

THE BIRDS
OF
AUSTRALIA



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PARROTS.

1. Bourke Grass-Parrakeet: *Neophema bourkei*.
2. The Smutty Parrakeet: *Platycercus browni*.
3. Red-collared Lorikeet: *Trichoglossus rubritorques*.
4. Golden-shouldered Parrakeet: *Psephotus chrysopterygius*.

[See page 198 et sqq.]

The Birds of Australia

BY

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PREFACE.

This book is the complementary volume to "The Animals of Australia, Mammals, Reptiles, and Amphibians," of the same authors and publishers. As it was impossible to give a reasonable account of all the Air-breathing Vertebrates of Australia in one volume, the account of the Birds was reserved for the present work.

The object and plan of this, as of the former, book are to serve the needs of the naturalist and to provide matter of interest for the general reader, by giving accurate descriptions and illustrations, and adding as much popular information as is available concerning habits and habitats.

In order to avoid rendering the volume too bulky and too heterogeneous in character, we have refrained from speculations and general disquisitions. It seemed wiser to present the facts in an ordered manner, and to leave for other publications the more general features of our Avi-fauna, relationships, and origins.

As in the case of "The Animals," while advantage has been taken of personal knowledge, we have drawn largely on other publications on Australian Birds. The classification is that of Dr. Bowdler Sharpe's "Hand-list of Birds," made more readily available by the publication of Mr. Gregory M. Mathew's "Hand-list of Australian Birds," in "The Emu," 1908. We gladly acknowledge our deep indebtedness to the various authors of the magnificent series of Descriptive Catalogues published by the authorities of the British Museum. We have included as nearly a complete account as possible of species described in Australia by Mr. A. J. North, of the Australian Museum, Sydney, and by Messrs. A. J. Campbell, Robert Hall, and others referred to in the text. We have drawn largely for accounts of habits on "The Emu," and "The Victorian Naturalist," and occasionally quote other periodical publications.

The illustrations have been collected with a considerable amount of labour, and have been derived from a variety of

sources. By the generous permission of the Trustees and the Curator, a large series of photographs was made by one of the authors of birds in the Australian Museum, and our thanks are again due to them and to the officers and assistants for the ready facilities afforded for the purpose. A few others were obtained of birds in the collections of the Macleay Museum and the Sydney Technological Museum. Photographs from well-stuffed and set-up Museum specimens, obtained under controlled conditions of light, undoubtedly present the pattern of the plumage in a more perfect and recognisable form than do those, except the very happiest, taken from life. On the other hand those taken from life show the live bird in actual surroundings. Hence we have obtained as many photographs from life as possible. For some of these we are indebted to Messrs. A. E. H. Mattingley, A. J. Campbell, H. Nielson, A. T. Dennis, J. B. Lane, Mrs. Ward of Mapoon, T. G. Campbell, Tom Iredale, H. P. C. Ashworth, A. F. Basset Hull, C. G. Gibson, H. Burrell, C. L. Barrett, W. S. Kent, F. George, C. P. Kinane, A. E. Kitson, and others.

The Royal Australasian Ornithologists' Union have generously allowed us to make use of several of the blocks of life pictures published in their very fine magazine, "The Emu." The New South Wales Bird Protection Society also kindly loaned us their blocks of the Egrets, and the Canterbury Philosophical Institute the block of *Megalestris*.

The highly artistic coloured illustrations are from paintings by Mrs. Ellis Rowan.

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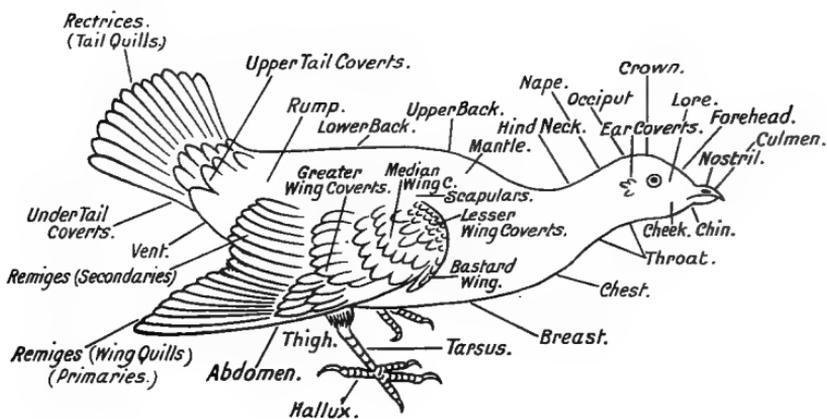


Diagram of a bird, showing its chief external characters.

The Birds of Australia

AVES

Warm-blooded animals breathing air direct by means of lungs: skin usually covered with feathers: skull jointed to the backbone by a single condyle: the young hatched out from eggs, usually fed by the parents.

SUB-CLASS PALAEOGNATHAE.

Sternum without keel.

ORDER CASUARIIFORMES.

Hallux absent. Feathers with a large after-shaft. Three front toes with claws.

Family Dromæidae.

No casque on the head: bill broad. *Dromæus*.

Family Casuariidae.

A casque on the head: bill narrow. *Casuarinus*.

The Emu.

Dromæus novæ-hollandiæ.

These interesting birds are typical of Australia, and fossil remains have been found, which show that they have been here for a great length of time, long before Tasmania was separated from Australia.

In 1859, Mr. Bartlett described a form of these birds as the Spotted Emu, *D. irroratus*, but young specimens received from all parts of Australia at the Melbourne Zoological Gardens show

that the so-called Spotted Emu is only an immature phase of the ordinary bird. The spots or bars are found on some birds of a clutch and not on others, and on birds from Victoria and New South Wales quite as often as on those from West Australia. When the birds are fully adult, all the bars disappear, and they are practically all alike in markings, from whatever part of Australia they may come. Another form, *D. parvulus* (Gld), formerly lived on Kangaroo Island, but



From life.

Emu: *Dromaeus novae-hollandiae*.

A. T. Dennis.

was ruthlessly destroyed by the early settlers. Of this bird fortunately both skin and skeleton are in existence. This does not seem, however, to have been the only Emu on the island, for many bones of birds received from it by the South Australian Museum are apparently identical with those of the existing species. Professor Spencer has recognised another smaller species, *D. minor*, determined on bones obtained from King Island in Bass Strait.

In the typical Emu the adults are grey, many of the feathers having a blackish tip, and there is little difference

between the plumage of the male and of the female. The upper part of the neck is almost bare of the short hair-like feathers, and the purplish skin is plainly visible. The early observers were much struck by the presence of the after-shaft to each feather, though this occurs equally in the Cassowary.

The chicks, when first hatched, have two black longitudinal bands on the back, and two more on each side, separated by a greyish-white stripe, but these mostly disappear by the end of the first year. They then have a dark-grey or brownish coat, occasionally with many of the feathers barred, but these markings usually only persist to the end of the second year,



Young Emus—fortnight old in Melbourne Zoo.

D. Le Souëf.

sometimes to the third year, after which the birds attain to their adult plumage. Total length over 6 feet. Albino varieties are met with now and then. There is one at present in the Sydney Zoo.

Nest usually near some cover, or under a tree with a little grass or other vegetation placed about the eggs, which the birds add to as they sit. They will also lightly cover the eggs, when they leave them before the full clutch is laid. The male bird usually sits during the day and the hen at night. On one occasion in the Melbourne Zoo a hen bird was accidentally killed after she had laid eight eggs. The male bird was equal to the occasion, sat on the eggs, and hatched and reared the

chickens single-handed. The unoccupied bird usually remains close at hand, and will drive intruding kangaroos and stock away from the nest.



From life.

Emu nine months old: *Dromaeus novae-hollandiae*.

Melbourne Zoo.

The eggs are dark-green, coarsely granulated, and number from six to twenty-one. They measure from 5.15 x 3.64 inches to 5.63 x 3.65 inches, and weigh from 16 to 24 ounces. The period of incubation is three months.

The name Emu, of Portuguese origin, was formerly applied to the Cassowary of Ceram, and also to the South American

Ostrich, and was adopted for the Australian bird by the officers who examined the first bird shot, within half a mile of the present Sydney Railway Station. The name caught the popular ear, and has held its own ever since.

The Tasmanian bird *D. diemenensis* became extinct about 1860. There are two skins in the British Museum, collected in 1845, by Ronald Gunn. Its breast is much lighter in colour than the mainland species.

The Australian Cassowary.

Casuaris australis.

A shy bird, living in the dense brush-covered coastal districts of North Queensland. Adult plumage black and lustrous, the feathers being unusually stiff. The sides of the head and the upper part of the back of the neck are bare, and of a light greenish blue; the lower part of the back of the neck, also bare, is bright scarlet; the chin and the front of the neck are deep blue; the sides of the neck below have intermingled blue and red. The two large wattles on the fore-neck are mottled with pinkish-red. The bare skin of the neck bears some short stiff hairs. The helmet or casque grows to a considerable size, and in old birds is very large. It serves to protect the head of the bird when, with body depressed and neck bent forwards, it dashes through the thick undergrowth in the jungle which forms its home. The sexes are very similar in plumage when adult.

The young are of a yellowish-buff colour, with three broad black stripes down the back, and three other irregular black stripes on each side. These markings do not survive beyond the first year. In the second and third years the plumage is yellowish brown; and it is only after the third year that the black colour gradually appears.

The eggs, from three to six in the clutch, are of a delicate pale green colour, which easily fades. They measure on the average about 5.55 x 3.70 inches. They are granulated like those of the Emu.

The Cassowary is too expensive and too uncertain in temper to be frequently kept as a pet. Mr. C. H. Hodges, when headmaster of the Townsville Grammar School, however, kept one for two years. Black Prince, as he was called, had been caught young, and, though he grew to stand over five feet without his stockings, he did not show any malice in his disposition, even to strangers. He would stroll about the grounds with his master's arm around his neck, and merely take the opportunity to poke his head into his master's pocket where he expected, not without warrant, to find something to his advantage. For sleeping-place a cage was provided in a

corner of the shrubbery, but he was allowed to ramble about at his own free will. The house was raised some three feet above the ground, and his delight was to creep under it, and to watch



From life.

Australian Cassowary: *Casuarius australis*.

J. B. Lane.

a hen which resorted to the same quarters, and, as soon as she had laid an egg, he would take and eat it. His appetite was a healthy one. At first he would only eat bananas, of which he consumed some ten shillings' worth in a week. The feeding operation resembled nothing so much as the posting of letters

in a pillar-box, unlimited bananas disappearing one by one into the dark cavity without producing any apparent effect. Later on he learned to feed on potatoes and bread. Hunger was in fact a constant trait, and he was ever on the look-out for something tasty. One lady had skinned a bird; he approached, saw, seized and promptly swallowed the skin. Another lady's bonnet attracted him; with a dart he pecked it off, but this, dainty as it was, proved too difficult an object for the pillar-box. This Cassowary drew the line at missionaries; he never attempted to swallow one. Black Prince made great friends with a cockatoo. In their game Cocky soon discovered the weakness of Achilles. A timely nip in the heel was always sufficient to make his large and otherwise invulnerable, friend leap high into the air as a first step in his retreat. The Cassowary was not so friendly with some tame kangaroos which shared the shrubbery with him. He would kick them from him, with the force of a horse, always kicking forwards. This power, alas, proved to be too dangerous as the bird increased in size and strength, and, in order to prevent accidents, it became necessary to remove him, greatly to the sorrow of his master. The lordly form of Black Prince still stands in the hall of the Townsville Grammar School.

SUB-CLASS NEOGNATHÆ.

Sternum with keel.

ORDER GALLIFORMES.

Game Birds.

Bill short and stout, the culmen arched and overhanging the mandible. After-shafts to the feathers of the body. Legs strong, sometimes armed with a spur. Hind toe (hallux) more or less developed. Nestlings precocious.

Family Megapodiidæ.

Hallux on the same level as the other toes. Oil-gland naked.

Genus Megapodius.

Upper tail coverts do not extend to the end of the tail. Head with a crest of feathers.

The Scrub Fowl.

Megapodius duperreyi.

The Scrub Fowl extends from North Australia through New Guinea and the chain of Malayan Islands as far as Wallace's Line. The birds inhabit the densest scrub, near the coast or in the low-lying country on each side of many of the tidal rivers. They are also found in some of the small scrub-covered islands off the coast, where the want of water does not seem to cause them any inconvenience. They are shy and solitary. If alarmed, they run off at a great rate, take refuge in thick



Mrs. Ward, Mapoon, Northern Territory.
Deserted Nesting Mound of Scrub Hen: *Megapodius (tumulus) duperreyi*.

cover, or fly on to a low branch of a tree. If compelled, they fly heavily away. They roost at night near the tops of the trees, and then frequently utter their double call. They feed on a varied diet of snails, insects, and berries.

Top of head crested with brown feathers; back of neck and mantle grey, shading into rufescent olive-brown on the middle of the back and the wings; lower back and upper tail-coverts dark chestnut; the tail with twelve feathers, blackish-chestnut. Throat and under-parts smoky-grey; sides and under tail-coverts dull chestnut. Bill reddish-brown with yellow edges; iris, dark brown; legs and feet bright orange, toes dark reddish brown. Total length 14 inches, wing 8.8., tail 3.6, tarsus 2.55.

Nesting mound usually in thick scrub, and frequently just above high water-mark on the beach. It is then mostly composed of sand, mixed with stones, roots and sticks, while further inland earth takes the place of sand. There is just sufficient vegetation included to provide in the processes of decay the heat requisite for incubation. The birds add to the mound every year; consequently old mounds attain a very considerable size, being about 10 feet high and 25 feet in circumference at the base. After a time they become so filled with roots of the aggressive vegetation that the birds can no longer work the soil, and are in consequence deserted. The temperature of the part of the mound where the eggs are placed is usually 95° F. Each egg is placed by the hen in a separate hole, which she scratches out, at a depth of from 6 inches to 5 feet. The various holes are not placed in any particular order, nor are they all of one depth. The white shell of the egg is covered with a pink substance which easily flakes off when the egg becomes dry. The young when hatched make their own way out of the mounds, which they are able to do, since the parent birds by frequent scratching prevent the soil from becoming caked. Only one egg is laid in each excavation. The young when first hatched are well feathered and can fly, roosting in trees the first night. They lead at once an independent existence and do not stay with their parents. The clutch of eggs is about nine; they are elongated, with the ends nearly alike, and measure about 3.61 x 1.97 inches.

Genus Lipoa.

Upper tail coverts extend to the end of the tail. Head with a short crest of feathers.

The Mallee Fowl.

Lipoa ocellata.

Southern and Western Australia.

Top of head covered with dark brown feathers, forming a short, thick crest; mantle grey, the lower feathers tipped with rufous-brown; back, scapulars and wing-coverts grey, with wide sub-terminal brown band; lower back and upper tail-coverts grey washed with brown, the latter barred with black, primaries pale brown, tipped with white, mottled with black; breast grey, with band of black

and white feathers down the centre, lighter underneath. Bill, legs and feet dark brown; iris light hazel. Total length 24 inches, wing 12.5, tail 9, tarsus 3.1.

Nesting mound and eggs generally situated close to some tree or thick scrub, the same site being used year after year. In making the mound, they first scrape out a slight hollow in the ground, then collect into it leaves, bark, twigs and other matter,



Mounted.

Mallee Fowl and Young: *Lipoa ocellata*.

D. Le Souëf.

making a small heap. They then make a hollow in the centre, about a foot wide and six inches or more deep, this being the egg chamber. They then scrape a ridge of sand all round the mound, and leave it until rain falls. When all is wet, they spread the sand of the surrounding ridge over the central heap to a depth of from 6 inches to one foot, and leave it until the vegetable matter below becomes heated. The mound is then ready for the eggs. Both birds assist in the construction. The

mounds are usually from two to four feet high and about twelve feet in diameter. Before laying, the bird scrapes out most of the sand from the egg cavity; and, the egg being laid, leaning well back she holds it upright with the smaller end down with one foot, while with the other she scrapes sand around it until it can stand alone. She then covers the whole over with sand. Every time an egg is laid the same process has to be gone through. The first circle of eggs is covered with about two inches of sand, and then a second tier is commenced, each egg



In situ.

Nesting Mound Mallee Fowl: *Lipoa ocellata*.

D. Le Souëf.

of which is laid opposite an interspace of the lower tier. There are often three tiers, each of from three to five eggs, the full clutch being about fourteen. The temperature of the egg chamber is from 95° to 96° F. The eggs are laid at daybreak on every third day. Incubation commences as soon as the egg is laid, and consequently the young hatch out at different times. The parent birds keep the mound well worked, usually opening it up at daybreak, so that the young which are ready to hatch out from the eggs of the lower tier are able to liberate themselves at that time. Those of the upper tier can make their way out through the supervening loose sand without assistance.

The fledglings can fly as soon as hatched, and they lead an independent existence until mated. The birds can run well, but fly heavily, and do not use their wings unless compelled. The eggs are usually of a delicate pink colour, but the colouring matter easily flakes off, showing the white shell underneath. Sometimes the pink colouring matter is altogether absent. The shell of the eggs is very fragile, and they measure about 3.71 x 2.34 inches.



D. Le Souëf.

Yellow-wattled Brush Turkey: *Talegallus lathamii* (*Catheturus*).

Genus Catheturus.

Head and neck almost bare, thinly covered with hair-like feathers; a large vascular wattle at the base of the neck, tail long, composed of 18 feathers.

The Yellow-wattled Brush Turkey.

Catheturus lathamii.

North-east and East Australia.

Upper parts brownish-black, lighter on the lower back and upper tail-coverts; the under parts dark brownish-grey, edged with white; tail black. Skin of head and neck pink-red, with a few hair-like dark brown feathers. Wattle bright yellow, tinged with red where it unites with the red of the neck. Bill black, iris and feet brown. Total length 25.5 inches, wing 12, tail 9.8 to 10.2, tarsus about 4.

The female has no wattle, but only a small patch of yellow skin, and when the nesting season is over the wattle of the male, too, is reduced. When the male utters his single note, he bends his body well forward, arches his neck, and distends his wattle. The habits are very similar to those of the Megapode.

The surface leaves and other materials are scraped together to form the nesting mound, with comparatively little soil. The male bird does practically all the work, and when the mound is finished he is always at hand,



From life.

Scrub Turkey: *Cathartus lathami*.

Melbourne Zoo.

tending it or watching to drive off intruders. He apparently resents the presence even of his mate, for while the hen is scraping out a hole in which to lay her egg, he buffets her with his wings most of the time, so severely that frequently many of the feathers of her wings are knocked out by the blows. Naturally as soon as the egg is laid the hen bird decamps. The mounds average about $3\frac{1}{2}$ feet in height and ten feet in the diameter of the base. They are freshly made up each year, generally in September, and the bird commences to lay in October. The temperature is maintained at about 95° F. An

egg is laid every third day, the full clutch being about fourteen eggs. These are pure white, much granulated and rather fragile, and measure about 3.56 x 2.34 inches. They are usually placed irregularly round the top of the mound, at a depth of a foot or more below the surface. The young, when hatched, make their own way out, can fly at once, and lead an independent existence.



In situ.

Scrub-Turkey's Nest: *Cathetus lathamii*.

D. Le Souëf.

The Bush Turkeys are hardy birds, and easily kept in confinement. Young are reared every year in a nesting mound in the Melbourne Zoological Gardens.

Barnard's Scrub Turkey.

Cathetus purpureicollis.

North-east Queensland—Cape York.

Head and upper portion of the neck red; lower neck, with wattle, purplish white. Iris very light brown, almost white; bill black; legs and feet dark brown. Upper surface blackish-brown, tail almost black: feathers of under-surface greyish-black tipped with light grey. The female is slightly smaller than the male. The

coloration of the head and neck is not so bright, and she has no wattle. During the breeding season the wattle of the male is $1\frac{1}{2}$ inches long. Total length of adult male 29 inches, wing 16, leg 11 inches.

Nesting mound and eggs similar to that of *C. lathamii*, and the habits of the birds are almost identical. The eggs are slightly smaller at one end, pure white, finely granulated and measure 3.61×2.36 inches

Family Phasianidae.

Hallux above the level of the front toes. Nostril never hidden by feathers.

Genus Coturnix.

Tail with 10-12 feathers. Axillaries long and pure white.

The Stubble Quail.

Coturnix pectoralis.

Australia and Tasmania. The birds are usually found in the open country, where the coarse grass gives them sufficient shelter. In a good season they even come into the gardens of the suburbs of Melbourne and Sydney. They generally nest each year in the hay-crop of the Melbourne Zoo. They breed two or three times a year when the seasons are favourable, and will commence to lay when six months old.

The adult male has the top of the head and back of the neck dark brown, the sides of the head, throat and forepart of neck reddish-buff, a black mark in the middle of the chest, the feathers of the chest and belly white with a black stripe down the shaft. Over each eye two parallel lines of yellowish-white. Bill black. Length 7 inches, wing 4.1, tail 1.5, tarsus 9. The female very similar, but with no black mark on the chest.

Nest and eggs usually in a crop, or amongst coarse herbage, the nest being lined with grass or straw. The clutch is from six to twelve, the eggs are strong, rather glassy in appearance of a dark yellowish colour, heavily blotched and flecked with dark greenish-brown. They measure from $1.17 \times .86$ to $1.28 \times .92$ inch.

Genus Synæcus.

Tail with 10-12 feathers. Axillaries short and grey.

The Brown Quail.*Synæcus australis.*

Australia, Tasmania, South-eastern New Guinea.

Feathers of male, upper portions reddish brown on sides, dull grey down middle, with a few fine mottlings of black; on underparts the buff feathers are grey down the centre. The V-shaped black bars nearly obsolete, sides of throat and head dull grey, tail feathers uniform grey. In younger specimens, upper parts are mottled with black and barred with rufous, and tail feathers black, barred with buff. Tail has 10 (rarely 12) feathers, outer ones shorter than middle pair, tarsus without spurs. Adult female has the black markings and patches on the upper and underparts much coarser, and the shaft-stripes, which are much wider than in the male, are pale buff.

Nest and eggs generally among rank vegetation and lined with grass or similar herbage and usually in a slight hollow. The eggs are from seven to twelve, strong and coarse, one end being much larger than the other. The colour varies; in a dry season in Northern Australia they are sometimes pure white, but generally finely freckled with light-brown; those laid in Tasmania and Southern Australia usually have the markings bolder and darker; they measure from 1.12 x .87 to 1.18 x .97 inch.

The Brown Quail, or Swamp-Quail, as Gould called them, though much smaller birds, strongly resemble the true Partridges in habits and economy. They move about in small coveys, and when flushed fly a short distance and alight again. They are genuine game birds, perhaps the most tempting to the sportsman of all Australian birds. Pointers will easily locate and stand to them. The flesh is excellent. Like the Partridge, the bird sits exceedingly close. You must nearly step upon it before it will rise from the nest.

The plumage is exceedingly variable, and the question of division into sub-species or races is an open one. Gould described three other species, but most Australian ornithologists include all the varieties under the same name. Gould's species were *S. diemenensis* from Tasmania (also in the islands of Bass Strait), larger and more varied in the markings of the upper

surface, and laying greener eggs; *S. sordidus* from W. Australia, in which all the feathers of the upper surface have a broad bluish stripe down the middle; and *S. cervinus* from Port Essington, one of the smallest forms, with a delicate sandy buff colouring.

Mr. G. A. Keartland placed a pair of these birds in an aviary, covering half of the floor with tufts of grass in the sod. For the first fortnight they kept out of sight, but by the end of a month they began to show themselves. Six weeks later seven eggs were laid, on which the hen sat. "A glance at her while sitting showed how these birds manage to cover such large clutches of eggs in a state of nature. The long feathers on the sides of the breast spread out at right angles from the body until the bird could hide an ordinary tea saucer." When the young were hatched, the male bird, who had taken no part in the incubation, was in constant attendance on them, and when finely chopped meat or green vegetables were thrown to them he would pick up pieces and hold them in his bill until the young ones took them from him. They all scratched like common fowls, and were fed principally on canary seed. When on one occasion Mr. Keartland removed two of the eggs with a spoon tied to a stick, the hen bird charged at it with her wings all distended like a bantam fowl would at a strange dog.

Genus Excalfactoria.

Tail with eight feathers.

The Chestnut-bellied Quail.

Excalfactoria lineata. Sub-species of *E. chinensis*.

Philippines, Palawan-Sulu Islands, Borneo, Java, Sumatra, Australia.

Adult Male: Upper portions brown, forehead, sides of head and neck and upper tail coverts dark slate-blue; a white band from nostril to eye; chin and throat black, a white band edged with black on either side, and forepart of neck white, upper part of chest, sides of breast and flanks slate-blue, rest of underpart rich chestnut.

Adult Female: Upper portions brown, with black markings and most of the feathers with a pale buff shaft-stripe; chin, throat and forepart of neck white, shading into rufous buff towards the sides, rest of underparts buff, paler in centre, chest, sides and flanks barred with black. Total length 5.3 inches, wing 2.9, tail 1.1, tarsus .9.

Nest in fairly thick herbage and usually in a slight hollow and lined with grass. The clutch is from four to six, and the eggs are of a light olive-green, thickly freckled with darker markings and measure about 1.05 x .79 inch.

ORDER TURNICIFORMES.

Feet generally with three toes only, the hallux being absent, except in *Podionomus*. Oil-gland tufted. Eggs double-spotted, three to five in number; nest none. The female is always larger, and the plumage more handsome than in the male. The male mostly incubates the eggs and tends the young.

Family Turnicidæ.

Genera. Hind toe absent. *Turnix*.

Hind toe present. *Podionomus*.

The Red-backed Quail.

Turnix maculosa.

North and East Australia, Southern New Guinea, South-east Celebes.

Adult Female: Throat and breast pale rufous, belly whitish buff; feathers on top of head black margined with dark grey, a buff line down the middle of head, a rufous nuchal collar; scapulars edged with straw colour. Bill slender. Length 5.8 inches, wing 3.2, tail 1.3, tarsus .85.

Adult Male: Resembles the female, but shows no trace of the nuchal collar. Length 5.1 inches, wing 2.8, tail 1.2, tarsus .8.

The Black-breasted Quail.

Turnix melanogaster.

Eastern New South Wales and Queensland.

Female: Chest black, many of the feathers having terminal bars of white; upper surface umber-brown, with irregular marks of black, rufous and white; forehead, sides of face, chin, and throat black. Underparts dark grey, marbled with buff and black; tail brown with wavy transverse bars of black and lateral buff spots. Total length 7.5 inches, wing 4.4, tail 1.7, tarsus 1.

Male: Top of head umber-brown, like back; lores and sides of head white tipped with black; chin and throat white; chest whitish buff, irregularly marked with black; underparts white. Total length 6.3 inches, wing 4.1, tail 1.6, tarsus 0.95.

The nest is a slight depression in the ground. Eggs three to four, whitish, finely freckled all over with light brown and also a few bold blotches of very dark brown, as well as some purplish-grey markings. The eggs measure 1.1 x .85 inch.

The Painted Quail.

Turnix varia.

Australia and Tasmania.

Female: Chest grey, each feather with a whitish shaft-streak, feathers surrounding the eye black spotted with white; a rufous nuchal collar; back black, barred with rufous; centre of top of head dark grey; sides black, edged with rufous; sides of face and throat white, tipped with black, chin and centre of throat white; underparts pale buff. Total length 7.6 inches, wing 4.2, tail 1.9, tarsus 0.9.

Male bird has no defined nuchal collar; chest mostly pale buff. Total length 6.4 inches, wing 3.7, tail 1.7, tarsus 0.8.

The nest is a slight depression, occasionally lined with a little grass; four eggs form a full clutch. They are whitish in colour, minutely freckled with light-brown, and interspersed with larger markings of dark bluish-grey; their measurements are about 1.17 x .88 inch.

The Chestnut-backed Quail.

Turnix castanonota.

Northern Australia.

Upper surface light red, one or two of the feathers of the middle of the back mixed with black, dark grey band down middle of head; nape spotted with white, sides of face white tipped with black; chin and throat white; middle of breast greyish-buff; sides light red; underparts whitish buff. Total length of female 6 inches, wing 3.6, tail 1.5, tarsus 0.9. The male is slightly smaller than the female.

The nest is a slight depression, rarely lined; clutch four; the eggs white, sparingly marked with blotches of umber and purplish-grey. The eggs measure .98 x .84 inch.

Olive's Quail.

Turnix olivei.

Queensland.

Adult Female: Most nearly allied to *T. castanonota*—resembling it in general coloration, but differing in its much larger size, in having the forehead grey without white tips to the frontal feathers, and with the superciliaries and sides of the face not conspicuously marked with

white. The feathers of the lower neck and breast with a decided wash of greyish-green, and with slightly indicated bars of dull greyish, without white centres; iris and feet yellow; bill brown. Total length 7.3 inches, wing 4.2, tail 2, tarsus 1.

This bird was named from a single female obtained at Cooktown, Queensland, in 1899, and at the time of writing nothing more is known about it or whether it will prove to be a good species or not.

The Red-chested Quail.

Turnix pyrrhothorax.

Australia except West.

Female: Chest rufous, feathers round the eye black spotted with white; upper surface grey, most of the feathers of the back with narrow transverse bars of rufous and black; feathers on top of head black with rufous margins, a whitish-buff stripe down centre of head; wing coverts marbled with black, buff and dull red, margined with pale buff; middle of chin and throat and underparts whitish. Total length 6 inches, wing 3.3, tail 1.4, tarsus 0.8.

Male: Like female, only smaller and rust-coloured chest not so bright. Length 5.2 inches, wing 2.9, tail 1.3, tarsus 0.75.

The nest is a slight depression, usually lined with a little grass. Four eggs are usually laid, much smaller at one end and are yellowish-white, thickly blotched with umber, reddish and purplish-brown markings, some having finer markings than others. They measure .95 x .73 inch.

The Little Quail.

Turnix velox.

Australia generally.

Chest dull light red, darker at the sides; feathers surrounding the eye light red; colour above reddish chestnut, shading into light red on nape and top of head; the chin, throat, breast and underparts white. Total length of female, 5.5 inches, wing 3.3, tail 1.2, tarsus 0.7; male 5.5 inches, wing 2.9, tail 1.2, tarsus 0.6.

Nest usually lined with a little grass; eggs four, yellowish-white and thickly marked with blotches of umber, reddish and purplish-brown; in some clutches the markings are finer than in others. Dimensions .96 x .71 inch.

The Plain Wanderer.*Pedionomus torquatus.*

Victoria, New South Wales, and South Australia.

Female: General colour above brown, finely barred with black; a black and white collar surrounds the neck; upper parts of chest rust-colour; chin and centre of throat white, sides of face and throat whitish, spotted with black; underparts whitish buff. Total length 6.3 inches, wing 4, tail 1.6, tarsus 1.

Male has no rust colour in nape; the collar is buff and brownish, and the upper chest tinted with bright buff. Total length 5.8 inches, wing 3.4, tail 1.2, tarsus 0.9.

Nest generally on open plains, and as a rule with little shelter, practically with no nest. The four eggs, much smaller at one end than at the other, greenish-white, thickly spotted with olive and purplish-grey markings. Slightly granulated, 1.3 x .96 inch.

ORDER COLUMBIFORMES. Pigeons and Doves.

Rostrum swollen at the hard and convex tip, the basal portion covered by a soft skin, in which are the openings of the nostrils, overhung by a valve. Feet with four toes on the same level. Tarsi covered on the sides and behind with hexagonal scales. Feathers without aftershaft.

The Pigeons build a very simple nest mostly of twigs and placed in a tree or on the ground. The eggs are one or two, and always white. The young nestlings are naked and helpless.

Family Treronidæ.

Tarsus shorter than the middle toe, feathered for more than half its length. Soles very broad, each toe with the skin expanded on the sides. Tail with fourteen feathers.

Tree-Pigeons.

Genus Ptilopus.—Bill thin and short. Size small, not larger than the domestic pigeon. Plumage mostly green, but much variegated with patches of bright colours.

Genus Myristicivora.—Bill thin and long, distensible at the base. Size large, not less than the domestic pigeon. General plumage white or light.

Genus Lopholæmus.—Head crested.

The Black-banded Fruit Pigeon.*Ptilopus (Leucotreron) alligator.*

Northern Territory of Australia.

Head and upper neck white, lower neck and chest whitish-cinnamon; rump and tail coverts grey, broad whitish tips to tail feathers, lower breast and underparts grey, separated from the chest by a broad black band on the lower breast; wings and tail slate-black. Female, a little duller in colour.

The Red-crowned Fruit Pigeon.*Ptilopus swainsoni.*

North-east Australia to New South Wales, Torres Strait Islands, South-east New Guinea.

Male: Green; forehead and crown rose-lilac, margined at the back with a narrow ring of yellow; chin and upper throat pale yellow; breast green, each feather forked at the end, which is silvery grey; a lilac transverse band between the breast and abdomen; underparts green, under tail coverts yellow, tinged with orange; tail green above, underneath grey, with a yellow band at tip; irides reddish orange. Total length 8.5 inches, wing 5.25, tail 3, bill 0.48, tarsus 0.84.

Female: Smaller, brighter green and with the yellow under tail coverts less stained with orange.

Nest a very frail platform of twigs, which can be easily seen through. One pure white egg is laid, which measures 1.15 x .80 inch.

The Rose-crowned Fruit Pigeon.*Ptilopus ewingi.*

Northern Australia.

Male: Green; forehead and crown rose-purple, margined behind with yellow; scapulars and tertials deep blue towards the tips and broadly edged with golden green; throat yellow, chest feathers tipped with grey, breast feathers tipped with yellow, abdomen orange, with a pale lilac band across the upper part; tail grey underneath, with broad terminal yellowish-white band; irides orange. Total length 8 inches, wing 4.6, tail 2.8, bill 0.55, tarsus 0.6.

Female: Duller in plumage.

Nest a very light platform of sticks, about $2\frac{3}{4}$ inches across and easily seen through; in fact it is a puzzle to see how the bird can fly off and on the frail nest without displacing the egg. One we saw was composed of only seven twigs. One egg is laid, pure white and slightly pointed at one end, some more so than others. They measure 1.10 x .86 inch.

The Purple-crowned Fruit Pigeon.*Ptilopus (Lamprotreron) superbus.*

Moluccas, Northern Australia, New Guinea, Batchian, Bismarck Archipelago, Ceram, Amboina.

Male: Brown-purple-violet, sides of head olive-green; upper parts green; scapulars, inner greater wing coverts and inner secondaries with deep blue spots near tip; sides and back of neck bright rufous; chin grey, breast grey with base of feathers purple; below the breast a broad black band, tinged with blue or green; abdomen white; flanks green, with two white bands; tail above green, underneath dark grey, with whitish band at tip. Total length 10.22 to 8.45 inches, wing 5.38 to 4.91, tail 3.22 to 2.63, bill 0.62 to 0.55, tarsus 0.74 to 0.66.

Female: No blue patch on the smaller wing coverts near the bend of the wing; breast grey and green; no transverse black band below the breast.

Nest a slight, flat platform, and like the foregoing, built in thick scrub near the end of a branch where the green back of the bird harmonises with the leaves. As there is practically no wind in the scrub, the birds are enabled to build on very thin boughs. They lay one egg, which is a very faint cream tint, almost white, and measures 1.20 x .87 inch.

The Purple-breasted Fruit Pigeon.*Ptilopus (Megaloprepia) magnificus.*

Queensland and North-eastern New South Wales.

Male: Head and neck pale greenish grey; all the upper surface and wings golden green; irregular oblique band of yellow across wings; under surface of wings brown; line down centre of throat; middle of breast and abdomen deep purple; sides green; tail green above, dark grey below. Total length about 16 inches, wing 9, tail 7.5; bill 0.8, tarsus 1.12.

Female: Like the male, but smaller.

Nest composed of twigs and tendrils and fairly substantial; built usually near the end of a bough; about seven inches across. One egg only is laid, which is pure white and usually pointed at one end, and measures 1.76 x 1.04 inch.

The Lesser Purple-breasted Fruit Pigeon.*Ptilopus (Megaloprepia) assimilis.*

North-east Queensland.

Similar to *M. magnifica*, but smaller. Total length about 14 inches, wing 7.5.

Nest a frail structure of twigs, often built at the end of a branch over a watercourse in the scrub. The one egg is white, sometimes slightly elongated, and measures 1.43 x .95 inch.



Purple-breasted Fruit Pigeon: *Megaloprepia magnifica*. Australian Museum.

The Nutmeg Pigeon.

Myristicivora spilorrhoea.

Northern Australia, New Guinea, Aru Islands.

Creamy white; winglet, primary coverts, primaries and secondaries black; tertiaries white, terminal portion of tail black, longer in the centre; under tail coverts, vent and flanks white with regular sub-apical black spots; legs and feet blue. Length 16 inches, wing 9, tail 5, bill 0.8, tarsus 1.2.

Nest occasionally frail, but usually substantially built, often composed of green twigs with the leaves on; built at varying heights from the ground. They lay one egg, which is white and measures 1.75 x 1.22 inch.

These birds come down the coast in countless thousands early in November, apparently from New Guinea and adjacent islands, and mostly nest on the scrub-covered islands of the Great Barrier Reef, but a few also on the mainland. On the Barnard Islands, for instance, we watched them returning from the mainland, where they had been feeding, to roost. There was a continuous flight of birds for about one hour and a half. When the steamer's whistle was blown, the birds rose into the air off the island like a white cloud. When they settled again, the trees seemed covered with large white flowers. The island was full of pigeons. The cooing of so many birds was as one continuous sound. They built anywhere, high up in the trees, low down on the vines, and occasionally on the rocks or birds-nest ferns on the ground.

The Top-knot Pigeon.

Lopholæmus antarcticus.

Eastern Australia coastal districts, from Cape York to Victoria.

General plumage grey, darker above than below; greyish-brown crest; from the eye to the occiput a black line meeting its fellow behind, and continued for a short distance down back of neck; feathers of neck and breast hackled; tail black, with grey base and crossed by band of grey near the end. Bill rose-red; feet purplish red; iris orange. Length 15 inches, wing 10.4, tail 6, bill 0.6, tarsus 1.25. These birds live mostly in the thick scrub-covered country.

Nest a platform of twigs usually built high up in a forest tree or at the top of a tall tree-fern, growing well up on the ridges of the hills. The single egg is white and measures 1.70 x 1.18 inch.

Family Columbidae.

Tarsus shorter than the middle toe. Soles not very broad, hind toe with the skin prominently expanded on the sides. Tail with twelve feathers. Tree Pigeons.

Genus Columba.—Tail not longer than the wings. Tarsus only feathered in the upper part.

Genus Macropygia.—Tail broad, longer than the wings.

The White-headed Fruit Pigeon.*Columba leucomela.*

Eastern Queensland and New South Wales.

Male: Head, neck, breast and abdomen white, washed with buff; upper surface, wings and tail slate-black; all the feathers of the back and lower wing coverts edged with purple; flanks slate-coloured; irides large, yellowish-hazel; naked skin of orbits pink-red. Total length 16 inches, wing 9.3, tail 6, bill 0.8, tarsus 0.95.

Nest a frail structure, about four inches across, placed near the end of a bough; one egg is laid, white in colour, and measures 1.41 x .97 inch.

The Pheasant Pigeon.*Macropygia phasianella.*

Eastern New South Wales, Queensland, and Northern Territory.

General colour chestnut-brown, below cinnamon-rufous; occiput and hind neck metallic amethyst; narrow dark bars on breast; tail rufous-brown; iris blue with an outer edge of scarlet; feet red. Total length about 17 inches, wing 7.7, tail 8.7, bill 0.68, tarsus 1.

Nest a fairly strong structure of twigs, built either on branches or on birds'-nest ferns. The two eggs are of a very faint cream colour, and measure 1.37 x .96 inch.

Family Peristeridæ.

Tarsus not shorter than the middle toe. Tail with 12-20 feathers. Ground Pigeons.

Sub-family Geopeliinæ.

No metallic spots on the wings. Size small. Tail rather long, of 12 or 14 feathers.

Genus Geopelia.

Tail of 14 feathers. First primary attenuated at the tip.

The Barred-shouldered Dove.*Geopelia humeralis.*

Southern New Guinea and Australia, except south-west.

Head, neck, and upper breast grey; occiput, back, wing-coverts, and upper tail-coverts pale brown; back of neck rufous; every feather of upper surface edged at the end with black; lower breast pale vinous,

centre of abdomen white; central tail feathers greyish-brown, the remainder chestnut tipped with white; irides yellow; naked skin round the eye purple; feet pink. Total length 11 inches, wing 5.5, tail 5.5, bill 0.7, tarsus 1.

Nest a frail structure of twigs, not usually high up, on which two white eggs are laid. They measure 1.12 x .89 inch.



Little Dove: *Geopelia cuneata*.

Australian Museum.
Peaceful Dove: *G. tranquilla*.

The Peaceful Dove.

Geopelia tranquilla.

Australia.

Forehead, cheeks and throat grey; occiput, back and wings ashy-brown; each feather black at the end; neck with numerous narrow black and white bands; breast and sides pale vinous; abdomen and under tail-coverts white; four central tail feathers ashy-brown, the rest black, tipped with white; irides light grey. Total length 8.75 inches, wing 4, tail 4.75, bill 0.62, tarsus 0.62.

When uttering their sustained coo, these birds use an elaborate ceremonial, bowing low with the head and elevating the tail. In their excess of politeness, some we have in captivity occasionally lose their balance and actually tumble off the perch.

Nest a very small frail platform, composed of twigs, rootlets or grass. The two eggs are pure white, and measure .86 x .60 inch.

The Little Dove.*Geopelia cuneata.*

Australia.

Head, neck and breast grey; abdomen and under tail coverts white; nape, back and scapulars pale brown; wing-coverts dark grey, each feather with two white spots encircled with black; four central tail feathers grey, the others greyish-black at the base and white for the remainder of their length. Total length 7.5 inches, wing 3.7, tail 4, bill 0.42, tarsus 0.5.

Nest very small, frail, built of grass or fine twigs. The two eggs are white and measure .77 x .60 inch.

An intermediate form between *G. tranquilla* and *G. cuneata* has been described from Carnarvon, W. Australia, under the name of *G. shortridgei*. It has transverse blackish lines on the foreneck and chest, a pinkish wash on the breast, and measures 8 inches, tail 4.1, tarsus 0.6.

Sub-family Phabinae.

Metallic blue or green patches on the wings. Size moderate.

Key to the Genera.

- A.—RUMP WITH TWO DARK CROSS BANDS.
 Upper wing coverts entirely metallic golden green. Chalcophaps.
- B.—RUMP WITHOUT DARK CROSS BANDS.
- A. Head not crested.
 Secondaries an inch or more shorter than the primaries.
 General plumage not uniform. Phaps.
 Tail of 16 feathers. Histriophaps.
 Tail of 14 feathers. Petrophassa.
 General plumage almost uniform dark brown.
 Secondaries rather less than an inch shorter than primaries. Geophaps.
- B. Head crested.
 Tail short, nearly even. Lophophaps.
 Tail long and very much rounded. Ocyphaps.

The Little Green Pigeon.*Chalcophaps chrysochlora.*

New Caledonia, Lord Howe Island, New Hebrides, South-east New Guinea, Moluccas, Lesser Sunda Island, Australia, and Timor Group.

Male: Head, neck, upper back, breast, and abdomen vinous; back and wings green; lower back and upper tail-coverts blackish; on the lower back two greyish bars, and between them a band of bronze; throat,

sides of neck vinous purple; smaller wing coverts on the shoulders vinous grey, tipped with white, producing a white bar. Total length 9.5 inches, wing 6, tail 3.5, bill 0.62, tarsus 1.

Female duller than male, head, neck, upper back, breast and abdomen rufous brown.

Nest a very frail structure of twigs, usually situated in a low bush. Two eggs are laid, white with creamy tinge, and measure 1.11 x .86 inch.



Bronzewing: *Phaps chalcoptera*. Crested Bronzewing: *Ocyphaps lophotes*. *Macleay Museum.*

The Lilac-Mantled Pigeon.

Chalcophaps occidentalis.

Described by Mr. North from North-west Australia. It differs from the preceding in the lilac-mauve colour of the head, hind neck and upper back, the more pronounced bronze colour of the wings, and the larger white shoulder patch. Total length 10.5 inches, bill .7, wing 6.2, tail 3.8, tarsus 1.

The Bronze-wing Pigeon.

Phaps chalcoptera.

Australia and Tasmania.

Male: Front white, tinged with fulvous, a dull purple band across the crown; occiput, hind neck, wings, upper part and sides brownish-grey; feathers on back, rump and upper tail coverts with lighter edges; lores black; a white subocular line; sides of neck grey, throat white; wing coverts with broad spot on outer web of golden bronze-green; tail grey, crossed by band of black near tip. Total length 13.5 inches, wing 7, tail 5.5, bill 0.66, tarsus 0.95.

Female and Young: Duller than male. Forehead grey, no purple band on the crown, no vinous colour on breast, which is greyish, with edge of feathers brownish.

Nest the usual platform of twigs, generally built at a fork of a horizontal limb. The two eggs are pure white, and measure 1.28 x .97 inch.

The Brush Bronze-wing Pigeon.

Phaps elegans.

Australia and Tasmania.

Forehead light yellow, crown grey, broad chestnut band behind eye; hind neck and upper back chestnut; lower back and upper wing-coverts olive grey; a black line on the lores; triangular chestnut spot on throat; greater wing-coverts metallic green on outer webs, with tips broadly grey; centre tail feathers olive grey; next two pairs brown towards the base; others grey; irides dark brown. Total length about 13 inches, wing 6.5, tail 4.5, bill 0.62, tarsus 0.95.

Nest built of twigs, about five inches across, generally in a bush. Two white eggs are laid, and they measure 1.30 x .97 inch.

The Flock Pigeon.

Histriophaps histrionica.

Northern and Central Australia.

Adult Male: Forehead white, a white stripe from behind the eye forming a circle round the ear coverts and gorget; remainder of head, throat and ear-coverts jet black; all the upper surface, wing-coverts, flanks and two centre tail-feathers cinnamon-brown; breast and abdomen bluish grey; edge of wing white, inner secondaries with a patch of metallic purple on the outer webs; lateral tail-feathers bluish grey at the base, passing into black towards the extremity, which is white. Total length about 11 inches, wing 8, tail 3.75, bill 0.75, tarsus 1.

Female: No white on forehead, which is sandy rufous like the other parts, and duller than male.

As this bird is terrestrial, it lays on the bare ground, although generally by some shelter. Two eggs are laid, frequently pointed at one end; they are white, with a faint creamy tone, and measure 1.30 x .98 inch.

The White-quilled Rock Pigeon.

Petrophassa albipennis.

North-west Australia.

Crown of head and neck greyish-brown, each feather margined with sandy-brown; all the upper surface and chest rufous-brown; the centre of each feather lighter; lores black; throat black, with the feathers

tipped with white; abdomen chocolate-brown; some of the inner upper wing coverts have on outer web a metallic coppery-violet spot, almost concealed; tail rufous-brown. Total length 10.5 inches, wing 5.2, tail 4.5, bill 0.6, tarsus 0.8.

The Chestnut-quilled Rock Pigeon.

Petrophassa rufipennis.

North-west Australia.

Similar to *P. albipennis*, but primaries chestnut, black margins; the centre of the feathers of the head and neck grey, throat whitish.

The Partridge Pigeon.

Geophaps scripta.

North-western and Eastern Australia to New South Wales.

Head, all upper surface and chest light brown, the tips of the wing-coverts much paler; throat and cheeks white; lores black, a band from over the eyes to the sides of the occiput and another under the eyes, black; a third band from the middle of the cheeks and passing under the white ear-coverts joins another black band which surrounds the throat underneath; forehead tinged with grey, lower breast grey, sides of breast white; abdomen and flanks fawn-colour; outer webs of inner greater wing-coverts with a spot of metallic greenish-purple, barred with darker tint; tail reddish-brown, the lateral feathers with broad apical black band. Total length 12 inches, wing 6, tail 4.5, bill 0.57, tarsus 1.05.

Nest a very slight hollow in the ground, usually lined with a little grass; the two eggs are white, with slight creamy tone, and measure 1.21 x .95 inch.

The Naked-eyed Partridge Pigeon.

Geophaps smithi.

North-west Australia and Northern Territory.

Head and all upper surface brown; throat white, surrounded with a narrow grey band; a white line from the nostrils over the eyes, and a similar one from the base of the lower mandible under the large naked space of a bright reddish-orange colour which surrounds the eyes; chest brown, in centre of breast a patch of grey feathers, edged at the tip with black, feathers of lower breast grey, sides of breast white; flanks dark grey, outer webs of the inner greater wing-coverts purple; tail wing 5.3, tail 3.75, bill 0.58, tarsus 1.12.

Nest a slight hollow in the ground, lined with grass. Two eggs are laid, white, with faint creamy tinge, measuring 1.23 x .94 inch.

The Plumed Pigeon.*Lophophaps plumifera.*

Northern and Central Australia.

General plumage pale cinnamon; forehead and a line on the sides of the crown, grey; bare lores and naked skin round the eyes bounded above and below with a narrow band of black; the lengthened crest-plumes cinnamon; throat and cheeks white, chin black, on chest a band of grey, margined below with a narrower one of black; back of neck and mantle with obsolete brown bars; upper wing-coverts and scapulars rayed with cinnamon at tip of feathers, with brown in the middle part and grey at base; an oblong bronze-purple spot on the outer webs of three of the inner secondaries; central tail feathers brown. Total length 8 inches, wing 4.2, tail 2.6, bill 2.65, tarsus 0.8.

Nest a slight depression in the ground, usually near some shelter. These are strictly terrestrial birds. The two eggs are of a very light cream colour, and measure .99 x .78 inch.

The Red-plumed Pigeon.*Lophophaps ferruginea.*

Interior of South, West, and North-west Australia.

Similar to *L. plumifera*, but no grey band on the chest, and breast and abdomen uniformly cinnamon coloured.

Nest a slight depression in the ground, usually near some shelter, such as a Spinifex tussock. The two eggs are of a creamy-white colour, and measure 1.01 x .74 inch.

The White-bellied Plumed Pigeon.*Lophophaps leucogaster.*

Northern Territory and interior of South Australia.

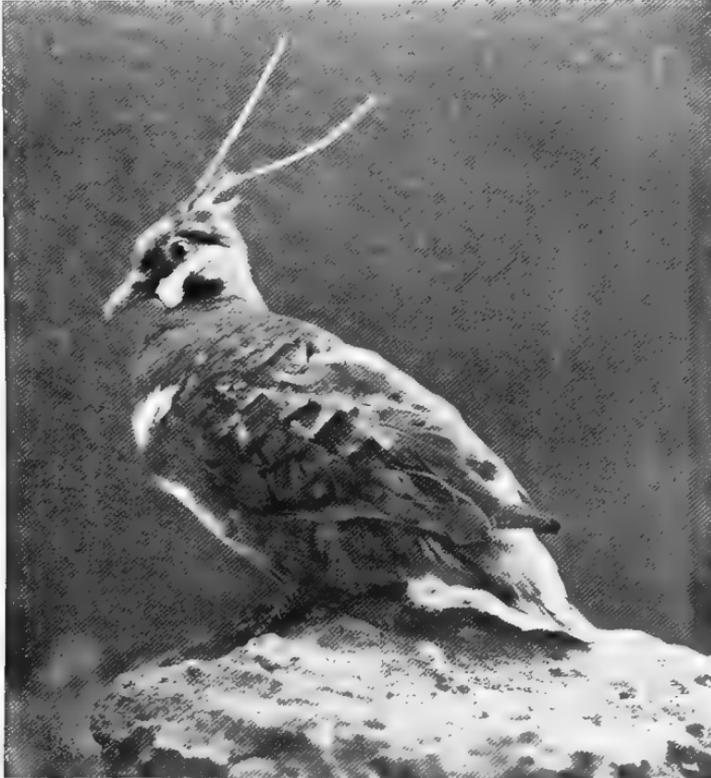
Similar to *L. plumifera* and *L. ferruginea*, but of a much paler and duller cinnamon colour, and with a distinct whitish band in front of the pectoral grey one; the central part of the lower breast is whitish, and the abdomen buff.

Nest similar to that of the other two species. The two eggs are also creamy white, and measure 1.04 x .80 inch.

The Crested Pigeon.*Ocyphaps lophotes.*

Australia in general.

Head, face, throat, breast and abdomen grey; lengthened crest plumes black, with the base grey; back and rump olive grey; upper tail-coverts greyish-brown tipped with white, sides of neck and breast salmon-colour;

*From life.*White-bellied Plumed Pigeon: *Lophophaps leucogaster*.

Melbourne Zoo.

feathers of wing-coverts crossed with narrow black band, greater wing-coverts bronze-green, margined with white, secondaries margined with white, the inner ones metallic purple on outer webs; tail blackish-brown. Iris orange, a ring of red naked skin around the eye. Easily tamed. Total length 12.5 inches, wing 6.8, tail 6, bill 0.55, tarsus 0.9. For figure see p. 29.

Nest a flat structure of twigs, usually placed in a bush. The two eggs are pure white, and measure 1.31 x .92 inch.

Sub-family Geotrygoninae.

No metallic spots on wings. Form robust, Partridge-like. Legs stout. Wings short.



Wonga-Wonga Pigeon: *Leucosarcia picata*. *Australian Museum.*

The Wonga-wonga Pigeon.

Leucosarcia picata.

Queensland, New South Wales and Victoria.

Upper parts, wings and tail lead-grey; forehead and chin white; lores black, a whitish line under the eyes and on the upper ear-coverts; cheeks light grey, gradually passing into the dark grey lead-colour of the breast; the latter interrupted by a broad semi-circular white band, which encircles the middle part of the breast; middle of lower breast, white; feathers of sides and abdomen with black spots and edged with white. Total length 15 inches, wing 8.4, tail 5.75, bill 0.75, tarsus 1.6.

Nest a frail structure of sticks, usually placed in a tree. Two white eggs are laid. They measure 1.50 x 1.1 inch.

ORDER RALLIFORMES.

Schizognathous birds (the maxillo-palatine process of the maxillary bones quite distinct from one another and from the vomer). Legs comparatively long. Wings very short and feeble.

Family Rallidæ.

Toes long and slender, the hind toes at a higher level. After-shaft to the feathers. Eggs numerous, cream-coloured with dark spots. Young precocious.

Key to the Genera.

- A.—CULMEN LONGER THAN MIDDLE TOE AND CLAW.
 Tarsus shorter than middle toe and claw. Hypotænidia.
 Tarsus longer than middle toe and claw. Eulabeornis.
- B.—CULMEN SHORTER THAN MIDDLE TOE AND CLAW.
- A. With no evident frontal shield.
1. Tarsus about equal to middle toe and claw.
 Under wing coverts and axillaries distinctly spotted or barred with white. Rallina.
 Under wing coverts and axillaries uniform. Plumage striped above. Tail pointed. Crex
 2. Tarsus shorter than middle toe and claw.
 Secondaries considerably shorter than primaries. Porzana.
 Secondaries about equal to primaries. Culmen not swollen at the base. Poliolimnas.
 Secondaries rather shorter than primaries. Culmen swollen at the base. Amaurornis.
- B. With frontal shield.
1. Toes short. Size 18 inches. Tribonyx.
 Size 12 inches. Microtribonyx.
 2. Toes long. Not lobed laterally.
 Nostrils oval. Sombre plumage. Gallinula.
 Nostrils rounded. Blue plumage. Porphyrio.
 Lobed laterally. Fulica.

The Slate-breasted Rail.*Hypotænidia brachypus.*

Australia, Tasmania and Auckland Islands.

Dark olive-brown above, streaked with black; tail black with brown edges; broad eyebrows of chestnut, extending to hind neck; throat white, breast slate colour. Total length 7.5 inches, culmen 1.2, wing 3.85, tail 1.7, tarsus 1.

Nest built in large tussocks of grass or rush in a swamp, and composed of fine grass with usually a staging leading to the nest, which lies from six inches to three feet from the water. The number of eggs is generally five, in colour pinkish-white, and blotched with light red and purple markings; they measure about 1.40 x 1.02 inch.

The Pectoral Rail.

Hypotaenidia philippinensis.

Australia, Malayan Archipelago, New Zealand, Pacific Islands, and Moluccas.

General colour above reddish-brown, all the feathers dark, with reddish edgings and spangled with white spots on the mantle, back, and wing coverts; lower back no white spots; tail feathers, reddish brown centred with black; crown of head brown, with black longitudinal spots, broad band through eye dusky brown, over the lores a white band extending above the eye; throat white, under surface white, with black bars; under tail coverts black, with white bars. Total length 11.5 inches, culmen 1.25, wing 5.7, tail 2.65, tarsus 1.55, middle toe and claw 1.85, White spots increase with age.



Lewin's or Slate-breasted Rail: *Hypotaenidia brachypus.* Australian Museum.

Nest a little herbage trodden down in some short thick vegetation, usually near the water's edge. Eggs from five to ten, pinkish-white, with a few roundish markings of reddish-brown, those beneath the surface being purplish-grey. They measure about 1.46 x 1.09 inch.

The Chestnut-bellied Rail.

Eulabeornis castaneiventris.

North Australia and Aru Islands.

General colour above dark reddish-brown, tail feathers the same, but more chestnut below; head slaty grey; chin whitish; under surface chestnut; bill yellow at the base, rest horn colour. Total length 17 inches, culmen 2.2, wing 8.5, tail 4.7, tarsus 2.75, middle toe and claw 2.7.

Nest a loose structure on the ground, composed of grass, generally in thick herbage. Clutch from four to six, in colour creamy-white, rather lightly, evenly distributed dark-brown spots, those beneath the surface being purplish-grey. They measure about 1.90 x 1.38 inch.

The Red-necked Rail.

Rallina tricolor.

Aru Islands, Waigiou, Mysol, New Guinea, Duke of York Island, and North-east Australia.

General colour above dark slaty brown, the quills with whitish bars on inner web; tail feathers blackish brown; head and breast vinous chestnut, throat lighter, under surface dark slaty grey, with few bars of sandy buff; under wing-coverts and axillaries black, with white bands. Total length 11.5 inches, culmen 1.35, wing 5.7, tail 2.5, tarsus 1.85, middle toe 1.9.

Nest made of grass and leaves at the base of a tree in thick scrub. The eggs number from four to seven, of a creamy-white colour, spotted with irregular reddish-brown markings, but occasionally pure white. They measure about 1.50 x 1.10 inch.

The Spotted Crake.

Porzana fluminea.

Australia.

General colour above olive brown, dotted all over with white spots and small streaks, the feathers centred with black; white margins to bastard-wing feathers and first primary; throat and breast dark slaty grey, abdomen white; sides black, barred with white. Total length 7 inches, culmen 0.8, wing 4.1, tail 2.2, tarsus 1.2, middle toe and claw 1.5.

Nest made of green weeds and lined with grass, situated in a tussock or thick herbage in a swamp, with a track leading to the nest. The eggs are usually five, olive in colour, marked with purplish-brown blotches, and measure about 1.25 x .80 inch.

The Little Crake.

Porzana palustris.

Australia and Tasmania.

General colour above brown, with black centres to nearly all the feathers, which are marked with white spots freckled with black; upper tail coverts brown with black centres; throat and breast pale ashy grey, centre of abdomen white. Total length 6 inches, culmen 0.65, wing 3.2, tail 1.6, tarsus 0.95, middle toe and claw 1.4.

Nest generally in the thick herbage growing in a swamp, built of aquatic plants and well hidden in the rushes; the clutch of eggs is from five to eight. They are brownish-olive, faintly mottled over with markings of a darker hue. The eggs measure about 1.11 x .77 inch.

The Spotless Crake.

Porzana plumbea (tabuensis).

Australia, Tasmania, New Zealand, Chatham Islands, New Caledonia, New Hebrides, Samoa, Fiji, and Philippine Islands.

General colour above chocolate brown; first primary whitish on outer edge; sides of face and under surface slaty grey; under tail coverts black, with white bars; iris bright red. Total length 6.3 inches, culmen 0.5, wing 3, tail 1.7, tarsus 1.05, middle toe and claw 1.27. Length of female 6.7 inches.

Nest of fine grass on the ground among thick short vegetation near water. From four to six eggs are laid, greyish-white, lightly mottled with reddish-brown, measuring 1.16 x .9 inch.

The White-browed Crake.

Poliolimnas cinereus.

Malayan Peninsula, Oceania, Buru, Greater and Lesser Sunda, and Northern Australia.

General colour above olive-brown, with darker centres to the feathers on the back; the first primary white along the outer web; head dark ashy grey, with band of white passing below the eye to above the ear coverts; throat and abdomen pure white; breast and sides of body ashy grey. Total length 7.5 inches, culmen 0.9, wing 3.9, tail 1.85, tarsus 1.5, middle toe and claw 2.1. Female, length 6.8 inches.

Nest on the ground in thick short vegetation about a swamp, and made of grass and rushes; five eggs are generally laid, ground colour cream, closely mottled and blotched all over with brownish markings, much lighter in some clutches than in others, and measure about 1.15 x .89 inch.

The Rufous-tailed Crake.

Amaurornis moluccana.

Moluccas, New Guinea, Bismarck Archipelago, and Northern Australia.

General colour above and sides dark olive-brown; sides of head and under surface of body slaty grey; lower abdomen buff. Total length 10.8 inches, culmen 1.4, wing 5.75, tail 2.2, tarsus 2.2, the middle toe and claw 2.35.

Nest built of coarse grass on the ground in damp situations. The clutch of eggs is from three to five; they are very similar to those of the Pectoral Rail. Three eggs obtained at Port Darwin are cream with irregular markings of dark-brown, especially towards the larger end, and measure 1.38 x 1.6 inch.

The Native Hen.

Tribonyx mortieri.

Tasmania.

General colour above ruddy brown, lower back with a few brownish spots at the ends of the feathers; wing-coverts greyish olive, with longitudinal white spots near the end of the feathers in the median series; tail brown, black at the ends, under surface greenish grey; on sides of body a patch of white; the outer under tail-coverts varied with white. Total length 14 inches, culmen 1.55, wing 7.8, tail 3.4, tarsus 3.25, middle toe and claw 3.1.

Nest of coarse herbage in thick vegetation by water, generally on the ground. The eggs number from six to eight, and are of a light stone colour, with a few blotches of brown, those beneath the surface being purplish-grey: the eggs are also minutely freckled all over with light-brown. They measure about 2.13 x 1.50 inch.

The Black-tailed Native Hen.

Microtribonyx ventralis.

Australia.

General colour above olive-brown, wings browner than the back; the first primary edged with white; sides of face and throat dusky slate colour, remainder of under surface dark slaty blue; abdomen blackish, sides of body brown; long feathers of lower breast with large ovate spots at the ends. Total length 10.5 inches, culmen 1.25, wing 8.7, tail 3.4, tarsus 2.4, middle toe and claw 2.5. These birds sometimes appear in immense flocks.

Nest made of grass, generally situated on the ground, but sometimes in a low thick bush near water. Clutch of eggs from five to eight, dark-green in colour, with reddish-brown markings and minutely freckled all over with the same colour; they measure about 1.80 x 1.26 inch.

The Black Moor Hen.*Gallinula tenebrosa.*

Australia and New Guinea.

Colour above dusky olive-brown, tail black; head, neck and under surface of the body dark slaty grey; under tail coverts white, long centre ones black. Frontal plate of bill orange; above the knee a band of yellow and scarlet. Total length 14.5 inches, culmen with frontal shield 1.8, wing 8, tail 2.8, tarsus 2.3, middle toe and claw 3.6.

Nest made of coarse herbage and lined with fine bark or grass, and situated among the thick rushes over water, or at base of tree in a swamp, or on a log. The eggs number from seven to eleven, ground colour stone, blotched with reddish-brown markings. They measure about 1.96 x 1.34 inch.

The Dark-grey Moor Hen.*Gallinula frontata.*

New Guinea, Moluccas, Celebes, South-east Borneo, and North Australia.

Similar to *G. tenebrosa*, but darker grey above and below, and distinguished by the red colour of the toes resembling that of the tarsi; bill and frontal shield red, excepting the terminal third, which is yellow; feet red and joints greenish, bare part of tibia olive-green behind; iris black. Total length 14 inches, culmen and frontal shield 1.75, wing 7, tail 2.5, tarsus 2.15, middle toe and claw 3.4.

The Blue Bald Coot.*Porphyrio bellus.*

Western Australia.

Back black, shade of greenish-blue on throat and foreneck; thighs purplish like the flanks; bill red; knees, lower part of tarsi greenish grey, remainder of feet and legs dark green. Total length 17.5 inches, culmen with shield 3, wing 10.6, tail 3.6, tarsus 3.6, middle toe and claw 4.6.

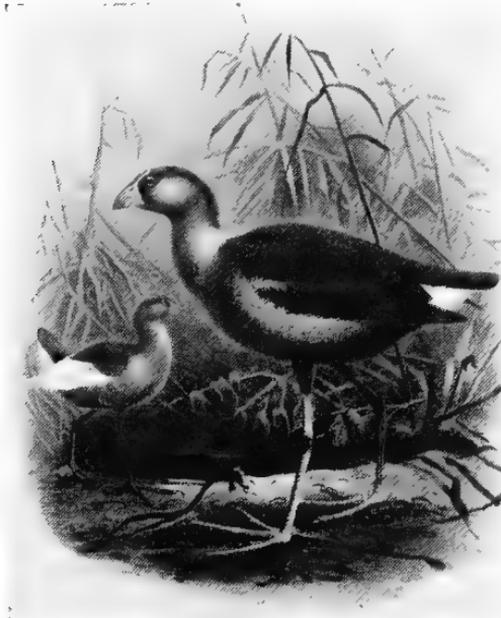
Nest made of rushes and water plants, leaves, &c., and situated over or near water. The eggs are from four to six and are stone colour, blotched with brownish markings of varying shades; they measure 2.24 x 1.60 inch.

The Bald Coot.*Porphyrio melanonotus.*

Australia, Tasmania, New Zealand, Norfolk Island, Lord Howe Island, and New Guinea.

Colour above black, lesser coverts purplish blue, first primary greyish blue; tail black; neck and under surface of body purplish blue; lower abdomen and thighs black; under tail coverts white, frontal plate, bill legs and feet red. Total length 16 inches, culmen and frontal shield 3, wing 10.5, tail 3.9, tarsus 3.7, middle toe and claw 4.5.

Nest usually built of aquatic plants, leaves, &c., in swamps, generally close to the water, either on rushes or brushwood.



Bald Coot: *Porphyrio melanonotus*. *Buller.*

They lay from four to seven eggs, which are of a greenish stone colour with brown markings of different shades; these measure about 1.95 x 1.43 inch.

The Coot.

Fulica australis.

Australia and Tasmania.

Colour above grey with olive shade; under tail coverts black, with a line of white feathers round the bend of the wing; bill bluish grey; iris red. Total length 14 inches, culmen from base of shield 1.2, wing 7.2, tail 1.8, tarsus 2.1, middle toe and claw 3.4.

Nest built in swamps, in or close to water, usually of rushes, aquatic weeds, &c. Clutch of eggs from six to nine, of a stone colour and thickly freckled with small purplish-brown markings. The eggs measure about 1.96 x 1.29 inch.



Coot: *Fulica australis*.

Australian Museum.

ORDER PODICIPEDIFORMES.

Palate schizognathous. Wing feathers developed into remiges as in aerial birds. Nestlings precocious.

Family Podicipedidæ.

Hallux above level of other toes. Toes with wide lateral lobes united at the base. Tail vestigial. No right carotid artery.

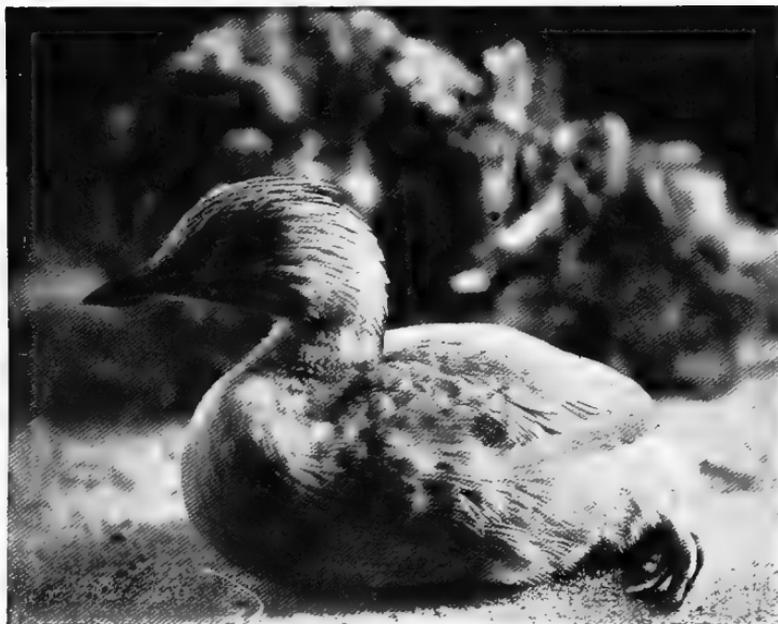
Genus Podicipes.

Bill pointed. Neck long. Plumage close and glossy. Feathers of the forehead normal.

The Black-throated Grebe.*Podiceps novæ-hollandiæ.*

Australia, Java, New Guinea, New Caledonia, Tasmania.

Colour above black, washed with grey on the back and wing-coverts; dark chestnut band on each side of neck; sides of lower back and rump white, tinged with rufous; upper part of chest, sides, and flanks mixed with black; rest of underparts and portion of wing white. Total length 9.5 inches, culmen from feathers on forehead 0.8-0.9, wing 4.2-4.5, tarsus 1.4, outer toe and claw 1.85. In moulting season the chin, throat, cheeks, sides and forepart of neck white like rest of underparts.

*From life.*Hoary-headed Grebe: *Podiceps nestor.**D. Le Souëf.*

Nest floating low in water and built of water-weeds, usually near some shelter, such as rushes. The eggs are from four to six and covered with a thin coating of white lime, which soon becomes stained and shiny. They measure about 1.45 x 1.02 inch. The bird does not as a rule sit on her eggs during the heat of the day, but leaves them covered over with weeds so as to prevent them from being scorched by the sun. She covers the eggs when leaving the nest.

The Hoary-headed Grebe.*Podiceps polio-cephalus.*

Australia and Tasmania.

Colour above ash brown; sides of lower back white; crown blackish, shading into deep black on occiput and nape, which is elongated and forms a kind of hood; sides of head brownish white, the feathers with

Hoary-headed Grebe: *Podiceps nestor.**Australian Museum.*

hair-like extremities; chest whitish, abdomen dusky, rest of underparts white. Total length about 9.5 inches, culmen from feathers on forehead 0.6-0.8, wing 4.3-4.4, tarsus 1.5, outer toe and claw 1.9. When not breeding hair-like filaments almost absent.

Flat floating nest of water weeds, the eggs always wet. Eggs four to six, with glossy surface, white when first laid, but soon stained brown, measuring about 1.58 x 1.13 inch.

The Tippet Grebe.*Podiceps (Lophæthya) cristatus.*

Europe to North Asia, Japan, Indian Peninsula, Africa, New Guinea, Australia, Tasmania, and New Zealand.

Colour above dark ash-brown, crown black; feathers on each side of crown elongate and forming a long double crest; throat white tinged with rufous, shading into chestnut at the back of the head; upper neck with long black plumes, forming a ruff, only worn during breeding season; underparts silvery white; sides rufous chestnut; lesser wing coverts white. Total length about 20 inches, culmen from feathers on forehead 1.6-2.1, wing 6.7-8.1, tarsus 2.5-2.6, outer toe and claw 2.9-3.1.

*Meyer.*Tippet Grebe: *Podiceps cristata.*

Floating flat nest, made of green water-weeds and well down in the water, usually placed among rushes. From four to six eggs are laid, white but soon stained from the wet water-weeds, of which the nest is composed. They measure about 2.04 x 1.44 inch.

ORDER SPHENISCIFORMES.

Palate schizognathous. Beak never hooked. Wing feathers small and stiff, not produced into remiges. Wings short, used as swimming organs. Tail of narrow rigid feathers. Tarsi very short, the front toes united by a web; the hind toe very small, united to the tarsus. Penguins.

Genus Aptenodytes.—Tail rather short of 20 feathers, almost hidden by the upper tail coverts. Lower mandible curved downward.



"Challenger" Report.

Crested Penguin (old and young): *Catarrhactes chrysocome*.

Genus Catarrhactes.—Tail relatively long, of 12, 14 or 16 feathers. Upper tail coverts short. A superciliary band of golden feathers. Deep grooves on the bill. Lower mandible straight.

Genus Eudyptula.—Tail very short, of 16, 18 or 20 feathers, concealed by the longer upper tail coverts. Grooves on the bill inconspicuous. Lower mandible straight.

King Penguin.*Aptenodytes forsteri.*

Eastern portions of Straits of Magellan, Kerguelen and other Islands in the Southern Ocean, and occasionally to Southern New Zealand and Tasmania, but not in the Antarctic circle.

Head and throat black, with golden yellow band on each side, narrowing towards the neck; the gape of the bill is also of an orange colour; the breast white, and the back bluish grey.

*From life.*Little Penguin: *Eudyptula minor.**D. Le Souëf.*

The King Penguins form large rookeries at Macquarie Island, but do not breed on any other of the New Zealand group. They make no nest, and lay only one egg, which the female holds in a fold of the skin between the legs until it is hatched.

The Crested Penguin.*Catarrhactes chrysocome.*

Falkland and Kerguelen Islands, Cape Seas, South Australia, Tasmania, and New Zealand.

Colour above dark slate, each pointed feather black, edged with bluish slate, top of head black; feathers of crown lengthened and forming a long crest; yellow eyebrow stripe; sides of the head black;

underparts pure white. Flipper above like the back, edged behind with white, white below. Tail with 16 feathers. Total length about 25 inches, nasal feathers to tip 1.30-1.55, gape to tip 2.1-2.3, flipper 6.8-7, tail 4.3-4.4, middle toe and claw 2.50-2.85.

Nest generally on the bare ground. Two greenish-white eggs are laid, which measure about 2.50 x 1.90 inch.

These birds often congregate together in immense numbers, especially on the Macquarie Islands.



"Victorian Naturalist."

A. H. E. Mattingley.

Fairy Penguin and Young: *Eudyptula undina*.

The Blue Penguin.

Eudyptula minor.

New Zealand, Tasmania, Southern Australia.

Above greyish-blue, below white. Both outer and inner margins of flippers widely bordered with white; upper tail coverts and tail sometimes white, sometimes blue. Tail with 16 feathers. Total length 18 inches, nasal opening to tip 1.3, gape to tip 2.15, flipper 5.6, tail 1.2, middle toe and claw 2.1.

Nest generally with a little dry vegetation and usually in deserted Petrel burrows under rocks, or under matted vegetation. Two white eggs are laid, which measure 2.30 x 1.66 inch; as a rule one egg is larger than the other.



T. G. Campbell.

Little Blue Penguin (*Eudyptula uncinata*) in Nest, with Young.

"The Emu."

The Little Blue Penguin.*Eudyptula undina.*

Tasmania, New Zealand, Chatham Islands and Southern Australia.

Above slate-blue, each feather with a brownish grey base and black shaft; throat and underparts white; flippers greyish black, narrowly edged with white on the inner margin, below white. Total length 14-15 inches, nasal opening to tip 1.2, gape to tip 1.75, flipper 4.7, tail 1.35, middle toe and claw 1.9. These birds are easily distinguished from the Blue Penguin, being considerably darker in colour and smaller, besides having the under surface of the flipper white.

Nest either in a hollow under matted vegetation or under rocks or in burrows. Two white eggs are laid, which measure 1.98 x 1.54 inch.

ORDER TUBINARES.

Oceanic birds with schizognathous palate; the external nostrils produced into tubes; hind toe absent or reduced to one joint, fore toe strongly webbed; oil-gland tufted; bill covered by several horny pieces, separated by deep grooves. Young helpless.

Family Procellariidæ.

Nostrils united externally above the culmen; second primary the longest.

Sub-family Oceanitinæ.

Leg-bones longer than the wing-bones; tarsus twice as long as femur; secondaries 10.

Key to the Genera.

- | | |
|---|-----------------------|
| A. Basal phalanx of mid toe not much flattened. | |
| Claws sharp. | |
| Shield scales on front of tarsus obsolete. | Oceanites. |
| Shield scales on front of tarsus distinct. | Garrodia. |
| Claws flattened and wide. | Pelagodroma. |
| B. Basal phalanx of mid toe much flattened. | Fregetta (Cymodroma). |

Yellow-webbed Storm Petrel.*Oceanites oceanicus.*

Southern oceans and Atlantic ocean as far north as Labrador.

Sooty-black, forehead and under surface paler, greater wing coverts greyish, upper tail coverts white, under wing coverts and tail black. Total length about 6.8 inches, wing 6.1, tail, central rectrices 2.45, bill 0.7, tarsus 1.37, middle toe 1.1.

Nest a slight hollow under rocks or other cover. One egg is laid; colour white, with some very small faint brownish spots on the larger end; it measures about 1.27 x .87 inch.



Yellow-webbed Storm Petrel: *Oceanites oceanicus*.

Meyer.

The Grey-backed Storm Petrel.

Garrodia nereis.

Southern Ocean.

Greyish black, darkest on head, becoming greyer towards rump; wings black; median and tail coverts and tail have narrow edge of white; under surface white, sides streaked with grey; tail grey, tipped with black. Total length about 6.7 inches, wing 5.2, tail 2.7, bill 0.65, tarsus 1.25, middle toe 1.2.

Nest either in a burrow about 15 inches in depth, or under matted vegetation. One egg is laid, white, with finely freckled brownish markings on the larger end; it measures about 1.40 x 1.06 inch.

The White-faced Storm Petrel.

Pelagodroma marina.

Southern seas.

Upper surface slaty-brown, back paler and greyer, the feathers narrowly edged with white; upper tail coverts crimson, edged with white, with a dark line on each feather; median wing coverts tipped with white.

Forehead, a stripe over the eye and entire under surface white; bill black. Total length about 8 inches, wing 5.8, tail central 2.75, lateral 3.15, bill 0.9, tarsus 1.9, middle toe 1.35.

Nest: If in hard ground, a short burrow about 18 inches long is made; but often under thick matted herbage. One white egg is laid, but many have fine reddish freckles in the apex; it measures about 1.41 x 1.06 inch. These little birds nest on Mud Island, in Port Phillip, as well as on many of the islands in Bass Strait. They leave their young during the day and return to them during the night to feed them.

The Black-bellied Storm Petrel.

Fregatta melanogaster.

Southern Ocean, northward to Bay of Bengal, and in Atlantic to Tropic of Cancer.

Sooty black, greater wing coverts paler; base of feathers of throat and under tail-coverts, flanks, upper tail-coverts and under wing-coverts white; rest of plumage black. Total length about 8 inches, wing 7, tail 3.2, bill 0.9, tarsus 1.6, middle toe 1.03. Amount of white on throat varies.

Nest usually in crevices or under rocks. One white egg is laid, with minute purplish-brown freckles, which are very numerous on the larger end. It measures 1.30 x .98 inch.

The White-bellied Storm Petrel.

Fregatta grallaria.

Seas of Southern Hemisphere, north to coast of Florida.

Sooty-black; back and scapulars greyish, each feather edged with white; rump, upper and inner under wing-coverts white.

Family Puffinidæ.

Nostrils united externally, or nearly so, above the culmen; second primary not longer than the first.

Sub-family Puffininae.

Sides of the palate without lamellæ.

Key to the Genera.

- | | |
|---|---|
| <p>A. Tarsi distinctly compressed, with sharp front edge.
 Nostrils separate.
 Nostrils united into a single opening.
 Tail Quills 12.
 Tail Quills 14.</p> | <p>Puffinus.
 Puffinus.
 Puffinus.
 Puffinus.</p> |
| <p>B. Tarsi not compressed, with rounded front edge.
 Bills more or less yellow.
 Bill black.</p> | <p>Majaqueus.
 Estrelata.</p> |

The White-fronted Shearwater.*Puffinus leucomelas.*

Japan and southwards to North coast of Australia.

Upper surface brown; anterior of crown, forehead, sides of head and neck white, each feather with a narrow dark disc; under surface and under wing-coverts white. Total length about 19 inches, wing 13, tail, outer feathers 4, central 5.6.

The Wedge-tailed Shearwater.*Puffinus sphenurus.*

Indian and Australian Seas to Central Pacific Islands.

Sooty-brown, crown, hind neck and wings darker, forehead and throat greyer, entire under plumage paler sooty-brown. (See *Addendum*.) Total length about 17 inches, wing 11.6, tail, central feathers 5, lateral 3.35, tarsus 1.8.

Nest generally in a burrow about three feet long. The single egg is white, and measures about 2.40 x 1.65 inch.

The Forster Shearwater.*Puffinus gavia.*

Australian and New Zealand seas.

Upper surface slaty-brown; under surface, including under tail-coverts white; sides of head and neck mottled with grey, below the eye dark; under wing-coverts white to the edge of wing. Total length 12 inches, wing 8, tail central 2.4, lateral 2.3, bill 1.9, tarsus 1.7.

Nest in burrows or under a rock. The egg is pure white, and measures from 2.45 x 1.45 to 2.20 x 1.45 inches (Buller.)

The Allied Shearwater.*Puffinus assimilis.*

Australian seas, Atlantic north to Madeira.

Upper surface slaty-black; all under surfaces white. Total length about 10.5 inches, wing 7.4, tail central 2.65, lateral 2.6, bill 1.4, tarsus 1.5.

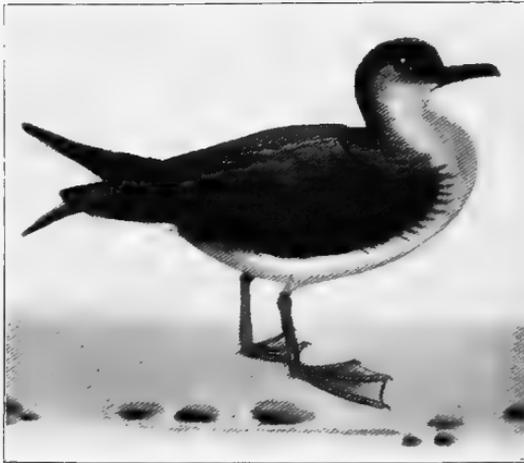
Nest in a burrow about three feet in length, or under a rock. One egg is laid, pure white in colour, and measures about 1.95 x 1.43 inch.

The Fleshy-footed Shearwater.*Puffinus carneipes.*

Australian and New Zealand seas, north to Japan.

Dark sooty-brown, slightly paler beneath, and greyer on throat. Total length 19.5 inches, wing 12.5, tail central feathers 4.3, lateral 3.65, tarsus 2.25.

Nest usually in a burrow about four feet in length; the one white egg measures about 2.64 x 1.75 inch.



Allied Shearwater: *Puffinus assimilis.*

Meyer.

The Sombre Shearwater.*Puffinus griseus.*

Atlantic and Pacific Oceans, south to Australia and Straits of Magellan.

Sooty-brown, darker on head, lower back, wings and tail; greater wing coverts and under surface a little greyer, throat and breast paler, under wing-coverts greyish white. Total length about 18 inches, wing 12, tail central 3.5, lateral 2.7, bill 2.1, tarsus 2.4.

Nest usually in a burrow, sometimes under matted vegetation. One egg is laid, white in colour, and measures about 2.60 x 1.97 inch.

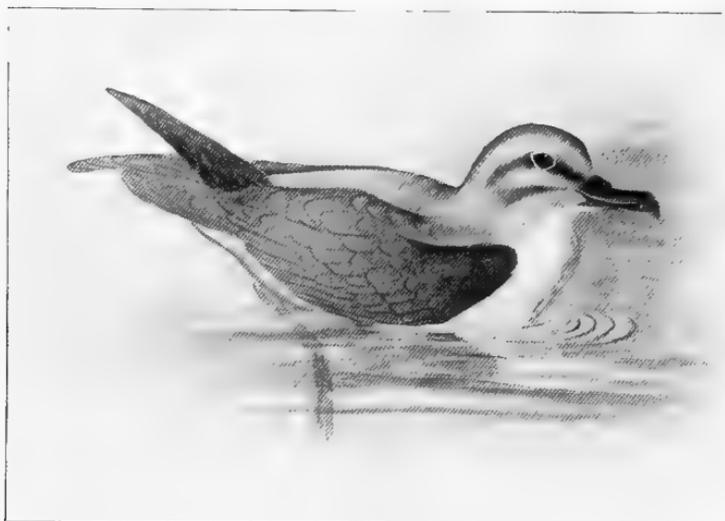
The Short-tailed Shearwater (Mutton Bird).*Puffinus tenuirostris.*

Australian and New Zealand seas, east to Samoa, north to Japan.

Sooty-brown; under surface paler and greyer, lighter on throat and breast, darker on flanks and under tail-coverts, under wing-coverts paler

grey. Total length about 13 inches, wing 10.4, bill 1.8, tarsus 2.05, middle toe 2.3.

Nest usually in a burrow extending to four feet. They lay one white egg, which measures about 2.90 x 1.93 inch. The young of these birds are taken in immense numbers from the islands in Bass Strait, about 600,000 being taken yearly at the Furneaux Group of Islands alone. They are killed just as they are leaving for the sea, and are preserved in casks of brine for food.



Brown Petrel: *Pterodroma cinerea*.

After Gould.

The Brown Petrel.

Pterodroma cinerea.

Southern Ocean.

Upper surface brownish grey, darker on crown, wings and tail; under surface white; under wing-coverts and tail-coverts grey; bill with yellow stripe. Total length about 19 inches, wing 13, tail, central 4.4, lateral 3.5, bill 2.4, tarsus 2.3.

Nest in a burrow some distance from the water. The one egg is white, and measures 2.77 x 1.97 inch.

The Antarctic Petrel.*Thalassœca antarctica.*

Antarctic seas.

Upper surface dull brownish black, on sides of neck gradually merging into white, under parts white; broad slaty-brown band along edge of the wings; the primaries are white on their inner webs, except at the tips; the secondaries and their coverts are white; tail-feathers white, with broad terminal band of brownish black. Total length 19.5 inches, wing from flexure 12, tail 5, tarsus 1.75.

This bird is only a rare visitor to the Southern New Zealand and Tasmanian Seas, its true home being the Antarctic.

The Silvery-Grey Petrel.*Priocella glacialisoides.*

Southern oceans, in Pacific reaches California.

Upper surface pale grey, lighter on head and back of neck; dark spot in front of the eye; forehead, cheeks and under surface white; flanks and tail pale grey; bill yellow. Total length about 18 inches, wing 12.6, tail central 5.1, lateral 4.15, bill 2.1, tarsus 1.8.

The Spectacled Petrel.*Majaqueus æquinoctialis.*

Southern Ocean, north to South Latitude 30°.

Sooty-black; chin white, which varies, some have irregular white stripe under the eye almost to the nape and a transverse band across the forehead; shafts of primaries white.

Nest in a long burrow, generally on a hillside. The nest near the end of a burrow is made of vegetation and mud mixed, about four inches high and slightly hollowed. Other petrels usually make no nest in their burrow. The single egg is white, and measures about 3.40 x 2.10 inch; it has a stronger musky perfume than most other Petrels' eggs.

The Black Petrel.*Majaqueus parkinsoni.*

New Zealand seas.

Very similar to the preceding species, but smaller and entire plumage sooty-black. Total length about 18 inches, wing 13.2, tarsus 2.2.

Nest the usual Petrel burrow. The single white egg measures 2.80 x 1.96 inch.

The Great-winged Petrel.*Œstrelata macroptera.*

Southern oceans.

Dark sooty-brown, under surface paler, forehead and throat greyer. Total length about 16.5 inches, wing 12 to 13, tail central 4.5, lateral 4, bill 1.7, tarsus 1.65.

Nest a burrow about three feet in length, with larger chamber at end than usual; the single white egg measures 2.6 x 1.91 inch.



Great-winged Petrel: *Oestrelata macroptera.*

After Smith.

The White-headed Petrel.*Œstrelata lessoni.*

South Indian Ocean, Australian and New Zealand seas.

Upper surface grey, lighter towards the crown, which is nearly white; feathers of back edged with paler grey; sides of neck mottled with bars of grey and white; wings nearly black, tail grey; forehead and under surface white; just below and in front of the eye black. Total length about 18 inches, wing 12.2, tail, central 5, lateral 3.7, bill 1.9, tarsus 1.8.

Nest rather a short tunnel with a large chamber at the end. The single egg is white, and measures about 2.78 x 1.88 inch.

The Soft-plumaged Petrel.*Estrelata mollis.*

Southern Ocean, north in Atlantic Ocean to Madeira.

Upper surface slate grey, feathers of forehead edged with white; wings dark brown; black in front of and beneath the eye; sides of neck freckled with grey; tail grey; under surface white. Total length about 14 inches, wing 10.3, tail 4.4, bill 1.4, tarsus 1.4.

Nest at the end of a burrow. The egg is white, and measures about 2.40 x 1.69 inch.

The White-throated Petrel.*Estrelata brevipes.*

Australian seas, Antarctica and Pacific Ocean.

Above dark ashy-grey, the feathers with broad grey margins; on the wings a patch of black feathers; wing coverts black, the greater series ashy-grey, with white fringes; crown of head and nape darker than the back; forehead white, with a few small black spots; lores and cheeks white; feathers below and round the eye and ear-coverts, black; throat and under surface of body white; centre of fore-neck and breast minutely freckled with grey. Total length about 10.5 inches; culmen 0.9; wing 8.5; tail 3.8; tarsus 0.95. Sometimes these birds have a dark phase.

The Brown-headed Petrel.*Estrelata solanderi.*

Australian seas.

Dark grey, head dark brown, face and under surface greyish brown, base of feathers white. Total length 18 inches, wing 12, tail, central 5, lateral 3.8, bill 1.8, tarsus 1.7.

The Mottled Petrel.*Estrelata gularis.*

New Zealand seas principally.

All upper surface dark ashy grey, the feathers of the back being margined with greyish black; primary quills marked with white on their inner web; the secondaries are margined with white and wholly white towards their base; forehead slightly mottled with white; lores and throat white, and a spot of dark grey under each eye; upper part of breast washed with grey, middle part and abdomen dark cinereous; sides freckled with grey. Total length 13 inches, wing 10.5, tail 4, tarsus 1.2.

These birds breed in Southern New Zealand, in very deep burrows on the hillside.

Schlegel's Petrel.
Oestrelata neglecta.

New Zealand seas principally.

Crown of the head and hind neck sooty brown, mixed on the latter with white, the rest of the upper surface brownish black; around the eyes is a faint mark of brown which fades away on the face; all the under surface white; quills with white shafts and white on the inner webs; tail feathers white at the base. Total length 15.5 inches, wing 12, tail 4, tarsus 1.5.



"The Emu."

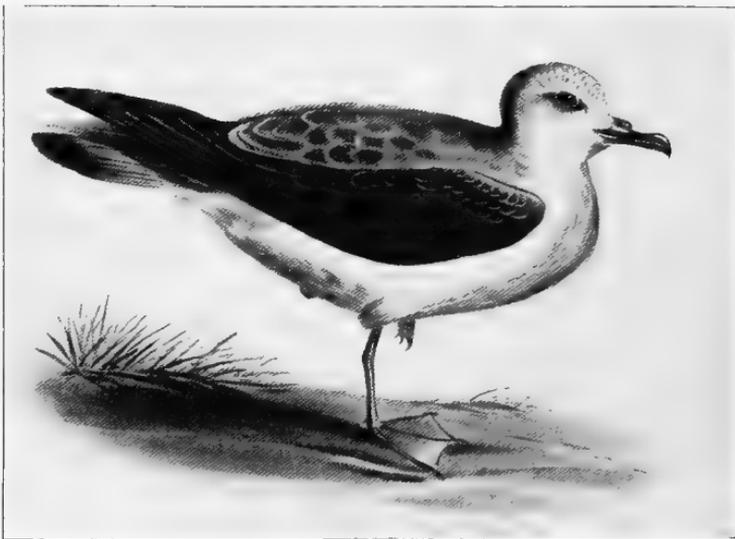
Schlegel's Petrel: *Oestrelata neglecta.*

Tom Iredale.

It would be well to quote from Tom Iredale's account of birds found on the Kermadec Islands in the "Emu," vol. x, July, 1910, p. 14:—

"During winter, however, Meyer Island is covered with birds, while none are found on Sunday Island. The darkest birds have the whole of the plumage of a dark black-grey—these are the birds Hutton called *philippi*, gray; the lightest have the head and all the under parts pure white—Hutton separated this as *leucophrys*. Between these two extremes every phase of plumage exists; the dark birds bred with the light

ones, as well as with the dark birds. They breed on the high parts of the Island as well as the low parts. Though tested in every manner that could be thought of, nothing that could be used as a separating test could be found." These petrels build their nests on the surface, and do not lay in burrows. Mr. Iredale states in the same article that "The manner of making these nests is identical, the site is chosen apparently without reference to its nest-building suitability. The bird sits on its nest and picks up all the straws it fancies, and gravely



Voy. "Erebus" and "Terror."
The Cook Petrel: *Oestrelata cooki*.

throws them behind it, first on one side, then on the other. Having selected all suitable, it moves forward, repeating the process and straying as far as a yard from its nesting-place."

The White-winged Petrel.

Æstrelata leucoptera.

Australian seas.

Upper surface dark slaty-black, centre of back and tail coverts dark grey; face and under surface white; forehead and sides of neck spotted with slaty-black. Total length about 12 inches, wing 8.5, tail, central 3.8, lateral 3.1, bill 1.35, tarsus 1.2.

The Cook Petrel.*Estrelata cooki.*

New Zealand seas principally, also eastern coast of Australia.

Upper surface dark grey, face and under surface white, sides of neck slightly mottled. A more slender bill than White-winged Petrel.

Nest the usual burrow. The egg measures 1.94 x 1.48 inch.

Sub-family Fulmarinae.

Sides of the palate with more or less distinctly developed lamellæ.



Giant Petrel: *Macronectes gigantea.*

After Gould.

Key to the Genera.

Size very large, 34 inches. Tail quills 16.
 Size smaller, 16 inches. Tail quills 14.
 Size smallest, 11 or 12 inches. Tail quills 12.
 First and second primaries sub-equal.
 First primary longest.

Macronectes (*Ossifraga*).
Daption.
Halobæna.
Prion.

The Giant Petrel.*Macronectes (Ossifraga) gigantea.*

Southern seas; north to about latitude 30° S.

Uniform dark brown, edges of feathers paler, bill yellow, legs black; total length about 34 inches, wing 20.5, tail, central 7, lateral 5.8, bill 4.2, tarsus 3.6.

Nest a slight hole scraped in the ground and lined with a little vegetation. The single white egg measures 4.01 x 2.58 inch.

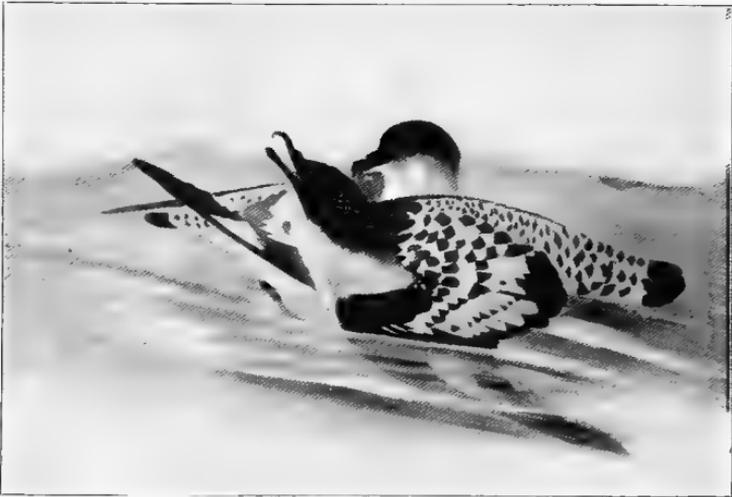
Often called "Nelly" or "Stinkpot" by seamen: occasionally white phases of this bird are seen.

The Cape Pigeon.

Daption capensis.

Southern oceans, north to Ceylon and Peru.

Upper surface white, each feather broadly edged with black; head and back of neck black; median wing coverts with white margin on



Cape Pigeon: *Daption capensis.*

After Gould.

outer web; under surface white; tail white, tipped with dusky. Total length about 16 inches, wing 10.5, tail 3.9, bill 1.7, tarsus 1.9.

Nest on the bare ground under rocks or in crevices or at lower edge of cliffs. The one white egg measures 2.12 x 1.75 inch. (British Museum Collection).

The Blue Petrel.

Halobæna cærulea.

Southern oceans.

Upper surface pale ashy-blue, darker on the crown, nape, lesser wing-coverts, outer webs of outer primaries and the scapulars, the latter tipped with white; feathers of forehead and back of crown also tipped

with white; whole under surface white; sides of breast ashy-blue; bill black. Total length about 11 inches, wing 8.5, tail 3.6, bill 1.4, tarsus 1.3.

Nest an unusually long burrow; the white egg measures about 1.98 x 1.44 inch.

The Broad-billed Dove Petrel.

Prion vittatus.

Southern Ocean between lat. 40° and 60° S.

Upper surface ashy-blue, darker on head and below eye; small wing-coverts, band across back, and outer primaries black, under surface white.



"Victorian Naturalist."

A. H. E. Mattingley.

Dove-like Prion and Young: *Prion desolatus.*

Nest either a burrow or under rocks or in crevices; the single white egg measures about 1.88 x 1.41 inch.

Banks Dove Petrel.

Prion banksi.

Southern ocean, usually between lat. 35° and 60° S.

Very similar to *P. vittatus*, but bill not so wide (0.5in.); the lamellæ of the maxilla just visible near the rictus when the bill is closed.

Nest a burrow, usually on declivities; the white egg measures about 1.99 x 1.46 inch.

The Dove Petrel.*Prion desolatus.*

Southern oceans, usually between lat. 35° and 60° S., but even south to Ice Barrier.

Similar to *P. vittatus* and *P. banksi*, but with a still smaller bill than the latter; the sides of the maxilla are nearly straight, not convex, and the lamellæ are not visible near the rictus when the bill is closed.

Nest in a burrow, or under rocks or vegetation, or in crevices, usually lined with a little vegetation. The single white egg measures about 1.94 x 1.33 inch.

The Fairy Dove Petrel.*Prion ariel.*

Southern Ocean, usually between lat. 35° and 60° S.

Similar in colour to other Prions, but with paler crown, hardly differing from the tint on the back; spot below eye also lighter; terminal dark band of tail wider, bill much narrower, lamellæ invisible when bill is closed.

Nest either in burrows, under rocks or vegetation or in crevices. The single white egg measures about 1.76 x 1.21 inch.

Family Pelecanoididæ.

Nostrils separate; second primary slightly longest.

The Diving Petrel.*Pelecanoides urinatrix.*

Australian and New Zealand seas, also Cape Horn and Falkland Islands.

Upper surface shining black; inner scapulars grey in the inner webs and edged with white; under surface white, sides of neck greyish. Total length about 8 inches, wing 4.7, tail 1.4, bill 0.9, tarsus 1.

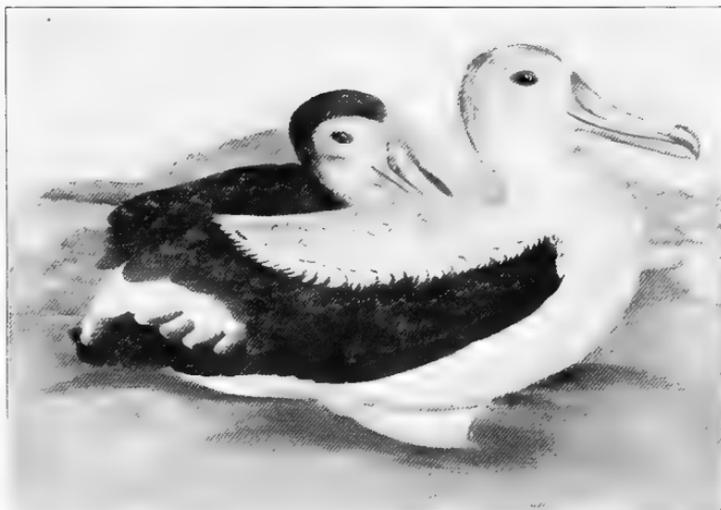
Nest either in a crevice or under a rock or in a short burrow. The single white egg measures 1.60 x 1.21 inch.

Family Diomedcidae.

Nostrils lateral separated by the wide culmen; first primary longest.

Key to the Genera.

- | | |
|--|------------------------------|
| a. Tail short, rounded. Mandible plain. | |
| Base of ridge shield of beak (culminicorn) broad and joined to side shield (latericorn). | Diomedea |
| Base of culminicorn narrow separated by membrane from the latericorn. | Thalassogeron.
Phœbetria. |
| b. Tail long, cuncate. Mandible grooved. | |



After Gould.

Wandering Albatross, Young and Old: *Diomedea exulans*.

The Wandering Albatross.*Diomedea exulans.*

Southern ocean generally.

White; back from the base of the neck banded with narrow transverse undulating dark lines; wings slaty-black; lesser wing-coverts more or less white in inner webs, middle and greater coverts edged with white, primaries black; tail white, with dark marks near the tip. Total length 42 inches, wing 25.5, tail 8.3, bill from gape 7, tarsus 4.8.

Nest open circular structures made of soil, grass &c., varying in height from a few inches to about two feet, with a shallow egg cavity, about a foot in diameter. The single egg is dull white, with brownish markings on the larger end, and has a slightly granular shell; it measures about 4.90 x 3.05 inch.

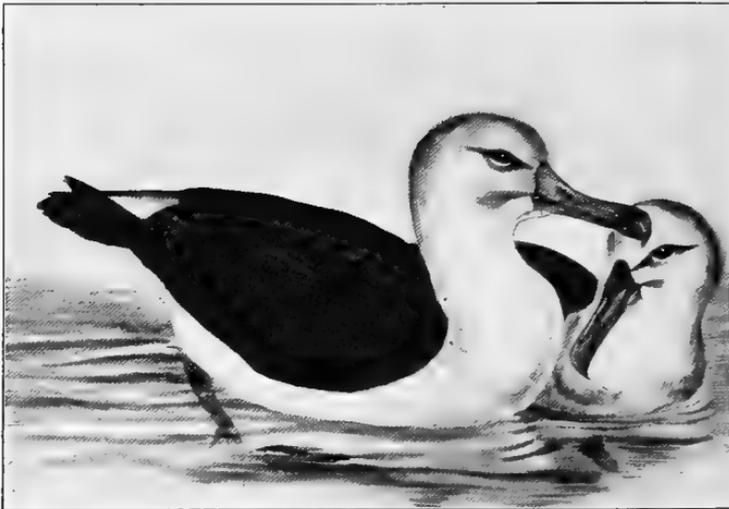
The White-winged Albatross.

Diomedea chionoptera.

Southern Indian Ocean, Marion and Kerguelen Islands.

Similar to *D. exulans*, but no transverse lines on the upper surface, the scapulars almost white, the upper surface of the wings are much whiter than in the allied forms. Total length about 50 inches, wing 25.5, tail 8.3, bill from gape 7.3, tarsus 5.

Nest similar to that of *D. exulans*; the single egg is dull white, with brownish clots on the larger end, and measures about 5 x 3 inch. This magnificent bird is the largest of the Albatrosses, its outstretched wings measure up to 13½ feet from tip to tip.



The Black-browed Albatross: *Diomedea melanophrys.* After Gould.

The Royal Albatross.

Diomedea regia.

Southern ocean generally, especially round the southern coasts of Australia and Tasmania, where it is plentiful.

General plumage pure white; upper surface of the wings dark brown, varied with pale brown and white along the edges, and a large patch of white on the humeral flexure; tail feathers largely marked with black in their apical part, and the outer ones marbled with brown. Total length about 48 inches, tail 10; tarsus 5, extent of wings 124 inches.

The single egg is dull white, and measures about 4.85 x 2.95 inches.

Short-tailed Albatross.*Diomedea albatrus.*

Northern Australian seas and North Pacific Ocean.

Very similar to *D. exulans*, but with shorter tail and with truncated form of the base of the bill; general colour white, tinted with buff on the head and neck; the centre and edge of the wing white, the remainder and the tips of the tail dark brown. Total length 37 inches, wing 22.



From life.

White-capped Albatross: *Thalassogeron cautus.* H. P. C. Ashworth.

The Black-browed Albatross.*Diomedea melanophrys.*

Southern Ocean to North Atlantic.

White, a short slaty-black band on either side of the eye; back and wings brownish black; white at the base of the neck; tail slate-grey; under wing-coverts white, with dark border on edges of wing. Total length about 30 inches, wing 20, tail 7.3, bill 5.2, tarsus 3.3.

Nest inverted cone shape, and similar to those of other Albatrosses, and made of soil and vegetation well mixed. The single dull white egg has brownish markings on the larger end, and measures about 4. x 2.71 inches.

The White-capped Albatross.

Thalassogeron cautus.

Southern Australian and Tasmanian seas.

Head, neck, lower back, upper tail coverts, under surface, white; a greyish black mark in front of the eye and extending over it and passing into pale grey, which spreads over the face; back, wings, and tail greyish brown. Total length 35 inches, wing 22, tail 9, bill from gape 6, tarsus 3.7.



From life.

D. Le Souëf.

White-capped Albatross on Egg: *Thalassogeron cautus.*

Nest a conical structure made of earth, grass, roots, &c., about six inches high and fourteen inches in diameter at the top. The single egg is dull white, marked at the larger end with brownish freckles, which can be washed off; the eggs measure about 4.25 x 2.73 inches. They nest on Albatross Island, Bass Strait.

The Flat-billed Albatross.

Thalassogeron culminatus.

Southern Ocean to Pacific coasts of Central America.

Upper surface dark sooty brown, paler on interscapular area; under surface white; head and neck whitish grey, dark patch in front of and above eye; tail dark greyish brown. Total length about 36 inches, wing 20, tail 7.7, bill 5.2, tarsus 3.25.

Nest similar to those of the other species; the single egg is dull white, with the usual brownish freckles on the apex, and it measures about 4.21 x 2.72 inches.



From life.

H. P. C. Ashworth.

White-capped Albatross and Young: *Thalassogeron cautus.*

The Yellow-nosed Albatross.

Thalassogeron chlororhynchus.

Southern Oceans.

Upper surface dark sooty-brown, wings darker; middle of back tinged with grey; under surface white; head and neck white, slightly tinged with grey, an indistinct dark grey mark in front of eye; tail dark grey; bill black on sides; culmen of adult bright yellow. Total length about 33 inches, wing 18.8, tail 7.7, bill 5.2, tarsus 3.1.

Nest same as in other Albatrosses. Egg dull white, with a few light markings on apex; it measures 4.02 x 2.29 inches.

Carter Albatross.*Thalassogeron carteri.*

This albatross was described from a male bird which was captured alive at Port Cloaks, North-west Australia, by Mr. Tom Carter; the bird had an injured wing. It is very similar to *T. chlororhynchus*, but differs in having the bill, including the culmen, black; the face and sides of the head white, without the grey tinge, and the feet yellowish-white in life, without any blackish colour on the digits and tarsi. The bill and irides are black. Nothing is practically known of this bird beyond the type skin at present, although it, or a closely allied form, breeds at Gough Island.

Sooty Albatross: *Phoebetria fuliginosa*.

After Gould.

The Sooty Albatross.*Phoebetria fuliginosa.*

Southern oceans.

Plumage generally sooty; a white ring, broken in front, round the eye. Total length about 36 inches, wing 19.5, tail, central 10.5, lateral 7, bill 4.5, tarsus 3.

Nest similar to those of other Albatrosses; the egg is dull white, with brownish markings on the larger end and sometimes minute markings over the egg. It measures 4.18 x 2.5 inch.

ORDER LARIFORMES.

Palate schizognathous. Front toes fully connected by webs. Bill simple. Primaries 10 large and visible, one minute, concealed. Aftershaft to contour feathers. Oil-gland tufted. Rectrices 12. Nestlings covered with down when hatched, soon able to run. Eggs not more than three; spotted or scrolled with dark on a lighter ground. Coastal or marine aquatic birds.

Family Laridæ.

Bill without a cere. Sternum with two notches on each side behind. Claws feeble or moderate.

Sub-family Sternine.

Bill straight, rather slender; both mandibles of about equal length. Tail, slightly or distinctly forked.

Key to the Genera.

- | | | |
|--|--|----------------|
| A. Tail from nearly square to distinctly forked. | | |
| a. Tail feathers rounded. Tail short. | | |
| Bill small: webs indented. | | Hydrochelidon. |
| b. Outer tail feathers longest, pointed. | | |
| Tarsus very long, longer than mid-toe and claw. | | |
| Bill robust. | | Gelochelidon. |
| Tarsus short. | | |
| Tail very short, less than one-third wing. | | |
| Bill exceptionally stout and deep. | | Hydroprogne. |
| Tail at least half wing, usually longer. | | |
| Bill compressed and slender. | | Sterna. |
| B. Tail graduated, feathers pointed, outer pair of rectrices shorter than next pair. | | |
| a. Middle toe and claw longer than exposed culmen. | | |
| Colour grey. | | Procelsterna. |
| b. Middle toe and claw shorter than exposed culmen. | | |
| Bill strong, decurved. | | Anous. |
| Bill slender and long. | | Micranous. |
| Bill stout at the base, pointed. | | Gygis. |

The White-winged Black Tern.*Hydrochelidon leucoptera.*

Central Europe to Central Asia and China in summer, and in winter to Australia, New Zealand, and Africa.

Head, neck and upper parts glossy black; coverts on carpal joint white, wing-coverts and primaries dark grey; tail white; underparts black, under wing-coverts black. Total length 9.3 inches, culmen 1.1, wing 8.2, tail 3.1, tarsus 0.75. When moulting the bird is parti-coloured.

Nest made of reeds and water-plants on floating vegetation in swamps. The clutch is three; the eggs vary in colour, but are

usually of some shade of buff, boldly blotched and finely marked with dark-brown, the under markings being grey. The eggs measure about 1.38 x 1.03 inch.

The Marsh or Whiskered Tern.

Hydrochelidon hybrida.

Europe to China in summer, northwards in winter to Malayan Archipelago, Africa and Australia.

Breeding plumage: Forehead, crown and nape black, from gape to nape a white streak; upper parts slate grey; greater part of inner webs



Caspian Tern: *Hydroprogne caspia.*

Meyer.

of primaries, white; tail grey, throat grey, breast dark grey, abdomen black, under wing-coverts white. Total length 11 inches, culmen 1.4, wing 9.25, tail 3.8, tarsus 0.9. In moulting season underparts white.

Nest generally built of water-weeds or rushes on floating vegetation in a swamp. The clutch is three, in colour greyish-green, blotched with brownish markings of varying density. The eggs measure about 1.44 x 1.12 inch.

Gull-billed Tern.

Gelocheledon anglica.

Australia generally; Europe, Asia, North and East America.

Crown of the head and back of the neck are black; all the upper surface and primaries are light silvery grey; the remainder of the



Marsh Tern: *Hydrochelidon hybrida*.

Australian Museum.

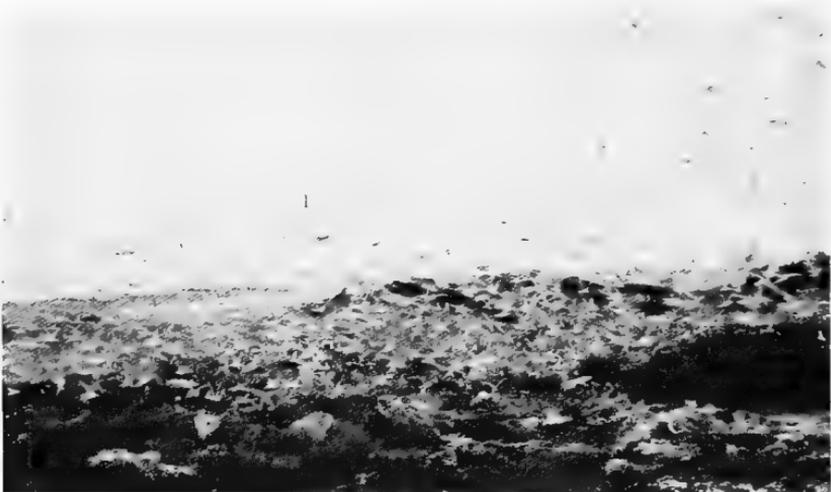
plumage is white, the bill and feet black. Total length 17 inches, wing $13\frac{3}{4}$, tail 6, tarsi $1\frac{5}{8}$. Three or four eggs are laid, of a yellowish-stone colour, blotched with dark brown and grey markings, dimensions 2.10 x 1.47 inch.

The Caspian Tern.

Hydroprogne caspia.

Cosmopolitan.

In breeding plumage, forehead, crown, and nape greenish-black; mantle light grey, tail greyish white; underparts white; bill red. In moulting season crown and nape streaked with white and black. Total length about 20 inches, culmen 3.3, wing 16.5, tail 6, depth of fork 1.25: the dimensions of these birds vary considerably.



"The Emu."

Crested Tern: *Sterna bergii.*

A. J. Campbell.

Nest a slight depression in the ground, either well above the sea on small islands or on the sand spits. Two eggs form the usual clutch, and are brownish stone colour, blotched all over with irregular dark brown markings, those under the surface being the usual grey. They measure about 2.43 x 1.63 inch.

The Roseate Tern.

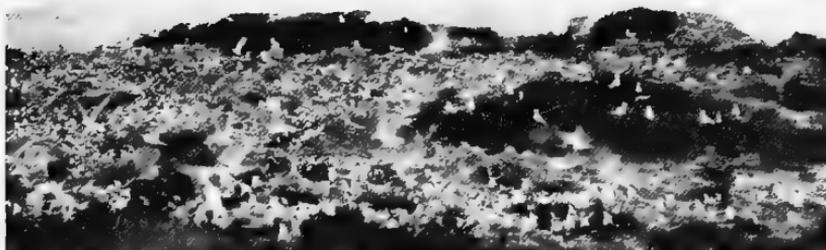
Sterna gracilis.

Coasts of Europe, Africa, Asia, and Northern Australia.

Forehead, crown, and nape black, neck white, mantle light grey, primaries darker, the inner margins of their webs with white borders, tail light grey to white, outer webs of the long streamers quite white;

underparts white with a pink tinge. During the moulting season the forehead is spotted with white. Total length 15.5 inches, culmen 1.9, wing 9.25, tail 7.5 to 8, depth of fork 5, tarsus 0.85.

Nest a slight depression, usually on low islands or coral ridges. They nest in companies. The colour is stone, blotched with dark umber markings and under markings of grey; they measure about 1.50 x 1.16 inch; two form the clutch.



"The Emu."

Crested Terns Nesting: *Sterna bergii*.

A. J. Campbell.

The Lesser Crested Tern.

Sterna media.

Mediterranean, African and Indian seas to Celebes and Northern Australia.

Forehead, crown and nape black, the feathers of the last prolonged; neck white, mantle grey, tail grey, a little lighter on the streamers; tarsi and toes black; underparts white; a white line along carpal joint. Total length 17 inches, culmen 2.4, wing 12, tail 6.75, depth of fork 3, tarsus 1.

Nest a shallow depression on broken coral reefs or sand ridges. They nest in companies and close together. The one egg is pinkish-white, with a few bold brownish markings, often lighter at their edges, those under the surface pale-grey. The egg measures about 2.16 x 1.53 inch.

The Crested Tern.

Sterna bergii.

Red Sea, African and Indian Oceans to China, Pacific Islands and Australia.

Broad white band at base of bill, mantle and tail dark grey; crown and nape black, forming a crest, neck white; underparts white; tarsi and toes black with reddish tinge, soles mottled with yellow. In the moulting season the crown is mottled with white. Total length 20 to 21 inches, culmen 2.5, wing 14.25, tail 7.5, depth of fork 3.5, tarsus 1.3.



Crested Terns: *Sterna bergii.*

A. F. Basset Hull.

Nests in companies; a slight depression is made, either on sandy ground or on broken coral ridges, &c. The one egg varies much in colour, far more so than probably in any other bird, and it is difficult to describe the various tints. Ground colour either cream, buff, reddish, light-green, yellow, light-blue or pink; the markings are usually dark-brown of varying shades and bold, and vary much in size and shape, sometimes having blotches, smudges or hieroglyphic-like lines over the surface; the under markings are purple. The eggs measure about 2.40 x 1.61 inch.

The White-fronted Tern.*Sterna frontalis.*

New Zealand and Australian coasts.

White at base of bill, crown and nape black, the feathers filamentous; upper surface pale grey; outer web of first primary black, other primaries edged with white to the tips of the inner webs; underparts white, sometimes with pink tinge; bill black. Total length 16 to 17 inches, according to development of tail-streamers, culmen 2.2, wing 11.25, tail 7, depth of fork 4, tarsus 0.85. In moulting plumage the crown and forehead are mottled with white.



Voy. "Erebus" and "Terror."

White-fronted Tern: *Sterna frontalis.*

Breed in companies, the nest a slight depression in the ground among short vegetation near the water. Two eggs are usually laid, but sometimes three; they are greyish in colour and strongly blotched with brown markings, those beneath the surface being purplish-grey. They measure about 1.80 x 1.28 inch.

The Brown-winged Tern.*Sterna anæsthera.*

West Indies, African and Indian Seas to Japan and Northern Australia.

Centre of forehead and superciliary line, thence to behind the eye white; loreal stripe, crown and nape black; hind neck grey, mantle dark slate-grey; primaries smoke-grey with white wedges to the centre of inner web; tail dark grey, outer feathers white on outside web to within 2 inches of the tip; underparts white; bill black. Total length 15 inches, culmen 1.9, wing 10.5, tail 6.75, tarsus 0.8, depth of fork 2.7.

Lay in companies in the same neighbourhood; the single egg is deposited either under a bush, roots of Pandanus Palm or sheltering rock; it is of a pinkish-white colour, spotted with dark reddish-brown markings, usually nine, plentiful on the larger end; the spots are not nearly so plentiful as on *S. bergii*. The eggs measure about 1.78 x 1.34 inch.

The Sooty Tern.*Sterna fuliginosa.*

Tropical and juxta-tropical seas of the world.

Very similar to Brown-winged Tern, but larger, the white frontal band and superciliary stripe broader, the latter not reaching beyond the eye, upper surface sooty black, streamers dull white on outer webs and grey on end half of inner webs, other tail feathers black, abdomen greyish white, breast white. Total length about 17 inches, culmen 2.1, wing 11.75, tail 7.5, depth of fork 4, tarsus 0.9.

The birds nest on the bare ground in companies. One egg is laid, which is pinkish white, blotched with reddish-brown markings, especially on the larger end; the eggs vary in colour. They measure about 2.01 x 1.40 inch. They nest in immense numbers on the Houtman's Abrolhos Islands.

The White-faced Ternlet.*Sterna nereis.*

Australian and New Zealand seas, including New Caledonia.

Forehead white, a black spot in front of eye, and narrow ring of black round eye, crown and nape black, mantle light grey; edge of primaries white; tail and underparts white; bill yellow. Total length 10 inches, culmen 1.5, wing 7.25, tail 4, depth of fork 2, tarsus 0.6. This bird is the palest member of the group of Little Terns.

Nest a slight depression in the ground; they often nest in small companies. Two eggs are laid, and are of buff or cream colour, and marked with spots of various shades of brown, the under markings being purplish-grey. Dimensions 1.4 x 1 inch.

The White-shafted Ternlet.

Sterna sinensis.

China and Indian seas to Australia.

Lores black from the base of the bill to the eye, forehead white, crown and nape black, mantle grey; outer web of outer primaries and broad line next the shaft on its inner web dark grey; upper portions and edges of inner webs, tail and underparts white. Total length 11 inches when streamers are fully developed, culmen 1.4, wing 7.4, tail 5.7, depth of fork 3.4, tarsus 0.65.

Nest a slight depression on the ground. Two to three eggs are laid, greyish in colour, and marked with small blotches of reddish-brown, the underneath markings being grey. The measurements are about 1.29 x .98 inch.

The Black-naped Tern.

Sterna melanauchen.

The seas of Northern Australia, Pacific Islands, Malay Peninsula, and China.

Forehead and crown white, black patch in front of eye; behind the eye on each side and enclosing the nape a black band; neck white, mantle light grey; the outer primary with the outer web blackish, the inner margins of the primaries, white; tail long and forked, the middle feathers being light grey, the rest white; underparts white with rosy tint; bill black. Total length, 13.5 inches, culmen 1.6, wing 8.5, tail 6, depth of fork 3, tarsus 0.7.

Nest a slight depression on the sand, generally on coral islands. The two eggs are greyish or light stone, marked with bold blotches of reddish-brown, the underneath markings being purplish-grey. They measure about 1.59 x 1.11 inch.

The Grey Noddy.

Procelsterna cinerea.

Australian and New Zealand seas, Norfolk and neighbouring islands, Kermadec Group, and western coast of South America.

Similar to, but larger than, the preceding species, much paler on the upper surface, well defined greyish-white "wedges" to the inner webs of the three outer primaries, underparts greyish-white, under wing-coverts white, bill black. Total length 11 inches, culmen 1.25, wing 8.5, tail 4.5, depth of fork 2, tarsus 1.

They lay on the ground with practically no nest, usually on ledges of cliffs. Only one egg is laid. It is cream colour, sparingly marked with spots and lines of yellowish and reddish-brown, the under markings of pale purple and faint. They measure about 1.65 x 1.28 inch.



Noddy Terns: *Anous stolidus*. Houtman's Abrolhos, W.A.

The Noddy Tern.

Anous stolidus.

Tropical and juxta-tropical seas.

Forehead nearly white at base of bill, passing on crown into grey, which darkens on the neck to lead-colour, lores black, upper parts dark brown; primaries and tail-feathers black; underparts dark brown passing to lead colour on throat. Total length about 16 inches, culmen 2.1, wing 10.25 to 11, tail 6 to 7, tarsus 1.

They nest in large companies, either on low bushes or the ground, the nest being composed of seaweed or land vegetation.



C. G. Gilson.

Group of Nesting Noddies.

"The Ema."

The single egg is usually pinkish-white and marked with reddish-brown blotches often blurred at their margins, and sometimes most numerous at the larger end. The eggs measure about 2 x 1.50 inch.

These birds nest in immense numbers on the Houtman's Abrolhos. Gilbert, who was the first to describe the rookeries on these islands, says that there the nest is constructed of seaweed, about six inches in diameter and four to eight inches high. The top is nearly flat, there being but a very slight hollow to prevent the single egg from rolling off. The nests are so completely



Lesser Noddy: *Micranous tenuirostris*.

A. J. Campbell.

plastered with the excrement of the bird, that at first sight they seem to be entirely formed of that material. They are placed either on the ground in a clear open space, or on the tops of the thick scrub, over those of the Sooty Tern, the two species incubating together in perfect harmony. The male Sooty Tern sits quite close to the nest of the Noddy, while its mate is sitting below on her own nest. The birds kept their posts with great tenacity. They would not stir off the egg or young, but allowed themselves to be trodden upon or taken off by the hand. The young of both Terns are largely destroyed by a lizard which is very abundant about the breeding places. In Torres Strait the nests are made of small twigs, over which are strewn fragments

of coral and shells, and usually upon tufts of grass, about a foot from the ground. The American Noddy lays two eggs.

The Lesser Noddy.

Micranous tenuirostris.

Mascarene Island to Torres Strait and Australia.

Forehead and crown greyish-white, above and in front of the eye a black half circle, followed by a minute white eyelid streak and then a small black spot, below the eye white; cheeks grey; nape pale grey,



From life.

A. J. Campbell.

Lesser Noddy Nesting in Mangrove (Houtman's Abrolhos): *Micranous tenuirostris.*

darkening on sides of neck; throat nearly black, mantle and tail brownish grey; primaries blackish; underparts sooty brown; bill black. Total length 12 inches, culmen 1.8, wing 8.3, tail 4.7, tarsus 0.9.

They build in colonies. The nest is usually made of seaweed, sometimes of land vegetation, situated on mangrove and other bushes or on ledges of rocks; loose masses of weed often hang down from the nest. The single egg is pale-cream colour, with a few reddish-brown markings, mostly on the larger end, those beneath the surface being purplish-grey. They measure about 1.80 x 1.22 inch. These birds nest in vast companies on the Houtman's Abrolhos.

The White-capped Noddy.*Micranous leucocapillus.*

Caribbean Sea, intertropical Atlantic, both sides of South Africa, Indian Ocean, Northern Australia, and most of the islands of the South Pacific as far as the Society Group.

Similar to preceding species, but forehead and crown whiter, and the rest of the body much darker, lores jet black, upper and underparts nearly black. Total length 13 inches, culmen 2, wing 8.9 to 9.1, tail 4.8 to 5, tarsus 0.9.

Breed in colonies. The nest is built of seaweed and placed on shrubs or on projecting rocks. The single egg is cream colour to white, and the markings reddish-brown; these vary from large blotches to small spots and lines, and are usually much more plentiful on the larger end; the undersurface markings are purplish. The eggs measure about 1.75 x 1.25 inch.

The White Tern.*Gygis alba.*

Indian Ocean to Australia, the Pacific Islands and Islands of South Atlantic.

Above and below white, except a narrow black ring round the eye; bill black; irides blue. Total length from 12 to 13 inches, culmen 1.8, wing 9.5, tail 4.25 to 5, tarsus 0.6.

The single egg is laid on the bare horizontal branch of a tree; it varies in colour from a dull white to pale buff; it is curiously and thickly marked and streaked with lines, large and small spots, blotches and scrolls, &c., their colour being brown of varying shades, those under the surface purple. The eggs measure from 1.51 to 1.81 in length and from 1.18 to 1.30 in breadth.

Sub-family Larina.

Bill with upper mandible longer and bent over tip of lower. Tail square (Australian).

Genus Larus.—Nostrils linear.

Genus Galianus.—Nostrils ovate, very small.

The Silver Gull.

Larus nove-hollandia.

Tasmania, Australia to New Caledonia.

Head, neck, tail and under surface white; mantle and secondaries light grey, first and second primaries black at the tip and over the larger portions, third quill with white tip, followed by black bar, fourth and fifth quills white to grey, with black bars, under wing-coverts grey; bill crimson-lake. Total length about 15 inches, culmen 1.8, wing 11.5 to 12, tail 5 to 5.5, tarsus 1.9 to 2.

Usually breed in small colonies, but occasionally a single pair by themselves. The nests are situated on some rocky headland and usually among the grass. The nest is composed of grass, seaweed, &c. The eggs are two or three and are greyish-green to olive. The markings vary from black to yellowish-brown, the underlying markings being purple. The eggs measure about 2.19 x 1.56 inch.

The Silver Gull is a beautiful little bird, abundantly dispersed over our sea-shores, and giving the first welcome to Australia to the incoming vessels in our harbours. It also frequents the rivers and inland lakes of any extent. It frequently congregates in immense flocks. Its flight is light and buoyant, and it runs over the sands or adjacent grassy flats with great facility. In maritime townships, where not disturbed, the birds will come about the cottages and take their share with the domestic poultry; and, before protection, gulls were often allowed to run free over the gardens and lawns of our city houses, as they are useful in the destruction of slugs. The gulls are closely protected in the different states, for they are excellent scavengers. Like so many of the sea-birds, however, they are astonishingly vicious to one another, and any weakly or injured birds are quickly destroyed and eaten by the rest.

At a meeting of the Linnean Society of New South Wales Mr. A. Basset Hull exhibited some extraordinary mutations in the eggs, which he had obtained at the rookery at Montague Island. Instead of the ordinary olive-green or olive-brown eggs streaked and blotched with blackish-brown markings, some of the eggs were of a beautiful uniform pale-blue with no markings whatever, while others were glossy white, faintly blotched with pale-red and a few dull red spots. There was in one case a full clutch of three blue eggs. Were these reversions?

The Pacific Gull.

Gabianus pacificus.

Australia and Tasmania.

Head, neck and under surface white; mantle and surface of wings black; secondaries with broad white tips; tail coverts white; bill orange. They obtain their adult plumage in the third year, and in the young stage the head and hind neck are brown, mantle and tail coverts paler brown, primaries and under surface brown, bill nearly black. The total length is 25 inches, culmen 2.8, wing 17.5 to 18, tail 8, tarsus 2.9.

Nest made of grass or other vegetation, and usually built on small islands or outlying reefs among the Mesembryanthemums or the tussock grass. Clutch from two to three eggs, olive-brown marked with dark-brown blotches, those underlying purplish-grey. They measure about 3.01 x 2.01 inch.

Family Stercorariidæ.

Bill with a cere; tip of mandible hooked. Sternum with only one notch on each side behind. Toes with strong, hooked sharp claws.

Genus Megalestris.—Form robust. Tail short, the central pair of quills projecting about half an inch.

Genus Stercorarius.—Form more slender. Tail with central pair of quills projecting 3 inches at least.

The Southern Skua.

Megalestris antarctica.

Southern Ocean generally, north to Madagascar and Comoro Islands.

Upper parts dark brown; under wing-coverts dark brown; bill and tarsi black. Total length 23 to 24 inches, culmen 2.5, and depth 1; wing 15.5 to 16.5, tail 6.5 to 7, tarsus 3 to 3.25.

Nest usually among and lined with grass. Two eggs are laid and are greyish buff to olive-brown; the markings are brown of various shades, sometimes more numerous at the larger end. The eggs measure about 2.94 x 2.10 inch.

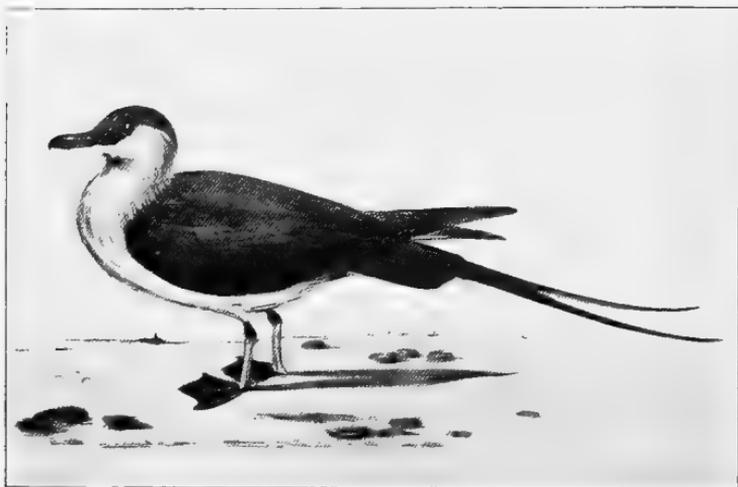
The Southern Skua is often called Sea Hawk by sailors because of its powerful beak and claws. The claws have a curious appearance, projecting beyond the web which unites the



Gulls: *Gabianus pacificus* and *Larus novaehollandiae*.

Macleay Museum.

toes. The bird is a great traveller, being a regular visitant to the Antarctic Continent. Gould noticed the Skuas at a great distance from land, resting themselves on masses of floating seaweed. They feed on young and sick birds, which they kill without remorse, but are easily daunted and driven off by adult Gulls. They do not skim over the water, like the Petrels, but fly low, with a heavy slow flapping of the roundish wings. The white mark on the wing is conspicuous when seen from below. In the breeding season the old birds are very fierce, flying round



Richardson Skua: *Stercorarius crepidatus*.

Meyer.

the head of an intruder, dashing every now and again at him, and making at the same time a curious croaking noise in their throats.

The Pomarine Skua.

Stercorarius pomatorhinus.

Arctic regions north of 70°, when nesting; in winter southward as far as Northern Australia, South Africa, and Peru.

Forehead, cheeks and crown sooty black; acuminate feathers of the neck white, edged with yellow, lower neck blackish; feathers of upper breast white barred with black, which forms a dark collar; mantle, upper tail-coverts and primaries dark brown; breast dull white; abdomen, flanks and under wing-coverts umber. Total length 21 inches, culmen 1.7. wing 14.25, tail about 5.25, tarsus 2.1.



Skua Gulls: *Megadestris antarctica*.

Canterbury Philosophical Institute.

Breeds on the Tundras, making a depression in the mossy vegetation for its nest. Two eggs are laid, of a dark greyish-olive colour, marked with brownish spots of varying shades, mostly at the larger end; they measure 2.27 x 1.8 inch.

The Richardson Skua.

Stercorarius crepidatus.

Circumpolar and sub-Arctic regions.

Dull white at base of bill; forehead ash-brown, crown darker brown; hind neck dull white, shading into ash-brown on the shoulders and thickly streaked with straw-colour; mantle, wing and tail-coverts darker brown; under wing and abdomen ash-brown; breast and chin dull white. Some forms are darker throughout, the underparts being nearly as dark as the mantle. Total length 20 inches; culmen 1.5, wing 13, tail 5 without the central pair, tarsus 1.75.

Builds a slight nest of moss, &c., on the Tundras in Siberia, although fairly plentiful in Port Phillip and round the Tasmanian and Australian coasts. It lays two eggs, which are dark olive, blotched with umber, especially on the larger end. They measure about 2.30 x 1.58 inch.

ORDER CHARADRIIFORMES.

Family Charadriidæ.

Nostrils schizorhinal: tarsus usually reticulated, sometimes scutellated.

Key to Sub-families.

Nasal grooves not extending beyond half length of the bill.	
Bill not swollen at the tip.	
Bill moderate about as long as the toes.	
Toes without web.	Arenariinæ.
Outer toe connected by web.	Hæmatopodinæ.
Bill much longer than toes.	Himantopodinæ.
Bill with marked swelling at the tip.	
Tarsus reticulated behind, scaly in front.	Lobivanellinæ.
Tarsus reticulated, or with hexagonal scales both in front and behind.	Charadriinæ.
Tarsus transversely scaled both in front and behind.	Peltohyatinæ.
Nasal grooves extending along the greater part of the bill.	
Toes webbed.	Totaniinæ.
Toes not webbed.	Scelopacinae.

Sub-family Arenariinæ.

Genus Arenaria.

Toes unwebbed, hind toe present. All parts of the world.

The Turnstone.*Arenaria interpres.*

Only seen with us in its winter plumage. Above, blackish-brown; throat and abdomen white; breast brownish-black; tail white, with a broad blackish band near the tip. In summer in Europe and Asia, the head and breast are white mottled with black. Bill black, legs red, eye dark brown; wing 6 inches, tarsus 1.

The Turnstones breed in high northern latitudes, migrating southwards in the early autumn. One contingent travelling down through the Malay Archipelago and New Guinea comes to us in Australia and Tasmania for the summer. Some reach New Zealand in November, and a few appear in Fiji.



Meyer.

Turnstone (breeding plumage): *Arenaria interpres.**Sub-family Hæmatopodinae.**Genus Hæmatopus.*

Bill longer than the head, strong, compressed. Hind toe wanting. Almost cosmopolitan.

The White-breasted or Pied Oyster-catcher.*Hæmatopus longirostris.*

Australia, Tasmania, New Zealand, Chatham Islands, New Guinea, and Moluccas.

Back and head glossy black, edge of wing black, lower back and tail-coverts white, latter broadly tipped with black; inner secondaries edged with white; under surface white. Total length 17 inches, culmen 3.4. wing 10.1, tail 4, tarsus 1.95.

Nest a depression in the sand; the two eggs are light greyish-stone in colour, with numerous markings of dark-brown fairly distributed; the measurements are about 2.38 x 1.56 inch.



Pied Oyster-catcher: *Haematopus longirostris*. Meyer.

The Black Oyster-catcher.

H. fuliginosus.

Australia, Tasmania, and New Zealand.

All black. Total length 18 inches, culmen 3.3, wing 11.5, tail 4.4, tarsus 2.1.



Black Oyster-catcher: *Haematopus fuliginosus*. Voy. "Erebus" and "Terror."

Nest usually a depression in seaweed or other dead vegetation on the rocks. The two eggs are greyish-stone, marked with numerous dark-brown blotches, very similar to those of the preceding species, and measure about 2.70 x 1.71 inch.

Sub-family *Lobivanellinae*.

Genus *Erythrogonys*.

Tip of bill only slightly swollen. No spur on wing.



Red-kneed Dottrel: *Erythrogonys cinctus*. Australian Museum.

The Red-kneed Dottrel.

Erythrogonys cinctus.

Australia.

Colour above bronzy brown; greater series of wing-coverts fringed with white at ends; inner primaries and secondaries broadly tipped with white; sides of back and rump white; centre tail feathers brown, rest white; small patch below eye, cheeks, throat and sides of neck white; head and sides of face black; broad band of black on chest; underparts white. Total length 7.5 inches, culmen 0.85, wing 4.3, tail 1.85, tarsus 1.6. This bird is found in the interior and away from the sea coasts, usually on the banks of swamps or lagoons.

Nest on the bare ground, usually by the edge of a swamp; four eggs are laid, of a dark stone colour, thickly marked with blackish wavy lines and spots, the lines interlacing. The eggs, measure about 1.23 x .87 inch.

Genus Lobivanellus.

Facial Wattle. Spur on wing.



"The Emu."

Nest of Spur-winged Plover: *Lobivanellus lobatus*.

H. Burrell.

The Spur-winged Plover.

Lobivanellus lobatus.

Australia and Tasmania, accidental in New Zealand.

Above light brown, with small fringe of white at the ends of the greater wing-coverts. Tail and upper tail-coverts white, the former having a black band at the end; crown of head black, extending backwards and joining a black patch on the sides of the breast; base of forehead, sides of face and under surface white, including under wing-coverts. Total length 14 inches, culmen 1.4, wing 9.6, tail 4.2, tarsus 3.

Nest on damp bare ground, usually slightly hollowed, and situated near a swamp, the four eggs are the same tone as the soil, and, as is usual with eggs laid on the ground, are much larger at one end than the other, the smaller end always being inwards, which enables the bird to sit on the eggs without pushing them from her. They are of a dark-greenish colour, marked with bold olive blotches, and measure about 1.94 x 1.40 inch.

The Masked Plover.

Lobivanellus miles.

Australia, New Guinea, Aru and Moluccas Islands.

Similar to *L. lobatus*, but distinguished by its larger and differently shaped lappet, and having the black on the head confined to the cap, being separated from the brown of the back by a white collar. Total length 12.5 inches, culmen 1.5, wing 8.9, tail 3.7, tarsus 3.

Nest a slight hollow on the bare damp soil near some swamp. The four eggs are greenish-olive, occasionally lighter, and spotted with dark-brown of varying shades. They measure about 1.76 x 1.25 inch.

Sub-family Charadriinae.

Genus Zonifer.

Facial wattle. No spur on wing.

The Black-breasted Plover.

Zonifer tricolor.

Australia and Tasmania.

Brown above; median series of wing-coverts tipped with white; the greater coverts white; secondaries black; upper tail-coverts white; basal half of tail white; the terminal half black with a white tip; crown of head and nape black; a white streak behind the eye; throat white, encircled by a band of black, which forms a broad pectoral band; remainder of under surface white. Total length 10.5 inches, culmen 1.05, wing 7.4, tail 3.2, tarsus 1.9.

Nest a slight hollow in the ground, usually scantily lined with grass or other material. The four eggs are greyish-olive, well marked all over with small brown spots. These birds are often noticed on the plains well away from water, especially in Riverina. The eggs measure about 1.80 x 1.25 inch.

Genus Squatarola.

No facial wattle. No spur on wing. Hind toe present.

The Grey Plover.*Squatarola helvetica.*

Sub-Arctic regions south to Australia and Tasmania; South Africa and South America in winter.

General colour above mottled with bars of black and ashy white; lower back dusky brown, with white spots and fringes to the feathers; upper tail coverts and tail feathers white, barred with blackish brown; crown of head more minutely mottled than the back; forehead and eyebrow white, extending down the sides of the neck and forming a



Australian Museum.

Golden Plover: *Charadrius (fulvus) dominicus.*

patch on side of breast; under surface of body black; abdomen white. The winter plumage has not the black on the face or breast, and the upper surface is ashy brown with narrow whitish edgings to the feathers; base of forehead like the crown; throat and underparts white, and the axillaries black. Total length 10.5 inches, culmen 1.3, wing 8.1, tail 2.9, tarsus 1.8.

Nest a shallow depression in the moss with a little lining. They nest in the Tundra country in Northern Siberia, and lay four eggs which are of varying shades of stone colour, marked with blackish-brown blotches, mostly on the larger end, those on the pointed end being smaller. The eggs measure about 2.10 x 1.40 inch.

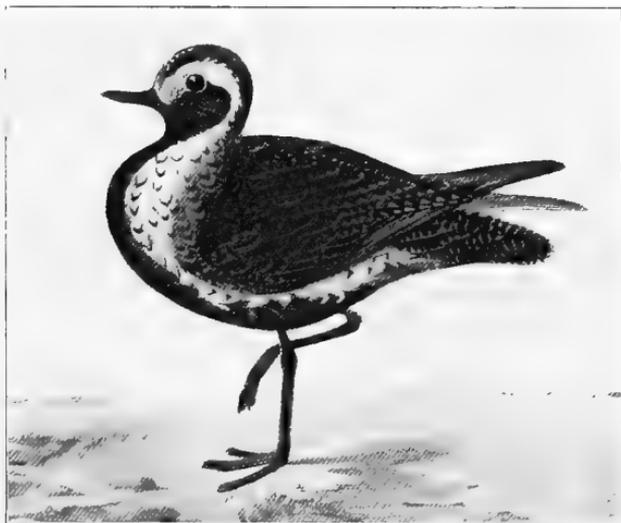
Genus Charadrius.

No facial wattle. No spur on wing. No hind toe.

The Lesser Golden Plover.*Charadrius dominicus.*

Sub-Arctic regions south in winter to Australia, New Zealand, Africa and South America.

General colour above mottled with black, golden-buff and ashy-whitish markings; tail feathers brown, barred with golden, outer feathers notched with white; a frontal band, extending down the sides of the



Lesser Golden Plover: *Charadrius dominicus.*

Meyer.

neck and joining the white along the sides of the body; sides of face and throat smoky-black; breast and abdomen black; axillaries smoky-brown. Total length 9 inches, culmen 0.95, wing 6.5, tail 2.4, tarsus 1.65.

Nest a slight depression on the moss-covered ground of the Tundra, in Siberia, and Northern America. Four eggs are laid, which are of a pale buff colour, boldly marked with blotches of dark reddish-brown. The eggs measure about 1.90 x 1.30 inch.

Genus Ochthodromus.

Bill equal in length to middle toe.

The Double-banded Dottrel.*Ochthodromus bicinctus.*

Australia, Tasmania, Norfolk and Lord Howe Islands.

General colour above greenish brown; the greater and primary-coverts with a narrow white tip; tail feathers brown tipped with white; forehead and throat white, separated from the brown face by a line of black, which runs along the throat and joins a broad band across the fore-neck; across the chest a broad white band followed by another of deep chestnut; rest of under surface white. Total length 7.5 inches, culmen 0.8, wing 4.95, tail 2.15, tarsus 1.25. In moulting plumage the bands of black and chestnut on the under surface are absent, and no black band on head.

Nest a depression in the loose soil, usually near the coast. The three eggs are greenish-stone, streaked and spotted with blackish-brown. They measure about 1.39 x .99 inch.

The Greater Sand Dottrel.*Ochthodromus geoffroyi.*

Eastern Asia to Africa, India, and Australia in winter.

General colour above light brown; the greater series of wing-coverts tipped with white; tail brown, with a broad white tip; on the forepart of the crown a band of cinnamon-rufous, which extends down the side of the neck round the hinder neck, where it forms a broad collar; base of forehead white, followed by a narrow black band; sides of face and under surface of body white, with a broad band of chestnut across the breast; in winter the rufous chest and facial markings are absent. Total length 8.5 inches, culmen 1, wing 5.5, tail 2, tarsus 1.45.

They breed in Formosa and China, and probably in Japan, making a slight depression in the soil. The eggs are buff, thickly marked with almost black blotches, some being very large and confluent, others smaller and well over the egg. An example in the collection of the author from Formosa measures 1.36 x .95 inch.

The Mongolian Sand Dottrel.*Ochthodromus mongolus.*

North-east Asia, Alaska, and China to Australia in winter.

Similar to *O. geoffroyi*, but smaller, a broader black band along the side of the face and the ear-coverts being entirely black; the white throat separated from the rufous chest band by a narrow line of black. In winter plumage the facial markings and rufous chest are absent. Total length 7.5 inches, culmen 0.75, wing 5.2, tail 2.1, tarsus 1.2.

Breeds in Eastern Siberia, The Commander Islands and Tibet.

The Oriental Dottrel.*Ochthodromus veredus.*

Mongolia and China to Moluccas and Australia in the winter.

Similar to *O. geoffroyi*, but with longer and more slender bill, and with smoky-brown axillaries, under wing-coverts and quill linings; upper parts uniform brown, with white tip to tail; chest, chestnut followed by horseshoe mark of black; breast and abdomen white. In winter plumage has no rufous chest-band. Total length 8.5 inches, culmen 1, wing 6.5, tail 2.4, tarsus 1.75.

Breeds in Mongolia.

Genus Ægialitis.

Bill shorter than the middle toe.

Ringed Plover.*Ægialitis hiaticola.*

Queensland, New South Wales, and South Australia; accidentally Europe, North Asia, and Africa. The winter distribution.

Whole of the underparts white, with the exception of the lores and a single broad breast-band, both of which are black in the adult male, brown in the female and young; nearly the central half of the outer webs of the innermost primaries is white, and the web between the outer and middle toes reaches only to the first joint.

Breeds in Greenland, Iceland, Spitzbergen and Novaya Zemlya.

The Red-capped Dottrel.*Ægialitis ruficapilla.*

Australia, Tasmania, New Zealand, north to China.

General colour above brown; the primary coverts fringed with white at the ends; the greater coverts also tipped with white; four central tail feathers brown, the next pair white, with some brown on the inner web, the remainder white; crown of head and hind-neck rufous; frontal band white, extending above the eye, and narrow band of black adjoining, sides of face and under surface white; a black mark on each side of neck. Total length 6 inches, culmen 0.6, wing 4.1, tail 1.55, tarsus 1.1.

Nest a slight hollow in the sand just above high-water mark, usually with some shells or seaweed about it. Two stone-coloured eggs are laid, with dark-brown markings, some being large, others very small. The eggs measure about 1.26 x .87 inch.

The Black-fronted Dottrel.*Ægialitis melanops.*

Australia.

Above dark sandy-brown, with darker bases to the feathers; the greater coverts with white tips; scapulars deep chestnut, forming a patch down each side of the back; primaries black; secondaries white on inner web, dark brown on outer; centre tail feathers blackish, the next tipped with white, the outermost being white; forehead black, and a black patch on the hind neck; a white band encircles the sides of the crown and meets on the nape; throat and underparts white, with broad black collar on fore-neck. Total length 6 inches, culmen 0.65, wing 4.4, tail 2.1, tarsus 0.9.

Nest a very slight depression on the margins of inland lagoons, rivers, &c. The three eggs are light-buff, thickly marked with minute dots and lines of brown or umber, and being so like the ground on which they are laid, are very difficult to detect; they measure about 1.16 x .86 inch. These birds are not found on the seashore; only inland.

The Hooded Dottrel.*Ægialitis cucullata.*

Australia and Tasmania.

Above pale ashy-grey; greater wing-coverts broadly tipped with white; primary coverts slightly fringed with white at the tips; centre tail feathers brown, the others white for the most part, and tipped with white; head, neck and throat black, enclosing white collar round the hind neck; a whitish spot below eye; remainder of under surface white, with black patch on sides of the chest. Total length 8.3 inches, culmen 0.7, wing 5.4, tail 2.6, tarsus 1.05.

Nest a slight hollow in the sand well above high-water mark; three eggs are generally laid, but occasionally only two, of a light stone colour, with blotches and irregular dark-brown markings, of various sizes. The eggs measure about 1.38 x .01 inch.

*Sub-family Peltohyatinae.**Genus Peltohyas.*

Characters of the sub-family. Confined to Australia.

The Australian Dottrel.*Peltohyas australis.*

Australia.

Above sandy buff, streaked with dark brown centres to the feathers; lower back ashy-brown; tail dark brown, edged with buff; crown of head spotted with blackish and separated from forehead by band of black; a black patch below the eye; a black collar round the hind-neck, descending to the chest; under surface sandy buff; lower abdomen, thighs and under tail-coverts white. Total length 8 inches, culmen 0.75, wing 5.35, tail 2.3, tarsus 1.35.

Nest a slight depression in the soil, usually on raised ground; from three to five eggs are laid, buff in colour, sparingly marked with dark-brown blotches, larger on some eggs than on others. They measure about 1.44 x 1.02 inch.

These birds inhabit the inland districts.

Sub-family Himantopodinae.

Bill much longer than head, slender, straight. Legs very long and slender. Toes with scarcely any web. No hind toe.

The White-headed Stilt.*Himantopus leucocephalus.*

Australia, New Guinea, Moluccas, and Greater Sunda Island.

Above black; lower back and tail white, the latter tinged with brown on centre feathers; head white; hind neck to the white collar black; under-surface white. Total length 14.5 inches, culmen 2.5, wing 9.4, tail 2.3, tarsus 4.5.

Nest sometimes a slight hollow in the damp ground, but if in a very wet situation, a nest is built of vegetation. Four eggs are laid, of a greenish stone-colour, with large dark-brown blotches or streaks; they measure about 1.80 x 1.25 inch.

Genus Cladorhynchus.

Like *Himantopus*, but the toes are webbed.

The Banded Stilt.*Cladorhynchus leucocephalus.*

Australia and Tasmania.

Above white; wing-coverts and primaries black; outer secondaries white, innermost black; tail white; head and neck white; line of black

on fore-neck; breast chestnut; black line down centre of abdomen and sides of body white. Total length 13.5 inches, culmen 2.8, wing 7.7, tail 3.1, tarsus 3.05.



Australian Museum.

White-headed Stilt: *Himantopus leucocephalus*.

Nest a very slight depression, sometimes none, with very little lining. The four eggs are greenish-stone, with dark-brown blotches or streaks, almost identical with those of the preceding species. They measure about 1.79 x 1.21 inch.

Genus Recurvirostra.

Bill long and slender, much curved upwards. Legs long and slender. Toes webbed. Short hind toe.



Avocet: *Recurvirostra
novaehollandiae.*

White-headed Stilt: *Himantopus
leucocephalus.*

The Red-necked Avocet.*Recurvirostra novaehollandiae.*

Australia, Tasmania, and New Zealand.

Above white, with black line down sides of the back, formed by the scapulars; outer scapulars white; small wing-coverts white on the edge; the greater series white with black on outer webs; tail ashy grey; head and throat chestnut; under surface white. Total length 15.5 inches, culmen 3.6, wing 8.9, tail 3.1, tarsus 3.35.

Nest on the bare damp soil, usually lined with a little vegetation. The four eggs are olive-stone, with dark-brown



Avocet: *Recurvirostra novae-hollandiae*.

Australian Museum.

markings, almost exactly as in the preceding species. They measure about 2.01 x 1.1 inch.

*Sub-family Totaniinae.**Genus Numenius.*

Bill strong and long, arched downwards. Legs stout. Tarsus transversely scaled in front, reticulate behind.

The Curlew.*Numenius cyanopus.*

East Siberia and Japan to Australia and Tasmania in winter.

General colour fulvous brown, with longitudinal black centres to the feathers; lower back darker and the axillaries and under wing-coverts and upper tail-coverts barred. Under surface tinged with buff. The bill is curved, and measures seven inches long. Total length 24 inches, culmen 7.2, wing 12.5, tail 4.6, tarsus 3.46.

Nest and eggs undescribed. They breed in Siberia, usually leaving here in the latter end of April. This bird is only found on the sea coasts, and must not be confused with the Stone Plover, also commonly called Curlew in Australia.

The Whimbrel.*Numenius variegatus.*

East Siberia to Australia and Tasmania in winter.

Above nearly uniform dark brown; lower back thickly mottled with bars and spots of brown, and the axillaries with broad bands of brown; tail tipped with white and barred; centre of crown whitish and streaked; breast and sides of body pale buff, with longitudinal streaks; abdomen white. Total length 15 inches, culmen 3, wing 8.8, tail 3.8, tarsus 2.15.

They nest in Siberia.

Genus Mesoscolopax.

Bill arched downwards. Tarsus with transverse scales before and behind.

The Little Whimbrel.*Mesoscolopax minutus.*

Eastern Siberia to Australia in winter.

Above blackish, mottled with sandy-buff spots and margins of the feathers; upper tail-coverts barred; tail ashy grey and barred; fore-neck buff and streaked; centre of breast whitish. Total length 13 inches, culmen 1.75, wing 7.1, tail 2.85, tarsus 1.8.

Nest in Siberia, leaving Australia about April.

Genus Limosa.

Bill very long, slightly inclined upwards. Hind toe rather long.



Barred-rumped Godwit: *Limosa novae-zealandiae*. Meyer.

The Barred-rumped Godwit.

Limosa novae-zealandiae.

Eastern Siberia and Alaska to Australia, Tasmania and New Zealand in winter.

Above blackish, mottled with chestnut; lower back dusky, the feathers having white edgings; under wing-coverts mottled and axillaries barred; tail brown, tipped and barred with white; crown of head chestnut and streaked; under surface chestnut and streaked on upper breast. Total length 14.5 inches, culmen 3.4, wing 8.9, tail 2.9, tarsus 2.2.

Nests in Siberia.

The Black-tailed Godwit.*Limosa limosa.*

Eastern Siberia to Australia in winter.

Above ashy brown, with slightly paler edges to feathers; lower back blackish and brown; upper tail-coverts white, long ones tipped with black; greater wing-coverts broadly tipped with white; tail white at the base, with broad black terminal band; upper throat and underparts white. Total length 16.5 inches, culmen 4.4, wing 8.8, tail 3, tarsus 3.2.

Nest made of vegetation in marshy situations. The four eggs are greenish-buff and marked with blotches of olive-brown. They measure from 2.05 to 2.27 inches in length to 1.42 to 1.55 inches in breadth.

Nests in the Northern Hemisphere.

Genus Totanus.

Bill straight, not longer than tail. Tarsus longer than middle toe.

The Little Greenshank.*Totanus stagnatilis.*

South-east Europe to North-east Asia and wintering in Africa, India, Malay Archipelago, Moluccas, and Australia.

Above nearly uniform ashy brown, some feathers margined with white; lower back white; upper tail-coverts white and barred with black; centre tail feathers ashy and barred with black, the remainder white, freckled and barred; forehead white and sides of face white and streaked with brown; under surface white. Total length 9.5 inches, culmen 1.6, wing 5.2, tail 2.1, tarsus 2.1.

A slight depression in the ground and the clutch usually four. They are stone colour, boldly marked with dark-brown blotches, and measure about 1.50 x 1.05 inch.

These birds nest in the Northern Hemisphere.

The Green Sandpiper.*Helodromas ochropus.*

North-west Australia and Queensland (winter), Europe, North Asia, Africa, India.

Dark olive-brown, with a few very small white spots; the rump is like the back, but the upper tail-coverts are white, as are the tail feathers, the latter having blackish bars; the under surface is white, with brown streaks on the lower throat and fore-neck.

It nests in Northern Europe and Siberia, building in trees, usually selecting old nests of other birds. The clutch is four, about $1\frac{1}{2}$ inch in length, and colour greenish-white with reddish-brown markings.

Genus Heteractitis.

Bill straight. Tarsus of same length as middle toe and claw. Secondaries shorter than primaries.

The Grey-rumped Sandpiper.

Heteractitis brevipes.

Eastern Siberia to Australia in winter.

Above uniform ashy grey, with very slight lighter margins to feathers; lower back more grey with whitish edges; tail ashy, with narrow whitish margins; sides of face and under surface white, with shade of grey on chest; sides of breast ashy grey. In the breeding plumage the cheeks are spotted and the breast and sides of body barred. Total length 8.8 inches, wing 6.4, culmen 1.5, tail 2.6, tarsus 1.15.

Breeds in Siberia.

The American Grey-rumped Sandpiper.

Heteractitis incanus.

Northern Australia, (Oceania north to Alaska).

The flanks, axillaries and breast are greyish brown, a little paler on the upper parts, the rest of the underparts are white, no white on the quills. Total length 9 inches, culmen 1.5, wing 6.1, tail 2.8, tarsus 1.2 inch.

They nest in Alaska and the Aleutian Islands, and passing along the coast of California and the Galapagos Islands winter in the Polynesian Islands.

Genus Tringoides.

As in preceding, but secondaries about equal in length to primaries.

The Common Sandpiper.

Tringoides hypoleucus.

Europe and Northern Asia to Africa, India, Australia (winter).

Above bronzy brown, the feathers with arrow-shaped central markings of black; wing-coverts barred with blackish; greater coverts tipped with white; tail irregularly barred and tipped with white, outer feathers

mostly white; under parts white. Total length 8 inches, culmen 1.1, wing 4.1, tail 2, tarsus 0.96.

Nest a depression in the ground, sometimes lined. Four eggs are laid and are stone colour, with blotches and finer marking of brown of varying shades. They measure about 1.40 x 1.01 inch.

These birds nest in the Northern Hemisphere.

Genus Terekia.

Bill with upward curve. Webs to both inner and outer toes.

The Terek Sandpiper.

Terekia cinerea.

North-east Europe, North Siberia to Africa, India to Australia (winter).

Above light ashy grey, with whitish edges to the scapulars and wing-coverts; in breeding plumage there are black centres to the upper surface. Secondaries tipped with white; upper tail-coverts freckled; forehead white; sides of face whitish streaked with ashy grey; underparts white. Total length 8.5 inches, culmen 2, wing 5.35, tail 2.2, tarsus 1.15.

Nest a depression in the ground, usually lined. The eggs are olive-buff, marked with blotches and streaks of dark-brown, especially on the larger end. They measure about 1.5 x .96 inch.

These birds breed in Northern Europe and Siberia.

Genus Glottis.

Bill with upward curve. No web to outer toe.

The Greenshank.

Glottis nebularius.

North Asia and North Europe to Africa, Indian Peninsula and Australia in winter.

In winter plumage the colour above is ashy-brown, mottled with whitish edges to the feathers, which are freckled with darker brown; lower back and tail white, the centre feathers of the tail barred with brown, the others spotted on outer web; forehead and sides of face white;

sides of neck streaked; under surface white. The breeding plumage is more ruddy brown with black centres to the feathers on the upper surface. Total length 13 inches, culmen 2.2, wing 7.2, tail 2.85, tarsus 2.15.

Nest a depression in grass, moss, &c. Four cream-coloured eggs are laid, marked with blotches and lines of brown, and generally most numerous at the larger end, where they are confluent. They measure about 1.95 x 1.30 inch.

Breeds in Northern Hemisphere.

Genus Rhyacophilus.

The Wood Sandpiper.

Rhyacophilus glareola.

Europe and North Asia to Africa, Indian Peninsula, and Australia in winter.

In winter the colour above is bronzy-brown, with light margins to the feathers, which are slightly spotted with white on both edges; feathers on rump edged with white; upper tail coverts white, the lateral ones with blackish markings; centre tail feathers ashy brown barred with darker brown and notched with white; the lateral feathers white, barred with blackish; sides of face white lightly streaked; throat white; chest ashy; remainder of under surface white. Total length 8.5 inches, culmen 1.15, wing 4.6, tail 1.85, tarsus 1.4. In summer the plumage is more variegated than in winter.

Nest the usual depression in the grassy and heathy ground and lined with similar material. The four eggs are greenish-white or buff and marked with blotches and spots of reddish-brown, especially at the larger end.

These birds nest in the Northern Hemisphere.

Genus Bartramia.

Bill thickened at tip, shorter than tail. Tail long, outer feathers shorter than middle ones.

The Bartram Sandpiper.

Bartramia longicauda.

North America, ranging to South America in winter, accidental in Europe and Australia.

Above mottled, the feathers being black, with whitish edges; lower back black; centre tail-feathers ashy brown, barred with black, remainder

buff, tipped with whitish; throat white; chest buff, feathers centred with triangular black spots; rest of underparts creamy white. Total length 11 inches, culmen 1.15, wing 6.5, tail 3.3, tarsus 1.75.

Nest a depression in the ground among short vegetation; four eggs form the clutch, and are of a greyish-stone colour, covered with spots and blotches of brown, rather more numerous at the larger end. They measure about 1.80 x 1.30 inch. They nest in North America.

Sub-family Scolopacinae.

Genus Calidris.

No hind toe. Bill and tarsus equal in length.

The Sanderling.

Calidris arenaria.

Arctic regions to South America, Africa, Indian Peninsula, and Australia in winter.

In winter the general colour above is light ashy grey, with whitish edgings to feathers; in summer the feathers are more mottled; medium wing-coverts ashy, broadly tipped with white; centre tail-feathers ashy grey, blackish towards the tips, remainder dusky brown; a broad frontal band; sides of face and under surface white. Total length 7 inches, culmen 1.05, wing 4.75, tail 1.8, tarsus 0.9.

Nest a depression on the ground lined with grass. The clutch is four, and they are olive-buff in colour, with numerous markings of olive-brown, generally most plentiful at the larger end.

They nest in the Arctic regions.

Genus Pisobia.

Hind toe present. Bill as long as tarsus. Tarsus as long as mid toe with claw.

The Little Stint.

Pisobia (Limonites) ruficollis.

Eastern Siberia to Australia in winter.

In winter plumage the general colour above is ashy brown, slightly darker along the shafts; lower back blackish brown; foreneck and chest white or slightly ashy; sides of lower back and lateral upper tail-coverts white; tail light smoky brown, the long central feathers dark brown,

with a narrow whitish fringe; a white wing-band on the greater-coverts; throat and under surface of body white. In summer much more mottled on the upper surface. Total length 5.3 inches, culmen 0.7, wing 3.85, tail 1.7, tarsus 0.75.

They nest in Eastern Siberia. Eggs so far undescribed.

The Middendorff Stint.

Pisobia damacensis.

Eastern Siberia to Australia in winter.

Similar in winter plumage to *L. ruficollis*, but darker, with the head and back much more thickly spotted with black, and the lower throat and foreneck very distinctly streaked or mottled with brown. The species can also be distinguished from the above by its long toes. Total length 5.2 inches, culmen 0.7, wing 3.4, tail 1.4, tarsus 0.8, middle toe and claw 0.9.

They breed in Northern Siberia, but eggs not described. Birds very plentiful on Rottnest Island, W.A., locally called Little Snipe.

Genus *Heteropygia*.

Hind toe is present. Bill as long as tarsus. Tarsus longer than hind toe.

The Sharp-tailed Stint.

Heteropygia aurita (acuminata).

Eastern Siberia to Australia, New Zealand and Tasmania in winter.

In winter are coloured brown above, streaked with black down the centre of the feathers; lower back dusky black; under surface of body white; lower throat and chest ashy fulvous with a few narrow streaks; tail feathers ashy brown fringed with white round the ends. Total length 7 inches, culmen 1.1, wing 5.4, tail 2.1, tarsus 1.2.

They breed in Siberia. Eggs not described.

Genus *Ancylochilus*.

Hind toe present. Bill longer than tarsus. Tarsus longer than mid toe. Tip of bill decurved.

The Curlew Stint.

Ancylochilus subarquatus.

North Siberia to Africa, Indian Peninsula and Australia in winter.

In winter the plumage is ashy brown above, slightly mottled with darker centres to the feathers; rump and upper tail-coverts white; tail feathers ashy brown, fringed with white, and a sub-terminal dusky bar; under surface white, with fine lines of dusky brown on the sides of the face, neck, lower throat, and fore-neck. Total length 7.4 inches, culmen 1.35, wing 5.3, tail 1.9, tarsus 1.15, middle toe and claw 1.

Breeds in Siberia.



Sharp-tailed Stint: *Heteropygia aurita.* Meyer.

Genus *Tringa.*

Hind toe present. Bill longer than tarsus. Tarsus longer than hind toe. Tip of bill straight. Tail square.

The Knot.

Tringa canutus.

Arctic regions to Africa, Indian Peninsula, Australia, and New Zealand.

In winter the plumage above is ashy grey, with a few dusky bars on the rump; upper tail-coverts white, barred with black; the inner primary-coverts black broadly tipped with white; tail ashy grey; sides of face white, with dusky streaks; under surface of body white; the throat streaked, and the chest mottled. Total length 9 inches, culmen 1.3, wing 6.1, tail 2.3, tarsus 1.2.

The single egg in the British Museum from the Seebohm collection is a greyish cream colour, boldly marked over the larger half with coarse blotches of chestnut-brown and pale underlying purple, with lines of black; the smaller end has a few rufous spots on. It measures 1.61 x 1.08 inch.



Knot: *Tringa canutus*.

Meyer.

The Great Sandpiper.

Tringa crassirostris.

Eastern Siberia to Australia and Western India.

The winter plumage is similar to *T. canutus*, being ashy grey above and white below, but easily distinguished by the longer bill and pure white upper tail-coverts; the dusky spots on the chest and sides of the body smaller and much more distinct. Total length 10.5 inches, culmen 1.6, wing 6.9, tail 2.5, tarsus 1.3.

Nests in Siberia. Not described.

Genus *Gallinago*.

Hind toe present. Bill longer than tarsus. Tarsus shorter than mid toe.

The Snipe.

Gallinago australis.

Nesting in Japan and passing in winter by Formosa to Australia and Tasmania.

The general colour above black and the stripes and markings of the upper surface are a dark sandy isabelline, especially on hinder neck, and the paler colour on the scapulars causes the black to stand out conspicuously

and imparts a strongly mottled appearance to the upper surface. The tail feathers number 18, and are tawny rufous, black at the base, and tipped with white; outer feathers regularly barred; crown of head with black band on each side; chin white; chest mottled sandy brown; breast and abdomen white. Total length 11.5 inches, culmen 2.7, wing 6.5, tail 2.6, tarsus 1.85.

Nest a very slight depression in marshy uplands. Four eggs are laid, light-stone in colour and boldly marked with brown blotches, especially on the larger end; some look as if they had been smudged. The eggs measure about 1.74 x 1.20 inch.

The clutch in the author's collection was found on the upland marshes of Mount Fujiyama. Strictly speaking, this bird should be called the Japanese Snipe. They usually arrive in Victoria about the latter part of August, leaving again about the latter end of March.

Genus Rostratula.

Hind toe present. Bill longer than tarsus. Tarsus as long as mid toe.

The Painted Snipe.

Rostratula australis.

Australia.

The general colour above of the hen bird is ashy brown, glossed with olive-green, the upper surface freckled all over with transverse blackish lines and a few broader bars and a reddish streak down each side of back; primary-coverts grey, freckled with irregular wavy lines of black; lower back pearl grey, with black cross-lines; tail barred with ochre; the sides of the face and throat sooty black; under surface white; on each side of the upper breast is a black patch. The male is easily distinguished from the female by the absence of chestnut on the throat and neck, and by the wing-coverts being bronzy and olive, with numerous spots of yellow-ochre. Total length 9.5 inches, culmen 1.7, wing 5.9, tail 1.8, tarsus 1.7.

Nest a slight depression in the ground lined with grass and usually near a swamp, the four eggs are light-stone, boldly marked with large blotches of very dark sepia and streaks. They measure about 1.39 x 1.01 inch.

These birds are rare and usually found in pairs, and resort to dryer situations than the before-mentioned species.

Family Parridæ.

Toes enormously long.

Genus Hydralactor.

Rail-like in form. The great length of the toes and claws enables the bird to run with great facility over floating aquatic plants in lakes or swamps. Weak in powers of flight, they can dive well and remain submerged for a long time.

The Comb-crested Jacana.*Hydralactor gallinaceus.*

Australia, Celebes, and South Borneo.

Above bronzy brown; upper tail-coverts and tail black, the centre tail feathers white at base; forehead, sides of neck and face straw-colour; throat white; breast and under wing-coverts black; abdomen white. Total length 9 inches, culmen with frontal lappet 1.8, wing 5.6, tail 1.6, tarsus 2.4, middle toe and claw 3.6.

Usually a floating nest of green vegetation or built on water-lilies and similar plants in a swamp. The four eggs are very striking, being exceedingly glossy and interlaced all round with almost black lines on an olive-stone background. They measure about 1.19 x .83 inch.

Family Glareolidæ.

Nostrils schizorhinal. Tarsus transversely scaled in front.

Genus Stiltia.

Tarsus very long, the outstretched feet far exceeding the tail.

The Pratincole.*Stiltia isabella.*

Australia to Celebes, and Greater Sunda Island.

Above brown, all the feathers more or less washed with a sandy rufous; coverts and primaries black; upper tail-coverts white; tail black, white at base, increasing towards the outermost, which is almost white; chest sandy rufous; abdomen white. Total length 9 inches, culmen 0.65, wing 8.3, tail 2.4, tarsus 1.85.

Eggs laid in a very slight depression on the bare ground. They are usually two, and are stone-colour, covered with light

markings and blotches of umber. They measure about 1.24 x .96 inch.



Comb-crested Jacana: *Hydractator (Parra) gallinaceus*. Macleay Museum.

This bird is very similar in appearance to a swallow, having long pointed wings, and can run fast on the ground.

Genus Glareola.

Tarsus rather short, the outstretched feet not reaching beyond the tail. Tail strongly forked.

The Oriental Pratincole.*Glareola orientalis.*

Eastern Siberia to Australia in winter.

Above olive-brown with greenish gloss; upper tail-coverts white; tail forked and blackish, the base white, cheeks and throat buff, surrounded with a white line; chest rufous; underparts white. Total length 10 inches, culmen 0.65, wing 7.3, tail 3.15, tarsus 1.2.

Nest on the bare ground. Two eggs are usually laid, of a yellowish-stone colour, boldly marked with blotches of very dark brown. They measure about 1.19 x .94 inch.

These birds apparently do not breed in Australia, but are often found in immense flocks in N.W. Australia.

Family Oedichenidæ.

Nostrils holorrhinal. Tarsus entirely reticulated. No hind toe.

Genus Burhinus.

Bill shorter than head.

The Stone Plover.*Burhinus grallarius.*

Australia.

Above ashy-grey, the crown, neck and mantle streaked with blackish stripes; lower back with blackish shaft-stripes; tail barred; a band of white on the first four primaries; under surface white, tinged with tawny on breast and sides and streaked. Total length 20.5 inches, culmen 1.9, wing 10.5, tail 6, tarsus 4.6.

The two eggs are laid on the bare ground; usually the same tint as the eggs. Those laid on decomposed basalt, which is chocolate, have markings of that colour, and others in a similar manner, the ground colour being usually light-stone or buff. The eggs measure about 2.33 x 1.59 inch.

Those in W. Australia are slightly smaller.

Genus Orthorhamphus.

Bill as long as head.



Stone Plover and Young: *Burhinus grallarius*. *Australian Museum.*

The Long-billed Stone Plover.

Orthorhamphus magnirostris.

Shores of Northern Australia and throughout the Malayan Archipelago to Borneo and the Andamans.

Above ashy brown, with dusky shaft-lines to the feathers; upper tail-coverts freckled; a broad dark band across the wing, followed by one of white; tail ashy brown, with a black band at the end, before which is a white band; face white; throat white; breast ashy; remainder of under surface white with tawny tinge. Total length 19 inches, culmen 3, wing 10.8, tail 4.3, tarsus 3.3.

Nest a depression usually scraped out under a bush and close to the shore. Usually only one egg is laid, of a grey colour, blotched and marked with dark olive. It measures about 2.55 x 1.76 inch.

Family Otididæ.

Large land birds with turkey-like form, flattened, blunt bill, stout legs and claws. Tail quills 16 to 20.

Genus Eupodotis.

Feathers of neck elongated. Wing three times longer than tarsus.

The Australian Bustard.

Eupodotis australis.

Australia.

Above dull sandy buff, everywhere finely lined with blackish and shaded with slaty grey; greater coverts black with white tips, inner ones mottled; primaries slaty grey; tail like back, but banded and mottled; crown of head and nuchal crest black; under surface white. Total length about 48 inches, wing 26, tarsus 7.2, culmen 3, tail 10.5; weight up to 18lbs.

Lays either one or two eggs on the bare ground in open country. They are olive in colour, sometimes with a bluish tint obscurely smeared, generally in a longitudinal direction, with olive-brown. They measure about 3.23 x 2.28 inch.

These splendid birds live almost entirely on the ground; consequently their young are often destroyed by foxes. They are now scarce in Southern Australia, what with rabbit poison, foxes and the indiscriminating gun. At times when crammed with grasshoppers, which they are doing their best to destroy, they fall victims to the stick of the ungrateful but hungry settler.

ORDER GRUIFORMES.

Family *Gruidæ*. True Cranes.

Palate schizognathous. Tall birds with long necks and legs. Tail quills 12.

Genus *Antigone*.

Skin bare round a clear patch of ear-coverts.



From life.

D. Le Souëf.

Australian Bustard: *Eupodotis australis*.

The Australian Crane or Native Companion.

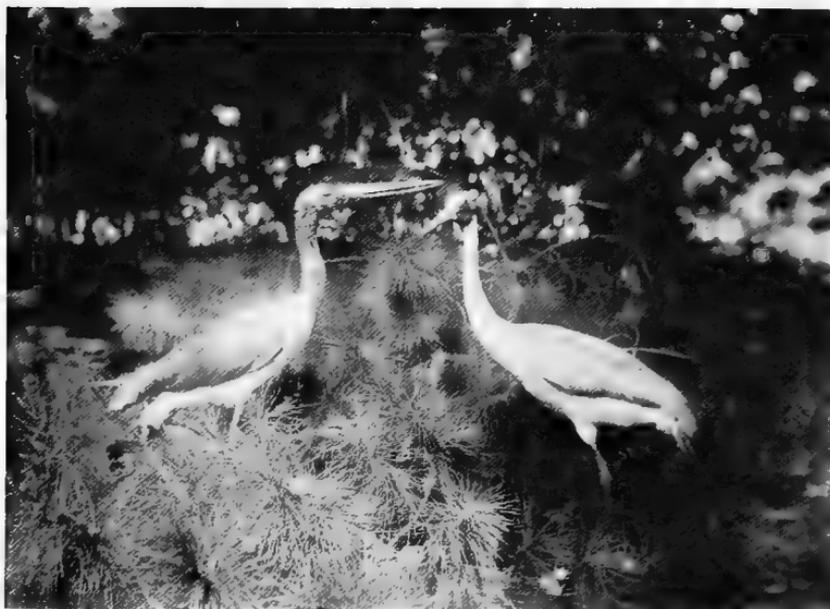
Antigone austrabasiana.

Australia.

Above grey, the margins of the feathers being paler; primaries black; tail feathers slaty grey, blackish towards the tips; crown bare and olive-green, the hinder crown with coarse papillæ; chin and upper throat bare; raised fleshy papillæ at back of head red; the pendulous gular pouch olive-green. Total length about 42 inches, culmen 6, wing 20.5, tail 7.5, tarsus 10.2.

Nest usually made of vegetation in swampy situations, sometimes raised above the shallow water and at other times on a small knoll, with very little nest. The two eggs are usually drab, but sometimes white, and are marked with brownish blotches, mostly on the larger end. They measure about 3.50 x 2.33 inch.

The light-coloured eggs are generally found in Northern Australia. When the nesting season is over, these birds often



Jabiru: *Xenorhynchus asiaticus*. Australian Crane: *Antigone australasiana*.
Macleay Museum.

congregate in considerable flocks. Like all the Cranes, the Native Companions are birds of stately form, and, under ordinary conditions, of dignified demeanour, recalling the elegant manners of the eighteenth century. Perhaps the bow is a little overdone, and certainly the steps of the dance which they much affect do not rival the grace of the minuet. In captivity they are fairly easily tamed, but are not very trustworthy, and the dart of the long powerful bill is dangerous. They live on lizards and insects, and will tear up the ground with the beak in search of edible roots and bulbs. These birds

soar at a great height in a series of easy circles, and then often give forth a hoarse croaking cry. They probably reach to a greater elevation than any other of our birds, even soaring to greater heights than the Swifts.

ORDER ARDEIFORMES.

Sub-order Platalea. Ibis and Spoonbills.

Nostrils schizognathous. Sternum with four posterior notches.

Family Ibirdidae.

Bill much recurved; nasal groove linear, produced nearly to tip of bill.

Genus Ibis.

Tarsus reticulated in front with many hexagonal scales. Plumes of inner secondaries with disconnected webs, highly ornamental.

The White Ibis.

Ibis molucca.

Australia, New Guinea, Ceram, Waigiou, Salawati.

White; inner secondaries mottled with black; primaries tipped with black; on the fore-neck drooping narrow plumes; head and upper half of neck bare and with the bill slaty black; in young birds the head and neck are covered with feathers until the third year, when they are shed; back of the head and neck crossed by ten narrow bands of pink; on crown of head some oval spots of the same colour. Total length 30 inches, culmen 7.5, wing 14.5, tail 5.1, tarsus 4.3.

Nest an almost flat structure composed of green twigs, rushes or flags, made by treading down the vegetation in the swamps on which their nests are placed. They usually build in companies; sometimes many thousands together. The clutch, generally three, is white in colour, the inside lining being light-green. They measure about 2.55 x 1.68 inch.

The White Ibis is an invaluable protector of crops and wholesale destroyer of insects, and it is folly not to protect the bird to the uttermost. We gladly quote in this connection from an article in the "Victorian Naturalist," by a practical Victorian politician, Mr. Frank Madden. After pointing out

that the ancient Egyptians, recognising the enormous value to agriculturists of the species which frequented the Nile Valley, proclaimed the bird as sacred, and made it a crime punishable by law to injure or destroy an Ibis, Mr. Madden goes on to describe the thoroughness with which the Australian Ibis clears a district of locust and cricket, the take-all and the harvest caterpillar, and other dire enemies of the farmer. "Watch a flock of Ibis on an autumn day on ground which is cracked by the heat of the previous summer, and where the crickets have effected a lodgment. Before the birds come the land is alive with these ravenous insects. When a flock of Ibis arrive they settle on one spot and pick, and pick, and pick by the hour. Then the crickets which have so far escaped become frightened, and disappear into the cracks in the ground, and the Ibis rise and seek a fresh place and commence operations there. When the crickets left in the first patch find that the birds are gone, they come out to graze, as they are as ravenous for grass as the Ibis are for crickets; and this the birds well know, and when they have reduced the second point of attack to the same condition as the first was in when they left it, they return to the first, and remain while a single cricket remains above ground, and so from place to place. Examine a place where locusts have deposited their eggs after it has been visited by a flock of Ibis, and you will find the ground as full of holes as a cullender. These holes are made by the powerful beak of the Ibis being driven into the ground to reach the eggs or newly-hatched insects, and the millions of the pest they thus destroy can only be imagined."

"I remember a most lovely crop of malting barley, which was grown close to the railway station at Camperdown. I saw it just as it was becoming fit to cut, and admired it greatly. Three days afterwards there was hardly a grain of corn to be seen of it. The caterpillars had cut off all the heads, and the farmer had to turn his stock in to eat the fallen grain. That autumn the Ibis came, not in battalions or regiments, but in whole army corps, and stayed during the winter, and for three years afterwards hardly a single harvest caterpillar was to be seen." And many farmers haven't the common sense to protect these useful and energetic friends!

Genus Carphibis.

Head and throat bare. Hind neck feathered to nape. Long stiff yellow shafts on the foreneck.

The Straw-necked Ibis.*Carphibis spinicollis.*

Australia.

Above glossy bluish black or steel-green; purplish on the wings, and the whole of the upper parts barred across with black; lower back black;



D. Le Souëf.

Melbourne Zoo.

Straw-necked Ibis, Adult and Young: *Carphibis spinicollis.*

long upper tail-coverts and tail feathers white; crown of head and fore part of throat bare, surrounded by white ruff; centre of fore neck white, with long straw-coloured plumes on each side; underparts white. Total length 29 inches, culmen 8, wing 14.7, tail 5.4, tarsus 3.3.

Nest and egg similar to those of the White Ibis; also nest in companies, sometimes to the number of three hundred thousand on one swamp. Eggs measure about the same.

Genus Plegadis.

Chin only bare, rest of throat feathered. Lores bare. Cheeks partly bare.

The Glossy Ibis.*Plegadis falcinellus.*

South Europe to India, China, Australia, Africa, Eastern United States to Florida.

Above black, with bronzy sheen of purple; upper mantle deep chestnut; head, neck and under surface deep maroon-chestnut, lighter on breast. Total length 22 inches, culmen 5.2, wing 11.2, tail 3.9, tarsus 4.2. In winter plumage head and neck streaked with whitish.

Nest constructed of sticks in forked branches, usually in trees near or over water, well lined with leaves, frequently in bunches. The four eggs are a beautiful dark bluish-green colour, and measure about 2.8 x 1.43 inch.

These birds are not nearly as plentiful as the other two species, and do not associate in the same large flocks.

Family Plataleidae.

Bill flattened, narrow in middle, widening out into a spoon-shaped end.

Genus Platalea.

Head partly bare, plumes around auricular orifice. Nostrils in a shallow depression.

The Black-billed Spoonbill.*Platalea regia.*

Australia to the Moluccas.

Plumage white, with full crest on the head; forehead, fore part of cheeks, and upper throat black; bill, legs, face and feet black. Total length 34 inches, culmen 8, wing 15, tail 4.6, tarsus 5.5.

Either a flat stick nest in a tree near or over water, or of rushes or reeds trodden down in a swamp and some other material added. Four eggs are usually laid. They are white, usually sparingly marked with brown blotches, most numerous near the larger end. Some eggs have no markings on. They measure about 2.57 x 1.71 inch.

Genus Platibis.

Nostrils in a deep depression. Inner secondaries with Ibis-like plumes.

The Yellow-legged Spoonbill.*Platibis flavipes.*

Australia.

White, with a tuft of elongated feathers on the fore-neck of light straw-colour; forehead and upper throat yellow; bill, legs and feet yellow. Total length 38 inches, culmen 9, wing 16.5, tail 6.8, tarsus 5.5.



Young Jabirus (*Xenorhynchus asiaticus*) on Nest.

H. Nielson.

Nest a flat structure of sticks, lined with leaves, usually on a horizontal branch, over or near water. The four eggs are white and measure about 2.80 x 1.88 inch.

*Sub-order Ciconiæ.**Family Ciconiinae.* Storks.*Genus Xenorhynchus.*

Hind toe above level of rest. Lower jaw accurved at tip. Bill very long, as long as tarsus.

The Jabiru (Black-necked Stork).*Xenorhynchus asiaticus.*

India, Burmah, Malay Peninsula, New Guinea to North Australia.

Above white from the hind-neck to the upper tail-coverts; the lesser wing-coverts white, forming a large wing-patch; the rest of the wing mostly black, glossed with metallic green and purple, the tail being the same; head and neck metallic bluish green, with patch of purplish bronze on the nape; under surface white. Total length 48 inches, culmen 12, wing 22.5, tail 8.5, tarsus 12.

Nest, a bulky structure made of sticks and lined with softer material; it usually builds on trees growing in swamps. Four eggs form a full clutch; they are white, and the surface pitted; they measure about 2.90 x 2.10 inch.

These birds are not plentiful in Australia.

Sub-order Ardeæ. Herons and Bitterns.

Nostrils holorhinal.

Family Ardeidæ.

Hind toe large, resting on the ground like the others, and furnished with a big nail. Middle claw with crust-like edge on its inner margin. Bill notched. Wings large, flight slow. Lores and eye bare. Tail short.

Genus Ardea.

Edges of mandibles distinctly serrated. Head crested, nape feathers form long ornamental plumes. No dorsal train.

The Great-billed Heron.*Ardea sumatrana.*

Northern Australia, Celebes, Sunda, Malay Peninsula, Aracan, and Tenasserim.

Above dull grey, the lower back paler; the scapulars have elongated plumes, white at the ends; tail dark slate, slightly glossed with green; crown of head crested; upper throat white; neck slaty brown, and feathers elongated; under surface grey, with white centres to the feathers. Total length 45 inches, culmen 6.8, wing 18.3, tail 6.1, tarsus 6.7.

Nest made of sticks and lined with softer material, and usually built in trees growing in a swamp. The eggs are pale-bluish green and measure about 2.70 x 1.9 inch.

These birds are not numerous, and appear to be solitary in their habits.



"The Emu."

Nest and Young of Great-billed Heron (*Ardea sumatrana*).

H. Nilsson.

The Grey or Common Heron.*Ardea cinerea.*

Europe, Asia, Africa and Australia.

Above light grey, the scapular feathers elongated to narrow drooping plumes of pale grey or white; primary wing-coverts purplish black; tail grey; a crest on the head, white in centre, with band of purplish black on each side, and having two long nuchal plumes; neck, sides of face and under surface white; drooping plumes on side of fore-neck and chest; lower throat has elongated black stripes on each side of the feathers. Total length 30 inches, culmen 5.1, wing 18, tail 7.2, tarsus 6.8.

Nest the usual nearly flat structure of sticks built in trees by this class of birds. The ordinary clutch of eggs is four. They are light bluish green, and measure about 2.30 x 1.75 inch.

Genus Mesophoyx.

Edge of mandible distinctly serrated. Head crested. Fore-neck with plumes. An immense dorsal train of fine plumes.

The Plumed Egret.*Mesophoyx plumifera.*

Australia, New Guinea, Moluccas, Celebes.

White above and below; the head crested; the long ornamental plumes of the back 17 inches long. These are sold for the purposes of fashion under the name of "Osprey" plumes, the parent birds being killed at nesting time. Feathers of fore-neck 8 inches long and webs broken up; bill yellow; feet black. Total length 25 inches, culmen 3.1, wing 11, tail 5.4, tarsus 4.05.

A nearly flat stick nest on a tree, usually over water. The full clutch is four eggs. They are bluish-green, and measure about 1.81 x 1.37 inch.

Genus Herodias.

Bill not serrated. No crest but a well-developed dorsal train. Tail quills 12.

The Egret.*Herodias timoriensis.*

North China and Japan to Australia.

White with a bunch of elongated plumes on the back; the feathers of the fore-neck and sides of upper breast forming a shield on the sides



Egrets on Nest.

Protection of Birds Society.

of the latter; bill yellow; naked space before and behind the eye greenish yellow. Total length 30 inches, culmen 4.4, wing 15, tail 6.3, tarsus 5.2 to 6.4.

Nest a slightly hollow platform of sticks on a tree, usually over or very near water. They generally build in colonies, frequently accompanied by Cormorants, Nankeen Herons, &c. From three to four eggs are laid, of a pale bluish-green colour. They measure about 2.21 x 1.51 inch.

Genus Notophoxyx.

A full crest but no nape plumes. Dorsal train not extending beyond tail. Tail quills 12.

The White-fronted Heron (Blue Crane).

Notophoxyx novæ-hollandiæ.

Australia, Tasmania, New Zealand, New Caledonia, New Guinea, and the Moluccas.

Above dark bluish grey, with long lanceolate plumes on the back and scapulars; lower back lighter; primary coverts blackish; crown very dark grey, the nape-feathers forming a crest; forehead, behind the eye, cheeks and throat white; the long feathers at the sides of the upper breast grey. Total length 26 inches, culmen 3.15, wing 12.5, tail 5.2, tarsus 3.75. The amount of white on the face varies.

A stick nest usually built on a horizontal branch, frequently over water. Five eggs is the full clutch. They are a delicate bluish-green colour. They measure about 2. x 1.38 inch. These birds do not nest in rookeries.

The White-necked Heron.

Notophoxyx pacifica.

Australia and Tasmania.

Above glossy olive-green, the long feathers slaty grey; the scapular plumes maroon; lower back slaty grey; wing coverts glossy green; the tip and edge of the wing white; tail dark slate-colour; head and neck vinous isabelline; throat white in centre, with a few black spots; feathers of fore-neck elongated with white at ends; under parts blackish, with longitudinal streaks of white. The neck is occasionally mostly white. Total length about 30 inches.

A nearly flat stick nest, usually in trees over water. They generally build in small companies. Four pale bluish-green eggs are laid, and they measure about 2.12 x 1.60 inch.



Starved Egrets, whose parents have been destroyed for the sake of the plumes, which are sold to adorn the hats of fashionable ladies!

Protection of Birds Society.

The Pied Egret.*Notophoxyx flavirostris.*

Northern Australia, New Guinea, Aru, Tenimber, Amboina, and Celebes Islands.

Above slaty black, with long plumes on the back and scapulars; collar round the hind-neck, the throat and fore-neck, white; feathers of fore-neck elongated and are parti-coloured on the sides of the neck, being white in the centre; under surface blackish slate-colour. Total length 19 inches, culmen 2.55, wing 8.7, tail 3, tarsus 2.8.

Nest the usual nearly flat stick structure on trees growing near or in water. Only one egg is so far described, that in the British Museum collection from the Gould collection from N. Australia; it is pale bluish-green, and measures 1.60 x 1.21 inch.

The White-headed Egret.*Notophoxyx aruensis.*

Northern Australia to the Aru Islands.

Above dingy slate-colour; tail black; head, crest, neck, and under surface white; sides of body slate-colour; edge of wing white. Total length 18.5 inches, culmen 2.4, wing 8.8, tail 3.2, tarsus 2.85.

This is a rare bird, and eggs so far not described.

Genus Garzetta.

No crest but drooping head plumes. Plumes on back and breast.

The Lesser Egret.*Garzetta nigripes.*

Java, Malay Archipelago, and Australia.

White with two elongated plumes from the nape, and similar plumes on the back and breast; bill, feet, and toes black. Total length 22 inches, culmen 3.4, wing 10.7, tail 3.5, tarsus 3.7.

Nest a platform of sticks in trees near or over water. The four eggs are pale bluish-green, and measure about 1.80 x 1.40 inch.

Genus Demiegretta.

Bill not serrated, longer than tarsus. Tarsus longer than mid toe. Tail quills 12.

The Reef Heron.*Demiegretta sacra.*

From the islands of the Bay of Bengal to Australia and north to Japan and Corea.

Reef Heron: *Demiegretta sacra.*White-fronted Heron: *Notophox novae-hollandiae.*

Above and below blackish slate-colour; feathers of upper breast elongated like those of the middle of the back; elongated feathers paler, those on the back reaching to the end of the tail; head crested; a white streak down the centre of the throat. Total length 23 inches, culmen 2.8, wing 10, tail 3.10, tarsus 3.9.

There are three forms of this bird in Australia; on the Southern coasts both the white and the grey, which interbreed, and in the Northern portion a darker variety is also found, as well as the other two forms.

Nest built of twigs or other material on the ground, frequently under a shelving rock and generally on small islands or reefs. Four eggs are laid, of a delicate bluish colour, and they measure about 1.82 x 1.31 inch.

Genus Nycticorax.

Tarsus as long as mid toe. Bill higher than broad. Two or three long nuchal plumes.

The Nankeen Night-heron.

Nycticorax caledonicus.

Australia, Celebes, Admiralty, and Pelew Islands.

Above cinnamon, including tail; crown of head black and crested on the nape, and with two long white plumes; eyebrows white; under surface white. The young are everywhere thickly streaked and spotted with buffy white; under surface white, streaked with blackish; they attain their adult plumage in the third year. Total length 19.5 inches, culmen 3, wing 11.6, tail 3.6, tarsus 3.25.

When nesting inland they build substantial stick nests on tall trees, usually in companies, but when nesting on the islands off the coast, especially in Western Australia, they build slight structures in sheltered places among the rocks. The four eggs are light bluish-green, and measure about 2 x 1.40 inch.

Genus Butorides.

Bill longer than tarsus. Ornamental nape and dorsal plumes.

The Thick-billed Green Bittern.

Butorides stagnatilis.

Northern Australia, New Guinea, Solomons, Moluccas, Lesser Sunda, Timor, Flores, New Caledonia, Fiji, Society and Friendly Islands.

Above slaty grey; cheeks and throat brown; long scapular feathers green; lower back greyish green; tail dull green; crown of head dark glossy green; hind neck grey; under surface rusty-brown. Total length 17 inches, culmen 2.8, wing 7.7, tail 2.6, tarsus 1.9.



"The Emu."

A. H. E. Mattingley.

Nests of Night Heron, Eggs and Young: *Nycticorax caledonicus*.

Nest a fragile structure of sticks, usually built on mangroves or similar trees near or over water. The three eggs are a pale bluish-green colour, and measure about 1.60 x 1.21 inch.

Genus Ardetta.

Bill serrated. Legs feathered down to tarsal joint. Tarsus as long as mid toe. Tail quills 10.

The Little Yellow Bittern.

Ardetta sinensis.

Japan and China to Northern Australia.

Above brown; edge of wing white; lower back ashy grey; tail and crown of head and nape black; throat white, streaked with yellowish buff, like the rest of the under surface; lower abdomen white; on each side of upper breast a patch of dependent feathers, blackish with yellowish margins. Total length 15.5 inches, culmen 2, wing 4.9, tail 1.5, tarsus 1.75.

Nest formed by treading down thick growing rushes or reeds in swamps. Four eggs are usually laid, of a very pale bluish colour; they measure about 1.24 x .94 inch.

The Minute Bittern.

Ardetta pusilla.

Australia and New Zealand.

Back, scapulars, and tail glossy greenish black; wing-coverts light brown, tinted with yellow; throat and under surface white, tinged with yellow; bill yellow. Total length 10 inches, culmen 1.8, wing 5.2, tail 2, tarsus 1.6.

Nest of reeds or rushes trodden down into a slight platform. The four eggs are white, and measure about 1.20 x .99 inch.

These little birds, unless they are disturbed, are rarely seen, remaining very close among the reeds.

Genus Dupetor.

Bill short and thick, longer than tarsus. Tarsus as long as mid toe.

The Yellow-necked Bittern.*Dupetor gouldi.*

Australia (except Southern) and New Guinea.

Above dark greyish brown; tail blackish; crest plumes on head; a band of golden straw-colour runs down the sides of the neck, the lower

Bittern: *Botaurus poeciloptilus.*

Meyer.

feathers being elongated; brown on under surface; a central row of spots down the throat black. Total length 24 inches, culmen 3.35, wing 8.9, tail 3.4, tarsus 2.65.

Nest a slight structure of sticks placed generally in a horizontal branch on a tree over or near water. Four white eggs are usually laid. They measure about 1.74 x 1.34 inch.

Genus Botaurus.

Bill serrated, about as long as inner toe and claw. Hind claw very long, nearly as long as its toe.

The Bittern.*Botaurus pœciloptilus.*

Australia, Tasmania, New Caledonia, and New Zealand.

Above mottled with tawny yellow and black; nearly uniform black mantle and scapulars; a ruff of smoky brown on the sides of the neck;



From life.

D. Le Souëf.

Bittern in Attitude of Defence: *Botaurus pœciloptilus.*

crown of head black, with a crest of mottled feathers on the nape; under surface reddish brown; reddish bands on fore-neck, and black-centred feathers on the sides of the chest. Total length 24 inches, culmen 2.8, wing 12.5, tail 4.5, tarsus 3.9.

Nest usually a trodden-down platform in a thick growth of rushes in a swamp. Five eggs form the full clutch. They are of a light olive-green colour, and measure about 2.01 x 1.46 inch.

ORDER ANSERIFORMES.

Aquatic birds. Young covered with down, and able to run or swim a few hours after hatching. Palate desmognathous, the maxillo-palatine processes uniting to form a long roof to the palate.

Family Anatidæ.

Margins of bill laminated.

Sub-family Cygninæ. Swans.

Hind toe lobed. Neck very long, as long as, or even longer than, the body.

Genus Chenopsis.

Predominant colour black.

The Black Swan.*Chenopsis atrata.*

Australia and Tasmania.

Brownish black, under surface paler; primaries and secondaries white; tertiaries and scapulars crisp. Total length 40 inches, wing 19, tail 4.6, culmen 2.8, tarsus 3.7.

Nest a large bulky structure, usually built in swamps, either of sticks and bark or of rushes, reeds, &c.; occasionally floating. From four to six eggs are laid, five being perhaps the most usual. They are greenish-white or greyish-green, and measure about 4.18 x 2.62 inch.

Sub-family Anseranatinaæ.

Hind toe not lobed. Feet half webbed.

Genus Anseranas.

Plumage black and white.

The Pied Goose.*Anseranas semipalmata.*

Australia and Tasmania.

Head, neck, mantle, wings, tail and thighs black; back, breast, abdomen, tail-coverts, scapulars and smaller upper wing-coverts white. Total length 35 inches, wing 18.5, tail 8, bill 3.25, tarsus 3.62.

A bulky nest usually made of reeds, rushes, &c., and generally placed on a thick growth of those plants in swamps. The number of eggs varies from eight to fourteen. They are yellowish-white and pitted, and measure about 3.02 x 2.31 inch.

These birds are now scarce in Southern Australia.

Sub-family Plectropterinae.

Hind toe not lobed, long. Feet fully webbed. Tail feathers rather long, broad, rounded at tip. Upper parts glossy.

Genus Nettopus.

Length of bill less than double its depth.

The Green Dwarf Goose.

Nettopus pulchellus.

Australia, New Guinea, Moluccas, Celebes and Tenimber Islands.

Sides of the head, throat, breast, and abdomen white; top of head brown, banded with dark green and pale brown; neck, back, scapulars and upper wing-coverts dark glossy green; lower part of neck and sides with crescent white and green bands; upper tail-coverts banded; white band across the wing; tail and under tail-coverts glossy black. Total length about 13.5 inches, wing 6.9, tail 3, culmen 0.98, tarsus 0.98. Female has top of head uniform brown-black, sides of head and neck speckled with black.

Nest occasionally made of grass or similar vegetation among the thick growth of the swamps and lined with feathers, but usually in hollows in trees. Clutch about nine, of a light-cream colour. They measure about 1.70 x 1.28 inch. These beautiful little geese are not found in Southern Australia, but only in the northern districts.

The White-quilled Dwarf Goose.

Nettopus albipennis.

Queensland and New South Wales.

Crown brown; remainder of head, neck, and lower plumage white; a broad collar round the neck, black in front and green behind; the white of the breast going round the neck and forming another collar below the black one; back and wing-coverts glossy green; white band on wing; the female has the breast mottled with brown, and lower plumage barred with brown. Total length 13 inches, wing 6.5, tail 3, culmen 0.92, tarsus 1.

Nest generally in a hollow in a tree. About nine form a clutch, and they are a light-cream, and measure about 1.90 x 1.45 inch.

Sub-family Cercopsinæ.

Cere of bill much developed.

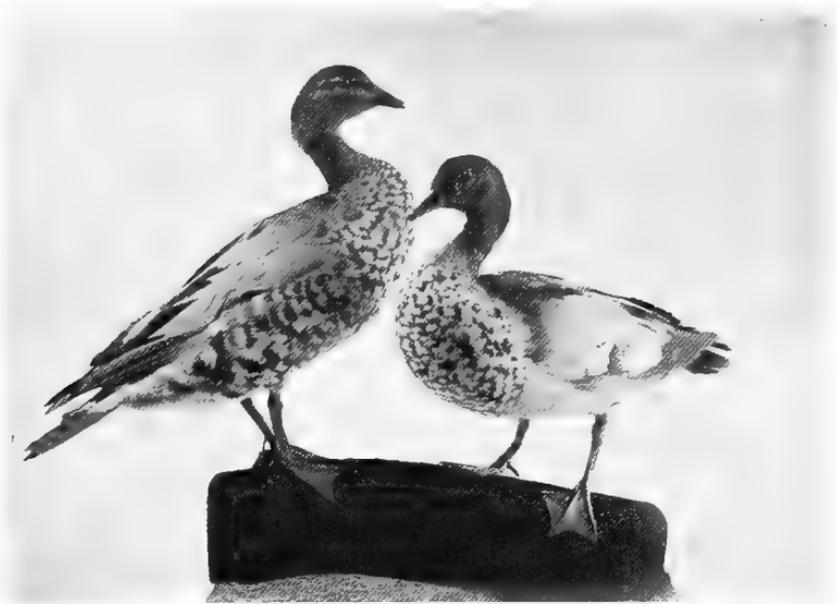
Genus Cereopsis.

Face wax-like.

The Cape Barren Goose.*Cereopsis novæ-hollandiæ.*

Southern Australia and Tasmania.

Crown of head whitish, rest of plumage brownish grey; some of the wing-coverts and scapulars with a spot of brownish black near the tip;



Maned Goose: *Chenonetta jubata.*

Australian Museum.

feathers of back margined with pale brownish grey; tail blackish brown; bill black and cere yellow; feet black. Total length 34 inches, wing 20, tail 8, tarsus 3.6.

Nest made of grass and lined with down, generally on the ground among the tussocky grass on the islands in Bass Strait and off the coast of South and West Australia. They do not nest inland or go far from the coast. From four to six eggs are laid, of a creamy-white colour. They measure about 2.94 x 2.10 inch.

Sub-family Chenonettinae.

Hind toe very narrowly lobed. Bill rather short and goose-like.

Genus Chenonetta.

Upper wing coverts grey.

The Maned Goose (Wood Duck).*Chenonetta jubata.*

Australia and Tasmania.

Head and neck brown; lengthened plumes down the back of the neck brown-black; back and lesser wing-coverts grey; lower back black; breast grey, each feather tipped with greyish white and spotted with black on each side; sides and flanks pencilled; abdomen black; glossy green band on the secondaries, which are tipped with white, as well as the greater wing-coverts. Total length 20 inches, wing 11, tail 4, culmen 1.15, tarsus 1.42.

Nest in a hollow spout of a tree and well lined with down, usually near water. From eight to twelve cream-coloured eggs are laid. They measure about 2.24 x 1.59 inch.

Sub-family Anatinae.

Hind toe very narrowly lobed. Bill rather flat and lobed.

Genus Dendrocygna.

Front of lower tarsus reticulate.

The Whistling Duck.*Dendrocygna arcuata.*

Australia, Oceania, New Guinea, Celebes, Moluccas, and Indo-Malayan Islands.

Upper part of the head and line down the back of the neck brown-black; sides of head and neck pale fulvous; throat almost white; back and scapulars black, with edges chestnut, and on the upper back the black part of the feathers with rufous spots; breast rufous, each feather with black spot in centre; lighter on abdomen; tail and rump black, the feathers of the flanks elongated with buffy white streaks, edged with black. Total length about 17 inches, wing 8.5, tail 2.8, culmen 1.7, tarsus 1.85.

Nest generally on the ground in thick long grass, and well lined with down. From eight to twelve light cream-coloured eggs are laid, and they measure 2.10 x 1.41 inch.

The Plumed Whistling Duck.*Dendrocygna eytoni.*

Australia, Tasmania, and New Zealand (accidental).

Upper part of head, hind-neck, and breast pale brown; sides of head and neck grey, fading into white on throat; back of wings greyish brown, with paler edges; sides and lower breast reddish and barred with black; feathers of the flanks very long, of a buff colour and margined with black; abdomen buffy white; bill has a mottled patch in the centre. Total length 16 inches, wing 9.5, tail 3, culmen 1.6, tarsus 2.

Nest a scraped out depression in long grass on the plains, and well lined with down. From eight to twelve cream-coloured eggs are laid, and they measure about 1.94 x 1.54 inch.

Genus Tadorna.

Front of lower tarsus with transverse scales. Sexes alike in plumage.

The White-headed Sheldrake.*Tadorna rufitergum (radjah).*

Northern Australia, Moluccas and New Guinea.

Head, neck, breast and abdomen white; back, scapulars, rump and upper tail-coverts black; the mantle has narrow chestnut lines; a chestnut pectoral band, with narrow black lines; upper wing-coverts white; primaries and coverts black; a glossy green speculum on the secondaries; tail black; bill and feet white. Total length about 19 inches, wing 11, tail 5, culmen 1.75, tarsus 2.12.

Nest generally in a hollow in a tree. From eight to ten eggs are laid, of a very pale whitish-cream colour. They measure about 2.36 x 1.72 inch.

Genus Casarca.

Lamellæ on edge of lower mandible projecting outwards. Sexes differing in plumage.

The Chestnut-Coloured Sheldrake (Mountain Duck).*Casarca tadornoides.*

Australia (not north) and Tasmania.

Head and upper part of the neck glossy dark green; a white ring round the middle of the neck; below the ring and the upper part of the back and breast are red; back, scapulars and lower parts black, finely

freckled with fulvous; tail and coverts black; wing-coverts white; primaries and coverts black; a glossy green speculum. Total length 24 inches, wing 14, tail 6, culmen 1.8, tarsus 2.25. The female has a mottled white ring round the base of the bill.



Chestnut Sheldrake: *Casarca tadornoides*.

Australian Museum.

Nest sometimes in hollows in trees and sometimes on the ground in long grass near a log or fallen branch, well lined with down and grass. From eight to thirteen cream-coloured eggs are laid, and they measure about 2.78 x 1.98 inch.

These birds are often seen in pairs on the plains and frequent the salt lakes. Their call is a deep toned "honch."

Genus Anas.

Bill broad, about as long as head.



Black Duck: *Anas superciliosa*.

The Black Duck.

Anas superciliosa.

Greater and Lesser Sunda, New Guinea, Polynesia and Pelew Islands, Australia and New Zealand.

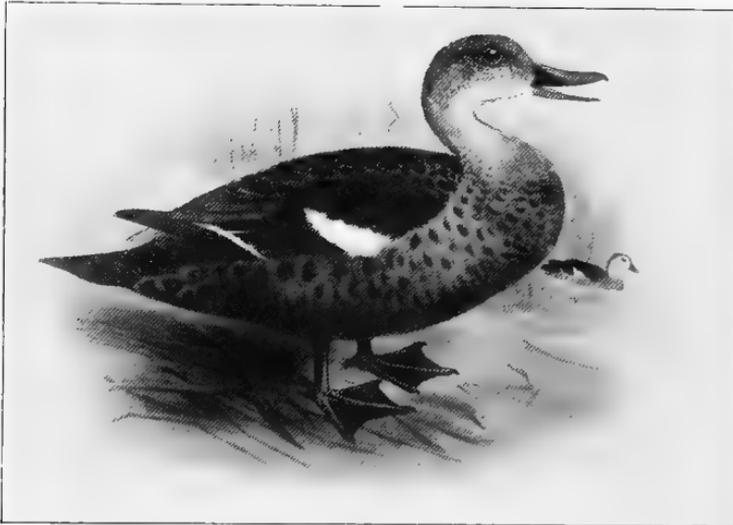
General plumage above and below brown, the feathers edged with buff; upper part of the head and a band on each side brown-black; a whitish stripe over the eye; a band of pale buff through the cheeks, chin and throat; a pale band on the nape; a glossy green speculum, bordered on both sides with black; upper wing-coverts white. Total length about 24 inches, wing 10.75, tail 4.4, culmen 2.25, tarsus 1.65.

Nest either on the ground in long grass or under a thick bush or in a hollow in a tree or in the deserted nest of a crow or hawk; usually well lined with down and a little grass. The clutch is from eight to thirteen, usually of a greenish-cream colour, and they measure about 2.32 x 1.65 inch.

This bird is by far the most common duck in Australia; it can be crossed with the domesticated varieties.

Genus Nettion.

Bill not very broad, compressed, shorter than head.



Pro. Zool. Society.

Chestnut-breasted Teal: *Nettion castaneum*.

The Chestnut-breasted Teal.

Nettion castaneum.

Australia, Tasmania, and New Zealand.

Head and neck dark glossy green; mantle and back black, each feather edged with chestnut; rump and tail-coverts glossy black; breast and abdomen chestnut, with round black spots; scapulars and wings olive-brown; wing-speculum velvety black, with a metallic green band on the upper half; bill bluish lead-colour. Total length about 18.5 inches, wing 9, tail 4.5, culmen 1.5, tarsus 1.4. The female is brown, with greyish edgings to the feathers, lower back almost uniform brown; lighter on the underparts; speculum tipped with white band.

Nest sometimes on the ground in long grass and lined with down and a little grass, but they generally lay in a hollow in a tree. From eight to ten cream-coloured eggs are laid, and they measure about 2.06 x 1.46 inch.

This bird is most plentiful near the southern coasts of Australia, as well as on the islands in Bass Strait and in Tasmania, where it is often locally called the King Teal.

The Grey Teal.

Nettion gibberifrons.

Celebes, Greater and Lesser Sunda, New Guinea, New Caledonia, New Zealand and Australia.

Upper part of the head dark brown, with the edges of the feathers greyish; sides of the head paler and streaked with dark brown; chin and throat white; upper parts brown, edges of feathers lighter; lower back almost uniform; underparts light fulvous, and with brown spots in the centre; each feather having a broad central mark of dark brown; white band on wing; wing-speculum metallic green, and velvety black, tipped with a white band. Total length 17 inches, wing 8, tail 4, bill 1.5, tarsus 1.25. Female almost the same, but smaller.

Nest occasionally on the ground, but generally in a hollow in a tree, lined with down. Clutch eight to thirteen, creamy-white in colour, and measure about 1.92 x 1.03 inch.

This teal is not so large as the preceding species.

Genus Querquedula.

Bill a third longer than tarsus.

The Garganey Teal.

Querquedula querquedula.

From Europe and Asia to Africa and Austro-Malayan regions in winter, accidental in Australia.

Crown brown-black; whitish band above the eyes; sides of head and upper neck brown, streaked with white; back blackish, edges of feathers lighter; scapulars elongated, black with central white stripe; breast with brown and black crescent bands; lower breast white; narrow black lines on abdomen and sides; long feathers on flank with bluish grey ends; upper wing-coverts bluish grey; speculum green with a white band each side. Total length 16 inches, wing 7.75, tail 2.75, culmen 1.62, tarsus 1.2. Female has the chin and throat white, as well as the abdomen and breast.

Nest on the ground in long grass, lined with down. The clutch from eight to twelve cream coloured eggs, which measure about 1.78 x 1.31 inch.

Genus Spatula.

Bill spoon-shaped, no soft membranes on the sides towards the tip.

The Common Shoveller.*Spatula clypeata.*

Nesting in Northern Hemisphere and in winter to Africa, India, China, and in America to Colombia and West Indies, accidental in Australia.



Australian Museum.

The Australian Shoveller: *Spatula rhynchotis*.

Adult male: Head and upper part of neck glossy green; lower neck, breast, and anterior scapulars white; middle of back dark brown, feathers with pale edges; rump greenish black; lower breast chestnut; flanks freckled with brown; upper wing-coverts and portions of scapulars pale blue; rest of scapulars black, with a white stripe along the middle; white band on the wings, and joining the speculum; tail white and freckled. Total length 20 inches, wing 10.25, tail 3.75, culmen 2.75, tarsus 1.4.

Nest a depression in the ground among short vegetation and lined with down. Clutch from eight to thirteen, greenish-buff in colour, and they measure about 2.15 x 1.50 inch.

These birds are very rare in Australia.

The Australian Shoveller (Blue-wing).*Spatula rhynchotis.*

Australia, Tasmania, and New Zealand.

Crown of head and chin brownish black; a white band between the bill and the eyes; rest of head and neck bluish grey; back brownish black, edges of feathers reddish; rump greenish black; lower neck and upper breast white, with dark crescent bands; lower breast rufous chestnut with black bands; shorter scapulars brown, with white crescent bars; upper wing-coverts light blue, tipped with white; speculum glossy green; tail black. Total length 22 inches, wing 9.75, tail 4, culmen 2.55, tarsus 1.3. Female, brown-spotted on the underparts, and tail brown with reddish bars.

Nest, usually a depression among thick vegetation, &c., and lined with a little grass and down, occasionally in a hollow in a tree. The clutch is from seven to nine, of a pale-cream colour, and they measure about 2.10 x 1.52 inch.

Genus Malacorhynchus.

Bill spoon-shaped, with soft membranes on sides towards tip.

The Pink-eared Duck (Widgeon).*Malacorhynchus membranaceus.*

Australia and Tasmania.

Crown greyish brown; sides of the head greyish white; a patch on the sides of the head and passing down to the back of the neck, dark brown; an oblong mark of pink just behind the dark patch surrounding the eye; neck, breast and underparts greyish white, crossed by numerous brown bars; upper parts greyish brown, minutely dusted with lighter points; a white band on wing; tail brown, tipped with white. Total length 17 inches, wing 7.15, tail 2.5, culmen 2.5 to 2.65, tarsus 1.25.

Nest, generally in the deserted nest of another bird, such as a Coot, Heron, &c., and thickly lined with down, in which the eggs are embedded. From seven to nine creamy-white eggs are laid, which measure about 1.88 x 1.36 inch.

Genus Stictonetta.

Plumage uniform without bright speculum on the wing.

The Freckled Duck.*Stictonetta nœvosa.*

Southern and Western Australia and Tasmania.

All dark brown minutely freckled with irregular oblong bars of white; under surface lighter; wings without speculum; primaries plain brown.

Nest, a depression in the ground, among thick vegetation, and lined with down. From eight to ten greenish-white eggs are laid, and they measure about 2.32 x 1.68 inch. This bird is comparatively rare.

Genus Aythya.

Hind toe broadly lobed. Bill smooth not swollen at base. Tail feathers not particularly stiff.



*From a Drawing in the Christchurch Museum.
White-eyed Duck: *Aythya (Nyroca) australis*.*

The White-eyed Duck (Hardhead).

Aythya australis.

Australia, Tasmania, New Zealand, New Guinea, and Waigiou.

Head, neck and breast dark brown chestnut; back and scapulars dark brown, each feather with olive-brown edges; abdomen white, but lower part brown; sides brown, paler edges to feathers; wing-speculum white, also white on the primaries; tail brown; skin round eyes white. Total length 20 inches, wing 8.75, tail 2.5, culmen 1.9, tarsus 1.6.

Nest on the ground among herbage or in hollows in trees, and, as usual, lined with down. From eight to twelve creamy-white eggs are laid, and they measure about 2.26 x 1.63 inch.

Sub-family Erismaturinæ.

Hind toe broadly lobed. Tail feathers narrow and very stiff.

Genus Erismatura.

Tail quills 18.



Technological Museum, Sydney.

Musk Duck: *Biziura lobata*.

The Blue-billed Duck.

Erismatura australis.

Southern Australia and Tasmania.

Head, throat and neck black; breast, back and flanks chestnut; rump blackish, freckled with reddish lines; underparts brown, feathers tipped with rufous-white; wings and tail dark brown; bill light blue. Total length 16 inches, wing 6.2, tail 2.6, culmen 1.6, tarsus 1.25. Female brown, upper parts freckled.

Nest on the ground in thick herbage and lined with grass and down. From four to five greenish-white eggs are laid, and they measure about 2.70 x 2.04 inch. This bird, like the musk duck, dives well and rarely flies. It is comparatively scarce.

Genus Biziura.

Bill shorter than head, very high at base. A pendent lobe on the chin. Tail quills 24.

The Musk Duck.

Biziura lobata.

Australia and Tasmania.

Upper part of the head and nape brownish black, finely freckled; upper surface, chest, and flanks blackish brown, thickly freckled with buffy white bars; under parts buffy white at tip of feathers; bill and large lobe beneath the chin greenish black. Total length about 26 inches, wing 9.25, tail 6, culmen 1.7, tarsus 1.55.

Nest, either in a thick patch of rushes in a swamp, which they bend over, and make the nest just above the water, or in a hollow log or in thick herbage near water, lined with down. Clutch from two to three coarse greenish-white eggs, the surface often being scratched. They measure about 3.14 x 2.12 inches.

These birds take refuge by diving, and rarely fly. They are often seen in small companies in the harbours and estuaries not far from shore. The scent of musk in the old males is strong.

ORDER PELECANIFORMES.

The most extensively webbed of all the aquatic birds, the hallux being united with the rest by a complete web. Nasal bone unsplit.

Family Phalacrocoracidae.

Bill sub-cylindrical, strongly hooked at the tip, cutting edges of mandibles entire.

Genus Phalacrocorax.

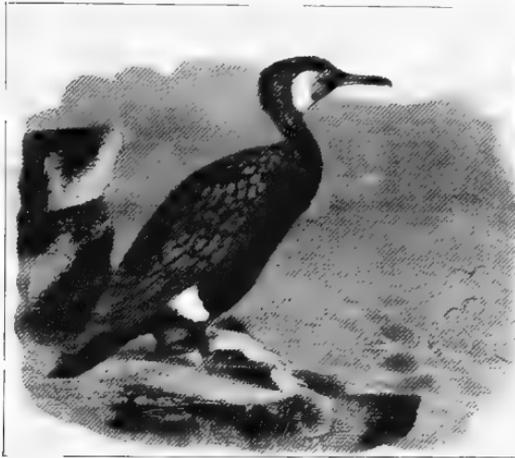
Throat furnished with a pouch. Neck long and sinuous. Tail rounded or wedge-shaped. Claw of mid toe pectinate.

The Black Cormorant.*Phalacrocorax carbo.*

Cosmopolitan, from New Zealand to Iceland.

General colour glossy greenish black; top of head and part of neck covered with long narrow white feathers; a crest of bluish black feathers; a white border on the throat next to the bare gular pouch; a patch of white feathers on each flank. Total length about 36 inches, culmen 2.3 to 3.2, wing 12.5 to 14, tail 6.8 to 7.2, tarsus 2.3 to 2.85.

Nest built of various material, according to locality, but usually of sticks, either high up in a lofty eucalyptus or on lower shrubs growing in swamps, and sometimes on ledges of



Black Cormorant: *Phalacrocorax carbo.* Wood's Nat. His.

rocks, reefs or islands. Four eggs is the full clutch, but sometimes not more than two or three are laid. They are a delicate greenish-blue colour, covered with a white chalky substance, laid on unevenly and easily removed. They measure about 2.36 x 1.48 inch.

The birds nest in the inland districts, as well as near the sea, usually in company with other Cormorants.

Cormorants, of course, feed on fish, and so unfortunately come into competition with the fishermen. In New South Wales a price is placed on their heads, and fairly large numbers are shot. Under ordinary circumstances the destruction of fish by the birds is perhaps not very serious. There are many fish in the sea, and the Cormorant is not so particular as man in his

choice. Exceptionally, however, the birds may collect, where the fish are naturally or by the action of the fishermen confined in a small area, and then do very complete damage. Thus Mr. E. J. Paton, Inspector of Fisheries at Port Stephens, writes of a raid made by the Cormorants in Smith's Lake, a small lake to the north of the Myall Lakes of the district:—"I found great numbers of Cormorants on the lake, chiefly the big black shag, and, although I have studied the habits of this pest for many years, their method of working in Smith's Lake was new to me. They work in flocks of from a hundred up to thousands.



Storehouse Island, Bass Strait.

A. J. Campbell.

White-breasted Cormorant: *Phalacrocorax gouldi*.

I observed one flock numbering approximately 2,000 working a school of small fish from the weedy bottom of the lake into shallow clear water by united and simultaneous action. The birds closely packed dived together until the water for many yards was in a boil with the diving birds. When the fish are drawn clear from the weeds, the birds surround them, working them inshore, and pen them in as securely as if in a net, until they gorge themselves." In such a case the Cormorants may be really as wastefully destructive of the fish supply as unrestricted netting.

The Little Black Cormorant.

Phalacrocorax sulcirostris.

Australia, New Zealand, Austro-Malayan Islands to South Borneo.

General colour brownish black, with a greenish gloss; some white plumules on each side of the head and about the neck. Total length about 25 inches, culmen 1.7, wing 9.5 to 10.4, tail 4.7, tarsus 1.7.

Build generally in rookeries, the nests usually being made of sticks in trees or shrubs in swamps, over water; occasionally



From life.

White-breasted Cormorant: *Phalacrocorax gouldi.* A. J. Campbell.

they build on rocks. Four eggs are laid, exactly like the other Cormorants. They measure about 2. x 1.40 inch.

These birds are very plentiful on many of the inland waters, and frequently nest in company with the Little Black and White Cormorant.

The White-breasted Cormorant.

Phalacrocorax gouldi.

Tasmania, South and East Australia and Louisiade Archipelago.

Above black, glossed with steel-blue; sides of the head, throat and underparts white; in nesting season back of neck has numerous white plumules; the feathering is continued along the lower mandible for some

distance *beyond* the gape of the bill. Total length about 24 inches, culmen 1.85, wing 9.5, tail 3.7, tarsus 2.15.

Nest usually made of sticks and seaweed. They build in companies on the bare rocks of small islands. The three eggs measure about 2.35 x 1.40 inch.

The Pied Cormorant.

Phalacrocorax hypoleucus.

West Australia.

Very similar to *P. gouldi*, but has much longer bill and distinguished by the feathering on the throat, which is *not* continued along the lower mandible beyond the gape; naked skin beneath the eye blue. Total length about 27 inches, culmen 2.7, wing 10.8, tail 4.7, tarsus 2.35.

Nest usually a structure of sticks, &c., and built on rocks or trees, either on small islands or on the sea coast. The four eggs measure about 2.35 x 1.4 inch.

The Little Black and White Cormorant.

Phalacrocorax melanoleucus.

Australia, New Zealand, New Guinea, Moluccas, and Lesser Sunda Islands.

Above glossy greenish black; throat and underparts white; under tail coverts black; the white feathers on the sides of the head and neck lengthened; narrow white plumes on top of head and neck. Total length 23 inches, culmen 1.2, wing 8.8, tail 5.8, tarsus 1.45.

Nest a good sized structure built usually of sticks, either in trees or shrubs, and generally over or near water. They nest in companies, and the four eggs measure about 1.85 x 1.33 inch.

These birds are found well inland up the rivers or on swamps, as well as on the sea-coast.

Family Plotidæ.

Bill long, pointed. Bill serrated. Body nearly uniformly clothed with small soft contour feathers.

Genus *Plotus*.

Bill compressed. Terminal half of mandible serrated.

The Darter.*Plotus novæ-hollandiæ.*

Australia, New Zealand, and South-east New Guinea.

Above glossy black; a white stripe below the eye and extending four inches down the neck; a white band bordering the bare throat; patch of chestnut on front of neck; underparts white; these birds have a very long snake-like neck. Total length 31 inches, culmen 2.8, wing 13.2, tail 8.4, tarsus 1.9.

Nest, a structure of twigs, placed in trees near or over water. The four eggs are very similar to those of the Cormorant, but more elongated, being chalky-white on the surface with a greenish shell beneath. They measure about 2.28 x 1.46 inch.

These birds usually nest in companies, and are found on the rivers and swamps; especially plentiful in Northern Australia, but not nearly as numerous as the Cormorants.

Family Sulidæ.

Tail wedge-shaped. Bill sub-cylindrical, pointed. No external nostrils.

Genus Sula.

Bill stout, straight, pointed. Wings long. Nostrils closed externally. Throat pouch.

The Gannet (Booby).*Sula serrator.*

Coasts of Australia and New Zealand.

General colour pure white; back and sides of the head and neck tinted with buff; primaries black; bare band about two inches long down the centre of the throat; two middle pairs of tail-feathers brownish black. Total length 36 inches, culmen 3.4, wing 18, tail 8.1, tarsus 2.2.

These birds nest in large companies, making their nest of seaweed, and feed their young on partially digested fish. They do not leave their nest on man's approach. The single egg is chalky-white, and on being scraped off shows a bluish-white shell beneath. They measure about 3.08 x 1.89 inch.

We take the following vivid description of the diving skill of the Gannet from a notice in the "Emu," by Mr. H. Stuart Dove, of West Devonport, Tasmania:—"I never remember

seeing them in such numbers as here just now. When over a good shoal of fish they literally tumble by dozens and scores into the water, reminding the watcher of a shower of huge snowflakes melting into the waves; it is marvellous how they avoid sinking each other when descending in such numbers, and with such velocity into a small patch of water, each apparently oblivious of everything except that one little object it has sighted beneath the surface. The dive into deep water is usually made from a height of 18 to 30 feet, and is a literal "header," the



"*Victorian Naturalist.*"

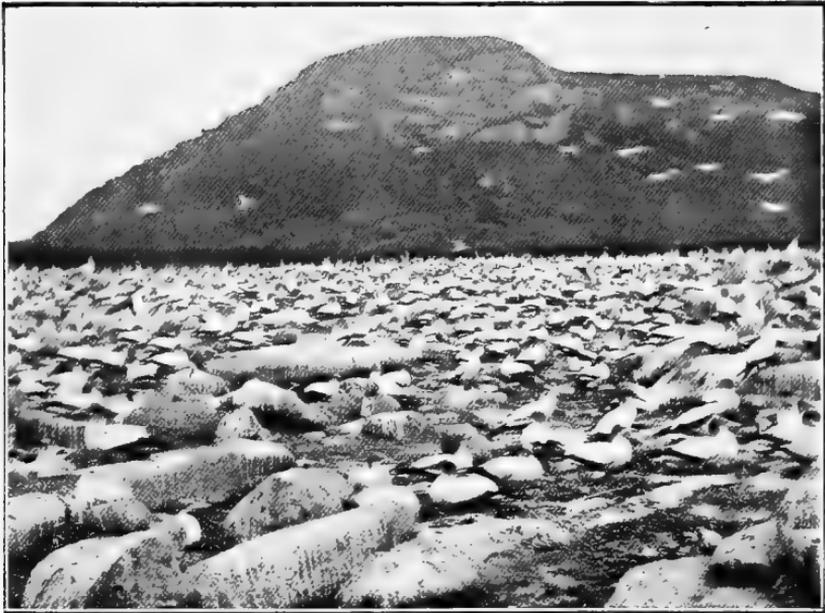
Gannetry on Cat Island, Bass Strait.

H. P. C. Ashworth.

bird usually entering the waves nearly vertically, and with a splash; a perceptible interval elapses before it reappears some little distance away, giving its yellowish beak a swish backwards and forwards after swallowing its prey. It usually sits a few seconds upon the water before going aloft again, thus differing from the Tern, which takes to its wings the moment it reaches the surface. When diving in shallow water close to the rocks, the Gannet begins the descent from a height of 4 or 5 feet only. The wings are not closed, as is usually supposed, at the beginning of the descent, but remain expanded until the bird is close to the surface, and apparently assist in guiding it to

the exact spot which it desires to reach; it then flaps them suddenly to the side of the body, and the admirable adaptability of its shape to its aquatic life may be well seen just as it enters the water, the long beak, head, neck and body stretched out rigidly in one straight line, the legs and wings tucked closely in, everything arranged so as to offer as little resistance as possible to the water."

The nickname of "Booby" attaches to the Gannets, and alludes to the calm imperturbability with which the bird sits on



From life.

Australian Gannets, Cat Island, Bass Strait.

D. Le Souëf.

its nest, and seems to be absolutely indifferent to the approach or presence of danger. Thus Mr. O. Salvin writes of *S. piscator*, "The word Booby is most appropriate; I never saw a bird with less idea of getting out of one's way, or caring less for what one did. Walking about under the trees was nothing; they hardly condescended to look down; nor when we stirred them up while taking a 'siesta,' pulled their tails, poked them off their nests, and fought with them for their eggs, and bullied them in every way, did we succeed in getting up any sort of excitement in the

colony." Gould says of the Australian Gannet that it appears to be the "Booby" par excellence. "Observing about fifty fine adult birds reposing on the flat top of a low rock, I directed my boatmen to row cautiously that I might endeavour to get a shot at them. I was soon not only within range, but too near to use my large duck gun, loaded as it was with large shot. I determined therefore to shoot them on the wing as they flew from their resting-place. Judge of my surprise when I found that neither the near approach of the boat, nor our speaking to



From life.

Gannets: *Sula serrator*.

Dr. C. S. Ryan.

each other startled them in the least. Taking one of the men with me, I stepped on shore and approached the motley assembly, which was still sitting in close array on the rock, and which did at length exhibit some degree of surprise and uneasiness at the intrusion, but were then so little disturbed that we succeeded in capturing five fine birds with the hand before the remainder had shuffled off to the ledge of the rock and taken wing. Had this occurred at a breeding-place it would not have excited any astonishment, but I did not expect that the birds would admit of being captured while merely at rest."

Mr. J. Gabriel thus describes the rookery in the Furneaux Group:—"We found between 2,400 and 2,600 birds (roughly estimated by measurement) seated in the locality on their nests. The birds were in no wise put out by our presence, and we photographed to our hearts' content. The nests were built on slightly raised mounds of clay and a good admixture of guano, of which the place smelt strongly, and were composed of twigs, algæ and polyzoa. Each nest contained one egg only. Hovering over the rookery, and coming and going from seaward,



"The Emu."

Gannets (*Sula serrator*) Nesting.

D. Le Souëf.

were the mates of the sitting birds. It was the prettiest of sights to see these birds alight alongside their mates, kissing and caressing them in a most loving and affectionate way. Occasionally one of the new comers would eject from its throat a fish which it had brought in from the sea. It is really wonderful the size of fish they carry—15 inches was the measurement of a pike which we found lying near one of the nests, and we saw the remains of others which must have measured still more. Frequently we could see a handsome Gannet rise on its feet off its egg and flap its wings to stretch its feathered limbs; should the bird be so unfortunate as to

lose its balance it soon regained its position, hastened, however, by its neighbours, who viciously pecked at it, as much as to say, 'Keep your own ground.' The nests, as far as the inequality of the ground would allow, were arranged, in symmetrical rows, and were about 30 inches apart. The diameter of the rookery was about 50 yards, and it was circular in shape. The old birds seemed to protect the eggs more fiercely than they did the young, and I had to approach them with considerable respect, requiring the aid of a bucket and fishing basket for them to peck at while I was securing their eggs. Promenading around the rookery and sometimes through the rows were to be seen those impudent scavengers, the Silver and Pacific Gulls, waiting their chance (a very poor one) of taking the eggs and pieces of fish lying about.'

The Masked Gannet.

Sula cyanops.

Tropical seas throughout the world.

White, except the primaries, secondaries and their coverts, as well as the tail-feathers, which are brownish black; chin and upper throat bare. Total length 36 inches, culmen from feathers on forehead 4.3, wing 17.6, tail 7.3, tarsus 2.3.

Very little lining is used for the nest on the ground, often none; they usually breed on the coral reefs and small islands. The two eggs are similar to the preceding species, and measure about 2.70 x 1.75 inch.

These birds nest in large numbers on Raine Island in Torres Strait.

The Red-legged Gannet.

Sula piscatrix.

Tropical and Sub-tropical Seas throughout the world, except the Pacific coast of America.

White, but primaries and their coverts grey, chin and upper part of throat bare; bill greyish blue. Total length about 29.5 inches, culmen 3.5, wing 15.5, tail 8.6, tarsus 1.4. Young birds brown.

A flat nest of sticks or seaweed, placed either on the ground or on thick herbage. The single egg is similar to that of the preceding species and measures about 2.35 x 1.57 inch.

These birds also nest on Raine Island in great numbers.

The Brown Gannet.*Sula leucogaster.*

Tropical and Sub-tropical seas throughout the world, except the Pacific coast of America.

Head, neck, chest, upper parts, wings, and tail dark sooty-brown; rest of underparts white. Total length 28 inches, culmen 3.90, wing 14.5, tail 7.6, tarsus 1.6. Young, light brown.



"The Emu."

Half-fledged Young Masked Gannet: *Sula cyanops.* Tom Iredale.

Nest, a scanty structure, usually on the ground, on small islands or reefs. The usual clutch is two, but sometimes three are laid. White in colour, and measure from 2.3 to 2.6 in length and from 1.55 to 1.75 in breadth.

This bird is commonly called the Booby by sailors.

Family Fregatidæ.

Tail deeply forked. Webs between toes deeply emarginated.

Genus Fregata.

Bill long, hooked at tip. Large throat pouch. Wings long and pointed.

The Great Frigate-bird.*Fregata aquila.*

Tropical and Sub-tropical oceans of both Hemispheres.

General colour black; feathers of the head, upper back, and scapulars elongate and pointed, with a greenish gloss; the female has the back of the neck dark brown and underparts white; bill purplish blue, white in the middle; gular pouch orange. Total length 40 inches, culmen 3.8, wing 20.5 to 25.8, tail 14, tarsus 0.7.

Nest, a considerable structure of twigs, &c., built either on the ground or on shrubs, ledges of rock, &c., and usually on islands. One egg is laid, chalky-white in colour, and measures about 2.75 x 1.82 inch.

This bird is sometimes called the Man-of-war bird. It secures its prey from what other birds have secured, by making them drop their fish in mid air, when it catches it before reaching the water. They have long wings and long slender bills, as well as a kind of pouch hanging down in front.

The Lesser Frigate-bird.*Fregata ariel.*

Tropical parts of Indian and Pacific Oceans.

Very similar to preceding species but smaller; has a large white patch on each flank; female has a wide white collar round the neck. Total length 30 inches, culmen 2.6, wing 19.2-21, tail 11-13.3, tarsus 0.75.

Nest composed of twigs, seaweed, &c., and placed either on the ground or on vegetation, usually on islands. The single egg is white, and measures from 2.63 to 2.26 in length, and from 1.75 to 1.50 in breadth.

This bird has the same plundering habit as the preceding species and the same great powers of flight.

Family Phaethonidæ.

Webs slightly emarginate. Mid tail feathers greatly produced. Bill compressed, pointed.

*Genus Phaethon.***The Red-tailed Tropic-bird.***Phaethon rubricauda.*

Tropical Indian and Pacific Oceans.

General colour white, with a pink tinge; a black band on the sides of the head; short black band on the wing; middle tail-feathers very

long, the shafts and parts of the web next to them being black; the remainder of the webs scarlet. Total length about 36 inches, culmen 2.55-2.65, wing 12.6, tail 17-18.5, tarsus 1.2.

Lays on the ground or rock-ledges without any nest, usually on an island. The egg is pinkish-cream, marked with various shades of reddish-brown, and thickly covered with minute reddish-brown dots; it measures about 2.88 x 1.95 inch.

Often called by sailors the Boatswain bird.



"The Emu."

Tom Iredale.

Red-tailed Tropic-Bird (*Phaethon erubescens*) on Egg in Nesting-place, Sunday Island.

The White-tailed Tropic-bird.

Phaethon lepturus.

Tropical Atlantic, Indian, and Pacific Oceans.

General colour white, very similar to *P. rubricauda*; bill yellow; four outermost primaries with the outer web black to within an inch and a half of the extremity.

Nest on the bare ground, usually in hollows or under rocks on islands. The single egg is greyish-pink, thickly freckled with reddish-brown dots; it measures about 2.06 x 1.51 inch.

Family Pelecanidæ.

Bill long and flattened, with external nostrils.

Genus Pelecanus.

Bill very long, broad and flat, a median bar all along. A very large distensible gular pouch. Wings large. Tail small.



From life.

H. P. C. Ashworth.

Young Pelicans: *Pelecanus conspicillatus.*

The Pelican.*Pelecanus conspicillatus.*

Australia, Tasmania, and New Guinea.

General colour white; scapulars, shorter upper tail-coverts, and tail black; gular pouch and mandibles yellowish white. Total length about 60 inches, culmen 17, wing 24, tail 7.5, tarsus 5. In breeding plumage there is a crest on the back of the head and neck.

An untidy nest on the ground with very little lining, what there is being composed of twigs and herbage. Usually on an island or narrow spit of land, either inland or on the coast.

From two to three eggs are laid, chalky-white in colour, and they measure about 3.62 x 2.31 inch.

The Pelican is a mighty fisherman; living only on fish. With his long boat-shaped furrowed bill he catches the fish in plenty, stowing them away in his basket, an enormous pouch in the lower jaw, which is drawn up when the bird is at rest, but is capable of enormous distension so as to carry a big catch. The feet are widely webbed, all the toes being connected, as in the Cormorants, to form a powerful paddle. The wings are large and strong, so that the birds are able to travel great distances and to reach the lakes of the interior. The "Pelican of the Wilderness" occurs in Australia as in Syria. In the early days they were so plentiful in the interior that Captain Sturt recorded that he found the channel of a river from 70 to 80 yards broad literally covered with Pelicans, and that they were in such numbers on the Darling as to be quite dazzling to the eye.

ORDER ACCIPITRIFORMES. Eagles and Hawks.

Bill strong, stout at the base, the tip bent at right angles. Feet strong, armed with powerful talons. With no facial disc. Plumage compact.

There are no Australian Vultures, and Eagles and Hawks are rather poorly represented. Kites, Harriers and Goshawks are more abundant. The females are larger birds than the males.

Sub-order Accipitres.

Outer toe not reversible.

Family Falconidæ.

The head is covered with feathers, true feathers being always present on the crown.

Key to Sub-families.

Tibia and tarsus equal.	Accipitrinæ.
Tibia longer than tarsus.	
a. Hinder aspect of tarsus plated.	Buteoninæ.
b. Hinder aspect of tarsus with reticulate scales.	Aquilinæ.

Sub-family Accipitrinæ. Long-legged Hawks.*Key to the Genera.*

Hinder aspect of tarsus reticulated; ruff of plumes around the face.	Circus: Harriers.
Hinder aspect of tarsus plated; no ruff or disc.	
Bill strong; legs and toes short.	Astur: Goshawks.
Bill small; legs and toes slender.	Accipiter: Sparrow Hawks.

Sub-family Buteoninæ. Buzzards.

Genus Erythrotriorchis (Urospizias). See p. 175.

Sub-family Aquilinæ. See p. 176.*Key to the Genera.*

- A. Bill not toothed. Eagles and Kites.
1. Tarsus clothed with feathers all round to base of toes.
Tail wedge-shaped when closed. Uroaëtus.
Tail nearly square. Eutolmaëtus (Nisaëtus).¹
 2. Tarsus bare on lower portion.
Nostrils oval vertical with bony margins. Haliaëtus.
Nostrils circular with bony margins. Haliastur.
Nostrils oblique: Kites.
Tail forked. Milvus.
Tail nearly square. Lophoictinia.
Tail rounded.
Tarsus mostly bare in front. Gypsoictinia.
Tarsus mostly feathered in front. Elanus.
- B. Bill toothed: Falcons.
- Nostrils oblique ovals; head crested behind. Baza.
- Nostrils circular.
- Outer toe longer than inner (measured without claws). Falco: Falcons proper.
- Outer and inner toes equal.
- Distance between tips of primaries and tips of secondaries not more than half length of tail. Hieracidea.
- Same distance greater than half length of tail. Cerchneis: Kestrels.

The Spotted Harrier.*Circus assimilis.*

Eastern Australia from New South Wales to Cape York; Celebes.

Crown of head, cheeks and ear-coverts bright brick-red; facial ruff pale bluish grey; back grey; primaries with brown tips, secondaries barred with brown; tail ashy, tipped with white, and crossed with bars of black; under surface rufous, *sprinkled all over with rounded white spots*, the under wing-coverts and axillaries similarly coloured. Legs and iris yellow; bill blue at base, black on culmen and at tip. Total length of male 22 inches, of female 24.5.

This beautiful Harrier is abundant over the plains, and on the flats between the hills in mountainous districts. Gould describes it as flying "lazily over the surface of the plains, intently seeking for lizards, snakes, small quadrupeds and birds;

and, when not pressed by hunger, reposing on some dried stick, elevated knoll or stone, from which it can survey all round."



Spotted Harrier: *Circus assimilis*. *Australian Museum.*

Nest open, constructed of dried sticks and twigs, and placed on the ground on the scrubby crowns of low hills. Eggs pure white, 2 inches by 1½.

The Harrier.*Circus gouldi.*

South and Eastern Australia to 20° N. lat., New Zealand, New Caledonia and Fiji.

Head and all upper surface rich dark brown; facial ruff rufous buff streaked with dark brown; tail ashy grey tipped with white, not barred; under surface creamy white, with pale rufous streaks; legs greenish white, feet yellowish buff; iris yellow; bill dark brown, bluish at base. Not quite as large a bird as the preceding.

Frequents lagoons, backwaters, swamps and marshes feeding on the smaller mammals, birds and reptiles. Flies with the typical Harrier flight, slowly and heavily, and near the ground. Nest and eggs as in preceding.

Genus Astur. Goshawks.

Key to the Species. Adult Plumage.

No red nape-band. Thighs uniform white.	
Upper surface and tail ashy grey.	<i>A. cinereus.</i>
Whole plumage pure white.	<i>A. novæ hollandiæ.</i>
Sides of neck rufous, forming an indistinct and partial nape-band. Under surface and thighs barred with white and rufous.	
Back dull ashy brown.	<i>A. approximans.</i>
Back bluish ashy grey.	<i>A. cruentus.</i>

The Grey Goshawk.*Astur clarus (cinereus).*

Australia and Tasmania.

The breast is white, with numerous, but indistinct dull ashy bars, which disappear altogether on the abdomen. Length of male 16.5, of female 20 inches.

The White Goshawk.*Astur novæ-hollandiæ.*

Australia, south and east, Tasmania.

For years the White Goshawk was a puzzle to naturalists. It seems extraordinary that a diurnal bird of prey, whose allies are all of varied plumage, should be of so pure a white, the beak only black and the legs and cere yellow. Was it an albino variety of the Grey Goshawk, which has much the same dimensions? The irides are of a pale carmine. But the bird was

found to breed true. Cuvier hazarded the view that it is an albino race which has become permanent. To this we have at least a parallel in the White Fantail Pigeon. But what were the causes of the permanence? See *Addenda*.

The Lesser White Goshawk, *A. leucosomus*, is a northern bird with similar white plumage. It is much smaller, the male measuring only 12.3 inches. It is found in the Cape York area, and in New Guinea and adjacent islands.



White Goshawk: *Astur novae-hollandiae*. *Australian Museum.*

The Goshawk.

Astur fasciatus (approximans).

Australia and Tasmania, New Caledonia, Norfolk Island.

One of the commonest and most widespread of our birds of prey. Male 15 inches, female 20.

It is a bold, powerful and rapacious bird, feeding on small and young birds, small mammals and reptiles, and a terror to young poultry. Mr. Keartland found Goshawks several times in Central Australia, especially where there was any permanent water with vegetation around the margin. Such places not only afford shelter to the frogs on which the bird delights to feed, but also prevent the young waterfowl seeing its approach until

it swoops amongst them, and seizes a victim from the surface of the water. Gould says that the nest is usually built on a large swamp-oak (*Casuarina*) growing on the side of the creek, but



From life.

Goshawk.

D. Le Souëf.

occasionally in a Eucalypt and away from water. It is of large size in proportion to the birds. It is built of sticks and lined with gum leaves. The eggs, generally 3, bluish-white smeared over with occasional buff stains as though soiled with weak

coffee; 1.8 by 1.5 inches. The male Goshawk is very nearly of the same size and colouring as the female Sparrow Hawk, but, as Mr. R. B. Sharpe has pointed out, may be distinguished from it by the longer tail, 8 inches or over, while that of the Sparrow Hawk is a little over 7 inches.

The Western Goshawk.

Astur cruentus.

Confined to Western Australia.

Very near to the preceding, but with bluer back, and with the rufous cross-bars on the breast narrower, so that the white appears the ground colour. It is a somewhat larger bird.

It builds a large nest of sticks placed on the horizontal limb of a gum-tree.

The Sparrow Hawk.

Accipiter cirrhocephalus.

Australia and Tasmania.

Male, 12.3, female 14.5 inches. In the young the plumage is striated, the longitudinal spots widening out into bars in the adult.

Handsome, bold and aggressive birds, extremely rapid and graceful in flight, skimming over the surface of the ground, circling in the air or dashing between the branches of the forest trees, wonderfully sure in aim, whether the quarry be the quail or lizard on the ground or the birds in the trees. The female is much the more powerful, but is not more active or swift than her mate. Even larger birds than itself fall before it. Mr. Keartland heard of one which decapitated a wild duck at a blow, and of another which actually killed a Bustard.

The nest is large, of dried stick lined with fibres and leaves and placed on the fork of a tree, usually near a river or creek. The eggs, 3 in number, are bluish or greenish-white with sometimes spots or smears of buff. They measure 1.5 by 1.2 inches.

The Red Goshawk or Buzzard.

Erythrotriorchis (Urospizias) radiatus.

Eastern and Central Australia.

Both male and female 20 inches, the latter a little the larger. Above bright rufous, each feather with black centre and rufous margins; below deep rufous; under surface of base of wing ashy white; tail ashy brown above, ashy white below, crossed above and below with blackish-brown bars; iris wood-brown; feet white tinged with lilac; beak purple, flesh-coloured at base, black at tip.

A dweller in the interior, this sole Australian representative of the Buzzards, generally flies high in the air, soaring in large circles after the manner of the Eagle, the dark breast and large white mark at the base of the wing conspicuous from below. Its sight is keen, and it will be drawn from great distances by a freshly-killed wallaby or kangaroo-rat. The eggs white with irregular blotches of brown or lilac, 2.5 by 1.8 inches.

The Wedge-tailed Eagle.

Uroaetus (Aquila) audax.

Australia and Tasmania.

General colour of adult black, of the young rufous; bill yellowish with black tip; feet light yellow; iris hazel. Length 38 inches, wing 24 inches.

Mr. Gould killed an Eagle which weighed nine pounds, and had a spread of wings of six feet eight inches, and saw far larger individuals. This is by far the largest and most powerful of our *Raptors*, and though, perhaps with a democratic contempt for noble freebooters, it is known in most parts of Australia as merely the Eagle Hawk, it is in sober truth one of the very largest and finest of the Eagles of the world. It is equal in size to the North American White Headed Eagle, and larger than the famous Golden Eagle of Europe. Gould, who was familiar with both birds, writes: "All that has been said concerning the courage, power and rapacity of the Golden Eagle applies with equal force to *Aquila audax*; but the lengthened and wedge-shaped form of its tail gives to the Australian bird a far more pleasing and elegant contour." The spread of the wings has been known to reach ten feet. The Eagle is a wide ranger, easily covering long distances. His centre of observation is aloft, and here his movements are free and elegant. He sails easily from mountain ridge to mountain ridge high over the deep intervening valley, or circles and soars over the wide plains, with keen eye eager to discern any live quarry or dead carcass which may be in the neighbourhood. The large Bustard or the Wallaby, lambs or young goats, are the game he prefers. Mr. Keartland on one occasion witnessed a pair of Eagles hunting a young wallaby from rock to rock on the side of a range, until at last it was secured and carried off. But the

Eagle condescends to the habits of a Vulture when a dead carcass presents itself, even if in a state of putridity, numbers collecting from afar as do the Vultures. Mr. Gould saw no less than thirty or forty assembled together around the carcass of a dead bullock, some gorged to the full, perched upon the neighbouring trees, the rest still in the enjoyment of the feast. Advantage of this habit is taken by sheep owners who wish to destroy the marauders. A dead beast is treated with strychnine, and left to attract the dingoes and eagles, many falling victims to the poison. In Riverina the advent of the lambing season is marked by the regular appearance of Eagles, which are rarely seen at any other time. The pastoralists resort to wholesale poisoning in order to keep them in check, and thousands are said to be destroyed annually, yet they appear the next season as numerous as ever. These must have gathered from great distances, it is supposed from the fastnesses of the remote parts of the Australian Alps, but this is uncertain. These birds destroy many rabbits, and some pastoralists in consequence look on them with favour, and prohibit their destruction. The nests are very large, nearly flat, built of sticks and boughs, and situated on the most inaccessible trees. It usually requires much skill in climbing, and much courage, in the collector who would win the eggs, for the Eagles will valiantly defend their home from the intruder, fiercely attacking him with their powerful beak and claws. The eggs are two in number, clouded with large blotches of pale-purple, and small specks and dashes of yellowish umber-brown on a stone-coloured ground, and measure 3 inches by 2.4 inches.

The Little Eagle.

Eutolmaëtus (Nisaëtus) morphnoides.

Probably all over Australia in the interior.

Length 21.5 inches, wing 15. A much smaller and rarer bird than the preceding. Face and crown of head blackish-brown, tinged with rufous, giving it a striated appearance; back brown; under surface rufous, with a stripe of black down the centre of each feather.

Mr. Keartland saw several in the Centre. Mr. Cowle obtained the egg from a large stick nest in a desert oak tree (*Casuarina*), from which he flushed the bird. Gould found a nest in a high

gum tree near the Hunter River, also containing only one egg, upon which the bird had been sitting for some time. The egg is bluish-white with very faint traces of brown blotchings; 2.2 x 1.8 inches.

The White-bellied Sea-Eagle.

Haliaëtus leucogaster.

Australia and Tasmania, on the borders of small bays and inlets of the sea, or around lakes and inland streams.

Length of male 28 inches, wing 22.3; the female slightly larger. The head and neck and all the underparts white; the upper ashy grey, the tail black, the terminal third white; bill leaden blue; feet yellowish white; iris olive-brown. The young, of a general brown colour. The bird has a wide range, from India and Ceylon to Western Polynesia.

The Sea-Eagle is almost invariably seen in pairs, and would appear to be permanently mated; each pair inhabiting a particular bay or inlet, to the exclusion of others of the same species. They may still be seen occasionally about the heads of some of the arms of the Sydney harbour. They do not plunge into the water, diving after fish as does the Osprey, but while able to seize fish swimming near the surface or leaping from the water (in Middle Harbour mostly mullet), they depend mainly, says Gould, on dead fish or other animals cast up on the shore, perhaps also living molluscs and other marine invertebrates. Gould found that most of the small islands in Bass Strait were inhabited, each by a pair of these birds, which subsisted largely on the Petrels and Penguins which resort to these islands to breed.

On the mainland the huge nest is constructed on a fork of a lofty tree; on the islands, where no trees can be found, flat on the ground. The materials of a single nest would fill a cart. The eggs are two in number, of a dull white, faintly stained with reddish-brown, and measure 2.75 x 2.25 inches.

The White-headed Sea-Eagle.

Haliastur (indus) girrenera.

Northern and Eastern Australia, extending through New Guinea to the Moluccas and Celebes.

Length of male 20 inches, of wing 14.2 inches; of female, a little greater. Head, neck, and breast snowy white; the rest of the body bright maroon, the tail broadly whitish at the tip. The young of a general maroon-brown colour. Our bird is distinguished from its Indian and Javan allies by the absence of black shaft-stripes from the feathers of the head and neck.

Very common on the North and North-east, taking up its abode in the most secluded parts of bays and inlets, catching the fish which may come near to the surface, but rarely plunging into the water.



Young White-bellied Sea Eagle: *Haliaëtus leucogaster*.
H. Nielson, Mackay.

Gilbert says that it breeds in the Coburg Peninsula in July and August. He found two nests each of which contained two eggs. The nests were formed of sticks, with fine twigs or grass as a lining; about two feet in diameter, and built in a strong

fork of a dead part of a tree. Both were about thirty feet from the ground and about 200 yards from the beach. The eggs are of a dirty white colour, the surface spread over with hair-like streaks forming hieroglyphics and with minute reddish-brown dots, and measure 2.2 x 1.7 inches.

The Whistling Eagle.

Haliastur sphenurus.

The whole of Australia and New Caledonia.

Length 22 inches, wing 16.6 inches. Head and neck sandy coloured, with fulvous streaks; tail uniform ashy brown. Young paler.

The Whistling Eagle is generally seen in pairs, and may be met with in almost any kind of country, and in any part of the Continent. It is incessantly hovering over the harbours and sides of rivers and lagoons, and, even in the Centre, Mr. Keartland saw a pair or more at every water-hole. Its flight is easy and buoyant, and it frequently soars to a high altitude, and, whether on the wing or at rest, it utters its peculiar shrill whistling cry, from which the common name is derived. It devours birds, small mammals, lizards, fish and has a special weakness for caterpillars. Hence, if there be a plague of these vermin^s the advent of the birds may be expected with some confidence.

The nest is composed of sticks and fibrous roots, and built on the topmost branches of the swamp-oak or other tree growing by the sides of the creeks or rivers. The eggs, usually two, are of a bluish- or greenish-white, with few obscure brown markings, appearing as if beneath the surface of the shell.

The Kite.

Milvus affinis.

Australia and Malaysia.

Length 20 inches, wing 16.5 inches. Blackish-brown above, under surface dull rufous brown; head paler brown, streaked with blackish; bill blackish; feet yellow; iris brown.

The Kites are more venturesome in the presence of man than any of the other birds of prey. They will dart down and seize the bird shot by the sportsman, or scraps of meat or flesh which he may throw away, although the gun is still in his hand.

Mr. Kcartland states that as a little girl was picking a bone, while she sat on the doorstep of the house, a Kite swooped down and seized the bone, in the struggle inflicting several wounds on the child's face. It was a constant attendant of the camps of the aborigines, and haunts stockyards and stations, looking to feast on scraps of meat after cattle are killed, and will fearlessly enter the farm-yard of the selector, and play frank havoc amongst the young poultry. Its flight, says Gould, is much less protracted and soaring than that of its European congener; the bird is much more arboreal, skulking about the forest after the manner of the true Buzzards. The usual stick nest is placed high in a tree. The eggs are less round than in most Falconidæ, of a warm fleshy-white, moderately blotched with reddish-brown, and with a few bluish-grey blotches appearing as if under the surface of the shell, and measure 2.25 x 1.6 inches.

The Square-tailed Kite.

Lophoictinia isura.

The only representative of the genus, which is confined to Australia, and is not found in the extreme north or extreme south of the continent.

Length 19 inches, wing 18.1 inches. Above blackish-brown, below rufous; head distinctly crested, dark rufous, streaked with black down the axis of the feathers; bill greyish at base, blackish at tip; feet greyish white; claws black; iris pale yellow.

A much rarer bird than the preceding, and, notwithstanding the absence of the fork in the tail, a true Kite in all its manners, soaring aloft with great speed and freedom of movement. Gould states that it feeds on caterpillars, reptiles and young birds; Gilbert, in Western Australia, says the food is chiefly birds. Makes the usual stick nest in a high tree; this is lined with leaves and the inner bark of the gum-trees; the eggs, two in number, buffy-white, freckled or blotched with reddish-brown, and measure 2 x 1.6 inches.

The Black-breasted Buzzard.

Gypoictinia melanosternum.

Interior of Australia generally is the home of this bird, but they are not plentiful anywhere.

The head and breast are black, the upper parts brown; tail rounded, outer feathers shorter than middle ones; the wings reach to the end of the tail. Total length 24 inches, culmen 2.45, wing 19, tail 8.5, tarsus 2.68.

They make a bulky nest, and their two eggs are thickly marked with reddish markings, sometimes fine and sometimes coarse and on a white ground. They measure about 2.55 x 1.84 inches.

The Black-shouldered Kite.

Elanus axillaris.

The Letter-winged Kite.

Elanus scriptus.

Neither of these birds is found in Tasmania. Both are confined to Australia, the latter not occurring in the hotter regions to the north.

The Black-shouldered Kite has a length of 13 inches, wing 11.5; is light silvery grey above, pure white below, with a large black patch on the under wing-coverts. The Letter-winged Kite has a length of 12 inches, wing 11.5; ashy white above, whiter below, with a black V-shaped mark on the under surface of the wing, following the line of the bones from the body to the pinion, so that, seen from below, the mark takes the form of the letter W, the two halves separated by the body. Both are exceedingly graceful when flying and circling aloft, but have a heavier flight near the ground. The bill and legs are slighter, and the birds are thus more adapted for the capture of small prey such as insects or small reptiles.

Mr. Keartland observed *E. scriptus* in the Centre searching for lizards and small rats amongst the saltbush and porcupine grass. He noticed the birds hunting mostly in pairs. Mr. White observed them in great numbers on Cooper's Creek, always in companies of from ten to thirty in number. The black marks under the wings are always conspicuous when the birds are seen from below. The stick nest may be lined with ejected pellets of fur, and contains a clutch of four or five eggs, white with dark-chocolate blotches and smears, those of *E. scriptus* easily removed by wetting. In both they measure 1.75 x 1.3 inches.

The Crested Hawk.

Baza subcristata.

North, North-east and Central Australia.

Length 17 inches, wing 13.5 inches. The bill with two distinct teeth. Head and neck ashy-grey, with a small occipital crest of black feathers; rest of upper surface brown; under surface greyish white, the breast banded alternately with buffy white and chestnut-brown.

Soars high over the plains. The egg is pure white, and measures 1.75 x 1.4 inches.

Genus Falco.

Of true Falcons Australia possesses four, two larger, *F. subniger* and *F. melanogenys*, and two smaller, *F. hypoleucus* and *F. lunulatus*. Of these Gould compares the Black-cheeked (*melanogenys*) to the European Peregrine Falcon, the Grey (*hypoleucus*) to the Ger-falcon, and the Little Falcon (*lunulatus*) to the Hobby or Merlin. All are adapted to the "gentle sport" of falconry, being endowed with great and rapid powers of flight, and with courage and strength to attack and carry off birds much larger than themselves. The females are the larger and more powerful birds.



From life.

Black-cheeked Falcon: *Falco melanogenys*.

Melbourne Zoo.

The Black-cheeked Falcon.*Falco melanogenys.*

Tasmania and Australia, through the Moluccas to Java.

Length of male 15 inches, wing 12 inches; of female 16.5 inches, wing 13.3 inches. Head, face, cheeks and ear-coverts deep black; upper surface mostly bluish-ashy, barred all over with blackish; throat and upper breast creamy buff, rest of under surface buffy white, closely but narrowly barred with black; thighs transversely barred; bill greenish at base, black at tip, under mandible deep orange; feet yellow; iris dark. The young have the breast longitudinally striped, instead of barred, as in the Peregrine Falcon.

This fine Falcon hunts over steep rocky cliffs and gullies, especially in the neighbourhood of water, the prey being chiefly wild Duck of various species. A pair will hunt the same district the year through. The eggs are two in number, of a buff ground-colour, but marbled all over with deep reddish-chestnut

blotches. They measure 2.2 x 1.6 inches. They are placed in a crevice of a precipitous cliff, no nest being constructed. Instances, says Mr. Campbell, have been known of their depositing the eggs under cover of a tussock of grass, on a plain. In fact many of our Raptores adapt their nesting habits to circumstances, if the natural surroundings are not favourable.

The Grey Falcon.

Falco hypoleucus.

Australia except the South-east.

Length of male 12 inches, wing 10.6; of female 15 inches, wing 12.5 inches. Above ashy, the feathers with blackish shaft-stripes; head darker and more bluish; under surface white; thighs uniform whitish, not barred; bill yellow at base, black at tip; feet orange yellow; iris dark brown.

A very rare bird. Mr. Keartland observed them, always near the ranges of the Centre, flying slowly along in search of prey, probably the small marsupials. They are strongly built for their size, and show the fierceness of the race. Shell of egg smooth, the whole of the ground-colour obscured by minute dots and freckles of rusty-red, 2 inches x 1.5. (Ramsay).

The Black Falcon.

Falco subniger.

South-eastern Australia.

Length of male 17 inches, wing 14.3; of female 19.5 inches, wing 15.8. Everywhere dark brown merging into black; thighs uniform sooty-brown, like the breast; bill lead colour; feet leaden yellow; iris dark brown.

A very rare bird, known only from a few examples.

The Little Falcon.

Falco lunulatus.

Australia and Tasmania, Flores.

Length of male 11.5 inches, wing 9.7; of female 13.5 inches, wing 10.5. Forehead and lores white; upper surface slaty blue; throat white; under surface dingy rufous; thighs uniform rufous.

Mr. Keartland writes: "This is one of our smallest and also boldest and fiercest hawks. Strongly built, and furnished with true Falcon bill, legs and talons, I have several times seen them kill and carry off birds heavier than themselves. When hungry

they are not at all particular whether it is a finch or a pigeon. Owing to their rapid flight they seem to be able to overtake any other bird on the wing. They were found in many places (in the Centre), but especially at rock-pools and waterholes, where



Australian Museum.

Little Falcon: *Falco lunulatus*.

no doubt food was most plentiful. At one pool a pair dashed into a flock of finches, seized a bird each, flew away, and in five minutes returned, appearing as if by magic, and repeated the operation." Unlike our other Falcons this species builds a large nest, as large as that of a crow, in a lofty tree. It is composed of sticks, and lined with bark and soft materials; the eggs two or three, light-buff, blotched and marked all over with dark-buff, 1.8 inches x 1.3.

The Striped Brown Hawk.

Hieracidea berigora.

The Brown Hawk.

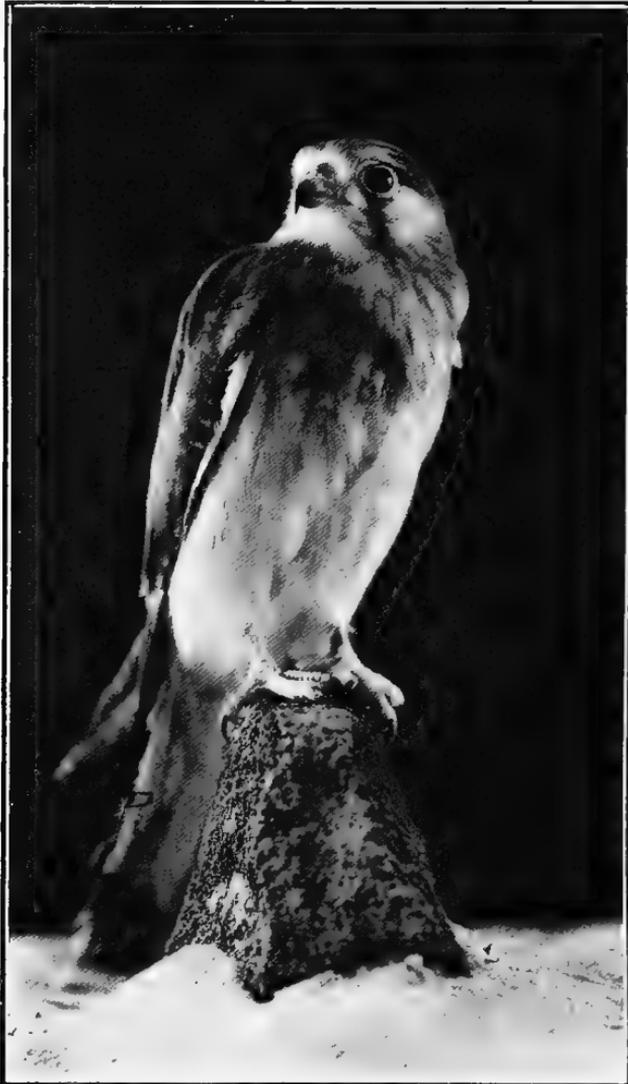
Hieracidea orientalis.

The Brown Hawk all over Australia and Tasmania; the Striped or Western Brown Hawk in South Australia, Central and West.

There is but little difference in size or plumage. Length of male 15.5 inches, wing 13; of female 17, wing 14. Both are brown above, the Striped Hawk more sandy; the under surface of *berigora* is creamy white, with fine brownish shaft stripes, and the cere is pale yellow; the under surface of *orientalis* is creamy buff, the sides brown, and the cere is blue-grey. The plumage varies much with age.

These Hawks are less fierce and daring than the Falcons, but by no means leave the poultry-yards immune, and small birds and quadrupeds are eagerly pursued. Gould found the Brown Hawk congregating in hundreds, in a district where a caterpillar plague was raging. The birds battered on the pest. In the Centre, when some of his party fired the spinifex

grass, Mr. Keartland says that, as the small marsupials, lizards and mice were disturbed by the flames, in a few minutes the



From life. Melbourne Zoo. D. Le Souëf.
Kestrel Hawk: *Cerchneis cenchroides*.

Brown Hawks appeared in numbers, and dashed through the dense smoke, seizing their prey as they darted from one tussock to another. Gould says that the Kite similarly hovers over the

smoke of bush fires, watching for the tenants of the forest cruelly ejected by the flames. The nests are as large as that of a Crow, and placed usually aloft in the trees, composed of sticks and lined with bark and leaves, and containing from two to four eggs. These are more oval than with the generality of Falcons, buff-white with blotches and freckles of reddish-brown, very irregularly disposed, so that the eggs of the same clutch may be quite different in their markings. They measure 2.1 x 1.5 inches.

Mr. C. French, junr., describes finding a nest of the Chestnut-eared Finch underneath and attached to a Brown Hawk's nest. It contained six fresh eggs. The Hawk's nest was occupied by two or three young ones nearly ready to fly.

The Kestrel.

Cerchneis cenchroides.

Australia generally.

Length of male 11.5 inches, wing 9.3; of female a little greater. Above pale rufous, almost unspotted; tail blue-grey, barred with black and tipped with white; head rufous grey, with black shaft-stripes; under surface pale tawny, breast and sides with black streaks; abdomen and under tail and wing coverts whiter; feet orange; iris dark.

Found among forest or scrub, the Kestrel is an active and graceful little Hawk, rising in the air and poising and circling with easy buoyancy; the prey lizards or insects. The eggs are placed in a spout or hole of a tree, or hole in a cliff, are four in number, freckled all over with blotches and minute dots of rich reddish-chestnut on a paler ground; length 1.5, breadth 1.25 inches.

Sub-order Pandionides.

Outer toe reversible.

The Osprey.

Pandion leucocephalus.

Tasmania, Australia, except Centre, New Guinea, Moluccas.

Length 20 inches, wing 16 to 17 inches. Crown of head, nape, throat, abdomen, thighs and under tail coverts white; sides of neck dark brown; back, wings and tail clove-brown, each feather of the back with a narrow circle of white at its tip; bill black; feet bluish white; iris primrose yellow to bright orange.

Found on most unfrequented headlands and islands, and on the borders of rivers and lakes. It feeds on living fish, which it procures by swooping down from its aerial outlook and plunging into the water with so true an aim that it rarely misses its object. It carries the fish off and devours it in its usual resting spot. Disturbed on a promontory it puts out to sea with the confidence of an ocean liner. When near the water, however, its flight is heavy and flapping. The nest is an enormous structure, which may be 15 feet in circumference. It is usually placed on the summit of a rock, but occasionally in a high tree, always near the water. It is composed of sticks



A. H. E. Mattingley.

Osprey's Nest, showing Eggs, and Coast of Kangaroo Island.

and branches, and often lined with seaweed. The eggs, two in number, yellowish-white, boldly spotted and blotched with deep, rich reddish-brown, which colour in some specimens is so dark as to appear nearly black. They measure 2.4 inches x 1.75.

ORDER STRIGIFORMES. Owls.

In the Owls there is an evident facial disc; the plumage is soft and fluffy, and the outer toe is reversible.

Families and Genera.

Bubonidæ.—Hinder margin of sternum with clefts; furcula free from sternum; inner margin of claw on middle toe not serrated; greater part of facial disc below the eye.
Genus Ninox.

Strigidæ.—Hinder margin of sternum without clefts; furcula attached to the keel; inner margin of claw on middle toe serrated; eye near the middle of the facial disc, parting of feathers between the eyes. *Genus Strix.*

Family Bubonidæ. Owls.

The Owls of this family, though they hunt chiefly by night, are partially diurnal, the large yellow or brown eyes being capable of facing the daylight. The Australian species are all assigned to the single genus *Ninox*. The head is smoothly rounded with no tufts about the ears. The general colour is brown of some shade, variegated with all manner of flecks, spots and bars of lighter and darker, the distinctive mottling and marbling of the species being difficult to convey in words. The frontal patch of stiff feathers which helps to separate so completely the two halves of the facial disc in the Barn Owls is quite wanting. The plumage of the nestlings and young birds is different from that of the adults. All lay their eggs in holes in trees, and the eggs are white.

A.—Breast streaked, each feather broadly centred with darker colour.

The Boobook Owl.*N. boobook.*

Australia generally.

Length 16 inches, wing 10.3 inches. Above light brown, the head spotted all over with fulvous, the hind neck very thickly mottled with buffy white spots, back and tail reddish-brown, the latter with six or seven lighter bars, which become buffy white beneath the tail; under wing coverts with lighter brown bars; under surface fulvous streaked.

The bird is mostly abroad during the night, when it gives out the melancholy More Pork—More Pork cry which can be heard from far in the stillness. The cry of the Boobook is, indeed, as characteristic of the Australian forest by night as the laugh

of the great Kingfisher is by day. The bird may, however, be seen on the wing in the daytime, in pursuit of small birds and cicadas. It breeds in the holes of the large gum-trees, laying



From life.

Boobook Owl: *Ninox boobook*.

Melbourne Zoo.

its three white eggs on the decayed wood without forming any kind of nest. The eggs are unusually round, and measure 1.4 x .9 inches.

The Marbled Owl.*N. ocellata.*

Takes the place of the preceding in North and West Australia.

Smaller, length 13.5 inches, wing 8.6 inches. More rufous, and the under wing-coverts uniform fawn-coloured.

The Spotted Owl.*N. maculata.*

South-east Australia and Tasmania.

Length 13.5 inches, wing 8.9 inches. Upper surface chocolate-brown all mottled with white spots disposed in pairs on the feathers; tail brown, with six or seven paler bars; forehead white; under surface rufous everywhere mottled with white, the belly and flanks with large rounded white spots.

Lurid Owl.*N. lurida.*

Northern Queensland.

Much smaller than *N. boobook*, and has throat, upper portion of breast, axillaries, and under wing coverts with intense rufous colouring. Closely allied to *N. ocellata*. Wing 8.5 inches.

The Winking Owl.*N. connivens.*

Australia.

Length 21 inches, wing 12.5 inches. Above nearly uniform dark brown; tail brown, tipped with whitish, and with six other narrow bars of whitey brown; under surface dull white broadly streaked with brown.

The Western Winking Owl.*N. occidentalis.*

North-west Australia.

Like the preceding, but the upper surface lighter.

The Cape York Owl.*N. peninsularis.*

Cape York Peninsula.

Smaller than the Winking Owl, with rufous streaks on the under surface.

B.—Breast barred with brown.

The Powerful Owl.*N. strenua.*

Australia generally.

Length 24.5 inches, wing 15.9 inches. Above dark brown banded with pale; tail dark brown with seven lighter cross-bands; under surface white barred with brown; ear-coverts brown.

The largest of our Owls, and amongst the largest of our birds of prey, powerful, and fierce if molested. Gould compares the night cry to the bleating of an ox.



Australian Museum.

Chestnut-faced Owl: *Strix novae-hollandiae*.

The Rufous Owl.

N. rufa.

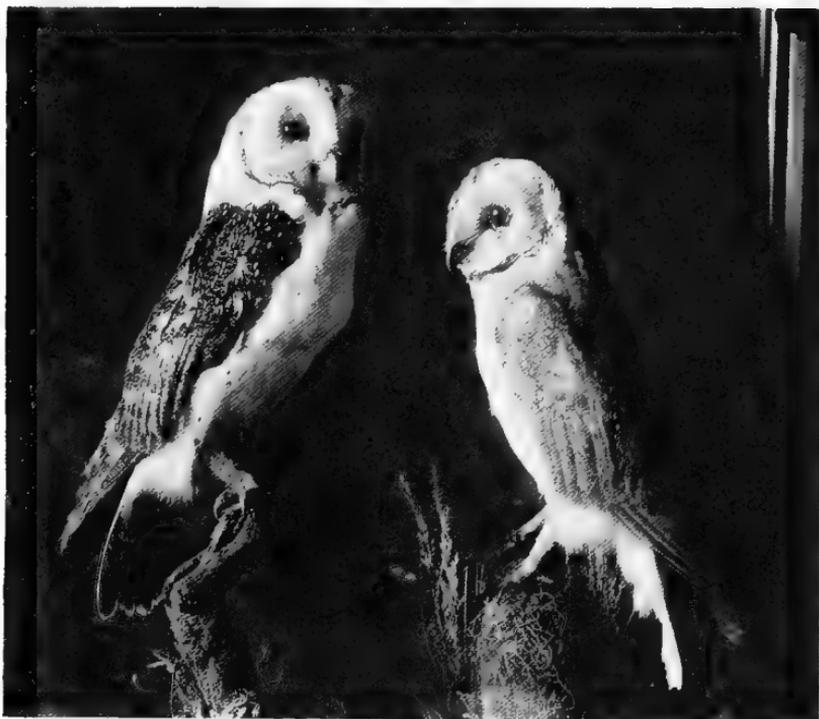
North Queensland and New Guinea.

Smaller, length 18 inches, wing 13.4 inches. The bars on the tail about eight; breast orange-buff barred with light brown. Ear-coverts black.

According to E. Hartert, the *Ninox humeralis* does not extend to Australia.

Family Strigidae. Barn Owls.

The Barn Owls are all strictly nocturnal and mostly silent birds, which prefer rats and mice, marsupial or otherwise, for their regular diet. The plumage is variable, and differs with age and probably also season and environment. The facial disc is more conspicuously developed than in the *Bubonidae*. They, except *S. candida*, breed in holes in gum-trees, and lay from two to four white eggs. The females are larger than the males.

Delicate Owl: *Strix delicatula*.

Technological Museum, Sydney.
Masked Owl: *Strix castanops*.

The Chestnut-faced Owl.*Strix novæ-hollandiæ.*

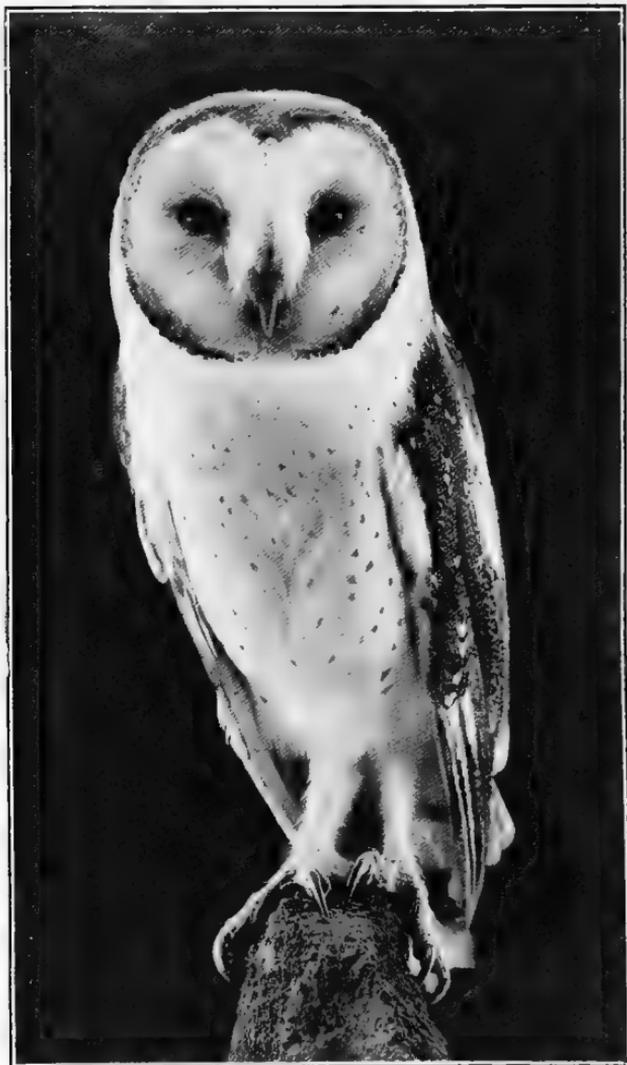
Australia, New Caledonia, Loyalty.

Above golden buff, mottled with black and white, or greyish black, spotted with white; tail crossed with six darker bands; under surface white or orange-buff, spotted with brown; facial disc purplish but margined with deep brown spots. Length of male 15 inches, of female 18 inches.

The Lesser Masked or Delicate Owl.*Strix delicatula.*

Australia, New Caledonia, Loyalty, New Hebrides.

A sub-species of *S. flammea*, the Old World Barn Owl. Above pearl grey, with faint zigzag grey mottlings; tail whitish, with brown vermiculations, crossed with four brown bands; under surface pure silky white, with a few spots on the sides of the body and the abdomen; facial disc pure white, margined with buff. Length 13 inches, wing 11 inches.



From life. Melbourne Zoo. D. Le Souëf.
Chestnut-faced Owl: *Strix novaehollandiae*.

The Masked Owl.*Strix castanops.*

Tasmania.

A sub-species of the Chestnut-faced Owl. Above chocolate brown varied with golden buff; tail dark brown, crossed with six bars of golden buff; under surface golden buff with blackish spots; facial disc deep chestnut becoming deeper at the margin, and encircled with black. Length 15 to 20 inches, wing 14.8 inches.

The Sooty Owl.*Strix tenebricosa.*

Eastern Australia.

Above sooty brown with white spots; tail same colour but paler; under surface sooty-brown with white bars and diamonds; facial disc sooty grey, with dark brown plumes around the eyes. Length 13 to 16 inches, wing 10 to 12 inches. The rarest species.

The Grass Owl.*Strix candida.*

India and Burmah, Celebes, Philippines, North Australia, Fiji.

Above dark brown with minute white spots; tail buffy whitish, with four brown crossbars; under surface pure white, the breast spotted with brown; facial disc entirely white. Length 14.5, wing 13.3 inches.

This Owl nests on the ground, choosing a high tussock of grass, forming a bower in it, and laying its eggs on the few grass blades that have been trampled down. Eggs four, thick ovals, white, lustreless, 1.7 x 1.26 inch. The nest and eggs were discovered by Mr. J. A. Boyd of the Herbert River, Queensland. (North).

ORDER PSITTACIFORMES.

Parrots and Cockatoos.

Feet adapted for climbing, two toes in front two behind (zygodaetyl), covered with plates. Bill short and very stout, strongly hooked, and furnished with a fleshy cere.

The Parrots and Cockatoos are renowned for their brilliant and variegated plumage, always conspicuous in the bush by their striking colours and calling attention by their shrill screams. Australia has a long list of varieties, varying in size from the large Black Cockatoo down to the little affectionate Love-birds. All colours are in evidence, black, white, red, yellow, blue and

green. The staple food is grain and fruits, and in consequence the birds are easily maintained in health in captivity, and are the great feature of our bird shops. From ancient times these birds have been made household pets, and have endeared themselves by their clever gymnastic performances, and the wonderful faculty of acquiring human speech. Thus the Roman satirist, Persius, asks—

Quis expedit psittaco suum $\chi\acute{\alpha}\iota\rho\epsilon$,
Picasque docuit nostra verba conari?

(Who first extracted from the Parrot his Halloo, and taught Magpies to attempt our speech?) Which seems to show that Greek and Latin were as handy to the birds as is back-blocks English. Few Parrots indeed are such experts as was a bird of a friend of ours, which had been brought from Mexico, and was so particular in his conversation that he sounded his h's before visitors who sounded theirs, and politely dropped them if he noticed that that was the custom of those who came to see him. Probably he was accustomed to the niceties of Spanish pronunciation. It is, however, astonishing to hear the vocabulary of some of our better talkers, as the White Cockatoo, the Corella, and the Galah. A bird kept for many years at Tom Ugly's Point, near Sydney, which had lost most of his feathers amused passers-by by calling out in the winter, with what seemed to be appropriate vehemence, "D—— it, it's cold." As one would not expect from the harshness of the wild cries, the parrot has apparently a good musical ear, and can be taught to whistle tunes which have some go in them. The White Cockatoo will become particularly tame and affectionate, and is exceedingly knowing in his ways and diplomacy. A Sulphur-crested Cockatoo has been known to live in captivity for 82 years.

Most species nest in hollow trees, on the dust and rotten wood at the bottom of the hole. Hence a certain expertness in climbing is needed in those who hunt the young birds for sale. Some of the Cockatoos build in crevices of cliffs or rocks. *Pezoporus* and *Geopsittacus* breed on the ground, and *Psephotus pulcherrimus* in deserted ant-hills. The eggs are always white.

The Black Cockatoos are generally found in the scrubs and high forest, and rarely thrive in captivity. They occur in pairs

or small flocks. Large limbs stripped of bark evidence the strength of their beaks in search of white grubs. The White Cockatoo and many of the smaller parrots usually feed in flocks. When they learn by experience the danger of the proximity of man, the Cockatoos are extremely wary, and difficult to approach. They learn to post sentries, when, say, the flock are engaged in raiding a newly-sown grain paddock. The vigilance of the sentries is truly surprising, for if danger is lurking about, on the slightest intimation of it, the watchers give the alarm cry, and the whole flock take flight. The sentries are relieved at intervals from the main body, who take up the watch while the others go to feed. Mr. Isaac Batey, who has had a long experience of bush life, and has closely observed these birds, says that they will, further, send out scouts for the purpose of investigating the food supply of a district. "Thus, when I see half a dozen cockatoos, or more often a single one, pattering to and fro, as if on a general ramble, I can safely predict that, provided the spies report favourably, before a week expires the grand horde will appear." It is strange indeed that the birds should submit themselves to labour alone for the good of the community, and that, with their limited number of natural notes, they should be able to communicate good or bad information to the main body. There can be no question of the very high degree of intelligence shown by these birds.

Parrots and Cockatoos.

Family Loriidae. Brush-tongued Parrots.

Key to the Genera.

- | | |
|---|------------------|
| Tail feathers gradually tapering to a point, more or less acute; predominant colour underneath and above green; tail feathers green with no yellow or red at the tip; tail moderate; the two middle tail feathers not very long. Shaft-streaks more or less blue on the head; breast generally tinged with red. | Trichoglossus. |
| Like <i>Trichoglossus</i> , only differing in colour; no blue shaft-streaks on the forehead, and no red colour on the breast; head yellowish or bluish green; bill orange-red. | Psittuteutes. |
| Predominant colour green, with yellow-green shaft-streaks on the neck and body; bill orange-red. | Ptilosclera. |
| First primary equal or little longer than the second and third; predominant colour green; bill black; dimensions small. | Glossopsittacus. |

The *Loriidæ* live almost exclusively on honey. Cockatoos and Parrots usually go in flocks, except when nesting, and feed mainly on grain, seeds and fruits. They all lay white eggs in hollows in trees, except the *Psephotus pulcherrimus*, which lays in certain mounds of the Termites or White ants. Those of the *Loriidæ* have no gloss, all the others have.

Genus Trichoglossus.

Key to the Species.

Middle of abdomen blue; head entirely blue.	T. novæ-hollandiæ.
Head and abdomen bright blue.	T. septentrionalis.
Band on the neck orange.	T. rubritorques.

The Blue-bellied Lorikeet.

Trichoglossus novæ-hollandiæ.

Back, tail and wings green, yellowish-green band on neck. Total length 12 inches, wing 6.7, tail 5.5, bill 0.7, tarsus 0.5. Two eggs are usually laid, and measure about 1.10 x .93 inch.

This bird, as well as the two following, usually lives in flocks, They fly very fast, and are noisy birds.

The Northern Blue-bellied Lorikeet.

Trichoglossus septentrionalis.

North-east Australia.

Very similar to *T. novæ-hollandiæ*, but of smaller dimensions, and the blue is brighter and purer. Iris red, feet black, bill red. Eggs measure 1.02 x .80.

These birds are very plentiful in the dense coastal scrubs.

The Red-collared Lorikeet.

Trichoglossus rubritorques.

Northern Australia.

Head and throat blue, breast orange-red, with blue cross band on hind neck, abdomen green, bill red. Total length 12 inches, wing 6.3, tail 6, bill 0.85, tarsus 0.65. Eggs measure about 1.09 x .85 inch.

These birds are plentiful in the scrub on the Daly River.

*Genus Psitteuteles.***The Scaly-breasted Lorikeet.***Psitteuteles chlorolepidotus.*

New South Wales and Queensland.

Band on the underside of the quills red, body green, with yellow-green streaks, crown and lores red. Total length 8 inches, wing 4.80, tail 3, bill 0.60, tarsus 0.45. The two eggs measure about 1.98 x .80 inch.

These birds are usually found in open forest country.

The Northern Scaly-breasted Lorikeet.*Psitteuteles neglectus.*

North Queensland.

This bird is only a sub-species of *P. chlorolepidotus*, there being no tangible difference, except being slightly smaller. The yellowish markings on the breast are easily distinguished, as well as the red under the wing when the bird is flying.

*Genus Ptilosclera.***The Red-crowned Lorikeet.***Ptilosclera versicolor.*

Northern Australia.

Crown and lores red, cheeks and a collar on the nape bluish, breast vinous red. Total length 8 inches, wing 4.80, tail 3, bill 0.60, tarsus 0.45. The eggs measure about .97 x .79 inch.

The birds generally obtain the honey from the flowers near the tops of the trees.

*Genus Glossopsittacus.**Key to the Species.*

Hind neck olive; cheeks with no red; larger: ear-coverts red like the forehead. *G. concinnus.*
 Smaller; ear-coverts yellow mixed with red like the forehead. *G. porphyrocephalus.*
 Cheeks, forehead and chin, all round the base of the bill, red. *G. pusillus.*

The Musk Lorikeet.*Glossopsittacus concinnus.*

Tasmania, Queensland, New South Wales, Victoria, and South Australia.

Green, forehead bright red, cheeks with narrow lines of bright green, sides of breast yellow. Total length 8.60 inches, wing 4.9, tail 3.50, bill 0.70, tarsus 0.51. The eggs measure about .98 x .82 inch.

These birds travel over wide areas of country in their search for food. They have a distinct musky perfume.

The Purple-crowned Lorikeet.*Glossopsittacus porphyrocephalus.*

West and South Australia, Victoria, and New South Wales.

Crown of head deep purple-blue; lores red; bend of wing light blue, body green, breast bluish. Total length 6.75 inches, wing 4.20, tail 2.50, tarsus 0.39. The eggs (4) measure .82 x .66 inch.

The Little Lorikeet.*Glossopsittacus pusillus.*

Queensland, New South Wales, Victoria, South Australia, and Tasmania.

Green, face red, hind neck olive-brown. Total length 6.60 inches, wing 4, tail 2.40, bill 0.45, tarsus 0.35. The eggs (4) measure .74 x .63 inch.

This is the smallest of the Lorikeets. They often hang on the branches head downwards in obtaining their food from the flowers.

*Family Cyclopsittacidae.**Genus Cyclopsittacus.**Key to the Species.*

- Wing 3.9 inches, frontal feathers red tipped with green, a few of the median ones bluish. C. coxeni.
- Smaller, wing 3.5 inches, broad patch of red on the middle of forehead, a broad red band across the cheeks in the male, female no red on cheeks, which are grey tinged with blue. C. maccoyi.

The Red-faced Lorilet.*Cyclopsittacus coxeni.*

New South Wales and South Queensland.

Green, blue patch on lower part of cheeks, upper part of the cheeks red, outer webs of the primaries and their coverts blue. Upper mandible bluish-black, under one whitish. Total length 7 inches, wing 3.9, tail 1.9, bill 0.65, tarsus 0.48.

The Blue-faced Lorilet.*Cyclopsittacus maccoyi.*

North Queensland.

Green, light below, red band on forehead bordered with blue above and below; lores, feathers round the eyes and upper part of cheeks blue; a purple blue band below the scarlet band on the cheeks, primary coverts blue. Total length 6 inches, wing 3.5, tail 1.7, bill 0.55, tarsus 0.4. The eggs measure about .85 x .68 inch.

The holes these birds nest in are generally very small.

*Family Cacatuidæ.**Key to Sub-families.*

- | | |
|------------------------------------|-----------------|
| Tail-feathers broad, not pointed. | Cacatuinæ. |
| Tail-feathers narrow, and pointed. | Calopsittacinæ. |

*Sub-family Cacatuinæ.**Key to the Genera.*

- | | |
|---|------------------|
| I. Cheek entirely naked; upper mandible much compressed, and much narrower than the lower mandible; feathers of the crest very long and narrow. | Microglossus. |
| II. Cheeks feathered, outer tail feathers shorter than the others; feathers of the crest broad; bill short, much curved and very high; general colour brown or black. | Calyptorhynchus. |
| III. Tail nearly even; general colour above and below grey; head and crest red in the male; cere feathered. | Callocephalum. |
| IV. General colour white or rosy-white, except in <i>Cacatua roseicapilla</i> , which is grey above, rose-colour on the head and below. Bill with the hook of the upper mandible of the ordinary size and nearly perpendicular. | Cacatua. |
| V. Bill with the hook of the upper mandible very long, slender and projecting forward. | Licmetis. |

*Genus Microglossus.***The Palm Cockatoo.***Microglossus aterrimus.*

North Queensland, New Guinea, and Aru Islands.

Slaty black, bare cheeks bordered with pale yellow. Total length 29 to 31 inches, wing 15, tail 10, bill 4.2, tarsus 1.1. Egg (generally one) measures 2.12 x 1.53 inch.

This is a very large bird, feeding on fruit and tender parts of the Palm Cabbage and lives in scrub covered country.

*Genus Calyptorhynchus.**Key to the Species.*

- | | |
|---|-------------------|
| I. A light patch on the ear-coverts. | |
| (a) Tail-band white. | C. baudini. |
| (b) Tail-band yellow. | C. funereus. |
| II. No light patch on the ear-coverts; tail-band red in adult males, more or less tinged with yellow, and crossed by narrow black bands in young birds and females. | |
| (a) Head and neck like body, greenish black; larger, total length 24 inches; crest longer, bill smaller. | C. banksi. |
| (b) Bill larger, much more powerful. | C. macrorhynchus. |
| (c) Smaller, total length 22 inches; crest shorter. | C. stellatus. |
| (d) Head and neck brown; upper parts glossy greenish-black. | C. viridis. |

The White-tailed Cockatoo.*Calyptorhynchus baudini.*

South-west Australia.

Feathers narrowly tipped with dull white. Total length 23 inches, wing 15.2, tail 14, bill 2.3, tarsus 1.2. Eggs (2) measure 1.78 x 1.27 inch.

Generally in forest country; their white lores and barred tails are conspicuous.



"The Emu."

A. H. E. Mattingley.

Black Cockatoo: *Calyptorhynchus funereus.*

The Yellow-eared Black Cockatoo.*Calyptorhynchus funereus.*

South Queensland, New South Wales, Victoria, South Australia, Tasmania, and King Island.

Feathers of the body narrowly margined with brown, ear-coverts dull yellow. Total length 24 inches, wing 18, tail 14, bill 2.1, tarsus 1.1. Eggs (2) measure 1.90 x 1.41 inch.

One egg is frequently larger than the other. Generally lays in a hole high up in a dead tree. They are fond of the grubs found in Wattle trees.

The Banksian Cockatoo.*Calyptorhynchus banksi.*

Queensland, New South Wales, Victoria, and South Australia.

The red band across all but the two central tail feathers. Total length 24 inches, wing 17, tail 13.5, bill 1.7, tarsus 0.8. Egg (1) measures 2.12 x 1.43 inch.

They commence nesting in July.

*Australian Museum.*Black Cockatoo: *Calyptorhynchus funereus.*

The Great-billed Cockatoo.*Calyptorhynchus macrorhynchus.*

Northern Australia.

Very similar to *C. banksi*, the female has the coloured part of the tail mingled with yellow and scarlet. Egg measures 1.86 x 1.33 inch. Often only one is laid; some eggs are longer than others.

The Red-tailed Cockatoo.*Calyptorhynchus stellatus.*

Central, West, and North-west Australia.

Very similar to *C. macrorhynchus*, but has smaller bill and more rounded crest. Bill in height 2.75, wing 14, tail 10.5, tarsus 0.7. Egg (one generally) measures 2.10 x 1.46 inch.

These birds are fairly plentiful in parts of Central Australia.

Glossy Cockatoo.*C. viridis.*

Queensland, New South Wales, Victoria, and South Australia.

The red band on the tail not across the two centre feathers. Total length 19.5 inches, wing 14, tail 10, bill 1.9, tarsus 7.5. Egg (usually one) measures 1.60 x 1.26 inch.

This is the smallest of the Black Cockatoos.

*Genus Callocephalum.***The Gang-gang Cockatoo.***Callocephalum galeatum.*

South Queensland, New South Wales, Victoria, Tasmania, and King Island.

All the feathers, except the primaries, secondaries and tail, narrowly margined with greyish-white. Total length 13.6 inches, wing 4.6, tail 5, bill 1.25, tarsus 0.7. The female has the crest grey. The eggs (4 or 5) measure 1.30 x 1.03 inch.

They usually feed on Eucalyptus and other seeds and usually go in pairs, and are not noisy birds; inhabit forest country and nest in holes very high up.

*Genus Cacatua.**Key to the Species.*

- I. Feathers of the crest narrow, with the slender point recurved at the end.
- (a) Crest sulphur-yellow; feathers white; wing from 13 to 15 inches; bare skin round eyes white. *C. galerita.*
- (b) Crest vermilion at base; yellow band in middle and white at the tip; cere feathered. *C. leadbeateri.*
- II. Feathers of crest broadened and not recurved at the end.
- (c) Total length 16 to 12½ inches; feathers of crest moderate; cere feathered; under surface white; lores stained with red; bare skin round eyes largely extended into the bare blue open space below. *C. gymnopsis.*
- (d) Bare skin round the eyes nearly circular. *C. sanguinea.*
- (e) Under surface rose-colour, upper surface grey. *C. roseicapilla.*

The White Cockatoo.*Cacatua galerita.*

Australia, Tasmania, King Island.

Bare skin round the eyes white. Total length 18-20 inches, wing 13-15, 7½-8½, bill 1½-2, tarsus 1-1.15. The eggs (2 or 3) measure 2 x 1.30 inch.

The birds in Northern Australia are usually smaller than those in the South. They are noisy birds, and sometimes destructive to newly-sown crops. They always have a sentinel when feeding on the ground.

The Pink Cockatoo.*Cacatua leadbeateri.*

Interior of Australia.

Forehead, sides of neck, head, breast and abdomen tinged with rose colour, very bright under the wings. Total length 16 inches, wing 11, tail 6.3, bill 1.3, tarsus 0.95. Eggs (2 to 4) measure 1.50 x 1.07 inch.

This beautiful bird is sometimes called the Major Mitchell Cockatoo or "Weejuggler," and generally goes in pairs.

The Bare-eyed Cockatoo.*Cacatua gymnopsis.*

Interior of Queensland, New South Wales, and South Australia.

Forehead stained with red, the feathers of the head, hind neck and abdomen stained with red at the base, quills of tail feathers pale yellow. Total length 16 inches, wing 11, tail 5, bill 1.26, tarsus 0.9. Eggs (4) measure 1.48 x 1.14 inch.

The Blood-stained Cockatoo.*Cacatua sanguinea.*

North-west and Northern Australia, Queensland, New South Wales, and South Australia.



Australian Museum.

Sulphur-crested Cockatoo: *Cacatua galerita.*

Base of the lores and sides of face stained with red; bare skin round eyes white. Total length 14 inches, wing 10, tail 5, bill 1.2, tarsus 0.95. The eggs (2—4) measure 1.45 x 1.08 inch.

These birds are closely allied to the foregoing species, and are generally found in the interior. During dry seasons when

surface-water is scarce, they assemble in flocks numbering many thousands at available water-holes. The noise at such places is deafening when they come to drink in the evening.



Australian Museum.

Pink or Leadbeater's Cockatoo: *Cacatua leadbeateri*.

The Rose-breasted Cockatoo (Galah).

Cacatua roseicapilla.

Australia generally.

Crown rosy white, upper surface grey, under deep rose colour. Total length 14 inches, wing 10.4-9.7, tail 5.2, bill 1.05 tarsus 0.85. Eggs (5 to 7) measure 1.37 x 1.08 inch.

These birds usually feed in flocks on the ground, eating succulent plants, roots and seeds. They generally peel the bark off the branch just round their nesting-hole, which makes the site conspicuous.



Long-billed Cockatoo: *Licmetis nasica*. Australian Museum.

Genus Licmetis.

Key to the Species.

Smaller; bare skin round the eyes smaller, light blue.
Larger; bare skin round the eyes broader and darker;
of a blue-lead colour.

L. nasica.

L. pastinator.

The Long-billed Cockatoo (Corella).*Licmetis nasica.*

Northern Territory, New South Wales, Victoria, and South Australia.

White, lores and a narrow frontal band red, the feathers of the head, neck and breast red at the base, under surface of wing pale yellow, bare skin round the eye light blue. Total length 15 inches, wing 11, tail 5, bill 1.95, tarsus 0.95. Egg 1.4 x 1 inch.

Like the other white Cockatoos they feed on the ground, generally on the thickened roots of plants, such as the native yam, and also dig up with their long bill and devour many thousands of the eggs of the grasshopper.

The Dampier Cockatoo.*Licmetis pastinator.*

West and North-west Australia.

Very similar to the foregoing species, but the bare spaces round the eyes are larger and darker, being blue-lead colour. Their eggs (4) measure 1.60 x 1.15 inch.

*Sub-family Calopsittacinae.**Genus Calopsittacus.***The Cockatoo Parrakeet.***Calopsittacus novæ-hollandiæ.*

Australia generally.

Dark grey, forehead and cheeks yellow, crest grey with base of the feathers yellow, ear-coverts orange, a white patch on the wing coverts. Total length 12.5 inches, wing 6.5, tail 6.6, bill 0.65, tarsus 0.6. The female is paler than the male. The eggs (5 to 7) measure 1.06 x .76 inch.

These birds are more plentiful in the inland districts than near the coast, and are to a limited extent migratory.

*Sub-family Palæornithinae.**Key to the Genera.*

Bill weaker, with upper mandible not notched.

Polytelis.

Tail feathers very broad, and almost equally long.

Ptistes.

Tail much graduated, bill upper mandible notched and red, especially at base.

Aprosmictus.

*Genus Polytelis.**Key to the Species.*

- General colour green, male with forehead, cheeks and throat yellow, female with forehead and cheeks tinged with bluish and the inner webs of the lateral tail-feathers margined with red. P. barrabandi.
- General colour green, forehead and rump bluish, lower part of cheeks and throat pale rose-colour, inner web of lateral tail-feathers margined with red. P. alexandrae.
- A red patch towards the tips of the innermost great wing-coverts and innermost secondaries; general colour of male jonquil-yellow, female duller and with inner webs of the lateral tail-feathers edged with red. P. melanura.

The Green-leek Parrakeet.*Polytelis barrabandi.*

South Queensland, New South Wales, Victoria and South Australia.

Just beneath the yellow of the throat is a crescent of scarlet, quills underneath black, tail black underneath, bill red. Total length 16 inches, wing 7.2, tail 9, bill 0.7, tarsus 0.57. The eggs (4 or 5) measure 1.16 x .89 inch.

These beautiful birds are nowhere plentiful, but are easily distinguished, and are usually in open forest country.

The Black-tailed Parrakeet (Rock Pebbler).*Polytelis melanura.*

New South Wales, Victoria, South and Western Australia.

Head, nape and upper tail-coverts tinged with olive, quills black, tail feathers deep purple-blue, black underneath. The female has the tail feathers bluish-green. The eggs (4 to 6) measure 1.21 x .96 inch.

Like the preceding species, this bird is not plentiful, and is generally found near water, nesting in holes in large Eucalyptus trees.

The Alexandra Parrakeet.*Spathopterus (Polytelis) alexandrae.*

Central Australia.

Forehead delicate light blue, lower parts of cheeks, chin and throat rose-pink; head, mantle, back olive-green; lower part of back blue; shoulders and wing-coverts yellowish-green, external webs of the primaries dull blue; breast grey, upper tail-coverts bluish-olive, bill red. Total length 14 inches, bill $\frac{1}{2}$, wing 7, tail 9, tarsus $\frac{7}{8}$. The eggs (4 or 5) measure 1.06 x .92 inch.

This is one of the most graceful and delicately coloured of Australian Parrots, although found in the dry, dreary districts



Australian Museum.

Green Leek Parrakeet: *Polytelis barrabandi*.

of the interior, and is comparatively rare. When resting on the thick branch of a tree, they often crouch lengthways on the bough, making them very difficult to detect.

*Genus Ptistes.***The Red-winged Parrakeet.***Ptistes erythropterus.*

Queensland, New South Wales, and Northern Territory.

Green, underneath yellowish-green, interscapular region and scapulars black; lower back and rump deep blue; upper wing-coverts rich crimson-red, with base of feathers yellow, and a few black feathers below the bend of the wing, tail above dark green, beneath dark brown. Total length 13.5 inches, wing 8, tail 5.6, bill 0.75, tarsus 0.68. The eggs (3 or 4) measure 1.31 x 1.04 inch.

This handsome bird is found principally in Queensland, and its beautiful plumage is easily recognised; their eggs are laid usually well down in a hollow tree.

The Crimson-winged Parrakeet.*Ptistes coccineopterus.*

North and North-west Australia.

These birds are very similar to the preceding species, but are considerably smaller, except the bill, which is slightly larger, but the birds are also more richly coloured and the red on the wing more extensive in proportion, and of a more crimson hue. Although not generally found in the same country, they occasionally overlap. Total length 12.3 inches, wing 7.4, tail 5.2, bill 0.76, tarsus 0.67. Their eggs (4) measure 1.24 x 1.03 inch.

*Genus Aprosmictus.***The King Parrot.***Aprosmictus cyanopygius.*

Queensland, New South Wales, and Victoria.

Adult male: Head, neck and under surface scarlet, back and wings green, a line bounding the scarlet at the back of the neck, also the rump deep blue; under tail-coverts scarlet, but the base of the feathers dark blue; tail black above, underneath black. Total length 17 inches, wing 8.7, tail 8.5, bill 0.95, tarsus 0.7. The female has the head, nape, back and wings green, chest dull green tinged with red, and abdomen scarlet, tail green. The eggs (4 to 6) measure 1.28 x 1.11 inch. The surface of the egg is slightly roughened.

These splendid and showy birds range from Victoria to Queensland. Their eggs are difficult to procure, being in holes high up in large trees and in thick forest country. The Northern birds, as in most other cases, are smaller than those found in the South.

*Sub-family Platycercinae.**Key to the Genera.*

- Tail not banded across from the base to the tip.
 Tail feathers rather broad, never acuminate at the ends.
 Back not uniform, but with the feathers black, broadly bordered, and having a scale-like appearance, bill notched. Platycercus.
 Back uniform, bill longer than deep, upper mandible notched, with the hook much lengthened. Porphyrocephalus.
 Bill deeper than long, upper mandible not notched, a yellow collar round the hind neck. Barnardius.
 No yellow collar round the hind neck, bill uniform with base of upper mandible not lighter, two central tail-feathers longer than the following pair. Psephotus.
 Four central tail-feathers about the same length. Neophema.
 Tail-feathers narrow and acuminate, upper mandible notched, orbital ring complete. Euphema.
 Upper mandible not notched. Melopsittacus.
 Tail with band across from the base to the tip, tail long, longer than the wing, nails long and straight. Pezoporos.
 Tail short, shorter than the wing, nails short and curved. Geopsittacus.

*Genus Platycercus.**Key to the Species.*

- Cheeks blue, underparts crimson. P. elegans.
 Underparts pale red, each feather slightly fringed with yellow. P. adelaidæ.
 Underparts yellow, red band on forehead, middle tail-feathers dull blue. P. flaveolus.
 Underparts jonquil-yellow, middle tail-feathers dark olive-green. P. flaviventris.
 Cheeks white and blue, under tail-coverts red, head pale yellow, underparts blue, edges of feathers on the back bright yellow. P. pallidiceps.
 Edges of the feathers of the back straw-yellow, cheeks almost blue, only white on the upper part. P. amathusia.
 Head black, cheeks white, bordered with blue below. P. browni.
 Head red. P. erythropeplus.
 Cheeks white, head red, upper tail-coverts green, edges of the feathers on the back yellowish-green. P. eximius.
 Edges of the feathers of the back gamboge-yellow. P. splendidus.
 Cheeks yellow, head and underparts red, smaller, rump and tail-coverts green, central tail-feathers green. P. icterotis.
 Larger, rump and upper tail-coverts olive-grey, central tail-feathers dull blue. P. xanthogenys.

The Crimson Parrot.*Platycercus elegans.*

South Queensland, New South Wales, Victoria, and South Australia.

The adult male has the feathers of the back and scapulars black, broadly edged with crimson, a broad black patch on the wing coverts, the bend of the wing violet-blue, four middle tail feathers deep blue, the others deep blue at the base and lighter towards the end. The eggs (4 to 8) measure 1.16 x .92 inch.

This beautiful bird is very plentiful in Victoria, parts of South Australia and Kangaroo Island. In a flock of these birds is usually a good proportion of females and young males, both of which are mostly green, with blue cheeks and anterior wing-coverts.

The Campbell Parrakeet.

Platycercus nigrescens.

North Queensland.

The hind-neck and back are mostly black and the head dark red, uniform in colour with the lower surface, otherwise very similar to the *P. elegans*, but smaller. The feet are black and iris brown. The eggs (4 to 8) measure 1.09 x .88 inch. Total length 12 inches, tail 7, wing 6.3.

These birds have a different note to *P. elegans*.

The Adelaide Rosella.

Platycercus adalaidæ.

South Australia.

Very similar to *P. elegans*, the only difference is in the red colour, which is much paler and mixed with yellowish, feathers of underparts have narrow yellowish edges, the black feathers of the back have broad yellowish-red edges. Total length 14 inches, wing 7, tail 7.2, bill 0.75. The eggs measure 1.12 x .92 inch.

These birds are sometimes called the Pheasant Parrakeet.

The Yellow Parrakeet.

Platycercus flaveolus.

New South Wales, Victoria, and South Australia.

Head, rump and upper tail-coverts pale yellowish; cheeks blue, back and scapulars black, margined with pale yellowish, wings blue with black patch on the cubital wing-coverts; the inner wing-coverts and inner secondaries black and edged with yellowish. Total length 14 inches, wing 6.4, tail 7, bill 0.75, tarsus 0.75. Young more greenish. The eggs (3 to 5) measure 1.13 x .91 inch.

This bird is sometimes called the Swamp Lory, and is chiefly found inland, and rarely near the coast.

The Green Parrakeet.

Platycercus flaviventris.

Tasmania and Islands of Bass Strait.

Head yellow, forehead and lores crimson, region round the eye stained with red, cheeks blue, back and scapulars and wing-coverts olive-black, edged with green, primary-coverts blue. Total length 14.5 inches, wing 7 to 7.4, tail 7, bill 0.75. The eggs measure 1.17 x .89 inch.

These birds are rarely found on the mainland of Australia.

The Pale-headed Parrakeet.*Platycercus pallidiceps.*

Queensland and New South Wales.

Feathers on the nape, back and scapulars black, margined with yellow; upper tail-coverts pale greenish; wings blue, with black patch on cubital wing-coverts; quills underneath black, central tail-feathers deep blue. Total length 13 inches, wing 6.2 to 6.5, tail 6.4, bill 0.68, tarsus 0.7. The eggs (3 to 5) measure 1.02 x .86 inch.

There is a good deal of variation in individual specimens, some having no blue on the cheeks, others have scattered red feathers on the head and the upper breast fringed with yellow. This bird is often called Moreton Bay Rosella. It is a bright-coloured bird and very conspicuous and usually found in open forest country.

The Blue-cheeked Parrakeet.*Platycercus amathusia.*

Northern Territory, North Queensland.

Very similar to *P. pallidiceps*, but differs in the cheeks, being almost entirely blue, in the more yellowish tinge of the bluish feathers of the rump and upper tail-coverts, in the yellow tinge of the upper breast, in the greenish tinge of the blue colour of the lower breast and abdomen. Total length 12.5 inches, wing 6, tail 5.8, bill 7, tarsus 0.65. The eggs (4) measure 1 x .79 inch.

This bird is seldom seen in captivity, being a comparatively rare bird. Two or three are usually seen on the ground together feeding.

The Smutty Parrakeet.*Platycercus browni.*

Northern Territory and North-west Australia.

Feathers of the back and scapulars black, bordered with broad band of yellow; rump, upper tail-coverts, breast and abdomen pale yellow, fringed with black; under tail-coverts scarlet, a black patch on the wing-coverts, from the bend of the wing downwards the anterior wing-coverts and outer webs of the secondaries and base of the primaries blue; under wing-coverts blue, central tail feathers blue, the remaining feathers tipped with white. Total length 11 inches, wing 6, tail 6, bill 0.65, tarsus 0.62. The eggs (4) measure .99 x .82 inch.

This beautiful bird is fairly plentiful in some parts of Northern Australia, going in small flocks, although it is not a common bird in captivity.

The Red-backed Rosella.*Platycercus erythropeplus.*

Australia.

Head, neck, and lower parts red, cheeks blue, feathers of upper part of the back black, with dark red edges, as in *P. elegans*; scapulars black, edged with pale yellow and tipped with red; lower back greenish yellow, each feather edged with red; the red feathers of the breast have yellow bases, wings as in *P. eximius*.

It is not known from what part of Australia the type skin of this bird came, and many consider it as a hybrid between *P. elegans* and *P. eximius*. The original label from the type skin was lost.

The Rosella.*Platycercus eximius.*

Tasmania, South Australia, Victoria, New South Wales, and South Queensland.

Head, sides of neck, breast, and under tail-coverts scarlet, feathers of the back black, edged with greenish-yellow, lower breast yellow, with a scarlet band down the middle, a black patch on the wing-coverts. Total length 13.5 inches, wing 6.1-6.5, tail 6.5, bill 0.7. The female is not so bright in colour. The eggs (5 to 9) measure 1.03 x .81 inch.

This is probably one of the most plentiful of Australian Parrots, and its bright plumage makes it a favourite cage bird. It can also be taught to whistle simple tunes. One in the Zoological Gardens at Melbourne at the time of writing has been 24 years in captivity.

The Yellow-mantled Parrakeet.*Platycercus splendidus.*

South Queensland, New South Wales, and interior of South Australia.

Very similar to *P. eximius*, but has no yellow spot on the nape, the edges of the black feathers of the back are gamboge-yellow, with no greenish tinge; the rump, upper tail-coverts, and lower abdomen pale greenish. Total length 12.5 inches, wing 6.1, tail 6.2, bill 0.7, tarsus 0.7.

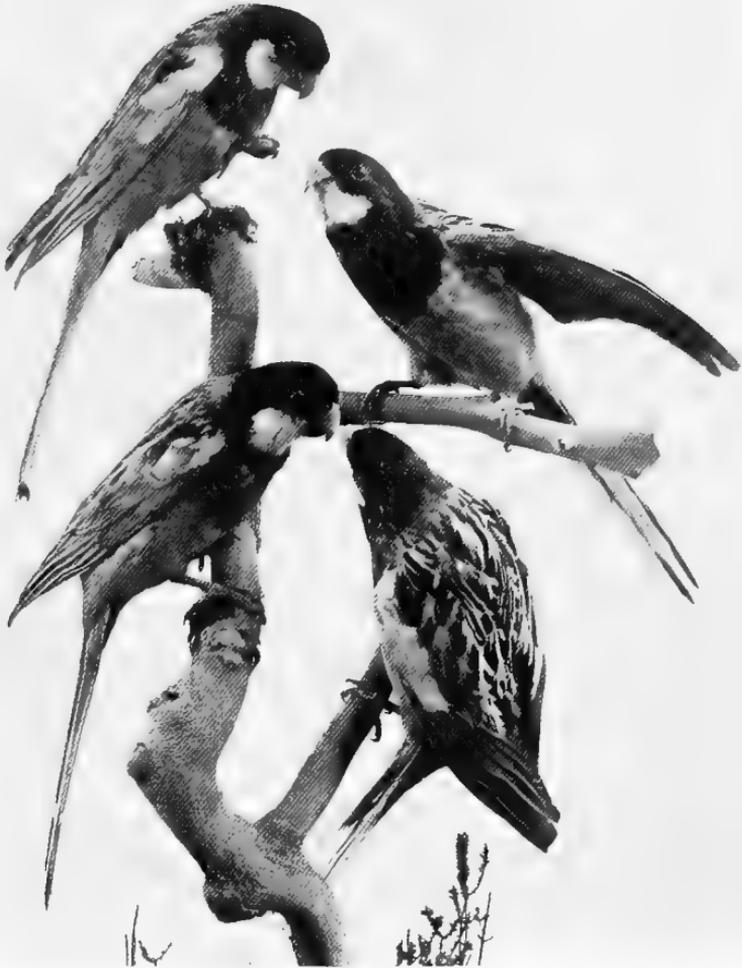
This bird was first procured by Gilbert near Brisbane in 1844; it is a comparatively rare bird.

The Masters Parrakeet.*Platycercus mastersianus.*

New South Wales.

This bird is very similar to *P. splendidus*. The front, top of the head, nape and ear-coverts crimson, mottled with yellow on the sides of the head, ear-coverts and nape; feathers of the neck washed with red; rump and upper tail-coverts crimson; scapulars black, broadly margined with

yellowish, mingled with red and blue; shoulders deep blue; under side of the wings black with irregular white band; cheeks blue; under tail-coverts crimson; tail black below. Total length 11 inches, wing 5.8, tail 6.3, tarsus 0.8, bill 0.7 inch.



Rosella: *Platycercus eximius*.

Australian Museum.

Dr. Ramsay, who originally described this bird, thought it might prove to be a hybrid, and it is quite possible it is, as little, if anything is known of it, beyond the type skins.

The Red-mantled Parrakeet.*Platycercus xanthogenys.*

North-east Australia.

Head, sides of the neck and all under surface scarlet; the feathers of the breast and abdomen with narrow pale yellow edges; cheeks yellow; feathers of nape and back black bordered with red; black patch on upper wing-coverts, the anterior ones from the bend of the wing down to the primary-coverts, and also the base of the outer webs of the primaries, blue; under wing-coverts blue; quills underneath black. Total length 12.5 inches, wing 5.45, tail 6, bill 0.56, tarsus 0.63.

Nothing is known of this bird except the type skin, and even its precise habitat is unknown. It was in Gould's original collection.

The Yellow-cheeked Parrakeet.*Platycercus icterotis.*

Western Australia.

Feathers of the back black, bordered with green, stained with red; a black patch on the upper wing-coverts; blue on the bend of the wing and down. Total length 10.5 inches, wing 5.3, tail 5, bill 0.61, tarsus 0.6. Female duller in colour, and young mostly green. The eggs (4 to 6) measure 1.04 x .84 inch.

This bird is very similar to the foregoing, except that it has a mottled-green mantle instead of a red one. It is frequently called the "Rosella" in Western Australia, and lives well in captivity.

*Genus Porphyrocephalus.***The Red-capped Parrakeet.***Porphyrocephalus spurius.*

West and North-west Australia.

The cap is deep red; lores dusky red; cheeks yellowish-green; back and scapulars green; rump and upper tail-coverts greenish yellow; breast and abdomen blue; under tail-coverts red; wing-coverts green; primary coverts and under wing-coverts blue; central tail-feathers green, blue towards tips. Total length 15 inches, wing 6.3, tail 7.5, bill 0.98, tarsus 0.76. The female is duller and smaller. The eggs (6 to 8) measure 1.14 x .89 inch.

This bird is often called the King Parrot in Western Australia, and it certainly is a splendid bird and very conspicuous when feeding on the seeds of various trees.

*Genus Barnardius.**Key to the Species.*

A yellow collar on the nape.

- | | |
|---|-------------------|
| a. Head verditer-green, with a broad brown-green crescent from the occiput to the eyes; forehead red. | B. barnardi. |
| b. Head brown-black. | B. semitorquatus. |
| a'. Frontal band red; abdomen green, larger. | B. zonarius. |
| b'. No frontal red band, sometimes slight indication; abdomen pale yellow-green; smaller. | B. occidentalis. |
| c. Light-blue cheeks, greater extent of lemon-yellow on the lower portion of the breast and abdomen. | |

The Mallee Parrakeet.*Barnardius barnardi.*

South Australia, Victoria, New South Wales, and South Queensland.

Chest, abdomen, central portion of the wing, and rump verditer-green; lower part of the cheeks bluish; back dark bluish-grey; centre of abdomen crossed by broad yellow band; primaries black, with outer webs deep blue; under wing-coverts blue; two central tail-feathers deep green, passing into deep blue at the base. Total length 14 inches, wing 6.5, tail 7.2, bill 0.8, tarsus 0.8. Female smaller and duller, and back more green. The eggs (4 or 5) measure 1.21 x .94 inch.

This beautiful bird is usually found in pairs or small flocks and, in Victoria, mostly in the Wimmera district.

The Yellow-collared Parrakeet.*Barnardius semitorquatus.*

Western Australia.

Green; cheek feathers and ear-coverts tipped with blue, broad yellow collar on the lower nape; upper breast dark green with a bluish tinge; primary-coverts and base of outer webs of the primaries deep blue, quills black underneath; two central tail-feathers deep green. Total length 17 inches, wing 8, tail 8.5, bill 1.06, tarsus 0.92. The female is duller and smaller than the male. The eggs (6 to 9) measure 1.23 x 1.0 inch.

This bird is commonly called the "Twenty-eight" parrot, as its call during its flight is something like those words. It is mostly found in the Southern districts.

The Yellow-banded Parrakeet.*Barnardius zonarius.*

Interior of South Australia, South-west and Western Australia.

Very like *P. semitorquatus*, but smaller. Total length 15 inches, wing 6.9, tail 8, bill 0.83, tarsus 0.77. The eggs (4 to 8) measure 1.21 x .92 inch.

This bird is locally called the Port Lincoln Parrot, and is generally found inland.



Australian Museum.
Yellow-banded Parrakeet: *Barnardius zonarius*.

The Western Collared Parrakeet.*Barnardius occidentalis.*

West and North-west Australia.

Very similar to *B. zonarius*, but with light blue cheeks instead of dark, the greater extent of the lemon-yellow of the lower portion of the breast, and the whole of the abdomen as far as the vent, the chest, back, wings and scapulars verditer-green instead of dark green, and no narrow black band below the collar.

Macgillivray's Collared Parrakeet.*Barnardius macgillivrayi.*

Northern Australia, south of Gulf of Carpentaria.

Very similar to *B. occidentalis*, but has the head almost uniform in colour with the upper parts, instead of blackish-brown as in that species. Verditer-green above, the feathers of the occiput, hind neck, and back broadly edged with green, and the centre of those on the lower back shaded with yellow; primaries and their coverts black; outer webs blue; two central tail feathers green; cheeks and a ring of feathers round the eye blue; the collar on the nape and a broad band on the lower breast yellow. Total length of skin 13.5 inches, wing 6.4, tail 7.2, bill from forehead 0.8, tarsus 0.8.

These birds are fairly plentiful in the district named, and are often seen near Cloncurry.

*Genus Psephotus.**Key to the Species.*

a. Abdomen red.

a'. Forehead and cheeks blue.

a". Median wing-coverts red; smaller wing-coverts verditer-green; under tail-coverts red.

P. hæmatorrhous.

b" Median wing-coverts brown-olive; smaller wing-coverts blue; under tail-coverts yellow, sometimes tinged with red.

P. xanthorrhous.

b'. Forehead and cheeks not blue.

c". Rump blue.

a"". Median wing-coverts with a red patch, frontal band red.

P. pulcherrimus.

b"". Median wing-coverts with a yellow patch, frontal band pale yellow.

P. chrysopterygius

d". Rump green, with a pale green cross-band, frontal band bright yellow, a spot in the occiput and another on the middle of the upper tail-coverts brown-red.

P. multicolor.

b Abdomen yellow, rump red.

P. hæmatonotus.

The Red-vented Parrakeet.*Psephotus hæmatorrhous.*

New South Wales and South Queensland.

Anterior part of head, neck, breast, back, and scapulars pale brown-grey; lower part of breast and flank yellow, patch of chestnut on the



Australian Museum.

Red-vented Parrakeet: *Psephotus hæmatorrhous.*

median and inner greater wing-coverts; primaries and under wing-coverts blue; two centre tail feathers olive-green at base, passing into deep blue towards the tip, the remainder tipped with white. Total length 12 inches, wing 5.4, tail 6.3, bill 0.65, tarsus 0.7. The eggs (4 to 8) measure .95 x .84 inch.

Gould obtained his first specimens of this bird in 1839 on the Lower Namoi River.

The Yellow-vented Parrakeet.

Psephotus xanthorrhous.

Western and South Australia, Victoria, and New South Wales.

Very similar to *P. hamatorrhous*, but the patch on the wing-coverts instead of being chestnut is olive-yellow, the lesser wing-coverts are not verditer-green, but uniform deep blue, the under tail-coverts are yellow instead of red, the breast is more or less distinctly mottled. Total length 12 to 13 inches, wing 4.3 to 5.5, tail 6.5 to 7, bill 0.65, tarsus 0.73. The eggs (5 to 8) measure .94 x .81 inch.

There is much individual variation in this species, both in size and coloration. It is often called "Blue Bonnet," and is plentiful in the Riverina district of New South Wales.

The Pale Parrakeet.

Psephotus pallescens.

South Australia.

This bird is a variety of *P. xanthorrhous*, but has the upper surface and breast much paler, and the olive patch on the median wing-coverts yellow.

The Beautiful Parrakeet.

Psephotus pulcherrimus.

New South Wales and Queensland.

Crown and nape brown-black, sides of the head and neck bluish-green; hind neck, back, scapulars, and inner secondaries greyish brown; upper tail-coverts blue; above the rump a black cross band; breast green passing into blue below; sides blue; abdomen red; under wing-coverts blue; two central tail-feathers olive-brown at the base, passing into blue towards the tip, which is black. Total length 12 inches, wing 5, tail 6.7, bill 0.58, tarsus 0.59. The eggs (3 to 5) measure .86 x .69 inch.

This beautiful bird makes a hole in a Termites' mound and lays its eggs there, making a considerable cavity, and it seems to cause the Termites to desert the mound.

The Chestnut-crowned Parrakeet.

Psephotus dissimilis.

Northern Territory.

This bird is very similar to *P. chrysopterygius*, but has not the yellow band across the forehead; the lower parts are verditer-blue in the male; rump bluish-green, under tail-coverts orange. The female has the crown and forehead greyish olive-green.

The Golden-shouldered Parrakeet.*Psephotus chrysopterygius.*

Northern Australia.

Centre of the crown black; sides of the head, neck, throat, breast, upper part of abdomen, rump, and upper tail-coverts turquoise-blue; back of the neck, back, scapulars, inner wing-coverts, and inner secondaries light greyish-brown; under wing-coverts blue; two central tail feathers olive-green at the base, passing into deep blue, and tipped with black. Total length 9.5 inches, wing 4.3, tail 5.6, bill 0.6, tarsus 0.55.

The Many-coloured Parrakeet.*Psephotus multicolor.*

New South Wales, Victoria, South, West, and North-west Australia.

Bluish green, back and scapulars darker; lower back and rump with three cross bars, two blackish with the feathers edged with blue and one light blue between the two black; abdomen orange-red; blue by the bend of the wing and under wing-coverts; middle tail feathers blue, black at the tip, greenish-brown at the base, the remaining feathers have white tips; all the tail feathers, except the four middle ones, crossed by a band of black near the base. Total length 12 inches, wing 5.4, tail 6.7, bill 0.58, tarsus 0.59. The eggs (4 to 6) measure .89 x .76 inch.

These birds are found in Central Australia, and have a wide range across from East to West.

The Red-backed Parrakeet.*Psephotus hæmatonotus.*

South Australia, Victoria, New South Wales, and South Queensland.

Head emerald green; forehead and cheeks bluish-green; back and scapulars greyish-green; upper tail-coverts and breast yellowish-green; bastard-wing, primary coverts, base of outer webs of primaries, bend of wing, and under wing-coverts deep blue; central tail-feathers green, passing into blue towards the tip, which is blackish, the remainder of the feathers have white tips. Total length 11 inches, wing 5.1, tail 5.7, bill 0.55, tarsus 0.51. The eggs (6 to 8) measure .96 x .76 inch.

This bird is often called the "Grass Parrakeet," as they usually feed on the ground and their prevailing colour is green. When the nesting season is over they often congregate in large flocks. It is common in the inland districts and often seen in captivity.



C. L. Barrett.

Nest of Rock-Parrakeet (*Neophema petrophila*). (uncovered).

"The Emu"

*Genus Neophema.***Grass Parrakeets.***Key to the Species.*

- A. Upper surface brown; abdomen rosy; under tail-coverts light blue. The Bourke
Grass-Parrakeet, *N. bourkei*.
- B. Upper surface green; abdomen and under tail-coverts yellow.
- a. Frontal band blue.
- x. Lores greenish yellow, abdomen yellow.
1. No orange spot on abdomen. The Blue-winged
Grass-Parrakeet, *N. venusta*.
Frontal blue band not reaching beyond the eyes. All the upper wing-coverts deep blue. Female like male.
- Frontal blue band continued over and behind the eyes. Outer upper wing-coverts blue, inner olive-green like the back; between the blue outer and olive inner is a row of blue-green (verditer) coverts. Female duller and smaller. The Grass-Parrakeet,
N. elegans.
2. An orange spot on the abdomen, brighter in the male. The Orange-bellied Grass-Parrakeet
N. chrysogaster.
Upper wing-coverts, inner green, outer blue.
- y. Lores and circle round the eyes verditer-blue. The Rock Parrakeet, *N. petrophila*.
- b. Face blue.
- Chest yellow, a chestnut-red spot on the inner upper wing-coverts. Female duller, with the lores yellowish, and without the chestnut spot. The Red-shouldered
Grass-Parrakeet, *N. pulchella*.
- Chest scarlet, no chestnut spot on the wing-coverts. The Scarlet-throated
Grass-Parrakeet, *N. splendida*.
Wing coverts blue. Female paler and duller, chest olive-green, and lores bluish.

*Genus Euphema.***The Swift Lorikeet.***Euphema discolor.*

South Queensland, New South Wales, South Australia, Victoria, and Tasmania.

General colour green; forehead and chin red, with yellow spot at gape; crown of head deep greenish blue; tips of shoulders and under tail-coverts deep red. Egg, .96 x .83 inch.

Genus Melopsittacus.

The Warbling Grass-Parrakeet.

Melopsittacus undulatus.

Australia generally.

General colour straw-yellow to grass-green, with wavy black cross bands; on the cheeks an oblique band of rich blue, and below it two or three circular black spots. Egg .7 x .56 inch.



Ground Parrakeet: *Pezoporus formosus.*

Australian Museum.

Genus Pezoporus.

The Ground Parrakeet.

Pezoporus terrestris (formosus).

Tasmania and all the southern half of Australia.

Above dark grass-green, the feathers crossed with bands of black and yellow; feathers of crown and nape with a streak of black down the centre; feathers of breast, abdomen, and tail lighter with more yellow, barred alternately with black and yellow; an orange spot on the forehead. Total length 12.5 inches, wing 5.25, tail 7.75.

It usually frequents heaths or swampy flats with tussocks of rushes. It is emphatically a ground bird, keeping among the grasses and bushes unless flushed, when it rises with a whirr like



Australian Museum.

Nest of Ground-Parrakeet: *Pezoporus formosus*.

a partridge. It takes then a short but rapid flight with many zigzags. It is a game bird which dogs soon detect by the strong scent, and its flesh is excellent in flavour. Eggs five or six, deposited on the bare ground.

*Genus Geopsittacus.***The Night Parrakeet.***Geopsittacus occidentalis.*

Victoria, South and Central Australia, West and North-west Australia.

Above olive-green; head and nape with black streak down the centre of the feathers; feathers of upper back black with a yellow spot; throat and breast yellowish-green, passing into sulphur yellow in the abdomen and under tail-coverts. Total length 10 inches, wing 5.5, tail 5.

ORDER CORACIIFORMES.

*Sub-order Podargi.**Family Podargidæ.*

Gape very wide; palate desmognathous (as in Duck).

Sub-family Podarginæ.

Nostrils a narrow slit near the base of bill, hidden by plumes of feathers.

Genus Podargus.

Tail quills pointed, the central pair much longest.

Key to the Species.

Tail more than 10 inches long.

Mottled grey and brown above; lower parts lighter, with white spots. Female rustier. Total length 22 inches, wing 12.1, tail 11, bill 1.4. New South Wales, Queensland, New Guinea. The Plumed Frogmouth, *P. papuensis*.

Tail redder, three semi-circular bars of conspicuous large round white spots on the wing. Female rustier. Queensland.

The Marbled
Frogmouth, *P. marmoratus*.

Tail less than 10 inches long.

General plumage tawny. Total length 18½ inches, tail 9.1, wing 11. Southern Australia and Tasmania.

Tawny Frogmouth, *P. strigoides*.

General plumage freckled. Wing less than 9 inches long. Australia except Victoria and New South Wales.

The Freckled Frogmouth, *P. phalænoides*.

General plumage freckled, smaller than *P. strigoides*, but has a larger and longer bill, and also has shorter wings. Total length 14.3 inches, wing 9.2, tail 7.6, bill 1.

P. brachypterus.

The Frogmouths are beautifully soft-plumaged birds, with a motley of grey, brown, black and white markings. In the



Mounted.

Tawny Frogmouth: *Podargus strigoides*.

D. Le Souëf.

coloration then they resemble the dead bark of the bough on which they sit. To render it still more difficult of detection, the bird does not sit across the bough, but along it, assuming the

stiff attitude of a rugged branch broken off short. The eyes are large and adapted to the diminished light of night, the brighter light of day seemingly making them dazed and inert. In both these characters they resemble the Owls. Their disposition is,



Freckled Frogmouth: *Podargus phalaenoides*. W. S. Kent.

however, much milder, and they can be handled by day without attempting to offer any resistance. They are invaluable insect-feeders, and capture their food, Cicadas, Phasmids and Beetles, &c., on the branches of the trees. After swallowing an insect they bring their mandibles together with a loud snap, as if in

satisfaction over the tit-bit. The nests are placed on horizontal boughs, and consist of small sticks carelessly interwoven into a loose flat structure. Eggs 2, white; dimensions about 1.75 x 1.25.

Sub-family Ægothelinæ.

Nostrils near tip of bill; third and fourth quills longest.
Pale nuchal collar.

Genus Ægotheles.

Owlet Nightjar.

Ægotheles novæ-hollandiæ.

These delicate little birds are found all over Australia and Tasmania. Their head is black; a lunar-shaped mark at the back of the head and a collar surrounding the back of the neck freckled with grey; back freckled black and white; wings brown, crossed by numerous bands of lighter brown freckled with dark-brown; tail dark-brown, crossed by numerous broad irregular bands of reddish freckled with dark-brown; chin, abdomen and under tail-coverts white; breast usually lighter than back, sometimes almost white and crossed by numerous freckled bars, the whole bird having a dark-grey freckled appearance, like that of the Podargus. These birds sometimes are of a reddish hue. Total length 9 inches, wing 5, tail 5, tarsus 1. The sexes are alike in plumage. Four white rounded eggs are laid on the decomposed wood in a hollow branch. They are very rough in texture, and have a strong shell, and measure about 1.14 x .86 inches. The birds live in hollow branches during the day, issuing only at night, and utter a hissing sound when disturbed.

Sub-order Coraciæ.

Family Coraciidæ.

Bill corvine in shape, culmen rounded. Nostrils basal, hidden by bristly feathers. No powder down patches. Oil gland nude. Tail feathers twelve. Old world. Rollers.

Genus Eurystomus.

Tarsus less than half length of middle toe. Bill short, depressed, slightly hooked, as broad at base as it is long. Habits arboreal. Tropical Africa, South-east Asia to Australia.

The Roller or Dollar-bird.*Eurystomus pacificus (australis).*

Australia, except South and West, Lord Howe Island, New Zealand, Moluccas to Celebes.

Head and neck sooty brown; mantle and back brownish washed with green; bastard wing and parts of true wing light blue; tail green at base black at tip, under parts green; bill and feet red; inside of mouth yellow; iris dark brown. Total length 10.5 inches, culmen 1.1, wing 7.85, tail 3.6, tarsus .6.

The Dollar-bird gets this name from the silvery-white spot in the centre of each wing. This is seen very distinctly during flight. Like so many birds it feeds chiefly in the early morning and again near sunset. In sultry weather it perches motionless on some dead branch. It is a very bold bird at all times, but particularly so in the breeding season, when it attacks with the utmost fury any intruder that may venture to approach the hole in the tree in which its eggs are deposited. It plays the game with anyone seeking to find the nest. It will dart into any hole around, except the true one, leading you to believe that you have located the nest for a certainty. When you have laboriously gained the spot, out flies the Dollar-bird, and you find nothing, but can watch the bird fly fifty yards off to another hole, to which you make your way, only to be again bamboozled. The flight is unlike that of any other bird. It does not fly straight, but dives down and rises again with many turns, as if delighting in the easy control of difficult wing movements. It is a very noisy bird, uttering a peculiar chattering note. The eggs, three or four, are laid without a nest in a hole in a tree, and are pearly white, pointed at the smaller end; dimensions 1.4 x 1.17 inch.

Sub-order Halcyones.

Spinal feather tract well defined on neck and not forked on the back; vertical feather tract split in the centre, and also on each side of the breast by bare tracts. Oil-gland tufted. No

after-shaft to contour feathers of body. Tail feathers generally 12. Egg white, young hatched naked and helpless. Cosmopolitan. Kingfishers.

Family Alcedinidæ.

Soles of toes much flattened. Sternum with two notches.

Sub-family Alcedininae.

Bill long and slender, compressed and perceptibly keeled. Mostly feeding on fish. East and West Hemisphere.

Genus Alcyone.

Bill longer than tail, which is conspicuously shortened. Toes three. Australia, the Papuan Islands and the Moluccas.

Key to the Species.

Abdomen rufous. Over 6 inches in total length.	
Sides of body rufous, or slightly washed with lilac.	<i>A. azurea.</i>
Sides of body bright ultramarine.	<i>A. pulchra.</i>
Abdomen white. Length 4.8 inches.	<i>A. pusilla.</i>

The Blue Kingfisher.

A. azurea.

Queensland to Victoria, South Australia and Tasmania.

Above bright ultramarine, wing coverts blackish edged with ultramarine; tail deep ultramarine above, black beneath; a loreal spot pale rufous; throat and a patch along the sides of the neck white tinged with orange; cheeks, ear-coverts and sides of upper breast ultramarine; rest of under surface cinnamon, with a lilac lustre on the flanks and under tail-coverts. Total length 6.5 inches, culmen 1.8, wing 2.9, tail 1.35, tarsus .3. Sexes alike.

The Purple Kingfisher.

A. pulchra.

Similar to preceding but richer in colour, more purplish blue above, brighter cinnamon rufous or deep bay below; brilliant purplish blue from the cheeks to the sides of the breast and down the flanks. Replaces the preceding in all the northern parts of Australia.

The Little Kingfisher.

A. pusilla.

Northern Territory, North Queensland, New Guinea to Moluccas.

Upper surface rich ultramarine; tail blue above, black beneath; a loreal spot and a patch along the sides of the neck white; under surfaces white. Total length 4.8 inches, culmen 1.15, wing 2, tail .85, tarsus .25.

The Kingfishers are met with along the rivers and creeks. They will sit on a bare branch overhanging the stream, and suddenly dart down into the water, plunging beneath the surface to seize a fish or some smaller aquatic creature, and return to their point of vantage to kill and devour the prey. A single bird, or a pair, seem to confine themselves to a particular stretch of the stream which they make their beat, and at some spot in which you may generally be able to observe them, as they speed up and down the water-course with arrow-like quickness. As the sun catches the plumage the glittering blue makes the bird a most beautiful object. The eggs are laid at the extremity of a hole drilled in the vertical or shelving bank of the stream, without any nest. They are rounder than those of most birds, pearly white, five to seven in the clutch. Dimensions of those of *A. azurea*, .86 x .75 inch.

Sub-family Daceloninae.

Bill usually more or less depressed, compressed and laterally grooved in *Halcyon*. Mostly feeding on insects or reptiles. In our genera the tail longer than the bill, in *Tanysiptera* exceeding the length of the wing. Southern Asia with Malaysia and Polynesia.

Key to the Genera.

Tail feathers 12. Tail rounded or graduated.	
Bill depressed. Smaller, total length 7 inches.	Syma.
Larger, total length 15-17 inches.	Dacelo.
Bill compressed and laterally grooved.	Halcyon.
Tail feathers 10, the central ones extraordinarily elongated.	Tanysiptera.

Genus Syma.

Confined to Papuan Islands and Northern Australia.

The Yellow-billed Kingfisher.

Syma flavirostris.

Northern Territory and North Queensland.

Head and hind neck bright cinnamon rufous; mantle and upper back dull green; lower back, rump and upper tail-coverts greenish-blue, tail feathers dark blue; under surfaces bright cinnamon rufous; throat and abdomen paler, a black half collar on the hind neck; bill yellow; culmen black; feet orange; iris blackish. Total length 7 inches, culmen 1.5, wing 3.05, tail 2.3, tarsus .55. The female has a large black patch on the centre of the crown.

Genus Dacelo.

Confined to Australia and Southern New Guinea.

Key to the Species.

Tail alike in both sexes, rufous barred with black.	<i>D. gigas.</i>
Tail of male blue, of female cinnamon rufous barred with blue	<i>D. leachii.</i>
Total length 17 inches	<i>D. cervina.</i>
Total length 15 inches.	

The Laughing Kingfisher (*Kookaburra*).*Dacelo gigas.*

Queensland, New South Wales, Victoria, and South Australia.

Crown of head brown, freckled with rufous on the forehead, the feathers forming a crest, the long crest feathers edged with white margins;



Sydney Zoo.

Kookaburras: Dacelo gigas. F. George, Photographer.

a very broad whitish band over the eye and encircling the neck, followed by a band of dark brown, and this by a broad white collar round the sides of the neck and hind neck; above generally brown, the upper back white with dusky brown cross bars, the lower back and rump greenish-blue; tail rufous barred with black, the under surfaces dingy white freckled with brown. Total length 17 inches, culmen 2.5, wing 8.55, tail 6.3, tarsus 1.

Leach's Kingfisher.*Dacelo leachii.*

Queensland and Northern Territory.

Head white, streaked with brown; a silvery blue patch on the wing, scarcely evident in *D. gigas*. The male has a blue tail, the female a red one, barred with blue and with white tips to the feathers. Otherwise, and in dimensions, very like *D. gigas*.

The Fawn-breasted Kingfisher.*Dacelo cervina.*

Western and North-west Australia, Northern Territory and North Queensland.

Very like the preceding but smaller. Total length 15 inches, culmen 2.95, wing 7.5, tail 4.75, tarsus 1.

The genus *Dacelo* comprises the Kookaburras or "Laughing Jackasses," the best known of our birds. The habits and voice of all the three species are very much the same. They are met with in most situations, but are commonest in the open forests. They seem to be inquisitive birds, and frequently come and perch on a branch of a tree near your camp in the bush, watching your operations with much curiosity. They feed on lizards, snakes, larger insects (*On dit* that the Jackass has been heard to laugh while a Cicada has been skirring inside him) and small mammals and birds. The snake is seized as the bird makes a sudden dash down, taken up quickly to a height and dropped on the ground, the operation being repeated until the snake is killed or so stunned that the bird can swallow it, head first, with safety. Gould shot a Jackass in South Australia in order to secure a fine rat he saw hanging from its mouth, and the rat proved to be a new species. The laugh is like nothing else in nature, the wildest human cachinnation falling short of its glory. At the dawn when he wakes up to the exhilaration of renewed activity, and at even when a number of birds sit together on a branch to bid farewell to the sun, or to chuckle over the happy hunting of the past day, the Jackass is heard at his best. Then the bush resounds with the Ha Ha Huh Huh Ho Ho Ha Huh in deafening chorus, "a chorus of wild spirits" as Sturt called it. The sun goes down and the strange serenade ceases.

The eggs, four or five, are laid in a hole in a gum-tree or in one of the great masses built by the white ants (termites) on the trees. There is no addition made by way of nest. The eggs are smooth, glossy and pearly white, measuring 1.8 by 1.4 inch. Those of *D. leachii* are a little larger.

The Kookaburra does well in captivity, becomes very friendly and submits to handling. It is an unfailing source of amusement and pleasure in its infinite variety of attitudes, of the humour of which it appears to be by no means unconscious.

Genus Halcyon.

All Africa; from Palestine to Manchuria and South Japan, Indian and Australian Regions. A very large genus.

Key to the Species.

Head black, crown deep ultramarine blue.	<i>H. macleayi.</i>
Head green, streaked with white.	<i>H. pyrrhopygius.</i>
Head greenish blue.	
Length 8 inches. Australia.	<i>H. sanctus.</i>
Length 8.5 inches. Norfolk and Lord Howe Islands.	<i>H. vagans.</i>
Head dusky olive-green.	
Length 8.5, bill 1.6, wing 3.7, tail 2.4.	<i>H. sordidus.</i>
Nuchal band and all under surface white.	<i>H. westralasianus.</i>

The Forest Kingfisher.*Halcyon macleayi.*

North-west Australia, Northern Territory, South-east New Guinea, through Queensland to New South Wales.

The upper surface of different shades of blue; sides of face and ear-coverts black; a large white supra-loral spot, and a broad white collar in the male only round the hind neck; cheeks and under surfaces white. Total length 7 inches, culmen 1.7, wing 3.7, tail 2.3, tarsus .45.

The Red-backed Kingfisher.*Halcyon pyrrhopygius.*

Australia generally.

The upper surfaces of shades of green; head and scapulars streaked with white; back from mantle downwards orange-rufous; a streak of white over the eye, widening out to encircle the back of the occiput; ear-coverts black, and a black collar round the hind neck followed by a broad white one; under surfaces white. Total length 8.5 inches, culmen 1.7, wing 3.85, tail 2.7, tarsus .6.

The Sacred Kingfisher.*Halcyon sanctus.*

Australia and Tasmania, New Hebrides, through New Guinea to Sumatra.

Head greenish blue; mantle green; back and tail blue; lores, sides of face and ear-coverts black, with a black band round the nape; a broad buff collar round the hind neck; under surfaces ochreous buff. Total length 7.5 inches, culmen 1.6, wing 3.75, tail 2.4, tarsus .45.

H. vagans, Norfolk and Lord Howe Islands and New Zealand, is like *H. sanctus* but larger, 8.5 inches, duller above and brighter below.

The Sacred Kingfisher appears all over Australia, coming to the South and to Tasmania in the summer, when it breeds.



The Wandering Kingfisher: *Halcyon vagans*. Australian Museum.

It is by no means confined to the neighbourhood of water. From its plumage it is a very attractive-looking bird, and its note is very striking, a shrill "pee-pee." It sits very upright, choosing

a point of vantage on a small dead branch, from which it flies down to capture its prey. It readily devours grasshoppers and caterpillars, and other insects and their larvæ, and small lizards and little snakes, which it kills by beating the head against a stone. "Specimens killed in the neighbourhood of salt marshes had their stomachs literally crammed with crabs and other crustaceous animals, while intent on the capture of which it may be observed silently sitting on the low mangrove bushes skirting the pools which every receding tide leaves either dry or with a surface of wet mud, upon which crabs are to be found in abundance. I have never seen it plunge into the water after fish like the true kingfisher, and I believe it never resorts to that mode of obtaining its prey. On the banks of the Hunter its most favourite food is the larvæ of a species of ant (termites) which it procures by excavating holes in the nests of this insect which are constructed around the holes and dead branches of the Eucalypti, and which resemble excrescences of the tree itself." (Gould). The nesting takes place from October till December, the eggs being laid in hollows of the gum-trees. The eggs are four or five in number, pinky-white, and measure 1.1 x .83 inch.

The Mangrove Kingfisher.

Halcyon sordidus.

North Queensland, Northern Territory, and Aru Islands.

Head, mantle, and back dusky olive green; lower back, rump and tail blue; ear-coverts black, a small white loreal spot and one below the eye; a broad white collar round the hind neck, separated by a line of black from the crown; under surfaces white, buffish in parts. Total length 10 inches, culmen 2.4, wing 4.4, tail 3, tarsus .6.

West Australian Sacred Kingfisher.

H. westralasianus.

Very similar to *H. sanctus*, nuchal band and under parts white and not buff coloured as in *H. sanctus*.

Genus Tanyiptera.

Moluccas, Papuan Islands and one species in North Queensland.

The White-tailed Kingfisher.*Tanysiptera sylvia.*

North Queensland.

A strikingly handsome bird with long central tail feathers like those of a Bird of Paradise; crown of head ultramarine blue, encircled by a band of brighter blue, which forms an eyebrow and band over the nape; lores, sides of face and neck, mantle and upper back black, the latter with a patch of white; lower back, rump and upper tail-coverts white; the two central tail feathers white, the others blue; wing-coverts ultramarine blue; under surfaces rich cinnamon; bill and feet sealing-wax red. Total length 13 inches, culmen 1.3, wing 3.8, tail 2.9, the central feathers 9, tarsus .5.

“This pretty bird is rather plentiful in the neighbourhood of Cape York, where it frequents the dense brushes, and is especially fond of resorting to the small sunny openings in the woods, attracted probably by the greater abundance of insect life. I never saw it on the ground, and usually was first made aware of its presence by the glancing of its bright colours as it darted past with a rapid, arrow-like flight, and disappeared in an instant among the dense foliage. Its cry, which may be represented by ‘Whee-whee-whee’ and ‘Wheet-wheet-wheet,’ is usually uttered while the bird is perched on a bare transverse branch or woody rope-like climber, which it uses as a look-out station, and whence it makes short dashes at any passing insect or small lizard, generally returning to the same spot. It lays three white eggs in a hole dug by itself in one of the large ant-hills of red clay which form so remarkable a feature in the neighbourhood, some of them being as much as 10 feet in height, with numerous buttresses and pinnacles.” (Macgillivray). Also in the smaller circular Termites’ mounds about two feet in height found in the dense scrub-covered hills near the coast of Northern Queensland. The Termites usually fill up the holes when the young birds have left.

Family Meropidae.

Bill long and gently curved, culmen with a sharply-defined ridge. Oil-gland nude. Feet partially syndactyle. Tail feathers ten. Temperate and tropical parts of the Old World. One genus with one species only in Australia. Bee-eaters.

Genus Merops.

The breast plumes ordinary, not elongated and pendent. The centre tail feathers elongated. Nearly the whole of the Old World.

The Bee-eater.*Merops ornatus.*

Australia generally to Moluccas and Celebes.

Head yellowish-green; nape orange-rufous; mantle yellowish-green; lower back and rump light cobalt blue; upper tail coverts dark blue, tail black; throat yellow with a broad band of black behind; rest of under surface of body yellowish-green; under wing-coverts fawn colour; under tail-coverts blue; bill black; feet greenish-grey; iris light red. Total length 9.5 inches, culmen 1.5, wing 4.55, tail 3.15, centre feathers 4.85, tarsus .4.

This bird is remarkable for its many coloured plumage, and for the extreme length of the two central tail feathers. In the day it frequents the open forest, in the evening the banks and sides of rivers. Like the Halcyon, it selects a dead butt of a branch which serves as a look-out, and from thence it darts forth to capture the passing insects. It is unfortunately not welcome on the bee farms, but, apart from these, it is a most useful destroyer of insect vermin. They arrive from New Guinea about August, flying against the south-east trades, usually in small parties of from ten to fifty birds, and fly with an undulating flight. The eggs are deposited in a hole made in a sandy slope. The entrance is very small, "scarcely larger than a mouse-hole," and the hole runs in for perhaps a yard. In a sort of chamber at the extremity are laid the eggs, four or five in number, pinky-white in colour. Dimensions .85 x .76 inch. As the bird commences sitting when the first egg is laid, the young hatch out in the order the eggs are laid.

*Sub-order Caprimulgi.**Family Caprimulgidae.*

Gape carried very far back. Night-flying insectivorous birds, catching their prey on the wing. Soft mottled plumage, the colours varying with the soil.

Sub-family Caprimulginae.

Ten primaries and ten tail quills.

Genus Eurostopus.

Gape with short inconspicuous bristles.

The White-throated Nightjar.*Eurostopus albigularis.*

From New Guinea to Victoria and South Australia.

Freckled brown and grey; a large white spot on each side of the throat; a patch of black on the back of the head; breast dark brown spotted with dull buff and grey, abdomen and under tail-coverts redder with bands of dark brown; the eyes large, dark, and lustrous, adapted to restricted light. The bird possesses powers of rapid flight, and captures its insect prey in the dusk while on the wing. During the day they rest on the ground. Wing about 10 inches, tail 6.2.

It lays a single egg on the ground, usually near a stone or log or mound of gravel. The egg is of a cream colour, sparingly spotted with blackish-brown, 1.5 inch x 1.1.

The Spotted Nightjar.*Eurostopus argus.*

Australia generally, New Ireland, Aru Islands.

Resembles preceding in form and habits. The abdomen and under tail-coverts of a uniform rusty-brown. Wing under 9 inches, tail 6.4.

Egg greenish-white or olive stone colour with a few purplish-black spots, 1.38 x 1 inch.

Genus Caprimulgus.

The gape armed with long stiff bristles.

The Large-tailed Nightjar.*Caprimulgus macrurus.*

Philippines, Malay Archipelago, Papuan Islands, North-west and North Australia, Queensland to New South Wales.

Plumage generally brown, mottled and freckled with grey, buff, black and white; across the throat a band of white bounded below by black; spots of white on the outer primaries; under parts deep buff; breast freckled; abdomen and under tail-coverts banded. Total length 11.5 inches, wing 7.5, tail to 6.3, tarsus .7, feathered in front for nearly whole length.

This Nightjar usually frequents scrub-covered country, and is strictly nocturnal in its activities. It is frequently called the "chop-chop" bird, from the peculiar call the bird makes; like the other Nightjars, it is most difficult to detect when on the ground. By day it rests on the ground in some shady recess, and hawks for its insect prey in the dusk of evening or early dawn. Two eggs are laid on the bare ground, pinkish-cream in colour, and faintly blotched with purplish markings. They measure about 1.23 x .86 inch.

Sub-order Cypseli.

Family Cypselidæ. Swifts.

Swallow-like birds with short legs, forked tails and extremely long wings and extraordinary powers of sustained flight. Very wide gape in association with the capture of insects while on the wing. Tail quills 10. The arrangement of the feather-tracts on the body connects them with the Humming-birds, and separates them widely from the Swallows and Martins.

Sub-family Chaeturinae.

Wing always reaching far beyond the end of the tail.

Genus Salangana.

Shafts of tail quills without spinous points.

The Edible-nest Swiftlet.

Salangana esculenta.

China and Japan to North Queensland.

Black above, especially the crown of the head; grey below.

These birds nest in caves or recesses of cliffs. "The nest, when pure and of the first make, is composed entirely of inspissated mucus from the salivary glands of the bird. It is very small, bluntly triangular in form, and slightly concave within; of a semitransparent, fibrous sort of texture, bluish-white in colour, and with the fibres, as it were, crossed and interlaced. When the nests of the first make are taken away,

the second nests are mixed with feathers, and occasionally other foreign substances. The eggs are two in number and pure white." (Jerdon). The birds breed in China and Japan, and the nests are highly prized as an article of food.

The Grey-rumped Swiftlet.

Salangana francica.

Mauritius, Ternate, North Queensland, Oceania.

Crown, nape, and back dark smoky-brown; rump brownish-grey, with dark shaft lines; lower surface dusky brownish-grey, feathers with dark shaft-lines; chin and throat a little darker. Total length over 4 inches, wing 4.4, tail 2.

This interesting Swiftlet has been found nesting in a cave on Dunk Island, off the coast of Queensland, by Mr. E. J. Banfield. The nest is like a basket and composed of fine grass and fibre, all cemented together and adhering to the walls of the cave. One pure white egg is laid, measuring about .80 x .51 inch.

Genus Chætura.

Shafts of tail quills with spinous points.

The Spine-tailed Swift.

Chætura caudacuta.

North Siberia, China, and Japan, migrating for the (southern) summer to Australia and Tasmania.

Crown of head, back of neck and ear-coverts deep shining green, slightly tinged with brown; a small space before the eye deep velvety black; a band across the forehead, chin and throat, and a patch on the upper tail-coverts white; wings and tail deep shining green with purple reflections; centre of back brown; chest and abdomen clove brown; bill black; feet brown.

One of the largest of the Swifts, seen flying in flocks in the hottest months of the year, and always attracting attention by its magnificent powers of flight. Gould says, "So exclusively is this bird a tenant of the air, that I never, in any instance, saw it perch. With the exception of the Crane, it is certainly the most lofty as well as the most vigorous flier of the Australian birds. I have frequently observed in the middle of the hottest days, while lying prostrate on the ground with my eyes directed

upwards, the cloudless blue sky peopled at an immense elevation by hundreds of these birds performing extensive curves and sweeping flights, doubtless attracted thither by the insects that soar aloft during serene weather." It is fortunately frequently out of reach of the most skilful "sportsman." These birds being migrants from the Northern Hemisphere, arrive about September and leave again in February. They breed in China and Japan. Their nest is built of mud on the side of some cleft on the face of a rocky cliff and under cover, for instance near the Kagon Waterfalls in Japan, where we saw many nesting in company with *Cypselus pacificus*. These birds having such short legs and long wings cannot rise off the ground; they therefore roost on the face of a cliff or rough bark of a tree, but their home is the air, and they may sometimes be seen flying about on moonlight nights. Two elongated white eggs are laid.

Genus Cypselus.

Hind toe directed more or less forwards.

The White-rumped Swift.

Cypselus pacificus.

Nesting in Siberia, China, and Japan, migrates to Australia and Tasmania in our summer.

Brown above and below; back with bronzy lustre. Throat and rump white. Feathers of under surface edged with white. Wings and tail dark brown. Iris, bill and feet black. Wing to 7.3 inches.

These birds usually both migrate and nest in company with the Spine-tailed Swift.

ORDER COCCYGES.

Feet zygodactyle or semi-zygodactyle.

Family Cuculidæ.

Feet zygodactyle, two toes in front and two behind, as in the Parrots. Oil gland nude. Tail feathers ten. Dorsal feather tract furcate between the shoulders. Cosmopolitan.

Sub-family Cuculinae.

Wing long and flat, not fitting to the body.

Key to the Genera.

- I. Bill moderate, never longer than the head or the tarsus.
1. Bill slenderer. Plumage variegated.
 - a. No metallic colours in the plumage. Sexes similar in plumage.
 - Tail fan-shaped.
 - Wings longer, reaching beyond tail-coverts. Under surface of quills barred. *Cuculus.*
 - Wings shorter, not reaching to ends of tail-coverts. Under surface of wing with a single oblique bar. *Cacomantis.*
 - Tail square. *Mesocalius.*
 - b. The plumage brilliantly metallic. Sexes often different in plumage. *Chalcococcyx.*
 2. Bill stouter. Plumage nearly uniformly black with greenish-blue gloss. *Eudynamis.*
- II. Bill very large and robust, more than twice the length of the tarsus, and with a lateral groove on each side. *Scythrops.*

Cuckoos are infamous the wide world over, on account of their habit of depositing the egg in the nests of other birds, the young when about one day old and sufficiently strong, proceeding to turn its foster brothers and sisters out of the nest to perish miserably. Australia possesses a remarkable number, no less than thirteen, of these unprincipled parasites, all alike, from the great Channel-Bill to the little Bronze Cuckoo, pursuing the same vicious tactics. The Pheasant Coucal, belonging to another sub-family, alone preserves the dignity of a self-denying conscientious parent, and tends her own young. None utter quite so dominant a note as the European male Cuckoo, but both the Pallid and the Fan-tailed give forth loud ringing notes. The ringing whistle of the Pallid Cuckoo consists of a succession of running notes, the last and highest of which are several times rapidly repeated. The aborigines represented the note of the Fan-tail by the syllables Du-laar. The egg is transposed by the female, probably in all cases by the mouth, to the nest of almost always an insectivorous bird. If, as occasionally happens, that of a grain eating bird, as a Finch, is selected, the young Cuckoo of course, and we feel deservedly, perishes, for all the Cuckoos are distinctively insect-eating birds. Long lists of foster parents have been recorded by different observers for the various species, and in all cases the remarkable

instinct which enables the Cuckoos almost invariably to choose the nests of insect-feeding birds is manifested. No particular care is apparently taken to match the eggs of Cuckoo and foster bird, either in size or colour. The young Cuckoo, even while still blind, as soon as it is strong enough, works the fledglings of the foster bird over the edge of the nest, and remains to be the



Pallid Cuckoo: *Cuculus pallidus*.

Australian Museum.
Fan-tailed Cuckoo: *Cacomantis*
flabelliformis.

sole care and charge of the defrauded parents, who never appear to discover or to resent the supplanting of their own offspring by an alien. It is indeed pathetic to watch tiny birds like the *Acanthizas* in a state of wild agitation endeavour to render succour to a young Cuckoo, many sizes larger than themselves, if mischance has ejected it from the nest.

Genus Cuculus.

The whole of the Old World, except Polynesia. The British Cuckoo belongs to this genus.

The Oriental Cuckoo.*Cuculus saturatus (intermedius).*

Queensland, and accidentally in New South Wales. From Siberia and India to New Guinea.

Head, throat and back blue grey; tail slaty black with white spots; under parts whitish with black bars. Total length 12.8 inches, culmen .9, wing 7.4, tail 6.3, tarsus .7.

The Pallid Cuckoo.*Cuculus inornatus (pallidus).*

Australia generally and Tasmania.

Generally grey, the tail barred with white; under surfaces nearly uniform, only the under tail-coverts with dusky bars. Total length 12 inches.

Egg uniform pale flesh colour, with a darker wash of the same tint at the larger end; sometimes a few chestnut spots appear here and there over the shell. About .9 x .7 inch.

Genus Cacomantis.

Indian Peninsula and Ceylon, China, the Philippines, to Australia, New Caledonia and Fiji. Fan-tailed Cuckoos.

The Fan-tailed Cuckoo.*Cacomantis rufulus (flabelliformis).*

Australia, Tasmania, the Aru Islands.

Above blue-grey; tail blue-black with white notches sometimes almost forming bars; under surfaces isabelline, not barred. Total length 10.2 inches.

Egg fleshy-white, sprinkled all over with fine pinkish-red spots, which are blended about the upper quarter so as to form a narrow belt. .86 x .6 inch.

The Brush Cuckoo.*Cacomantis flabelliformis (variolosus).*

Australia generally, New Guinea, Timor, the Moluccas.

Above brown, the tail with an olive gloss and no white notches; under surfaces buff, not barred. Total length 8.5 inches.

Egg dull white, with a band round the larger end of purplish-grey markings. They measure .73 x .57 inch.

The Chestnut-breasted Cuckoo.*Cacomantis castaneiventris.*

North Queensland, New Guinea, Aru Islands.

Above deep slaty-blue; tail feathers all tipped and notched with white; under surfaces bright chestnut, with the chin grey, without bars. Total length 9 inches.

Eggs very similar to those of *C. flabelliformis*. This bird has the habit of frequently uttering its monotonous running note throughout the night.

Genus Misocalius.

Australia generally, Aru Islands, Moluccas. The one species.

The Black-eared Cuckoo.*Mesocalius palliolatus.*

Ashy brown above, quills dark brown; all the tail feathers with broad whitish ends and five other distinct bars on the inner webs of the outer pair; on the side of the head a broad white eyebrow, and a black band through the eye over the ear-coverts; under parts buff, white behind. Total length 7.6 inches.

The eggs are of a uniform reddish-chocolate, darker than the egg of the Bronze Cuckoo. They measure about .85 x .59 inch.

Genus Chalcococcyx.

Indian Peninsula, Ceylon, Burmah through Malaysia to Australia and New Zealand. Bronze Cuckoos.

The Bronze Cuckoos have a very general resemblance in the pattern of the plumage; the upper surfaces dark with brilliant

metallic green or purple or bronze, the tail feathers with rows of white spots or bars, and the under surfaces white with metallic cross bands.



"The Emu."

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

C. P. Kinane.

Key to the Species.

- I Basal two-thirds of tail rufous, except inner and outer feathers. C. basalis.
- II. Basal half of tail never uniform rufous.
1. With no rufous edges to the quills.
- a. Larger, wing not less than 4 inches.
Breast bands bright green, crown green like back, forehead freckled with white. C. lucidus.
- Breast bands coppery bronze, crown and back of neck purplish bronze contrasting with green back, forehead less freckled with white. C. plagosus.
- b. Smaller. Wing not more than 3.8 inches.
Breast bands coppery bronze, back green, forehead strongly freckled with white. C. malayanus.
2. With narrow rufous edges to the quills.
Like *C. malayanus*, but with no white on the forehead. C. pœcilurus.



Bronze Cuckoo: *Chalcococcyx plagosus*. Australian Museum.

The Narrow-billed Bronze Cuckoo, *C. basalis*.—Australia, Tasmania, Aru Islands to South Celebes, Java and Malay Peninsula. Total length 6.3 inches. Egg, fleshy white, speckled all over with fine pinkish red spots, which become darker by age; .7 x .5 inch.

The Broad-billed Bronze Cuckoo, *C. lucidus*.—East Australia, Tasmania, New Zealand. Total length 6.5 inches. Eggs very pale olive, often stained with brownish-grey, and measures .81 x .52 inch.



"Victorian Naturalist."

C. P. Kinane.

Bronze Cuckoo (16 days old) to the right, being fed by foster parent (the Brown Tit).

The Bronze Cuckoo, *C. plagosus*.—Australia generally, Tasmania, New Caledonia, South New Guinea. Total length 6.2 inches. Egg, clear olive-brown, slightly paler at the smaller end; the olive brown can easily be removed by wetting, leaving a uniform light bluish shell, .7 x .5 inch.

The Little Bronze Cuckoo, *C. malayanus*.—All the Northern parts of Australia, New Guinea, and Malay Peninsula. Total length 5.8 inches. Egg slightly darker than *C. plagosus*, and measures .74 x .54 inch.

The Rufous-throated Bronze Cuckoo, *C. pœcilurus*.—All the northern parts of Australia, New Guinea to Timor and Moluccas. Total length 5.8 inch.

Genus Eudynamis.

India to Australia.

The Koel.*Eudynamis cyanocephalus.*

North-west Australia, Northern Territory, Timor, New South Wales, Queensland, New Guinea.



"The Emu."

C. P. Kinane.

Bronze Cuckoo (*Chalcococcyx plagosus*) about three weeks old.

Male: Black, with a bright greenish-blue gloss. Total length 16 inches. Female: Upper half of head and back of the neck glossy greenish-black; rest of upper surface dark olive-brown; back and wing-coverts thickly spotted with white; quills of wing and tail with white bars; chin and upper throat black, with white spots; rest of under parts white washed with buff and barred with black.

Usually deposits its eggs in the nests of Orioles, Friar birds and Miners. The egg is pinkish-buff with slight markings of chestnut, especially on the larger end, and measures about 1.37 x 1.03 inch.

Genus Scythrops.

Celebes, Flores, Moluccas, Papua, Australia. The one species.

The Channel-bill.*Scythrops novæ-hollandiæ.*

Distribution above.

Head and neck pearl grey; rest of upper parts olive-grey with broad blackish ends to all the feathers of the back and wings; tail with broad subterminal blackish bar and a white end; under surfaces greyish-white with pale wavy markings; bill yellowish; feet olive-brown; iris red; orbits and lores scarlet. Total length 25 inches, culmen 4, wing 14, tail 11, tarsus 1.7. Female similar.

Egg light stone-colour, marked all over, but particularly at larger end, with irregular blotches of reddish-brown, many darker and as below surface of shell. 1.7 x 1.25 inch. Usually laid in the nests of Crows or Magpies, and occasionally small Hawks. Seen at the feeding times, morning and evening, in pairs or less often in small companies. The food is the capsule of the gum-trees. The note is a loud scream. It is often called the Rain bird, as it is supposed to be unusually noisy just before rain and so foretell its coming. The same name was given to it for similar reasons among the natives of the Celebes.

Sub-family Centropodinae.

Wing shorter than in *Cuculinae* and curved to fit the body.

Genus Centropus.

All Tropical Africa, Madagascar, Indian Peninsula and Ceylon, South China, Malay Archipelago to Papua and Australia. A large genus with but one Australian species.

The Coucal.*Centropus phasianus.*

North-west Australia, Northern Territory, Queensland, and New South Wales.

The male assumes a special plumage in the breeding season. In both seasons the rump, upper tail-coverts and tail are glossy greenish-black with numerous rufous, buff or white bars. When not in the breeding season, the upper half of the head and back of the neck chestnut with buff shaft stripes, mottled near the mantle with wavy black bars; the

wings when closed buff crossed by rufous bars with black margins; the back dusky brown; the under parts buff. In the breeding season the head, neck, and entire under parts are black glossed with green and with glossy shaft stripes; the wings chestnut barred with black and buff; the back brownish-black glossed with green; bill horny black; feet slate colour; iris golden yellow. Total length 23.3 inches, culmen 1.6, wing 10.4, tail 14.5, tarsus 2.

Inhabits swampy places abounding in tall grasses and reeds, amongst which the bird runs with great facility. The nest is usually placed in the midst of a tuft of grass, sometimes on a Pandanus; is large and composed of dried grasses, of a dome-shaped form with two openings, through one of which the head of the sitting bird protrudes and the long tail through the other. Eggs three to five, nearly round, of a dirty white, stained sometimes with brown, and rather rough on the surface. They measure 1.3 x 1.2 inch. These birds have a curious note, like coop-coop-coop, &c., in a descending scale, and quickly repeated.

Order Menuriformes.

Furcula complete, sternum with rounded posterior margin. Tail feathers produced to an extraordinary length, and many of them devoid of hooklets. Comprises only the single family Menuridæ, Lyre-birds, which is developed only in South-east Australia.

Key to the Species.

1. Outer tail feather white or ashy white on the inner web, with rufous notches and tipped with black; under tail-coverts ashy; back ashy-brown.
 - a. Outer tail-feather ashy white below, the bars being reddish-brown. New South Wales. 38 inches.

The Lyre-bird, *M. superba*.
 - b. Outer tail-feather white below, the bars being chestnut.

Victoria. 36 inches. The Victoria Lyre-bird, *M. victoriae*.
2. Outer tail feather not barred; under tail-coverts chestnut; upper surface also rufous brown or dull chestnut.

Southern Queensland and Northern Rivers of New South Wales. 31 inches. The Albert Lyre-bird, *M. alberti*.

The Lyre-bird.

Menura superba.

Male: Head and neck dark slaty-brown, as also the sides of the face, ear-coverts and cheeks; mantle slaty-brown; rump washed with grey, upper tail-coverts reddish-brown; wings dark slaty-brown. "The two



From life.

Pheasant Coucal: *Centropus phasianus*.

Sydney Zoo.

centre tail feathers with brown webs along the outer edge, but with only a few radii on the inner edge; remainder of tail feathers having only long lateral filaments, only the bare portion being webbed; the outer



Lyre-bird: *Menura superba*.

Australian Museum.

feathers curving gracefully outwards at the ends, the outer web being smoky-brown and the tip black, the inner web ashy-grey with triangular notches of tawny buff, these notches being transparent by the absence of the radioli of the feather, the inner edge of the outer tail feather



In situ.

Nest of Lyre-bird: *Menura superba*.

D. Le Souëf.

recurved on itself and edged with black." (R. Bowdler Sharpe.) The under surface ashy-brown; bill and nostrils black; bare space round eye lead-colour; legs and feet black, the scales mealy; iris blackish-brown. Total length 38 inches, culmen 1.65, wing 11, tail 24, tarsus 4.4. The female lacks the beautiful lyre-shaped tail, and is smaller, 33 inches. The other species are similarly plumaged, the slight differences being indicated in the key to the species.

Lyre-birds are confined to the Eastern strip of Australia. It has been suggested that they would flourish in Tasmania, and it is to be hoped that the suggestion will be acted on, and that birds will be introduced into that island in which the Fox is not likely to get a footing. Where properly protected, as in the National Park of New South Wales, they do well, and it is to be hoped that, as their natural haunts are invaded by the Fox and the illicit sportsman and collector, fresh harbours will be found for these beautiful and musical denizens of the forest. They frequent retired and shady gullies from sea level to the tops of the ranges. Gould met with the bird in abundance at Western Port and Illawarra, and it is not unknown even nowadays at the head of Sydney Middle Harbour and in the Port Hacking district. But it is chiefly in the gullies of the ranges that the birds are now met with, and where their habits may be studied. The best spots are where the bird still survives in scrubs adjacent to clearings. The birds and eggs are closely protected by law.

Naturally shy birds, they require careful approach. When you have discovered their haunts by waiting patiently in concealment and quiet, you may secure good views, and be able to watch them building or playing on their mounds, or be favoured by one of their marvellous musical recitals. The birds rarely fly, and to no great height, and then mostly when disturbed, or betaking themselves to a lower branch of a tree. They run rapidly along the roughnesses of the rocky gullies, tangled with brush and creepers, and beset with rotten logs and boughs, the legs being long and strong and the thigh muscles powerful, and they have extraordinary powers of springing up the sides of the precipitous ravines, so that pursuit is hopeless.

Morning and evening are the times of activity, when the birds are most seen and heard. They move about rapidly, scratching up the dead leaves and bark to obtain the centipedes,

crustaceans, beetles, and snails on which they feed. The Lyre-bird is our most wonderful songster. Its own notes are peculiarly liquid and melodious, but not content with these it delights to reproduce the notes and calls of its neighbours and to mimic any sounds it may hear in the bush. When singing the bird can be approached with more ease, as it becomes less on the alert as it pours forth its soul in song. Then you may listen to a programme of many items, and did you not know that the solitary performer was before you, you would marvel at the number of



From life.

Victoria Lyre-bird: *Menura victoriae*.

D. Le Souëf.

different birds taking part in the concert. The laugh of the Great Brown Kingfisher, the Kookaburra, is imitated to perfection; then may follow the feeding call or the scream of a Parrot; then the full rich notes of the Thrush; and so on one after another you will hear all the local birds. Thrown in, perhaps as comic items, the bird will give you the rap of the hammer as the settler is driving in his nails, or the hum and buzz of a circular saw, or the steam whistle for knocking off work; or even the bark of a dog, the howl of the Dingo and the crow of a cock.

Among its many curious habits is the building of small banks or mound hillocks. These are formed of light sand and built on ledges, and are a few inches in height. The birds visit



"The Emu."

Lyre-bird (Female): *M. Victoriae*.

A. E. Kitson.

these during the day in the times of courtship, and the male bird struts about on them, erecting and spreading his handsome tail for the admiration of the female.

The Lyre-birds breed in the late winter or early spring, from the latter part of June in early seasons, usually in July or .

August, according to the latitude. The nest is a large one, and is placed on the ground at the base of a stump or the buttress of a tree, on the ledge of a projecting rock or in the head of a tree-fern or against the trunk, but usually near the ground, and among the recesses of the deep gullies. On one occasion we found one about 80 feet from the ground in the fork of a tall Eucalyptus tree. The bird hopped from branch to branch in the thick adjacent smaller trees to get to it. The nest proper is dome-shaped with a side entrance, and is constructed of fine strong roots, narrow strips of bark, leaves and ferns, and is lined with the softer feathers of the bird. There is a foundation of coarse sticks, and the nest is protected from the rain-drip by a rough covering composed of sticks and bits of wood, grass, moss and leaves, which projects over the nest proper. Care is always taken to build the nest in a situation in which it avoids the natural drainage, and is protected from the wind, and the home is made as snug as can be, notwithstanding the dark and damp surroundings. The bird enters by the side opening, going in backwards with tail reversed over the back, and there is sufficient room for it to turn round in the nest. Once inside, the bird is entirely hidden from view, and the outside of the nest closely resembles its environment, so that it is not easily detected. One egg is usually laid, (occasionally two) which is about 2.5 inches long and 1.62 inches broad. It is somewhat rough, depressed all over with pin-point like indents, and with, sometimes, little ridges like the veins of a leaf. The colour is dark purplish-grey, with numerous spots of umber or chocolate, others of dark violet, both sets of markings thicker about the top of the egg where they tend to form a belt. The period of incubation is a long one, apparently extending in some cases to seven weeks.

The habits of the three species are very similar.

ORDER PASSERIFORMES.

Sub-order Mesomyodi.

Intrinsic muscles of the voice organ affixed at or near the middle of the bronchial semi-rings.

Family Pittidae. Ant-thrushes.

Manubrium of sternum forked. Tail quills 12.

Genus Pitta.

Tail short, more or less squared. Birds of varied and brilliant plumage. The young assuming the adult plumage on leaving the nest.



Noisy Pitta: *Pitta strepitans*.

Australian Museum.

The Noisy Pitta.*Pitta strepitans.*

South New Guinea, Queensland and New South Wales.

General colour of back and wings deep green; crown of head ferruginous with a narrow black vertical stripe; sides of head, nape and back of neck black; lesser wing-coverts metallic blue, primaries black with white speculum; chin with black spot, breast buff or fawn colour, abdomen with a black patch, vent and under tail-coverts scarlet; upper tail-coverts and tail black, the latter tipped with green. Total length 8.5 inch, wing 5, tail 2.

The Noisy Pitta keeps much to the ground, but takes to the branches of the trees if alarmed. Its food consists of insects,

fruits and snails. The call is something like "Want-a-watch." The nests are placed on or near the ground, often on the spurs of fig-tree roots. They are made of sticks and lined with moss, leaves and soft bark. The eggs, four, pale creamy-white, marked all over with blotches of brown and deep grey, and measure 1.25 x .87 inch.

The Lesser Pitta.

Pitta simillima.

The northern form of *P. strepitans*, being smaller in size, but not otherwise distinguishable.

The Blue-breasted Pitta.

Pitta mackloti.

Malay Peninsula, Java, Aru, Australia and Tasmania.

Differs from *P. strepitans* in having the rump, upper tail-coverts as well as the wing-coverts blue; breast with a broad greyish-blue band, bordered behind a wide black margin. Total length 7 inch, wing 4, tail 1.6.

The Rainbow Pitta.

Pitta iris.

North-west Australia and Northern Territory.

Upper surface and wings golden green; head, neck, breast, abdomen, flanks and thighs deep velvety-black; on the eye a chestnut band joining its fellow on the nape; shoulders bright metallic-blue; primaries black with white speculum; tail black at base, green at tip; vent and under tail coverts bright scarlet. Total length 6 inches, wing 4, tail 1.4.

PASSERES ABNORMALES.

Family Atrichornithidae.

Furcula rudimentary. Sternum with a single deep indentation on its hinder margin. Wing tiny, powers of flight rudimentary. Back of the tarsus more scutellated than in any Lark. The one genus, confined to Australia.

The Noisy Scrub-bird.

Atrichornis clamosa.

West and South-western Australia.

Above dark chocolate-brown, waved with circular black markings, the brown and black alternating; tail feathers black, varied with alternate wavy markings of black and brown on the margins; throat and breast white, with a blackish patch on the lower throat. Total length 8.5 inches, culmen .75, wing 3.1, tail 4.1, tarsus 1.05.

Nest usually placed on the ground near a stump or log, and is dome-shaped and made of grass and rootlets. The two eggs are reddish-white, with purplish-brown markings, which are confluent on the larger end. They measure .91 x .69 inch.

The Rufous Scrub-bird.

A. rufescens.

The Richmond and Clarence River Districts of New South Wales.

More rufous than preceding, and having upper tail-coverts and tail-feathers regularly barred across with black; the throat is whitish, the centre of the breast black, the abdomen orange rufous. Total length 6.8 inches, culmen .65, wing 2.45, tail 2.85, tarsus .85.

Nest and egg very similar to *A. clamosa*. The eggs measure .89 x .68 inch.

Family Hirundinidæ.

Broad-billed, Passeres with nine primaries. Cosmopolitan. Swallows and Martins.

All our Australian birds belong to the sub-family *Hirundinina*, True Swallows, and all possess bare toes. Feed on insects, which they capture on the wing.

Key to the Genera.

Tail strongly forked, the outer feather indented on the inner web and elongated. Nostrils, the nasal apertures longitudinal or oval.	Hirundo.
A distinct superior membrane.	Cheramœca.
Scarcely any superior membrane.	Petrochelidon.
Tail square. Nostrils rounded and exposed, without any superior membrane.	

Genus *Hirundo*.

Cosmopolitan. *H. gutturalis* extends over a wide area from Northern Asia through the Malay Archipelago to New Guinea and Northern Australia; *H. javanica* from Southern India through the Malay Archipelago to the islands of Torres Strait; *H. neoxena* replaces *H. javanica* in Australia and Tasmania.

The Chimney Swallow.

Hirundo gutturalis.

Above glossy purplish-blue, streaked with the white bases to the feathers of the mantle, tail feathers, except central, with a large oval white spot on the inner web; forehead, cheeks and throat dark-chestnut.

with an incomplete purplish-blue collar on the foreneck, rest of under-surface white; bill black, feet brown, iris black. Total length 6.7 inches, culmen .35, wing 4.6, tail 3.4, tarsus .5.

The Eastern Swallow.

Hirundo javanica.

Above dull steel blue, mottled with white bases to the plumes of the hind neck; wing-coverts, quills of wing and tail black; tail-feathers, except central, with an oval white spot on the inner web; a broad frontal band, cheeks, throat, foreneck and most of the ear-coverts brick red, rest of under-surface ashy brown. Total length 5.1 inches, culmen .4, wing 4.15, tail 2.15, tarsus .35.

The Australian Swallow.

Hirundo neoxena.

Resembles preceding generally, but the ear-coverts are glossy blue like the back, and the breast and especially the abdomen are lighter in colour, the latter being inclined to ashy white. Total length 5.8 inches.

The Swallow performs a general migration avoiding the extremes of heat and cold. Thus it appears in Tasmania in September and leaves in March. A few will pass the whole winter about Sydney, but the majority go north for a couple of the coldest months. In the summer they appear in great numbers, and are active for the greater part of the day, hawking insects in graceful curves, skimming close to the ground in duller days, and more aloft on bright. They are indifferent to the proximity of man, circling round a cricket ground for instance, while a match is being played, so that often on a late afternoon when the light is weak a bird has been mistaken for the ball by the field, and has confused the batsmen. The nests are placed in deep clefts of rocks or in dark caverns in country unoccupied by the white man, but since his advent the bird has chosen sites similar to those selected by the European Swallow, building under verandahs or eaves, in barns and outhouses, less frequently in the chimney. The well-known nest is made of mud or clay, intermingled with straw or grass to bind it; is open at the top, and lined first with a layer of fine grass and then with feathers. The shape varies according as the nest is built in a corner, or against a wall, but is always rounded on the free rim. The eggs, usually four, are rather long, pinky-white with many fine spots of purplish-brown, .75 x .5 inch. The note is a pleasant twittering.

Genus Cheramæca.

Comprises but one species, which is confined to the Australian Continent.

The Black and White Swallow.*Cheramæca leucosternum.*

Upper surface parti-coloured; crown of head white with brown centres to the feathers, nape and hind neck and sides of neck brown; mantle and upper back white, lower back, rump and tail-coverts and most of the wing blue-black; ear-coverts brown; cheeks, throat, foreneck, and breast, white; abdomen and under tail-coverts blue-black; bill blackish-brown; feet greenish-grey; iris dark reddish-brown. Total length 5.5 inches, culmen .25, wing 3.95, tail 3, tarsus .5.

The Black and White Swallow is a very wandering species, seen in small flocks of ten to twenty in number. It usually flies very high, more like the Swifts. It more closely resembles the European Sand Martin in its nidification than do any of our other Swallows. It builds sometimes in a deserted burrow of some Bandicoot or Rat Kangaroo, but more generally drills for itself a hole in the side of a bank. The hole is perfectly round, and the passage runs in horizontally for about a yard, and then expands into the nesting chamber. The nest is composed of dry grasses and leaves. Eggs about .67 x .48, pure white, elongated.

Genus Petrochelidon.

Both hemispheres. Martins.

Head steel-blue with a frontal band of sandy-buff or rufous. *P. nigricans*. Head all rufous. *P. ariel*.

The Tree Martin.*Petrochelidon nigricans.*

Australia generally and Tasmania, visiting New Zealand, the Papuan Islands and even the Moluccas, migrating north for the winter.

Above deep steel-blue, lower back and rump whity-brown, upper tail-coverts and tail-feathers dusky-brown: a frontal band of pale brick-red extending backwards to the corner of the eye; lores, feathers round eye, and ear-coverts sooty-blackish; cheeks and throat dull whitish, with blackish streaks, rest of under-surface whitish with a sandy tinge, a patch of blue-black on the sides of the upper breast. Bill and toes light-brown, iris black. Total length 5.2 inches, culmen .3, wing 4.2, tail 2.1, tarsus .5.



"The Emu."

Nests of Colony of Fairy Martins (*Petrochelidon ariel*).

C. A. Barnard.

Lays its eggs in the holes of trees, making no special nest. The eggs, three to five, are pinky-white faintly freckled at the larger end with fine spots of light reddish-brown. .67 x .5 inch.

The Fairy Martin.

Petrochelidon ariel.

All Australia and Tasmania.

Head bright rufous, upper surfaces generally deep-blue, lower back and rump mottled creamy white, upper tail-coverts smoky-brown; lores black, sides of face and ear-coverts smoky-brown, cheeks and throat white with minute dusky streaks; breast and abdomen pure white, under tail-coverts white with a smoky tinge; bill blackish-grey, feet olive-grey, iris blackish-brown. Total length 4.6 inches, culmen .3, wing 3.7, tail 1.9, tarsus .4.

The Fairy Martin is migratory, like the other Swallows, breeding in the south in the spring and early summer. The nests are usually placed in clusters against the vertical sides of a river bank, the sides of a rock or a building, or sometimes to overhanging formations. The nest is long and bottle-shaped with the opening at the end of the neck. It is composed of mud or clay, each portion plastered on to the foundation or to the growing structure by the bill of the bird. It is nearly round, from four to seven inches in diameter, and the spout reaches to even eight or nine inches in length. It is lined with fine grasses and feathers. The nests are usually congregated in some situation near to water, but not actually on the sea coast. Thus we have seen them on the Saltwater River, near Melbourne, at Hunter's Hill, on the Parramatta River, and at Norman Park, a suburb of Brisbane below the city. The parish church at Richmond, situated near the edge of the higher ground which overlooks the alluvial flats, and close to one of the billabongs of the Nepean, has two sides below the roof covered with hundreds of the nests. The birds have but a short distance to fly in order to obtain the mud for the nests, and there is abundance of insect food over the water. As in England, the common Sparrow in some cases challenges successfully the ownership of the nest, and turns out the milder Martins. "In constructing the nests the 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 the others in their mouths." (Gould). The eggs, 4 to 5, white, plain or spotted and blotched with red, and measure .7 x .5 inches.

Family Muscipidæ.

Bill broadened and rather flat, generally furnished with numerous rictal bristles; culmen keeled. Eminently insectivorous.

Key to the Genera.

- A. Wings long, longer than the tail, and distance between the wings and the tip of the tail not greater than the length of the tarsus.
- a. Bill broader, when measured across the nostrils the width equals the length of the hind toe, without the claw. *Micræca.*
- b. Bill narrower, when measured across the nostrils the width much less than length of hind toe.
1. Distance of wings from tip of tail greater than length of culmen.
 Second primary longer than the secondaries.
 Culmen very small, about a quarter of an inch. *Smierornis.*
 Culmen about half an inch.
 Under tail-coverts short. Robins. *Petroæca.*
 Under tail-coverts long. Yellow-breasted in Australian species. *Gerygone.*
 Second primary equal to secondaries. Bristles scanty. *Pseudogerygone.*
2. Distance of wings from tip of tail not greater than length of culmen.
 Bill higher than broad at the nostrils. *Heteromyias.*
 Bill broader than high at the nostrils. *Pœcilodryas.*
- B. Wings shorter, the distance between the wings and the tip of the tail greater than the length of the tarsus.
- a. Wings shorter than tail.
 Sexes coloured alike. *Rhipidura.*
- b. Wings longer than tail.
1. Bill moderately broad, at base of forehead width equal hind toe without claw. *Myiagra.*
2. Bill extremely broad and flattened; culmen elevated into a distinct ridge. *Machærirhynchus.*
3. Bill narrower.
 Culmen very long and thin, longer than middle toe with claw. *Sisura.*
 Culmen not as long as middle toe with claw.
 With a fleshy eye-wattle. *Arses.*
 Without a fleshy eye-wattie.
 Head velvety, with soft scale-like plumes. *Piezorhynchus.*
 Head with ordinary plumage. *Monarcha.*

*Genus Micræca.***The Brown Fly-catcher.***Micræca fascinans.*

Australia except North and West.

Upper surface and sides ashy-brown; throat, belly and under tail-coverts white; outermost tail feathers pure white. Length 4.9 inches, wing 3.45.

Mr. North says well of this charming, if homely, little bird, "A resident and well-known species as freely distributed inland as it is near the coast, where it may be found frequenting alike the tall Eucalypti and the low undergrowth, and is equally common in the parks and gardens of Sydney. This sombre little bird with its conspicuous white lateral tail feathers, which show to advantage when flying, is an indefatigable destroyer of insects, and being of a fearless and sociable disposition, is a general favourite with orchardists and agriculturalists." Jacky Winter, as they call him, is indeed seldom molested by even the thoughtless schoolboys. It is endowed with a most cheerful and pleasing song, the notes of which resemble, according to Gould, the spring notes of the English Chaffinch, but are more clear and powerful. They are rendered in trochaic measure—u—u—u—u—something like Peter, Peter, Peter, Peter. It will come around as you work in your garden, and perch on a gate or fence or a fruit tree stake, though it never remains long in the same place, but flits across with a peculiar turn of its tail from one side to the other, showing the white feathers. It nests in the latter part of the year. The nest is a very small, slight, nearly flat structure, some 2½ inches across, formed of fibres or grasses, with bits of bark and lichen outside, and most artfully placed flush in the fork of a horizontal branch at a good height from the ground, so that it is most difficult to see from below. The eggs two or three, are of a bluish-green ground colour, spotted and blotched with purplish-brown and underlying blotches of grey, and measure .72 x .55 inch.

In the West and the Northern Territory, this bird is represented by the Lesser Brown Fly-catcher *M. assimilis*, which is rather smaller. Total length 4.5, wing 3.35 inches, and has the outermost tail feathers blackish-brown with a white margin.

In North Queensland and the Northern Territory the variety *M. pallida*, is found. It is lighter in colour and smaller in size than *M. fascinans*, and has more white on the tail feathers. Total length 4.3 inches, wing 3, tail 2, bill 0.3. The two eggs measure .68 x .53 inch.

The Lemon-breasted Fly-catcher.*Micræca flaviventris.*

North Australia and New Guinea.

Olive-brown above, more or less tinged with yellow; below pale-yellow, the sides scarcely darker; throat white or paler. Length 4.6, wing 2.75 inches.

According to Gilbert, a very familiar species, inhabiting the trees and bushes around the houses, and little alarmed or disturbed at the approach of man. Gilbert describes the song as varying with Robin-like notes in the early morning, and notes like those of the Gerygone (known about Sydney as the Bush Canary) in the evening. "In the middle of the day, when the sun is nearly vertical, it leaves the trees and soars upwards in circles, like the Skylark, until it arrives at so great a height as to be scarcely perceptible; it then descends perpendicularly until it nearly reaches the trees, when it closes its wings and apparently falls upon the branch on which it alights. During the whole of this movement, it pours forth a song some parts of which are very soft and melodious, but quite different from that of the morning or evening." He adds that the bird is "at times extremely pugnacious. I have seen a pair attack a Crow and beat it until it was obliged to seek safety in flight, all the while calling out most lustily." The nest is composed of fibrous material, covered externally with cobweb, to which are attached flakes of bark. It is situated in the fork of a tree, about 20 feet from the ground and is almost invisible from below. As the nest measures only $1\frac{1}{2}$ inches x $1\frac{1}{4}$ in depth, it is one of the smallest of Australian birds' nests. The single egg is greyish in colour, blotched with chestnut and purple, and measures .76 x .53 inch.

Genus Petræca. Robins.

Australia, Tasmania, New Zealand, and with species in the New Hebrides, Fiji and Samoa. These sprightly little birds are met with all over Australia, different species occupying different stations, so that everyone has the opportunity of now and again seeing one or other of the Redbreasts. The sexes are very dissimilar, the males marked in black, white, and most of them with

some shade of red, while the females are of a sombre brown. The brightly coloured birds seem to delight to show off their brilliant breasts, raising them as they perch. The song is pleasing and melodious; Tee-treee-treee-treee it has been rendered; but it is not so full and free as that of the English Robin. They build round, cup-shaped nests, constructed of strips of soft bark, grass and fibres, with a thick rim trimmed with lichens, and lined with hair, and placed on the ground against a rock or trunk, or in crevices of rocks, or in spouts or hollows of trees at no great height. The eggs are three in number, greenish-white in colour, speckled and freckled with purplish and brown, and are about three-fourths of an inch long by about half an inch wide. For the diagrams of the various species we are indebted, as in general, to the admirably worked out keys of the British Museum Catalogues. The male plumage alone is indicated.

- A With red on the under surface of the body. Red-breasts.
- a. Forehead red.
 Throat black, South Australia, Centre and West. The Red-capped Robin, *P. goodenovii*.
 Throat red in the centre. North and North-west. The Red-throated Robin, *P. ramsayi*.
- b. With a white mark on the forehead.
- a. Wing coverts with a white patch. Broad white bar along the wing.
 Upper surface black, frontal white mark large, throat black; breast scarlet. East and South Australia and Tasmania. The Scarlet-breasted Robin, *P. leggei*.
 Similar, but with smaller white markings. The Western Scarlet-breasted Robin, *P. campbelli*.
 Upper surface slaty-grey, frontal mark small, chin black, throat and breast orange-scarlet. East and South Australia and Tasmania. The Flame-breasted Robin, *P. phoenicea*.
- γ. Wing-coverts without any white; frontal mark very small; breast pink.
 With no white on the tail. South-east Australia and Tasmania. The Pink-breasted Robin, *P. rhodinogastra*.
 Outer tail feathers mostly white. Eastern Australia. The Rose-breasted Robin, *P. rosea*.
- B. With no red on the under surface of the body.
1. Glossy black above; throat black, breast white.
 Tail with broad sub-terminal black band; length 5.2 inches. Southern Australia. The Hooded Robin, *P. bicolor*.
 Similar, but with less black on tail; length 5.8 inches. North, Central and West Australia. The Pied Robin, *P. picata*.
2. Dusky brown above; throat and breast brown.
 Southern Australia and Tasmania. The Dusky Robin, *P. vittata*.

Genus Smicornis. Tree-tits.

The smallest of the Australian birds, the length under $3\frac{1}{2}$ inches, the wing 2 inches or under. The habits are those of the European Titmice, though their leafy world is loftier. They twine about the finest twigs of the outermost branches, and pry into the leafy recesses in their busy search for insects, uttering

Flame-breasted Robin: *Petroeca phoenicea*.

Australian Museum.

the while their pretty little notes. The nest is built aloft among the highest twigs of the tree; it is dome-shaped in form, with a side entrance, and is composed of green moss and grass all matted together very closely with spiders' webs, and lined with a few feathers. The eggs are two or three in number, dull buff marked with fine freckles at the larger end. They measure .62 x .43 inch.

There are two species of the Tree-tits.

The Short-billed Tree-tit, *S. brevivostris*.—New South Wales, South Australia, and the Centre. Dull olive-yellow above, pale yellowish-buff below; the eyebrow reddish-brown. It is more of an inland than a coast bird.

The Yellow-tinted Tree-tit, *S. florescens*.—North and West Australia. Is pale olive-yellow above, and sulphur-yellow below; the eyebrow is whitish. Its habits are those of its congener.



From life.

A. H. E. Mattingley.
Hooded Robin: *Petroeca bicolor*.

Genus Gerygone. Fly-eaters.

Small woodland birds, the Australian species with white throats and yellow breasts, which busy themselves in hunting for tiny insects which they discover amid the denser foliage of the upper boughs. At the pairing and breeding time the song is liquid and varied. The more widely distributed species, living in New South Wales during the summer months, is often, and not undeservedly, called the "Native Canary." The nest is a beautiful structure. It is suspended from the leafy twigs of a bushy tree; is oblong-oval in shape, with a narrow entrance in the side, which is almost concealed by a small protecting hood, and the bottom of the nest terminates in a small beard or tail

several inches in length. It is outwardly constructed of strips of bark, grasses and cobwebs matted up and interwoven together; the inside being warmly lined with hair, opossum fur, or the silky-white down of the Cotton Plant. The eggs are three in number for a sitting, elongate in form, and a pure white, thickly freckled, and spotted with dull red markings; .75 x .5 inch. The White-throated Gerygone is frequently the foster-parent of the Narrow-billed Bronze Cuckoo and the Barred-breasted Bronze Cuckoo.

There are two Australian species.

The White-throated Fly-eater, *G. albigularis*.—Eastern Australia from Cape York to New South Wales, migrating southward for the summer. Nest described above. The upper surface is olive-brown. Length 4 inches.

The Grey Fly-eater, *G. cinerascens*.—North-west Australia and South-east New Guinea. Ashy-brown above, and the length is but 3.4 inches.

Other species are found in Timor, Borneo, Celebes, and the Philippines.

Genus Pseudogerygone. Fly-eaters.

This genus includes a large number of birds, closely allied to the preceding, and of similar habits, and ranges over the whole of Australia, New Caledonia, New Guinea and adjacent islands. There are six Australian species. They are all small birds, approaching four inches in length, the bill, except in *P. magnirostris*, being under half an inch. The song is inferior to that of the Gerygone.

Like the Gerygone, they build suspended dome-shaped nests. That of the *P. magnirostris* is a long ragged structure about 18 inches long built on a hanging creeper usually over water and exactly resembles some flood debris, hence its local name, the Flood Bird. The nest proper is at the bottom, and is comparatively small. Three eggs are laid, colour warm-white, marked with reddish-brown blotches, especially on the larger end. They measure about .67 x .47 inch.

Back brown, abdomen white in the first four species.

The Western Fly-eater, *P. culicivora*.—Western Australia. Ashy-brown above, throat and chest ashy-whitish. Culmen .4 inches.

- The Large-billed Fly-eater, *P. magnirostris*.**—North and North-east Australia. All the under surface tinged with brown. Bill over half an inch.
- The Brown Fly-eater, *P. fusca*.**—East and South Australia. Rufescent brown above; throat ashy-grey; breast greyish-white. Culmen .4 inches.
- The Buff-breasted Fly-eater, *P. lævigastra*.**—North Australia. Throat and breast pure white; sides of breast and flanks ashy-brown. Culmen .4 inches.
- The Green-backed Fly-eater, *P. chloronota*.**—North Australia. Head and nape brownish grey; rest of upper surface bright olive-green; under surface white; sides of the body yellow.
- The Black-throated Fly-eater, *P. personata*.**—North-east Australia and Southern New Guinea. Forehead brown; general colour above olive-greenish; throat dark; rest of under surface sulphur-yellow. The female has a white chin. Builds its pendent nest by the nest of a species of hornet.
- The Brown-breasted Fly-eater, *P. brunneipectus*.**—Has reddish-brown breast, flanks, and ear-coverts.
- The Dusky Fly-eater, *P. tenebrosa*.**—Tail uniform ashy-brown; lores and eyebrows creamy-white; throat whitish, like rest of under surface, and all lightly washed with pale yellowish-brown; flanks a shade darker; bill black.
- The Singing Fly-eater, *P. cantator*.**—South-east Queensland. Differs from *P. fusca* in having its flanks ashy-grey; under tail-coverts white; feet and legs strong and size large; length 114mm., wing 56, and tail 45.

The Ashy-fronted Robin.

Heteromyias cinereifrons.

Cape York district. Rusty-brown above, head and nape dark with ashy shade; throat and abdomen white, chest light-grey. Total length 6.3 inches, culmen .7 inch. Builds open nest of tendrils and moss; one or two eggs, dull greenish-white colour, with brownish markings, especially on larger end. They measure about 1.05 x .72 inch.

Genus *Pæcilodryas*.

Larger Robins, five to six inches in length, occurring in New Guinea and adjacent islands and, except *P capito*, Australia only in the Northern regions. There are five Australian species. Abdomen greyish-white; throat white.

The Buff-sided Robin, *P. cerviniventris*.—North-west Australia. Brown above, darker on the head; neck and breast grey; flanks and under tail-coverts tawny buff.

The White-browed Robin, *P. superciliosa*.—North and North-east Australia. Brown above; chest and breast ashy white; flanks and under tail-coverts white, or flanks brownish-white.

The Ashy Robin, *P. pulverulenta (cinerea)*.—North-east Australia, New Guinea, Aru.—Bluish-grey above; under surfaces white; sides of breast and flanks washed with grey.

The Grey-headed Robin, *P. cinereiceps*.—North-west Australia. Crown of head and upper surface pale ashy-grey, underside as in *P. pulverulenta*; tail black, with a white band on the basal half (except the two central rectrices); upper tail-coverts black; under tail-coverts white.

A form from Cape York has been named *P. albigularis*. It has not only the chin, but nearly the whole throat for about 1 cm. white, and the pileum is slightly more blackish.

Abdomen yellow; above yellowish or olive-green; region of eye and lores white.

The White-faced Robin, *P. albifacies*.—North-east Australia. Forehead blackish; throat bright yellow.

The Large-headed Robin, *P. capito*.—Richmond and Clarence Rivers, New South Wales. No black forehead; chin and upper throat greyish-white; rest of under surfaces bright yellow.

The nest is a deep cup-shaped structure, composed of the dead leaves of the lawyer-vine (*Calamus australis*), held together with a few wiry grass stems, the exterior being covered with mosses and a few pieces of lichen. Eggs, two in number for a sitting, of a dull greenish-white colour, indistinctly marked with yellowish and reddish-brown, particularly towards the larger end; .8 x .6 inch. It is interesting to find this member of a Northern type established among the palms and other vegetation which has migrated from the North. Both "brushes" and bird are now isolated from their kin.

Genus Rhipidura. Fan-tails.

A well-established genus, comprising some 50 species, and extending from India and Ceylon through Malaysia and Australia to New Zealand and Oceania. Owing to its long

dominance there has been considerable differentiation into subspecies and varieties. The Australian forms naturally group themselves about four types.

A. The White-shafted Fantails.—Ashy-brown above; wings brown, the inner secondaries edged with white; most of the tail feathers with conspicuous white shafts, the ends of the feathers white; cheeks and throat white; lower throat black; rest of under surface buff. Total length 6 inches, tail about 3.5 inch.

The White-shafted Fantail, *R. albiscapa*.—Australia except North and West.

The White-tailed Fantail, *R. albicauda*.—Of the Centre, has a greater extension of the white of the tail, one or two of the outermost feathers being pure white, and the others, except the two centrals, white narrowly edged with brown.

The Dusky Fantail, *R. diemenensis*, is the Tasmanian form. It is slightly larger and more deeply coloured, the upper surface darker; the throat collar deeper black; the tail blackish; and the entire under surface richer orange fulvous.

The Western Fantail, *R. preissi*, is the West Australian form. Lacks the black throat collar, and has the white of the tail more extensive.

The White-fronted Fantail, *R. phasiana*.—Northern Australia. Breast white; wings spotted.

B. The Rufous Fantails.—About the size of the Dusky Fantail. Head earthy-brown; back and tail bright bay-red, the tail tipped with white; wings rufous; cheeks and upper throat white, lower part of throat black, forming a large patch; fore-neck mottled with black and white; centre of breast and abdomen white.

The Rufous Fantail, *R. rufifrons*, is the type.—Eastern Australia from Victoria to Cape York, Southern New Guinea. *R. intermedia*.—North-east Queensland, is less brightly coloured.

The Wood Fantail, *R. dryas*.—North Australia. Is rather smaller, has more white in the tips of the tail feathers, and has the white breast crossed by a distinct band of black.

C. **The Grey Fan-tails.**—Length 7 inches; head blackish; rest of upper surfaces and sides ashy-grey; tail blackish with broad white tip to the outermost feather; throat white, a broad band of ashy-grey across the fore-neck and chest; centre of body light buff; white under the tail.

The Northern Fantail, *R. setosa (isura, gularis)*.—North Australia, New Guinea and Bismarek Archipelago, Waigiou.



From life. C. P. Kinane.
White-shafted Fantail feeding young: *Rhipidura albiscapa*.

D. **The Black and White Fantails.**—Length nearly 8 inches. Above black with brown on the wings; tail black; throat, neck, thighs, and sides of face and breast black; remainder of under surface white.

The Black and White Fantail, *R. tricolor*.—All Australia, New Guinea, Bismarek Archipelago, Solomons, Moluccas.

The White-shafted Fantail is one of the small birds most frequently noticed when one is travelling in the bush, since from its inquisitiveness and social disposition it will come near and fly round you in the camp or on the track. “While in the air it

often assumes a number of lively and beautiful positions, at one moment mounting almost perpendicularly; constantly spreading out its tail to the full extent, and frequently tumbling completely over in the descent." (Gould). It literally hunts high and low for the insects, the flies and gnats which form its food, in the



In situ.

Nest of White-shafted Fantail: *Rhipidura albiscapa*.

D. Le Souëf.

tops of forest trees, or flitting over your shoulder, or even entering the bushman's hut in the pursuit. The song is a sweet twittering. The nest is always a source of admiration; it is placed a few feet from the ground, fastened to a usually dead branch, and shaped like a wine-glass with the stem broken across, and composed of small strips of bark outwardly matted

together with spiders' webs, which are beautifully interwoven with the bark and help to attach the nest to the branch. It is lined inside with the fibre or grasses which the neighbourhood supplies. The eggs, two or three in number, are white, blotched with olive-brown, and measure .64 x .5 inch.

The Rufous Fantail, while it may be seen in open forest country in winter, has its home, and brings up its young, in the



From life.

Black and White Fantail: *Rhipidura tricolor*.

H. Burrell.

most secluded gullies and brushes. It is more terrestrial than the white-shafted, has longer legs and runs freely over the ground and the fallen logs of trees. In the Blue Mountains it seems to prefer the crown of a tree-fern as the situation of its nest, which is wine-glass shaped.

The Black and White Fantail, or Willy Wagtail, resembles the Pied Wagtail of Europe in its contrasted colouring, and in its movements; it runs along the ground, and manipulates its long black tail from side to side, not up and down like the

Wagtail. The notes during the breeding season are strong and clear and of much sweetness. Bushmen generally translate the call note into "Sweet Pretty Creature." It is a very tame bird, is constantly about the farms, gardens and orchards, sits on the gates or palings, and will even run along the backs of the cows in its busy search for insects. The nest is deeply cup-shaped, resembling in texture that of the other Fantails, and is usually placed on the branch of a tree at a good height from the ground. The eggs of all the Fantails have a general resemblance.

Genus Myiagra. Fly-catchers.

Another genus widely distributed over Australia, Austro-Malaysia and the Western Pacific. The sexes differ usually considerably in the colouring of the plumage. There are four Australian species, two of which are confined to the North, while the other two migrate to the southern states and Tasmania, arriving in September and remaining until March to nest and rear their young. The note is a loud and shrill whistle.

A.—Head, back and wing-coverts, throat and fore-neck leaden-grey; remainder of under surface white; in the females the throat and fore-neck light reddish-buff.

The Leaden Fly-catcher, *M. rubecula* (*plumbea*).—Tasmania and Eastern Australia to New Guinea. Lores and feathers in front of the eye lead-colour. Length of male 5.7 inches, of female 5.2.

The nest is composed of small pieces of bark and wiry rootlets held together with cobwebs, and ornamented on the outside with green lichens; usually it is placed on the top of a horizontal bough, and frequently at a considerable height from the ground. The eggs are 3 in number, dull bluish-white in ground colour, with a zone of dark slaty-blue spots around the centre or towards the larger end of the egg. They measure .74 x .55 inch. A most active bird, and most useful to man as a destroyer of insect pests. It displays a constant tremulous motion of the tail, which often betrays it even when resting on a bough.

The Blue Fly-catcher, *M. concinna*.—North and North-west Australia. Differs from the preceding in that a narrow frontal line, the lores, and the feathers in front of the eye, are black.

Egg with very rounded apex, of whitish ground colour encircled about the centre with a belt of umber and grey spots and small blotches, .65 by .5 inch.

B.—Head, back, wing-coverts, throat and fore-neck greenish-black; remainder of under surface white; in the females greyish-brown above, throat and fore-neck orange-rufous, abdomen buffy-white.

The Satin Fly-catcher, *M. nitida*. Tasmania and Eastern Australia. Length of male 6.6, of female 6.4 inches.

Egg somewhat round, greenish white, spotted and blotched all over with umber-brown, yellowish brown and obscure purplish grey, .75 by .6 inch.

C.—All upper surfaces leaden grey, darker and more greenish and glossy on the head; lores and feathers in front of the eyes ashy grey, throat and chest pale rufous, breast and abdomen white, tinged with orange on the sides of the breast. The female much paler in plumage. The bill is much broader than in the other species.

The Broad-billed Fly-catcher, *M. latirostris*. North and West Australia, New Guinea, Aru. Length of male 6.5, of female 6.4 inches.

Genus Machærorhynchus.

A small highly specialised genus, limited to Northern Australia, New Guinea and the adjacent islands. The beak is extremely broad and flattened, “laterally developed to a greater extent than in any other bird of its size.” (Gould). The culmen of the beak is elevated into a distinct ridge.

The Yellow-breasted Fly-catcher.

Machærorhynchus flaviventer.

North-east Australia.

Above olive-green, yellow on the rump; upper tail-coverts black, and tail and wings black with white tips; forehead and eye-brow bright yellow; chin and upper throat white, breast and abdomen bright yellow. Length 4.6 inches. Visits the tropical flowers for insects.

Genus Sisura.

Confined to Australia. There are two species.

The Restless Fly-catcher.*S. inquieta.*

Australia except north.

A resident bird. Head and upper surface shining bluish-black; wings dark brown; under surface silky white. Length 8 inches.

Thus it closely resembles the Black and White Fantail in size and colouring, except that it lacks the black throat. It well deserves the common names of Restless Fly-catcher and Razor-grinder. It is never still, not only displays the graceful movements of the other Fly-catchers, but has a habit of hovering like a small Hawk and then darting straight down to seize the insect which its keen eyes have detected. While hovering it makes a loud noise exactly resembling a razor-grinder at work. When perched on a bow it utters a shrill whistle. The nest is placed as much out of reach as possible at the end of a dead horizontal branch, with bark, grasses and cobwebs outside and lined with feathers, fine grasses or hair. The eggs of the usual type, three in number, white, blotched and spotted with brown, and measure .75 x .6 inch.

The Little Fly-catcher.*S. nana.*

North, Central, and North-west Australia.

Head, back, and tail glossy greenish-black; wings brownish-black; under surface white, tinged with buff on the chest. Length 6 inches.

Genus Arses.

A small genus occurring in New Guinea, the Papuan islands and North-east Australia.

The Pied Fly-catcher.*Arses kaupi.*

North-east Australia.

Head, back, wings and tail glossy blue-black; a broad collar round the neck; scapulars and rump white; under-surface white with a broad band of glossy black across the breast. Length 6 inches.

The Frill-necked Fly-catcher.*A. lorealis.*

North Queensland.

Has white lores and the whole of the under surface white.

Nest of Kaup's Frilled Fly-catcher: *Arses Kaupi*.*D. Le Souëf.*

Nest usually suspended from two parts of a creeper and composed of dark coloured tendrils with pieces of lichen fastened on the exterior with cobweb. The eggs are two in number, and are pinkish-white, spotted with reddish and purple markings, mostly on the upper end. They measure .75 x .54 inch.

Genus Piezorhynchus. Fly-catchers.

A large genus extending from Australia through the Papuan island to Timor and Moluccas.

The Shining Fly-catcher.*P. nitidus.*

North and North-east Australia, Aru Islands.

Length of male 7.3, of female 6.8 inches. Male: Whole of plumage rich, deep, glossy greenish-black; iris red. Female: Top and sides of head and nape of the colour of the male plumage, back, wings and tail rusty-brown; under-surface white.

“Inhabits the densest mangroves and thickets, and is usually seen creeping about close to the ground among the fallen trees in the swamps, at which time it utters a note so closely resembling the croak of a frog, that it might easily be mistaken for the voice of that animal; this peculiar note would seem to be only emitted while the bird is feeding on the ground; for when it occasionally mounts to the higher branches of the trees it utters rather a pleasing succession of sounds resembling *twit-te-twite*. The nest is built among the mangroves, or on the verge of a thicket near an open spot.” (Gilbert). It is cup-shaped, made of bark, bound with fibres and cobwebs, and all over the outside small pieces of bark like bits of lichen are attached, some hanging by a single thread and moving about with every breath of air. The eggs two, bluish-white, spotted and blotched with olive and greyish-brown, .8 x .6 inch.

The Spectacled Fly-catcher.*P. gouldi.*

East Australia.

Length of male 5.8, of female 6 inches. The male and female coloured alike, ashy-grey above; wings brown, tail black; sides of throat, neck and chest bright orange rufous, centre of breast, abdomen and under tail-coverts white; forehead and a ring of feathers round each eye black.

The nest is usually built between the stems of the lawyer palm, *Calamus australis*, and is outwardly composed of shreds of bark fibre, grasses and dried skeletons of leaves, ornamented and held together with spiders' webs and egg bags, the inside being neatly lined with fine black hair-like roots. (North). Eggs

of the usual type. It is interesting to note the constant use which the Fly-catchers and Fantails make of the webs of their allies or rivals, the spiders.

The White-eared Fly-catcher.

P. leucotis.

North-east Australia, Louisiade Archipelago.

Glossy black above, the scapulars and upper tail-coverts white; tail black, most of the feathers with white tips; lores, spot in front of the eye, and a large one above the ear-coverts white; throat and abdomen white, breast ashy. Length 5.7 inches.

The White-bellied Fly-catcher.

P. albiventer.

Similar to *P. gouldi*, but having the lower part of the breast and sides of the body pure white and the upper tail-coverts blackish. Total length 5.49 inches, wing 2.9, tail 2.7. Nest and eggs very similar to those of *P. gouldi*, the latter measure about .79 x .57 inch, and are dull white in colour and well marked all over with small reddish dots. Two eggs are laid.

Genus *Monarcha*. Fly-catchers.

Australia to Timor and the Moluccas, a small genus.

The Black-faced Fly-catcher.

M. melanopsis.

North-east Australia and New Guinea.

Migrates south to the coastal brushes and mountain gullies of New South Wales in the spring, and leaves in the autumn. Length 6.8 inches. Above uniform ashy-grey; a ring of black feathers round the eye, forehead, lores and throat black; breast and abdomen light orange-buff; female without the black forehead and throat, these parts grey.

Nest in a low tree in thick scrub, built of green mosses lined with black rootlets. Eggs two, white with dots and spots of red. .93 x .64 inch.

The Pearly Fly-catcher.

M. canescens.

Cape York Peninsula.

Pearly-grey above, the wings and tail black in marked contrast to the pearly back; a ring of black feathers around the eye, forehead and throat black; breast and abdomen orange-chestnut. Length 6.4 inches.

Group Cichlomorphæ.

Wing with ten primaries, the first more or less markedly reduced in size; claw of middle toe oblique; bill notched, the culmen nearly straight, bent at the end in an arch, generally incised at the sides, rictal bristles generally present round the base; nostrils placed low nearer to the cutting edge of the mandible than to the culmen. Thrush-like Passeres.

Family Campophagidæ. Cuckoo-Shrikes.

Shrike-like birds of soft plumage; the shafts of the feathers of the lower back and rump stiffened. Bill short, moderately hooked and notched, thick at the base, rather widened, the nostrils hidden by nasal plumes. Wings in most species lengthened.

Key to the Genera.

Tail forked.	Pteropodocys.
Tail rounded.	
Bill broad.	Coracina (<i>Graucalus</i>).
Bill long and thin, the culmen equal to the tarsus.	Edoliisoma.
Bill moderate, the culmen shorter than the tarsus. Wing much longer than tail.	Lalage.

The Ground Cuckoo-Shrike.*Pteropodocys phasianella.*

Australia in the interior of the States.

Above French-grey; abdomen, back, rump, and upper tail-coverts pure white, with narrow bars of black; wings and tail black; bill and feet black, tinged with olive; iris buffy-white. Length 13 inches, culmen .85, wing 7.65, tail 7, tarsus 1.45.

A rare bird which, unlike the rest of the family, hunts for insects along the ground, over which it travels rapidly. When disturbed it will fly across the plain to the timber. Egg long and tapering, of a polished dark-green or olive, without blotches, but with the slightest washings of a darker shade, especially on the top of the egg, and measures 1.25 x .9 inch.

Genus Coracina (Graucalus).

Large arboreal Cuckoo-Shrikes, 9.5 to 12.5 inches in total length with broad bills, which measured at the gape equal the outer toe without its claw, of a general French-grey colour,

marked with black and white in various ways. They all form shallow nests of fine short dead twigs curiously joined together with cobwebs and lichen, and place them in forks of horizontal branches. The clutch of two or three eggs of a green ground colour with spots of umber, about 1.2 x .9 inches. They feed mainly on insects. Five species are known from Australia.

The Black-faced Cuckoo-Shrike, *G. robusta (melanops)*.—Australia, New Guinea, through the Moluccas to Celebes. Has the forehead, ear-coverts, sides of face and neck, and throat black; and the tip of the tail, the lower abdomen, and under tail and wing-coverts white. Length 12.5 inches. Culmen 1.05.

The Small-billed Cuckoo-Shrike, *G. parvirostris*, resembles the preceding and is probably a sub-species. The bill is shorter, culmen .85 inch. It represents *G. robusta* in Tasmania.

The White-bellied Cuckoo-Shrike, *G. hypoleuca*.—North Australia and Queensland, New Guinea, Aru, Solomons. Has a narrow black band from the gape to the eye, and the cheeks, throat, lower breast, abdomen, flanks, under tail and wing-coverts white. Length 9.5 inches, culmen .95.

The Little Cuckoo-Shrike, *G. mentalis*.—Australia, except West and Centre. Has a broader black band from the gape reaching to beyond the eye; and the lower abdomen, and under tail and wing-coverts white. Length 10.2 inches, culmen .85.

The Barred Cuckoo-Shrike, *G. lineata*.—Eastern Australia. Has a narrow black line in front of the eye, and the lower breast and abdomen, and the under wing-coverts barred with black and white. Length 9.5 inches, culmen .75.

The Caterpillar-eater.

Edolisoma tenuirostre.

Eastern Australia, New Guinea, Aru.

The sexes are distinct in colouring, and the male is rather the larger. **Male:** Sides of face black; general colour of upper and lower surface dark slaty-grey. **Female:** Sides of face grey; general colour of upper surface ashy-brown; of the under-surface creamy-buff, with narrow waved arrow heads of blackish. Length of male 10 inches, culmen .95; of female 9.5 inches, culmen .9.

A shy and retiring bird, dwelling among the tree-tops near swamps. Has a harsh grating note. Feeds on insects, especially coleoptera. The nest is a small and shallow structure composed of wiry grasses securely fastened together with cobwebs. The egg (only one has so far been found in a nest) pale bluish-grey,

uniformly spotted and dotted with markings of umber and slaty-brown. It measures 1.2 x .82 inches. (North). Eggs have been taken in Victoria. (Shepherd).

The White-shouldered Caterpillar-eater.

Lalage tricolor.

Australia and South-east New Guinea.

The sexes differ in colour. The male is of a glossy greenish-black above, the shoulders and upper wing-coverts pure white; throat, chest and all the under surface white; no white eyebrow; the lower back grey. The female is brown above, buffy-white below, the sides and upper breast speckled with brown. Length 6.7 inches, culmen .6.

This bird migrates to the South in September, and, after breeding, departs to the North again in January or February. Gilbert says of it, "Its powers of flight are considerable, and, when excited during the breeding season, the males become very pugnacious, and not only attack each other in the most desperate manner, but also assault much larger birds that may approach the nest. The usual flight is even, steady and graceful, and while flying from tree to tree it gives utterance to its sweet and agreeable song, which at times is so like the full, swelling, shaking note of the Canary, that it might easily be mistaken for the song of that bird. Their favourite haunts are thickly-wooded places and the most secluded spots. The nest is so diminutive that it is very difficult to detect it." The nest is round and shallow, built of small pieces of bark, twigs and grasses, woven with fibres, cobwebs and moss, and placed in the fork of a tree. The eggs, two or three in the clutch, are variable in colouring, usually light-green with brown blotches, .8 x .6 inch.

The Pied Caterpillar-eater.

Lalage leucomelæna.

Eastern Australia, New Guinea, New Ireland, Aru.

Somewhat like the preceding, but a rather larger bird. Male: Above glossy greenish-black, with a white eyebrow; under-surfaces in general white. Female: Above ashy-brown; under-surface fawn-buff deepening into orange-buff on the vent and under tail-coverts, and crossed on the breast with wavy blackish lines. Length of male 7.8 inches, culmen .6; of female 7.5 inches.

Eggs greyish-green, mottled all over with chestnut or umber, .8 x .6 inch. In flying from tree to tree it utters a delightfully liquid note.

Family Timeliidae.

Group Crateropodes. Babbling Thrushes.

True Babbling Thrushes, remarkable for their strong clumsy feet and powerful rounded wings. As a rule they are gregarious in their habits, and are poor songsters, but there is much in their form which is suggestive of the true Thrushes. (Sharpe).

Key to the Genera.

A. Shafts of tail feathers produced and stiffened.	Orthonyx.
B. Shafts of tail feathers ordinary.	
1. Tail longer than wing.	
Tail less graduated, the distance between the outer and the middle tail quills less than the tarsus. No crest.	
Tarsus short, one-fourth of length of tail.	Cinlosoma.
Tarsus very long, one-third of length of tail.	
Legs less stout, hind toe and claw less than half length of tarsus.	
Quills of tail much graduated, third much shorter than fourth.	Pycnoptilus.
Quills of tail less graduated, third nearly equal to fourth.	Drymæodus.
Legs stouter, hind toe and claw more than half tarsus.	Hylacola.
Tail strongly graduated, the distance between the outer and the middle tail quills longer than the tarsus. A large crest.	Psophodes.
2. Tail not longer than wing.	
Bill long, culmen longer than tarsus.	Pomatorhinus.
Culmen much shorter than tarsus.	
Wing Pipit-like, pointed, the inner secondaries nearly equal to the primaries.	Cinclorhamphus.
Wing not so pointed, the inner secondaries not much longer than the rest.	Calamanthus.

Genus Orthonyx. Log-runners.

The genus comprises two species, limited to the Eastern coastal brushes of Australia.

The Spine-tailed Log-runner, *O. temmincki* (*spinicauda*).—Brushes of New South Wales and South Queensland. Head and back reddish-brown; wings black; tail dark brown; wing-coverts tipped with grey; eyebrow and ear-coverts grey; throat, breast and abdomen white. In the female the throat is orange-rufous. Length 7.3 inches. Lays two eggs, size 1.14 x .85 inch.

The Black-headed Log-runner, *O. spaldingi*.—North-east Australia. Head, face and nape black; back dark chocolate-brown; wings and tail dark brown; wing-coverts, blackish-brown not tipped with grey; ear-coverts black; throat and breast white; abdomen brown. In the female the throat is orange-rufous. Length 9.5 inches. Lays one egg, which measures 1.39 x .94 inch.

These birds are only to be seen in the most retired situations, running over the prostrate logs and trees and the stones covered with moss and ferns. They scratch amongst the detritus and fallen leaves, throwing back the earth like the common fowl, hunting for beetles and other cryptozoa. They utter an often-repeated cry of cree-cree-cree-creet. The nest is large and dome-shaped, constructed of mosses, the entrance being lateral near the bottom, and is usually placed on the ground, but occasionally on the top of a broken stump or similar site a few feet above the ground in the scrub. The eggs are white and disproportionately large.

Genus Cinclusoma. Ground Thrushes.

Australian with one species in New Guinea. Mostly inland ground birds, found among rocks and underwood, of medium size, mostly 9 or 10 inches in length; of a general brown or cinnamon colour above and lighter below. They feed on insects and seeds. When flushed they rise with the whirr of the Partridge or Quail, and fly heavily in a succession of undulations. The note is a low piping whistle. The nest is placed on the ground under lee of a stone, stump or tussock, open and made of leaves and bark. The eggs, two or three, are white blotched with olive brown, and measure in *C. punctatum* 1.35 x .93 inch.

1. Back brown spotted with black.

The Spotted Ground-Thrush, *C. punctatum*.—South and South-east Australia, Tasmania. Head uniform brown; a broad grey band across the chest. In the male the throat is black, and there is a black patch on the cheek. In the female the throat is ashy-whitish, and the cheek patch is orange-buff. Length 10 inches.

2. Back uniform, without black streaks. Wing-coverts black spotted with white.

The Chestnut-backed Ground Thrush, *C. castanonotum*.—South and West Australia. Head and upper back brown; scapulars and lower back maroon; throat black. Length 9.75 inches.

The Cinnamon Ground Thrush, *C. cinnamomeum*.—Interior of South Australia. Above cinnamon-rufous uniform, except head duller; throat and chest black; separated by white fore neck. Length 7.75 inches.



Pilot-bird: *Pycnoptilus floccosus*. A. H. E. Mattingley.

The Chestnut-breasted Ground Thrush, *C. castanothorax*.—Eastern Australia. Head and neck umber; back uniform chestnut-brown; throat glossy blue-black; fore neck and chest chestnut-red, a black band across the lower chest; breast and abdomen white. Length 8.5 inches.

The Black-vented Ground Thrush, *C. marginatum*.—North-west Australia. Like the preceding, but the fore neck and chest cinnamon. Length 9.5 inches.

The Pilot Bird.

Pycnoptilus floccosus.

South-east Australia.

The only representative of the genus. Above dark chocolate-brown, more sooty-brown on the head, neck and mantle; throat and breast rufescent-ochre, mottled with dusky margins to the feathers; breast more ashy, abdomen white, under tail-coverts bright chestnut. Length 6 inches.

Lives in secluded gullies, where it passes most of its time upon the ground hopping about the tangled masses of luxuriant vegetation or among the fallen and decaying timber and ferns, in search of insects and seeds of various kinds, which constitute its food, stopping now and again to utter its clear, distinct note which can be heard for a considerable distance. The note strongly resembles the words Guinea-a-week, and the bird is often called by this name locally. Nest dome-shaped with side entrance, built in the thick undergrowth near the ground. Eggs two, slaty or purplish-brown ground colour with a zone of indistinct blackish markings on the thicker end; 1 x .75 inch.

Genus Drymaëdus. Scrub-Robins.

There are three Australian species, and a fourth in New Guinea and the Aru Islands. Birds of recluse habits, seven or eight inches in length, found among open scrub country in stony ground, resorting much to the ground, moving by fits and starts like the European Robin, and with a sharp whistling note. The females are smaller than the males.

The Scrub-Robin, *D. brunneopygius*.—S. Australia and Victoria. Brown above, the wings darker, and the tail more rufous; a white bar on the wing; all the tail feathers, except the two central, tipped with white; a small black spot above and below the eye; below ashy-brown. Length 8 inches.



A. H. E. Mattingley.

Pilot-bird (*Pycnoptilus fuscus*) and Nest.

"The Emeu."

The Pale Scrub-Robin, *D. pallidus*.—Western Australia. Like the preceding, but lighter brown above and creamy white below.

The Eastern Scrub-Robin, *D. superciliaris*.—North and East Australia. Chestnut brown above, brightest on the tail; two white bars across the black wing; half the tail feathers tipped with white; a white eyebrow, and a black spot above the eye, and a vertical black streak below; below fawn-white. Length 7 inches. Forms an open nest of small sticks among the dead leaves at the foot of a tree. Eggs 2, stone-grey, thickly covered with umber blotches, 1 by .7 inch.



"The Emu."

A. H. E. Mattingley.
Scrub-Robin (*Drymaoedus brunneopygius*) Nest and Young.

Genus Hylacola. Ground-Wrens.

Strictly Australian. The two species are small birds, found in open scrub country, creeping among the thickets or perched on a bush. Generally in small companies, like the Blue Wrens, and like them carrying the tail erect. Birds of agreeable song. The nest is dome-shaped with a narrow protruding entrance;

usually built in a thick bush near the ground. Eggs two or three, pinky-white to clove-brown, with browner markings especially near the thicker end, .77 x .58 inch.

The Chestnut-rumped Ground Wren, *H. pyrrhopygia*.—Australia, except North and West. Russet-brown above; upper tail-coverts chestnut; a sub-terminal bar of black across all but the two centre tail feathers; below dull white, the throat and breast thickly spotted with brown. Length under 6 inches.

The Red-rumped Ground Wren, *H. cauta*.—South Australia. In size rather less than the preceding, the markings on the under surface much bolder, and the chestnut-coloured mark on the rump much deeper.

Genus Psophodes. Coach-whip Birds.

The Coach-whip Bird.

P. crepitans.

South-east Australia.

The male bird has the head and crest, ear-coverts, chin and breast, and the hinder portion of the tail black; a large patch on the sides of the neck, the tips of the outer tail feathers, and a patch on the centre of the breast and abdomen white; the rest of the upper surface of that dark olive-green, so frequently found in the birds living in the deep shade of the bushes, and the rest of the under-surface olive-brown. Length 10.75 inches. The female is more sombre and smaller.

A very shy bird found in the bush forests and deeply shaded gullies, where it keeps itself concealed amongst the dense vegetation, occasionally only to be seen, as it runs along a fallen log about which the ferns and bushes have not yet grown. Its actions are full of vigour, as it raises its crest and spreads its tail, and turns with elegance on the rounded surface. In the spring the males chase one another, and then pour forth their full vigorous and beautiful notes, the last loud and clear as the crack of a coachman's whip. The female answers with a twite-twite immediately after the male. The bird feeds on the ground, scratching up the leaves and turning over the small stones like its frequent companion, the Lyre-bird. The nest is open and

cup-shaped, of fine twigs and fibres and lined with finer rootlets, and is usually placed in a low bush in the thick undergrowth.



A. J. North.
Coach-whip: *Psophodes crepitans*.

"N.S.W. Agricultural Gazette."
Bristle Bird: *Sphenura brachyptera*.

The eggs two, rarely three, of a beautiful bluish or greenish-white ground colour, sparingly spotted with black, and sub-surface lighter markings, very irregular in shape, sometimes like commas and crooked Hebrew-like characters, 1.07 x .82 inch.



"The Emu."

Coachwhip-Bird (*Psophodes crepitans*) and Nest. A. H. E. Mattingley.

The Black-throated Coach-whip Bird.

P. nigrogularis.

West Australia.

Olive above, below ashy; throat deep black, with a white stripe on each side.- Length 6.5 inches.

Inhabits the thickets of a tea-tree growing among the sand-hills. Utters a peculiar harsh and grating song. (Gilbert). Presents a marked contrast to its congener in habits and in song. The genus is strictly Australian.

Genus Pomatorhinus. Babblers.

A large genus, extending from the Himalayas to China. Burmah, Malay Peninsula, Java, Sumatra and Borneo, with outliers in New Guinea and Australia. There are four Australian species. Our birds are eight to ten inches long, brown above, of medium size, and mostly white below. Gould's vivid description of the ways of *P. temporalis* applies in general to the Babblers. It inhabits forest country, mostly inland, is gregarious in its habits, and is exceedingly noisy and garrulous. It is frequently to be seen on the ground, but on the slightest alarm it resorts to the trees. Commencing with the branches nearest the ground, it gradually ascends, in a succession of leaps, to the very top of the trees, whence, with its tail elevated, it peers down, and continually utters its peculiar chattering cry. The troop often ascend the same tree in line, and, if still unsatisfied with the security, will fly off one after another from tree to tree. The nest is a large structure of twigs, covered in at the top, and the entrance is at the side in the form of a long spout. The nest is lined with fine grasses, and several are often built on one tree. The eggs, four, are very characteristic, buffy-brown or olive-grey, clouded with purple and brown, and streaked with conspicuous hair-like lines of black, and measure about an inch by three-quarters. The birds are mainly insectivorous.

All the Australian birds have a distinct white eyebrow, and the tail tipped with white.

A.—Throat and breast white.

The Babbler, *P. frivulus* (*temporalis*).—Australia except West. No white bar across the wing; lower breast rufescent; forehead paler brown than nape. Length 10 inches.

The White-browed Babbler, *P. superciliosus*.—All over Australia. No white bar on the wing; lower breast whitish; forehead like rest of crown. Length 7.5 inches.

The Chestnut-crowned Babbler, *P. ruficeps*.—South and South-east Australia. Two white bars on wing; head chestnut. Length 9.3 inches.

B. Throat white, breast bright rufous.

The Red-breasted Babbler, *P. rubeculus*.—North and North-west Australia. Length 9.5 inches.

Genus Calamanthus. Field Wrens.

Confined to Australia. Small Wren-like birds frequenting open scrub covered country. They are most often on the ground itself, along which they move with great quickness in a succession of hops, or, if disturbed, they will take to cover running from bush to bush. They are surely the smallest of game birds, emitting so strong an odour that game-dogs stand to them as to quail. The tail is held erect, and when the bird is resting, is turned from side to side, as in the Fly Catchers. They will perch on a low bush, and utter a clear and pretty song. The nest is dome-shaped, placed on the ground, and hidden by the surrounding grass, the bird frequently entering by a tunnel, which may be a yard long, under the herbage. The eggs three or four, wood-brown, clouded with reddish markings, .9 x .7 inch about. The sexes are nearly alike in colour and size.

A.—Head olive-greenish, streaked with black like the back.

The Striated Field Wren, *C. fuliginosus*.—Tasmania. Wings sooty-black narrowly margined with olive; tail with broad black sub-terminal band; a white eyebrow; throat, breast, flanks, and under tail-covert streaked with black. Length 5.8 inches, wing 2.43, tail 2.3.

B.—Head rufous, nearly uniform or with narrow black streaks.

The Field Wren, *C. campestris*.—Southern Australia from east to west. Wings sandy-brown; tail with dark cross band and white tip; a white eyebrow; throat white; rest of under surface pale yellowish, streaked with dusky brown; under tail-coverts light rufous shaded with brown before the tips, which are white. Length 4.5 inches.

The Desert Wren, *C. isabellinus*.—Centre. Streaks on the upper surface almost entirely lost.

The White-lored Field Wren, *C. albiloris*.—Victoria. Very similar to *C. fuliginosus*, but has a large triangular white patch in front of the eye, and extending in a broad line of white feathers below the eye. Total length 5.2 inches, wing 2.2, tail 2.1.

Rock Field Wren, *C. montanellus*.—West Australia. Upper surface lustreless dingy brown; abdomen pale olive-yellow, tending to white; throat and breast with bolder striations than in *C. fuliginosus*, and more ashy-white.

Genus Cincloramphus. Song Larks.

Australia only. The indigenous skylarks of Australia, having much the same habits as the European birds. They are plain brown birds, which migrate to the grassy paddocks and plains of the cooler south to breed during the spring months, being especially plentiful if the season has been well favoured with rains. There is an extraordinary disparity in size between the sexes, the female being less than half the size of the male. Like the true Larks, they run along the ground, and the male rises into the air, singing, as he soars, his animated song. The nest is made of dried grasses, and lodged in a slight hollow of the ground, under the shelter of a tussock. The eggs, four, dull white, the ground colour almost obscured by pinkish-red and purplish freckles; .95 x .7 inch. Both species are met with all over the Continent.

The Brown Song Lark, *C. cruralis*.—Upper tail-coverts ashy-brown; throat and belly blackish. Length 9.2 inches.

The Rufous Song Lark, *C. rufescens*.—Upper tail-coverts rufous; throat and belly whitish. Length 7 inches.

This lark seems to be possessed of powers of ventriloquism in addition to its own loud and pleasing song.

Family Turdidæ.

Bill moderately stout, rather wide and depressed. Wings moderate, with a small bastard primary.

Sub-family Turdinæ.

The young in first plumage have the upper and under parts spotted, whether this is the case or not in the adult. One moult

in the year. (These characters remain to be verified in the case of our species of *Merula*.)

Genus Merula. Ouzels.

This genus, of which the British Blackbird and Ring Ouzel are types, is absent from North America and Africa, but widely spread over tropical America, Europe and Asia. Peculiar species occupy singly certain of the islands of the Pacific, as Formosa, Mare and Lifu of the Loyalty group, Samoa, Eromanga, Viti Levu, Kandavu and Taviuni of Fiji, New Caledonia, with one each in Norfolk Island and Lord Howe Island off the Australian Coast.

The Norfolk Island Ouzel, *M. fuliginosa*.—Head and adjoining parts pale brownish-grey; rest of upper surface uniform dull black; under surface dark brown. Wing 4 to 4.5 inches. Sexes nearly alike.

The Lord Howe Ouzel, *M. vinotincta*.—Head and adjacent parts uniform russet; under surface dark vinous brown. Wing 3.85 to 4.2 inches. Females slightly paler.

Both species are without bars or streaks in the plumage, and have yellow bills, legs and feet; wings uniform underneath.

Genus Oreocichla. Ground Thrushes.

Feet and legs strong, pale yellowish. Upper surfaces some shade of brown, the feathers with conspicuous lunar terminal black bands, sometimes also with subterminal ochreous spots. The underparts of our species white, buff on the breast, the feathers with crescent-shaped black tips except on the centre of the breast. The wing has a white pattern on the under surface.

These, the "Ground-Thrushes *par excellence*," and incapable of long continued flight, must have had a long duration in time, for there are several species spread over Africa, and over India, Burmah and Indo-Malaysia, while pioneers have reached Eastern Siberia, one has crossed the Straits to Western North America, and one has even penetrated to Mexico. The Australian immigrants are so much alike that Gould considered them all as belonging to but one species. Isolation has, however, resulted in

a certain amount of differentiation, and four species are now generally recognised, three Australian and the fourth confined to Tasmania.

They are generally found in damp forest country. They spend the summer in the highlands, and descend in the winter to the plains or lowlands. They feed on snails and insects, and are without song. They build in low branches of trees, large nests



Australian Museum.

Ground Thrush: *Oreocichla lunulata*.

of moss lined with fibres, some seven inches in internal diameter. The eggs, usually two in number, are light delicate green or buffy white in ground colour, are freckled all over with reddish-brown, and measure about 1.4 x .9 inch.

Broadbent Ground-Thrush, *O. cuneata*.—Herberton, Queensland (5000ft.). Outside tail feathers with wedge of white on the inner web; olive-brown above. Wing 5.45 inches.

- The Ground-Thrush, *O. lunulata*.**—Victoria to South Queensland. Outside tail feathers with obscurely-defined narrow white tips; olive-brown above; sub-terminal spots on feathers of head and neck obsolete. Wing 5.1 to 5.5 inches.
- The Large-billed Ground-Thrush, *O. macrorhyncha*.**—Tasmania. Russet-brown above; sub-terminal spots on feathers of head brown, of back obsolete. Wing 5.1 to 5.3 inches.
- The Russet-tailed Ground-Thrush, *O. heinii*.**—East Queensland, North-east New South Wales. Outside tail feather on each side tipped with white on the inner edge for an inch or more. Wing 4.7 to 4.9 inches.

Sub-family Ephthianurinae.

Genus Ephthianura. Chats.

Bill slender, about equal in height and breadth at the nostrils. Confined to Australia.

A.—Throat white.

- The White-fronted Chat, *E. albifrons*.**—Across Southern Australia. Forehead white; crown and nape black; back grey; wings and tail brown; tail feathers with white tips, external widest; below white, with a broad black band across the chest, joining the black of the nape. Length 4.6 inches.
- The Tri-coloured Chat, *E. tricolor*.**—Australia, migrating to the south for the summer. Forehead, crown and upper tail-coverts crimson; back and tail dusky brown; under surface behind the throat crimson. Length 4.2 inches.

B.—Throat black.

- The Orange-fronted Chat, *E. aurifrons*.**—Interior of New South Wales, Victoria, and South Australia. Crown of head orange yellow; back light yellowish-brown; wings and tail brown; tail with white tip; below orange-yellow, paler on the abdomen. Length 4.3 inches.

C. Throat and under surface bright yellow, with a black band across the chest.

- The Yellow-breasted Chat, *E. crocea*.**—Centre and North. Crown olive-yellow; back yellowish-brown; tail brown with white base and tip. Length 4.3 inches.

The females are a shade smaller, and paler in colouring.

These attractive little birds, of ornate plumage, found in pairs, or in small family companies at the end of the season, which frequent open lands studded with low bushes, and feed on caterpillars and other soft-bodied insects. The first two migrate southwards to breed, and rear two broods at least in the season. The White-fronted Chat is the one most frequently seen, and around Sydney may often be met with in marshy localities in the spring and summer. The nest is cup-shaped and usually built in a low bush, or in a tuft of rushes, of coarse grasses or fine twigs lined within with finer grass and hair. The birds often betray the situation by their over anxiety to avoid detection. They feign broken wings, uttering a plaintive note, or will lie struggling on the ground as in a fit. The eggs are three or four, white, spotted and dotted with red, and measure about .65 x .5 inch.

Family Sylviidæ. Warblers.

Reed Warblers.

Genus Acrocephalus.

Bill typically large, depressed and broad at base, with moderate rictal bristles. Wing rounded, with very minute bastard primary. Tail moderately rounded. Plumage more or less uniform in colour, of some shade of brown.

Migratory birds which winter in the tropical regions of Africa and Asia, and are especially common in the islands of the Malay Archipelago. The two species met with in Australia come south to breed in the reed-beds, and spend the summer with us. One directs its course to Western Australia probably viâ Timor, and the other entering by Cape York spreads over all the Continent except the West and Coburg peninsula, and reaches Tasmania.

The Reed Warblers, though homely in their plumage, have the sweetest of songs. All who listen are enchanted with the melody. Gilbert even goes so far in his enthusiasm as to say that the strain is in many parts very like that of the far-famed Nightingale. The beauty of the song is enhanced by the picturesque surroundings of the bird's home. These may

perhaps be illustrated by the following simple verses, written on a spring evening on the Saltwater River near Melbourne.

Now this will I write for my ladye,
Thought I, as we pulled down the stream,
I will tell how that reed-warbler whistled
Sweet trills as we passed him abeam.

Though the rain-drops came down in a patter,
And made many a bubble and ring,
They moved not the face of the river,
And the reed-bird he ceased not to sing.

And the plash of the rain on the water
Seemed to soften my thought as we rowed
Past the bluff where the martin was nesting,
Past the reeds where the warbler abode.

The birds themselves are rather shy, keeping near their nests, which are generally charmingly sustained a few feet above the water by three or four of the stiff upright reed stems. Though the wind blows down the river the eggs and nestlings are safe, for the nest is a deep cup. It is woven of dried reeds and lined with grass, and the eggs are four in the clutch. The birds feed entirely on insects.

The Long-billed Reed-Warblers.

Acrocephalus gouldi.

Western Australia.

Sexes alike in colour, russet-brown above, darkest on the head; chin whitish; under surfaces deep fawn-colour. Total length 6.5 inches, wing 2.9 or 3 inches. The eggs dull greenish-white, blotched all over, especially at larger end, with irregular patches of olive, measuring .75 by .6 inch.

The Reed-Warbler.

Acrocephalus australis.

Tasmania, Australia, except West and Coburg Peninsula.

Sexes alike in colour; olive-brown above, under surfaces deep buff, fading into white on the throat; rather larger than the preceding. The eggs greyish-white, thickly marked all over with irregular blotches of yellowish-brown, umber brown and bluish-grey, measuring .85 by .6 inch.

Genus Cisticola. Grass-Warblers.

Tail strongly graduated or rounded. Two well-developed rictal bristles.

The Grass-Warbler.*Cisticola exilis.*

The genus *Cisticola* is a large one, comprising nearly thirty species, which range from the borders of the Mediterranean to Japan, Malaysia and Australia. Australia possesses but the single species, which is found all over the Continent, and extends to Eastern Bengal, the Philippines and Formosa. Brownish-black above, each feather margined with buff; under surface sandy-buff, fading into white on the throat and centre of the abdomen. Length about four inches. It frequents the long grass of the flats, or the standing grain crops, and will almost admit of being trodden on before it will rise and take wing, and creeps about more like a mouse than a bird. Its note is a short and feeble but very pleasing song. Eggs, three or four, blue, spotted with red, .6 x .45 inch. Feeds on minute insects. Considerable variation occurs according to season and locality.

The nest is a beautiful structure, and may be built in a small bush near the ground among long grass, in which case it weaves the grass round the nest; or again in a growing crop. It then fastens the hanging lower dead leaves to its nest, which may be composed of fine grass mixed with dandelion or thistle-down; or if the nest is built, as it usually is in Queensland, close to the ground in a large-leaved shrub, its nest would then be composed entirely of down and cobweb and two or three large leaves of the shrub sewn round the nest, the thread being made from cobweb, a delicate structure.

Genus Megalurus. Grass-birds.

With twelve tail feathers. Tail longer than wing.

Small plain coloured birds, brown above, all the feathers with darker centres, and paler below. They frequent the long grasses and rushes in low damp flats, or along water-courses, and are birds of secluded habits and short flight. The note is simple and unattractive. The nest is deep cup-shaped, composed of the soft tops of the reeds or of fine grasses lined with

feathers, and placed on the ground at the bottom of a clump of rushes or tussock grass. These birds have a strong perfume, and in consequence can be set by dogs. The eggs are four, fleshy-white, freckled and streaked with red.

The Grass-bird, *M. gramineus*.—Tasmania and Australia except the north. A white eyebrow; throat streaked with dark brown. Length 5.75 inches.

The Tawny Grass-bird, *M. galactotes*.—Australia except the West. A buffy eyebrow; throat not streaked. Length 6.5 inches.

The Striated Grass-bird, *M. striatus*.—West Australia (Lake Yanchep). Much smaller than *M. gramineus*, and lacks the fulvous colour of the upper surface, sides flanks and tail-coverts of *M. gramineus*, and in lieu is smoky-brown, and is also boldly striated from the chin to the abdomen. Total length 5.25 inches, tail 2.25, tarsus 0.75.

Genus Eremiornis.

Carter's Desert-Bird.

Eremiornis carteri.

North-west Australia.

The slender bill, short tarsi, small feet and abnormally long upper and under tail-coverts, which conceal the greater portion of its long and broad tail-feathers, will serve to distinguish it from any other Australian genus. The long tail, short and rounded wings, and habits would indicate its position as being nearest that group of birds frequenting sterile situations with a sparse and stunted vegetation, among which are included *Amytis*, *Hylacola* and *Stipiturus* (North). Above rufous brown, wings and tail dark-brown; lores and eyebrow whitish; throat dull white, chest buff, breast and abdomen buffy-white. Length 5.65, wing 2.07, central tail feathers 2.6 inches. The birds live on barren rocky ranges in the dense spinifex tufts.

Genus Origma.

With twelve tail feathers. Tail much shorter than the wing.

The Rock-Warbler.

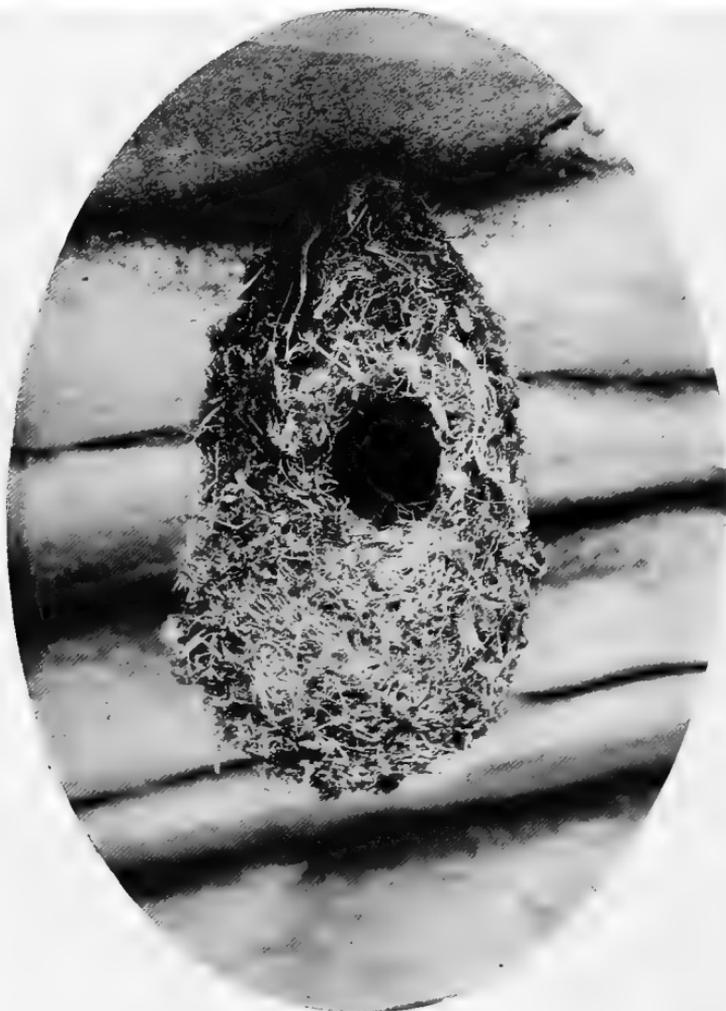
Origma rubricata.

New South Wales and South Queensland.

Dull dark brown above; tail blackish; throat ashy-whitish; rest of under-surface ferruginous. Length 5.8; wing 2.6; tail 2.35 inches.

This active and lively bird frequents the rocky beds of creeks and gullies, whether on the coast or in the mountains, restlessly

flitting from one side to the other, and not at all shy of strangers. It utters a cheerful note, but seems to be a solitary bird. The nest is a large globular structure of moss or root-fibres, lined inside with feathers, with a side entrance, and attached marvelously to the roof of a cavern or overhanging rock. The rule



Nest of Rock Warbler: *Origima rubricata*. *Australian Museum.*

seems to be that each pair of birds has its own beat and nesting ground. The eggs are pure glossy white, three in number, and measure .8 x .6 inch. The only species of this strictly Australian genus.

Genus Chthonicola.

Tail quite even. Tarsus scutellated. First primary long, half the length of the whole wing.

The Little Field Lark.*Chthonicola sagittata.*

The genus, this being the only species, is confined to Australia, except North and West. General plumage above olive-brown, the feathers with darker centres; the under-surface pale-yellow, each feather with a dark stripe down the centre, except the middle of the abdomen, which is white, without stripes. Length 4.75 inches.

Found in little companies of five or six on the ground in the grassy glades of the open forest, and very tame, only flying a short distance away if disturbed. The nest is domed, with an exceedingly small entrance near the ground, in a depression of which, overhung with withered grass, it is usually placed. Being constructed of dried grasses just like those of the surroundings, it is hard to find. The eggs, three or four, are remarkable in colour, being bright chocolate red, uniform, or with a zone of blackish-brown spots on the larger end, .76 x .6 inch.

Genus Acanthiza. Tits.

Tail quite even. Tarsus scutellated. First primary short, half the length of the second primary. Confined to Australia and Tasmania. Little olive-brown or olive-green birds, four inches or under in total length, with a broad dark-brown band across the hind tail, reaching nearly to the tip. They are found in small flocks, busily hunting for insects in the leafage of the trees, saplings and larger shrubs, clinging and prying among the smaller branches after the fashion of the true Titmice, and, if disturbed, flying off in a body to a neighbouring tree-top. As several of the species will visit the fruit trees of the orchards, these birds are most useful in attacking and destroying the insect pests. The notes vary with the species, but mainly amount to a constant twittering. The nests are oval, dome-shaped structures, with a side entrance, and the little eggs, three in number, are white spotted with red. Too frequently foster parents of Cuckoos.

A.—The base of the tail of the prevailing colour of the upper surface, the dark-brown or blackish band strictly subterminal.

1. **The Little Tit**, *A. nana*.—New South Wales. Throat rufescent, streaked with whitish shaft lines; above uniform olive-green; breast and abdomen yellowish. Length 3.8 inches.



Nest of Brown Tit: *Acanthiza pusilla*. *Australian Museum.*

2. **The Plain-coloured Tit**, *A. inornata*.—South and West Australia. Throat uniform ashy or yellowish-white; breast and abdomen yellowish; above olive-brown. Length 3.6 inches.
3. Throat ashy white with black streaks; upper tail-coverts reddish, contrasting with the upper parts of the body.



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Little Tit: *Acanthiza nana*.

Yellow-rumped Tit: *Acanthiza chrysorrhoa*.

- The Brown Tit**, *A. pusilla*.—Eastern Australia. Above olive-green; forehead pale rufous; breast and abdomen yellowish-white; tail without white tip. Length 3.9 inches.
- The Brown-rumped Tit**, *A. diemenensis*.—Tasmania. Above olive-brown, forehead pale rufous; breast and abdomen yellowish-white; tail without white tip. Length 4 inches.
- The Broad-tailed Tit**, *A. apicalis*.—Central and West Australia. Above dark olive-brown; forehead blackish; breast white, streaked with black; abdomen white; tail feathers with white tips to the inner webs. Length 4 inches.
- The Red-rumped Tit**, *A. pyrrhopygia*.—Western Australia. Like the preceding, but has shorter and more robust bill, and greater depth of red colouring on the rump and upper tail-coverts. Length 4 inches, wing 2, tail 1¾.
- Whitlock's Tit**, *A. whitlocki*.—Western Australia. Distinguished from preceding "by its greyish-brown instead of olive-brown upper parts, rendering the rufous-brown upper tail-coverts more conspicuous, by its purer white under parts, and the broader black sub-terminal band on the tail feathers." (North.)
- Scaly-breasted Tit**, *A. squamata*.—North Queensland (Herberton Range). Similar to *A. reguloides*, but is larger and has a shorter tarsus.
- Dusky Tit**, *A. Zietzi*.—Kangaroo Island. The mantle is blackish, not olive-brown; the legs are black with brownish hue; the forehead feathers are fawn-coloured at their base, not rufous; nearest to *A. apicalis*. Length 3.9 inches, wing 1.8, tail 1.6.
- Large-billed Tit**, *A. magnirostris*.—This bird has more of the black and white mottled under surface than *A. diemenensis*, and thus more resembles *A. pusilla* in this respect, but may be easily separated from both these birds by the great size of its bill. Length 4.25 inches, wing 2.0, tail 1.6. (Campbell.)
- Thick-billed Tit**, *A. robustirostris*.—West Australia (Murchison). Head and upper surface bluish-grey, the feathers having longitudinal black centres, bold on the crown, but faint on upper mantle; white feathers on the rump and its sides; centre of abdomen and under tail-coverts white. Length 3.5 inches; wing 2.1, tail 1.6, tarsus 0.8. (Milligan).
- Mathew's Tit**, *A. mathewsi*.—Victoria. Underparts less green than in *A. nana*, rather less bright and of a more brownish tint, and the under surface paler and of a more buffy-yellow, contrasting with the pale rufous-buff throat.
- The Striated Tit**, *A. lineata*.—South and East Australia. Above dull olive-green, but the head brown, streaked conspicuously with white; breast like the throat; abdomen yellowish-white; tip of the tail ashy inclined to white. Length 3.9 inches. Nest pendant.



Double Nest of Yellow-rumped Tit: *Acanthiza chrysorrhoa*.
D. Le Souëf.

B.—The base of the tail brightly coloured; the dark band occupying nearly the terminal half of the feathers.

The Chestnut-rumped Tit, *A. uropygialis*.—An inland species of South and East Australia. Above light brown; below white; the base of the tail and the upper tail-coverts rufous. Length 3.7 inches.

The Yellow-rumped Tit, *A. chrysorrhoa*.—Tasmania, Australia except North. Above olive-yellowish; throat white; breast and abdomen buffy yellow; the base of the tail and upper tail-coverts bright yellow. Length 3.8 inches. This bird has the remarkable peculiarity of constructing a double nest, the dome-shaped ordinary nest below, and resting on this a shallow unlined nest, which is used by the male bird while the female is sitting on the eggs below.

The Buff-rumped Tit, *A. reguloides*.—South and East Australia. Above dull olive-brown, throat and breast ashy yellow; abdomen buffy-yellow; the base of the tail pale buff; upper tail-coverts dull yellow. Length 3.9 inches.

The Plain-fronted Tit, *A. flaviventris*.—(Lake Frome), South Australia. Differs from *A. chrysorrhoa* in the typical white spots on the forehead, face, and ear-coverts being entirely absent; in the general buff coloration, yellow abdomen and under tail-coverts.

The South Australian Tit, *A. australis*.—South Australia (Adelaide). May be distinguished from *A. reguloides* by the richer and deeper ochraceous-buff rump, upper tail-coverts, basal portion, and tips of tail feathers; and in the more distinct rufous forehead and deeper under surface.

Leigh's Tit, *A. leighi*.—New South Wales (Lithgow). Closely allied to *A. chrysorrhoa*, but differs in having the underparts white, washed with pale yellow, especially on the sides and flanks; under tail-coverts pale bright yellow; wing 2.28 to 2.35 inches, tail 1.6, tarsus 0.65 to 0.7.

Masters's Tit, *A. mastersi*.—Western Australia (King George's Sound). The darker upper and under surface will always serve to distinguish *A. mastersi* from its near ally *A. inornata*. Length 3.5 inches, wing 1.85, tail 1.5, bill 0.38, tarsus 0.7.

The Pallid Tit, *A. pallida*.—Western Australia (Murchison Range). Closely allied to *A. chrysorrhoa*, and is a pallid and miniature form of that bird, having its under surface almost uniform white, and the forehead band conspicuously white, as well as the sides of the head and cheeks. Length 3.6 inches, wing 2.3, tail 1.8, culmen .45.

Ewing's Tit, *A. ewingi*.—Tasmania. Differs from *A. diemenensis* in having a rufescent forehead, longer tarsus, and the dark winglet (at point of wing), greater length of tail, and darker upper surface, throat and abdomen. (Legge.) Length 4.5 inches, wing 2.05, tail 1.7, tarsus 0.95.

Small-billed Tit, *A. tenuirostris*.—South and West Australia. Closely allied to *A. reguloides*, but is smaller in size, has no buff colouring on the rump, and lacks the pale buff bases to all the tail feathers. Length 3.5 inches, wing 1.9, tail 1.5, tarsus 0.65.

Mr. De Vis has described two other forms of these little birds, one from Charleville, in the interior of Queensland, *A. modesta*, and one from the Bellenden-Ker ranges in Eastern Queensland, *A. katherina*.

Genus Sericornis. Scrub-Wrens.

Tail quite even. Tarsus plain.

Mainly Australian with one species in the Aru Islands and another in New Guinea. Rather larger birds than the Tits, from 4.5 to 5.5 inches in total length, living in the well-shaded and watered gullies of the brushes or fern gullies, where they feed on the insects which they find about the fallen and decaying logs and the moss-covered stones. They are plain plumaged birds, and utter pleasing but simple notes, an "inward warbling." The nests are dome-shaped, composed of mosses, rootlets, fern, and are cosily lined with feathers or hair; in some species suspended from a drooping bough, in others hidden under the shelter of a grass tuft or a bush. The eggs, three, chocolate-brown in *S. barbara* (*atreogularis*), reddish-white in most, bluish-white in *S. magnirostris*, with a zone of darker spots around the large end of the egg.

A.—Tail feathers without subterminal black band.

1. **The Red-Throat**, *S. brunnea*.—Australia, except North. Throat bright rufous; tail feathers broadly tipped with white. Length 4.6 inches.
2. **The Yellow-throated Scrub-Wren**, *S. barbara* (*citreogularis*).—Eastern Australia. Throat bright yellow; no white tips to tail feathers; lores and ear-coverts black. Length 5 inches.
3. **The Large-billed Scrub-Wren**, *S. magnirostris*.—Eastern Australia. Throat whitey-brown; no white tip to tail feathers; above uniform olive-brown. Length 4.8 inches.

B.—Tail feathers with a dark subterminal band.

1. White edging or tip to the tail feathers.

The Buff-breasted Scrub-Wren, *S. lewigastra*.—Northern Australia. Throat, breast, and abdomen pale yellow; base of forehead black. Length 4 inches.

The Spotted Scrub-Wren, *S. maculata*.—East and South-west Australia. Throat white spotted with blackish; breast and abdomen pale yellow; base of forehead brown. Length 4.7 inches.



Australian Museum.

Nest of Yellow-throated Scrub Wren: *Sericornis citreogularis*.

The Scrub-Tit, *S. magna*.—Tasmania. Throat, breast and abdomen pale yellow; base of forehead brown. Length 4.7. (Now separated as the genus *Acanthornis*.)

Bernier Island Scrub-Wren, *S. balstoni*.—Bernier Island, Western Australia. General colour above pale greyish-brown; a white superciliary stripe extending from lores to behind the eyes; underparts white, the





SUPERB WARBLERS.

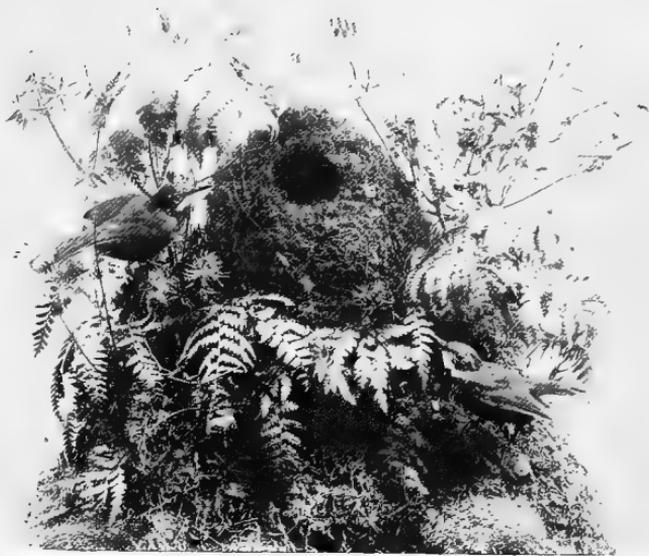
1. Blue Wren: *Malurus cyaneus*.
2. Banded Wren: *M. splendens*.—Lower view.
3. White-winged Wren: *M. leucopterus*.
4. Banded Wren: *M. splendens*.—Upper view.
5. Black-backed Wren: *M. melanotus*.
6. Blue-breasted Wren: *M. putcherrimus*.
7. Red-backed Wren: *M. dorsalis*.

[See page 322 et seq.]

feathers of the throat and breast with dark shaft streaks, sides of the flanks slightly washed with buff; tail feathers dark grey, with a black sub-terminal band and tipped with white. Length 4.4 inches, wing 2, tail 1.75.

2. No white edging or tip to the tail feathers.

White-browed Scrub-Wren, *S. frontalis*.—New South Wales, Victoria, and South Australia. Throat yellowish-white with broad dark streaks; wing-coverts indistinctly tipped with white; tail olive and crossed with blackish band, except the central pair; a streak over the eyes and a spot just above the lores white; chin and cheeks also white. Length 4.7 inches, wing 2.3, tail 1.87, tarsus 0.8.



Scrub Wren: *Oreoscopus gutturalis*.

Australian Museum.

The Brown Scrub-Wren, *S. humilis*.—Tasmania, Islands of Bass Strait. Throat and under surfaces pale yellow; throat streaked with blackish; the rest with dusky. Length 5.5 inches.

The genus *Oreoscopus* has been created to receive the allied bird, the Collared Scrub-Wren of North Queensland, *O. gutturalis*, which presents on the lower throat a broad black crescentic band with its marginal feathers posteriorly edged with ashy-white. It is found in the dense scrubs, and builds a nest entirely of moss in some excrescence of a bank.

The Little Scrub-Wren, *S. minimus*.—Northern Queensland. Lores, feathers below the eye and ear-coverts light rufous; throat white; under surface pale yellowish-white. Length 3.9 inches, wing 2.16, tail 1.8, tarsus 0.7.

Genus Malurus. Wrens.

Confined to Australia and New Guinea. Small birds, about the size of the Robin, usually under 5 inches in length, with much of the habit of the English Wren, and a not dissimilar song, which are found flitting among the bushes whether in the wild scrub or in the garden of the city. Their diet consists exclusively of insects such as grasshoppers, caterpillars and the larvæ of cockchafer beetles, and because of their usefulness, and, still more, because of their pretty movements and pert confidence, they are general favourites. Since the wings are short and rounded there is no great power of long flight, but the bird passes over the ground in a succession of bounding hops, or flits amongst the bushes hiding itself for a moment and then emerging always with the long tail held erect or thrown forward over the body. Mr. Robert Hall says of their melodious notes, "There is the first grand oratorio of the male in spring, when he is leading a charming competitive life; then the notes of rollicking fun of the summer bird; and, thirdly, the series of thrilling squeaks when the young have ventured into a gambol among the boughs, which would be quite out of place in birds of maturer years, while during nesting the female will sometimes utter a call as if a tragedy were taking place. Blue Wrens are occasionally known to sing at night." The nest is dome-shaped, with a narrow entrance in the side, and is made of dried grasses, lined inside with feathers or hair. "Ideal nesting places are small detached portions of cover situated at a short distance from the main cover, and all the better if it contains plenty of tussocky grass. A large overhanging tussock comes first in favour for the nest; next, low prickly bushes. When the young are old enough to make an outcry if disturbed is the time to see a display of pugnacity and courage on the part of the male. It does not flutter or utter alarm notes like the female, but goes silently and

swiftly to the attack, with its little body crouched, its wings and tail depressed, and its blue mantle standing out like a ruff. It moves quickly over the turfs or over the ground after the manner of a mouse, making angry darts at the intruder until it retires." So writes Mr. G. Graham, of Heyterbury in Victoria, and we regret that we have not space to quote in full his most interesting notes, founded on close observation of the Gould's



"The Emu."

H. Burrell.

Blue Wren: *Malurus cyaneus*, Male, near entrance of Nest.

or Long-tailed Blue Wren. The eggs are generally three or four in number, of a delicate flesh-white sprinkled with spots and blotches of reddish-brown forming a zone at the large end of the egg, and measure .6 or .7 x .4 or .5 inch. Frequently the nest is invaded by one or other of the Cuckoos. If the full brood is hatched there is generally but one male amongst them. For four months the sexes are alike in brown colouring. In the fifth month the males acquire some of their bright colours. In the tenth or eleventh month a second moult takes place, when

the males assume their full nuptial plumage. The birds pair strictly in the spring, and rear two or three broods during the season. All the members of the families keep together in a company during the year, and from the excess of hen-birds the association suggests polygamy, but the blue male who "proudly struts his dames before" is but the mate of one and the father of the others. In the summer moulting the males lose their



"The Emu."

H. Burrell.

Blue Wren: *Maburus cyaneus*, Female near entrance of Nest.

brilliant colours and are scarcely distinguishable from the hen birds. As the next spring draws on the colours are resumed, and the young birds are dismissed to take upon them domestic duties of their own. Curiously enough it seems that sometimes unmated males will assist a mated pair in feeding and tending the nestlings. There are some nineteen Australian species of these charming little Wrens or Superb Warblers.

The females of all save *M. amabilis*, are of a homely brown; the males are brilliantly coloured during the breeding season.

A.—Head blue.

1. Scapularies blue.

Upper tail-coverts black. throat blue-black.

Three species are recognised which are alike in their markings, but differ in the shade of the blue, which varies, as in the Humming birds, according to the light in which they are viewed. These are—

The Blue Wren, *M. cyanocephalus*, of which the mantle is described as of a turquoise blue. It is the common species in South Australia, Victoria, New South Wales, Queensland and Kangaroo Island. The tail measures 2.2 inches.

The Long-tailed (or Gould's) Blue Wren, *M. cyaneus (gouldi)*, with a rich cobalt blue mantle. The tail measures 2.65 inches. This is the only Blue Wren found in Tasmania.

Dark Blue Wren, *M. elizabethæ*.—King Island (Bass Strait).—The largest of the Blue Wrens, and a darker shade of blue; tail dark blue; blue tint on the buffy-white under parts and on the outer edge of some of the primaries. Length 5.75 inches, wing 2.1, tail 2.35.

Upper tail-coverts black, throat blue, the lower back black.

The Black-backed Wren, *M. melanonotus*.—Inhabits the Centre and the scrubby dry interior of South Australia, Victoria and New South Wales.

Upper tail-coverts blue, throat blue with a black collar below.

The Turquoise Wren, *M. callainus*, has a black bar across the rump. It is met with in the interior of South Australia, and the adjacent parts of New South Wales.

The Banded Wren, *M. splendens*, has all the back and tail blue. A West Australian species.

2. Scapularies white.

The White-winged Wren, *M. leucopterus*.—General colour of the upper and under surfaces of the body deep cobalt-blue; the scapulars, all the inner coverts and inner secondaries pure white. A species dwelling in the scrubs of the interior from West Australia across the Centre to the back country of Victoria and New South Wales.

The White-backed Wren, *M. leuconotus*.—Like the preceding, but with the centre of the back white, as well as the wings. A very rare bird, found in the interior of South Australia, and once found breeding near Bourke, in New South Wales. (North.)

3. Scapularies chestnut-red.

The Red-winged Wren or Graceful Blue Wren, *M. elegans*.—West Australia. Mantle and upper back silvery blue; tail greyish blue; throat and breast blue black; abdomen buffy white.

The Variegated Wren, *M. lamberti*.—South, South-east, and Eastern Australia. Mantle and back cobalt blue, usually separated by the overshadowing red of the scapulars; lower back and rump velvety black; tail dull blue; throat and breast deep black; centre of body whitish.

The Purple-backed Blue Wren, *M. assimilis*.—Australia. Crown and sides of the head purplish-blue; the feathers round the eye and the ear-coverts rich cobalt, and the mantle and upper portion of the back purplish-blue, the colour of these parts very similar to *M. pulcherrimus*; sides of neck, collar, and lower part of the back black; shoulders chestnut; tail dull blue, all but the two central feathers tipped with white.

Bernier Island Blue Wren, *M. bernieri*.—Bernier Island, W.A. Nearly allied to *M. assimilis*, but the feathers round the eye and the ear-coverts are bright purplish-blue (not bright cobalt-blue), and contrast but little with the darker purple-blue of the crown. Wing 1.8 inch.

Lavender-flanked Wren, *M. dulcis*.—Arnhem Land, N.A. Closely allied to *M. pulcherrimus*, but has a black throat and the flanks lavender-blue, not white as in *M. assimilis* or sandy-buff as in *M. lamberti*. Length 5.2 inches, wing 1.9, tail 2.3. The female is bluish-grey above, and under surface pale buff, throat white, tail dark blue.

The Lovely Wren, *M. amabilis*.—North-east and North Australia. Hind neck velvety black, succeeded by a band of deep cobalt blue across the upper part of the mantle; centre of back and scapulars conspicuously red; lower back bright blue; rump velvety black; tail blue; throat and breast velvety blue-black; rest of under surface white. The female of the species is blue, an exception to the general rule.

The Blue-breasted Wren, *M. pulcherrimus*.—West Australia and interior of South Australia. Hind neck velvety black; mantle and back purplish-blue with a lilac tinge, separated by red; lower back and rump deep blue-black; tail dull blue; throat and breast deep black; abdomen creamy white.

B.—Head lilac with large spot of black in the centre.

The Purple-crowned Wren, *M. coronatus*.—North-west Australia. Back sandy brown; tail blue; under surface buffy-white. Gould remarks on the rare occurrence of this beautiful lilac tint in the plumage of birds, finding a parallel in the nape of the Bower-birds (*Chlamy-dodera*.) The Pink-eared Duck has ear feathers of much the same tint.



"N.S.W. Agricultural Gazette."

A. J. North.

Blue Wrens.

Black-headed Superb Warbler: *Malurus melanocephalus*.

Superb Warbler: *Malurus cyaneus*.

C.—Head black.

The Orange-backed Wren, *M. melanocephalus*.—Central and Eastern Australia. Head and neck all round as well as the entire under surface of the body velvety-black; the back scarlet-vermilion.

The Red-backed Wren, *M. cruentatus (dorsalis)*.—North and North-east Australia.—The black predominating as in the preceding, and even more extended; the back dark crimson.

The Black and White Wren, *M. edouardi*.—Barrow Island off North-west Australia; found amongst spinifex grass. (A. J. Campbell). General colour glossy blue-black; scapulars, inner secondaries, and upper wing-coverts pure white.

Genus Stipiturus.

Ten tail feathers. Tail feathers stiff, with spiny shafts and loose webs, the latter lax and separate.

The Emu Wren.

Stipiturus malachurus.

Southern Australia, from East to West, Tasmania.

Head light rufous, broadly striped with black towards the nape; upper surfaces brown; tail feathers blackish; throat and fore neck light blue; breast brown; abdomen whitish. In the female, head ashy grey; throat fulvous. Length 6.2, wing 1.55, tail 4.1 inches.

This curious little bird, with its long erect tail of isolated plumes, like those of the Emu in their loose structure, occurs in little flocks on swampy ground, covered with rank high grasses and rushes, especially near the coast. Its short round wings are ill adapted for flight, and it runs along the ground, or creeps amongst the coarse herbage in mouse-like fashion, uttering a little twitter as it goes. The nest is oval or round, with a large side entrance, and is placed under the shelter of a tuft of overhanging grass or rushes. It is composed of grasses and lined with soft material. The eggs are three, white sprinkled with spots and dots of reddish-brown, and measure .64 x .5 inch.

Mr. A. J. Campbell has described a much smaller bird from North-west Australia. The specimen, a female, had the crown of the head rufous-brown, and the tail feathers were not so lengthened or so filamentary or loose in structure. Length 3.9, wing 1.4, tail 1.95 inches. He has named it the Rufous-crowned

Emu-Wren, *S. ruficeps*. He has also described the Mallee Emu Wren, *S. mallee*, from the Mallee scrub districts in Victoria. It differs from *S. malachurus* in being lighter in colour, and smaller in dimensions, except the bill, which is larger, and in having the six loose feathers of the tail less filamented. Upper surface olive-brown, each feather having a dark stripe, chest purplish-blue; length 5 inches, wing 1.54, tail 3.04, bill 0.39.



Nest of Rufous Bristle-bird: *Sphenura broadbenti*.
A. J. Campbell.

Genus Sphenura. Bristle-birds.

With ten tail feathers. Tail feathers soft, ordinary, shafts elastic but not spiny. Rictal bristles 3, very strong and recurved.

A.—Head brown.

The Bristle-bird, *S. brachyptera*.—New South Wales and Victoria. Larger, length 8.3 inches. Above uniform reddish-brown.

The Long-billed Bristle-bird, *S. longirostris*.—West Australia. Smaller, length 6.8 inches; head and back mottled with ashy-grey spots.

B.—Head rufous.

The Rufous Bristle-bird, *S. broadbenti*.—Interior of South Australia.

The Lesser Rufous Bristle-bird, *S. litoralis*.—West Australia (Ellensbrook). Closely allied to *S. broadbenti*, but much smaller, also has a brighter chestnut head, and lighter under surface; and has no yellow gape or triangular loral spot as in *S. broadbenti*; upper surface dark slaty-brown, dappled with grey margins to feathers; wings and tail chestnut-brown; shaft of tail feathers black. Length 9 inches, wing 3.4, tail 4.5, tarsus 1.2, culmen .6. (A. W. Milligan).

The Bristle-birds have a shy disposition, and live in reed-beds and thickets, and in consequence are seldom seen. They resemble the Blue Wrens in the habit of carrying the tail erect, and are birds of short flight, running along the ground and threading their way skilfully through the thickets. Mr. North says of the Sydney bird that "it may be observed during spring, perched on the top of a low bush, pouring forth its rich and varied notes, resembling those of the acclimatized Skylark, and which it probably mimics, as they are plentiful in the locality." The nest is globular, with a side opening, and is formed of dry wiry grasses, without any lining. It is placed in a stunted bush or clump of coarse grass, and contains two or three eggs, of a dull white ground-colour thickly freckled and dotted with brown markings, measuring 1 inch x .75 in *S. brachyptera*. Confined to Australia.

Genus Amytornis (Amytis). Grass-Wrens.

With ten tail feathers, which are soft, with elastic but not spiny shafts. Rictal bristles five, weak and not recurved.

Plain-coloured birds of similar habits to the Blue Wrens, but larger, and of some shade of brown or russet above and pale below. They are birds of the interior, and are found in the chaparrals or amongst the spinifex, in small troops of four to seven. They dart from bush to bush, or from tussock to tussock, running rapidly on the ground with the tail erect. The nests are partially dome-shaped, built near or on the ground, and the eggs are white, spotted with red. Confined to Australia, and to its interior. Mr. Keartland has given an excellent account of these birds in the "Victorian Naturalist."

The Grass-Wren.

A. textilis.

• West and Central Australia.

Brown above, with a dirty white stripe down the centre of each feather; chest lighter with similar streaks; a patch of chestnut-brown on the side and flank. Length 6 inches.

Stunted tea-tree scrub, cane grass, samphire and spinifex flats are the favourite haunts. Mr Keartland observed the birds at breeding time for five weeks in a samphire flat. The male birds showed themselves with great freedom, hopping about on the open ground amongst the samphire. Females would soon appear in answer to the call of the male, and then all the antics of the Maluri were gone through. Each pair of birds kept to themselves, and should a third appear it was at once chased away. The nests were close to the ground, in dense undergrowth, dome-shaped with a large side opening. The young as soon as feathered, are exactly like the parents, except that the tail is a trifle shorter.

The Large-tailed Grass-Wren.

A. macrurus.

Western Australia.

Paler. Length 6.5 inches.

The nest and eggs of the Large-tailed Grass-Wren were not obtained until 1909, when Mr. C. G. Gibson collected examples near Kalgoorlie. The nest is the usual bulky grass structure, with very little "roof." The entrance is near the top, and is large, the eggs being plainly visible from outside; no lining beyond fine grasses is used in the nest, which is placed in the centre of a low thick bush, a foot or two from the ground. Eggs three in clutch, white with purplish-red dots and spots, and underlying lilac grey markings, .78 in. x .65. Mr. Keartland considered that this bird is identical with *A. textilis*.

A. modestus from the Centre and adjoining regions of New South Wales and South Australia is also very similar, but much inferior in depth of colour to *A. textilis*. Length 6.5 inches. In the rocky sides of the gorges of the Macdonnell Ranges they are chiefly found, in flocks of from six to ten birds, apparently living in the most perfect harmony. Mr. Keartland saw several

flocks hopping amongst the rocks or on the ground, sometimes as many as four or five on one stone at a time, but at the least alarm they all vanished behind stones or into crevices in the rocks, but apparently avoiding the shelter of the grass. His opinion is that they are not polygamous but simply gregarious when not breeding. Nests were found in cane grass tussocks.

The Striated Grass-Wren.

A. striatus.

Same range as the Grass-Wren.

Chestnut-red above, conspicuously striated with white: a black check stripe; throat white; breast dirty white to pale buff; the tail long, generally carried erect. Total length 6.8 inch.

Truly a grass bird, being invariably found in spinifex or porcupine-grass flats, where it runs rapidly from tussock to tussock when disturbed. Seldom more than two were seen together by the members of the Horn Expedition, though hundreds were observed. They live in country destitute of water, and their food consists principally of ants and spiders, of which a plentiful supply is always available. Crossing the Great Deserts of North-west Australia they were frequently the only birds visible. The nest is placed on the top of a tussock, dome-shaped, with a large side-opening, invariably facing east, and constructed of the dead strippings of the spinifex. Clutch two, white, with a few light-brown spots; some freckled with finer spots, in some cases forming a zone.

The Goyder Grass-Wren.

A. goyderi.

Central Australia.

Brownish, much streaked; throat and chest uniform white. Length 5.5 inches. A doubtful species.

Western Grass-Wren.

A. megalurus.

West Australia.

No black cheek stripe; feather striations very distinctly and regularly marked; all upper surface dull-brown, with feathers striated with white, especially on head and nape; tail feathers not striated; striations also on the under surface, but fainter. Length 7.25, wing 2.75, tail 3.75, tarsus 0.95 (A. W. Milligan).

Mr. Milligan also described a very dark form of this bird from the Kimberley District of Western Australia, under the name of *A. housei*, or the Black Grass-Wren. The throat is striated with black and white, each feather being white with black margins, the breast and abdomen light-chestnut, under tail-coverts blackish with rufous shafts and the upper wing-coverts chestnut with whitish shaft-lines.

Dr. E. Hartert describes another form, *A. woodwardii*, from North Australia (*Arnhem Land*), which differs from *A. housei* in having the throat and fore-neck white, instead of striped with black and white; the tail much longer; and a uniform black malar stripe. The sides of the head, neck, top of head, hind neck and upper back black, as in *A. housei*, each feather with a white shaft-line, with fine branches. Wing 74 to 77 mm. tail 106 to 114, bill 13.5 to 15.5.

Mr. T. Carter also describes one from Broome Hill, South-western Australia, *A. varia*, or the Marloch Grass-Wren, very similar to *A. megalurus*, but has no chestnut patches on body or shoulders. The upper surface has three distinct shades, the dark head and neck being very pronounced; all six rictal bristles well developed and visible, bars on tail feathers very distinct; length 7.50, wing 3.0, tail 4.20.

Family Artamidae.

Nostrils placed low in the bill, nearer to the gape than to the crest. One genus in the Indian and Australian Regions, the others in West Africa.

Genus Artamus.

Bill long and pointed, the culmen exceeding in length the hind toe and claw. Central tail feathers not produced into a spine. Indian and Australian Regions. Wood-Swallows.

Key to the Species.

- | | |
|--|--------------------------|
| I. Lower rump and upper tail-coverts pure white, breast white. | <i>A. leucogaster.</i> |
| II. Rump brown like back, upper tail-coverts ashy-white. | |
| 1. Breast pale vinaceous brown; a broad white eyebrow. | <i>A. superciliosus.</i> |
| 2. Breast beautiful grey; no white eyebrow. | <i>A. personatus.</i> |

III. Rump and upper tail-coverts black (dark brown in *A. tenebrosus*).

1. Under surface ashy grey, chin black.

a. Narrow blackish frontal line, throat blackish.

Under tail-coverts black, broadly margined with white.

Under tail-coverts white.

Under tail-coverts black, narrowly edged with white.

b. No black frontal line, throat not black.

2. Under surface dull brown, chin scarcely darker.

Under wing-coverts white. Larger, 7 inches.

Under wing-coverts fawn-coloured. Smaller, 5.9 inches.

A. cinereus.

A. hypoleucus.

A. melanops.

A. venustus.

A. tenebrosus.

A. minor.



Australian Museum.

White-browed Wood-Swallow:
Artamus superciliosus.

Masked Wood-Swallow:
A. personatus.

The White-rumped Wood-Swallow, *A. leucogaster*.—The Andamans, Malay Archipelago, to New Guinea and Australia generally. Head and neck ashy; back brown; wing dark slate colour; tail black; under surfaces white. Total length 7.5 inches, culmen .8, wing 5.35, tail 2.55, tarsus .75.

The White-browed Wood-Swallow, *A. superciliosus*.—Southern and Eastern Australia, not in North or West. Head and back slaty-grey; lores, sides of face and throat slaty-black; a broad white eyebrow; wing quills tipped with black; tail feathers with white; under surfaces behind throat vinous chestnut. Total length 7.5 inches, culmen .75, wing 5.05, tail 2.85, tarsus .8.

The Masked Wood-Swallow, *A. personatus*.—All Australia except Northern Territory and Western Queensland. Much like *A. superciliosus*, but without the white eyebrow; the whole of the face jet black; under surfaces grey with an indistinct collar on the throat. Total length 7.2 inches, culmen .75, wing 4.9, tail 3.15, tarsus .8.



"The Emu."

A. H. E. Mattingley.

Wood-Swallow (*Artamus sordidus*), Nesting Site.

The Grey-breasted Wood-Swallow, *A. cinereus*.—Western Australia. Brown above, the head rather pale; eyebrow and ear-coverts paler brown; lores, cheeks and throat blackish. Total length 7.5 inches, culmen .75, wing 4.95, tail 3, tarsus .85.

The White-bellied Wood-Swallow, *A. hypoleucus*.—Northern Territory and Queensland. Like preceding, but with white under tail-coverts. Total length 6.3 inches.

The Black-faced Wood-Swallow, *A. melanops*.—Central Australia. Like *A. cinereus*, but smaller, the face with a greater amount of black on the sides, and the black under tail-coverts narrowly edged with white. Total length 7 inches.

The White-vented Wood-Swallow, *A. venustus*.—North-west Australia. No black frontal line; chin black; throat ashy-grey like rest of under surface; the two central tail feathers all black, the rest tipped with white. Total length 7 inches.

The Wood-Swallow, *A. tenebrosus (sordidus)*.—All Australia and Tasmania. Chocolate brown above and below; under wing-coverts white; the two central tail feathers all black; the rest tipped with white. Total length 7 inches. These birds occasionally cling one on to the other in the form of a bunch, in a similar way to a swarm of bees.

The Little Wood-Swallow, *A. minor*.—Australia generally, except Victoria. Chocolate-brown above; below inclining to chestnut; the rump, upper and under tail-coverts black; the under wing-coverts pale fawn brown. Total length 5.7 inches, culmen .5, wing 3.85, tail 2.25, tarsus .5.

The Wood Swallows form a charming group of birds. Most are migratory, coming south in the spring and leaving in the autumn, though a few species do not come south at all, and *A. leucogaster* and *A. melanops* are resident in New South Wales. The flight recalls that of the Swallow, the birds flying over the tops of the trees. They also recall the Swallow by the dark colours of the plumage. They are all insectivorous, but occasionally take honey, and are most useful birds to the agriculturalist. The nests are built in the forks of the branches of trees or in bushes, and are constructed of fine twigs and grass, lined with fibrous roots. Clutch two or three eggs. These are often variable in the disposition of the markings, have a light neutral ground colour, and are dashed, speckled and blotched with various shades of brown. Those of the larger species up to .9 inches long and .7 broad, those of the Little Wood Swallows .7 x .5 inch.

Family Prionopidae.

Bill with a notch in the upper mandible. Tail moderate, rounded or square, consisting of twelve feathers.



HONEY-EATERS.

1. Sanguineous Honey-eater: *Myzomela sanguinolenta*.
2. New Holland (or White-bearded) Honey-eater: *Meliornis novae-hollandiae*.
3. Golden-backed Honey-eater: *Melithreptus laetior*.
4. Painted Honey-eater: *Entomophila picta*.
5. Yellow Honey-eater: *Ptilotis flava*.

[See page 369 *et seq.*]





Museum, Melbourne Zoo.
Grey Shrike-Thrush: *Collyriocichla harmonica*.

Genus Collyriocichla. Shrike-Thrushes.

Grey and brown birds. Second primary longer than the secondaries.

Bill blackish or deep brown.

1. Back umber brown contrasting with grey head and rump.

The Grey Shrike-Thrush, *C. harmonica*.—Australia, except North and West. Bill stout, .9 inches long; white loral spot very distinct; no white eyebrow; beneath ashy grey, the throat, centre of abdomen and under tail-coverts white. Length 9.8 inches.

The Whistling Shrike-Thrush, *C. rectirostris*.—Tasmania. Bill very long, 1.2 inch; white loral spot very faint; a distinct whitish eyebrow; beneath all grey. Length 9.5 inches.

2. Back ashy-brown, like the rest of the upper surface.

The Brown Shrike-Thrush, *C. brunnea*.—New Guinea and North Australia. White loral spot and eyebrow; beneath brownish white; throat and under tail-coverts white. Length 8.5 inches.

The Buff-bellied Shrike-Thrush, *C. rufiventris*.—Central and West Australia. White loral spot; no white eyebrow; beneath brownish white; under tail-coverts bright fawn-buff. Length 8.5 inches.

Woodward's Shrike-Thrush, *C. woodwardi*.—Northern Australia (Arnhem Land). Greyish-brown above; more greyish on the crown and sides of the head; quills and tail dark brown; throat and chest pale grey with a faint buff tinge; under parts ochraceous. Wing 129mm., tail 125mm.

The Shrike-Thrushes are remarkable for the rich swelling melody of their loud and clear notes, which ring through the forest, and enrapture the listener. The notes, as I am now listening to the birds in my garden and an adjoining tree paddock, seem to resemble Wokh-wokh-wokh-Wee-ee. They feed on insects, which they pursue making short hops from limb to limb of the trees, and discover by tearing off the bark cleverly with their bills. The nest is not usually elaborate, made of strips of bark and lined with fibrous roots or grasses, and placed in a hollow open stump, that of *C. harmonica* sometimes on a ledge of a rock. The clutch usually consists of three or four eggs, which are pearly white with chestnut-brown blotches and bluish-grey under markings. Those of *C. harmonica* measure 1.2 x .9 inch.

Genus Pinarolestes.

Birds very similar to the preceding, but smaller. Second primary equal to the secondaries in length; bill narrower. Our species have a ring of whitish or buffy-white feathers around the eye.

The Little Shrike-Thrush, *P. parvulus*.—Northern Australia. Distinct white eyebrow; under surface very pale buff; under tail-coverts whitish. Length 7.6 inches.

The Rusty-breasted Shrike-Thrush, *P. rufiventris*.—North and North-east Australia. No distinct eyebrow; under surface, including under tail-coverts, deep fawn colour. Length 6.5 inches.

P. boweri is closely allied to *P. rufigaster*, but has the underneath parts brownish, and is a generally darker tint, and is found in Queensland. (Cairns.) Wing 4 inches, tail 3.5.

In the clear melodious Thrush-like tones, and in the character of the nest and eggs these birds closely resemble the other Shrike-Thrushes.

Genus Grallina.

Black and white birds. Second primary longer than the secondaries.

The Magpie Lark.*Grallina picata.*

Australia and Tasmania.

It is universally distributed over Australia, wherever water is found, and being a general favourite is but little molested. The birds are black in colour with large white areas, the extent of the white varying very greatly in individuals. There is a white patch on each side of the neck, a long white stripe on the wing, the upper tail-coverts and the basal two-thirds, and often the tip of the tail, and the whole of the under-surface behind the breast white also. The female has a white frontal band, and the throat white, but lacks the white line over the eye, and the shade of black is greener than in the male, which is bluer. Length 10 inches, culmen .95, wing 6.95, tail 4.95, tarsus 1.6.

Of a tame and familiar disposition, haunting gardens, orchards and cultivated paddocks, especially when the ground is being turned over. It feeds on insects, and does not at all interfere with the fruit crops. The flight is peculiar, rather heavy, accompanied by a flapping of the wings. The familiar

shrill and rather whining cry gives it the common name of the Pee-wee or Pee-wit, the former rendering the sound more accurately. The nest is an open structure, composed of mud with a little grass worked in to hold it, and lined with grass. It is a substantial building,



Australian Museum.

Magpie Larks (*Grallina picata*) with albino.

one example weighing 1lb. 7 oz., and measuring $5\frac{1}{2}$ inches in diameter and $4\frac{1}{2}$ inches deep. It is placed on a horizontal branch high up in a large tree, and involves the architects in assiduous labour for a few days in carrying up the mud pellets to so great a height. They will build in trees quite near to houses. This season a pair nested in my back garden. The nest

swayed in the wind, the bird perching on the rim to feed the young. Both birds took part in this office. While the one was on duty, the other was away hunting for insects. Sometimes the nest bird would cry as if impatient. An answering call would come from the mate, and presently he would fly up, the other bird starting off as soon as he reached the bough. The birds changed their offices at intervals of seven minutes to a quarter of an hour. When the young could fly, they were attended by their parents, the family keeping together for several weeks. In the Royal Park, Melbourne, a flock of about fifty of these birds is to be found nearly all the year round, but only two pairs nest regularly, and nearly always in the same tree, and that they have done for many years; but the young they rear always seek fresh scenes. The eggs, two to four or five, vary considerably, white or reddish-white with purplish-brown markings, usually forming a zone at the larger end. They measure about 1.1 by about .8 inch. Wood Swallows (*Artamus*) frequently build their own nests in the old nests of Magpie Larks.

Family Laniidæ. "Crow Shrikes."

Bill either strong, with curved culmen, with hook and notch, black or dark-brown, or with straight culmen, almost without hook and notch, bluish-white. Wing with ten primaries. Tail with twelve feathers. Non-migratory, insectivorous. Nest containing a few coloured eggs, built in a tree.

Sub-family Gymnorhininæ

Nostrils midway between base and tip of bill.

Bill very straight and pointed, scarcely hooked. Tail not half the length of the wing. Gymnorhina.

Bill rather curved, strongly hooked. Tail little shorter than wing. Cracticus.

Magpies.

Genus Gymnorhina.

Bill longer than rest of head, slightly notched. Nostrils longitudinal slits, quite bare of feathers. Wings very long and

pointed. Tail square. Black and white the only colours. Confined to Australia and Tasmania.

Of the five species, *G. hyperleuca*, the smallest, is confined to Tasmania, not occurring on the islands in Bass Strait; *G. longirostris* North-west Australia; *G. dorsalis* West Australia; *G. tibicen* ranges from the Gulf of Carpentaria district down through the interior parts of Queensland, New South Wales, Victoria and South Australia; *G. leuconota* inhabits more especially the coastal and heavily forested parts of New South Wales, Victoria, and South Australia.

The Black-backed Magpie.

Gymnorhina tibicen.

Adult male glossy blue-black, except nape and hind neck, upper and under wing-coverts, upper and under tail-coverts, tail (except a broad terminal band) and vent, which are white; bill bluish-white to bluish-black at the tip; iris light-hazel; legs black. Total length 15 to 16 inches, culmen 2, wing 10, tail 6, tarsus 2.

Adult female differs in that the black has a more brownish tinge, and the upper parts white in the male are grey in the female.

Magpies in their natural state mostly procure their food on the ground, devouring mainly grubs and caterpillars and small lizards, but occasionally grain, berries and fruit. They are very properly protected, as any creature which will lessen the number of our million insect pests in Australia is especially valuable.

All the species are famous vocalists. The wild carol is wonderfully rich and clear, falling away in sweet flute-like notes. In captivity the birds soon pick up fetching airs. I heard of one bird which rose to a correct rendering of the first bars of the anthem, "How beautiful upon the mountains," but the majority are brought up on "There is no luck about the house" and "Merrily sang the baker's wife." Some birds have been taught to imitate the human voice in speech, and indeed the mimetic talent is considerable.

Mr. W. H. Bowman, of the Currajong, possessed a bird which had been taught to call Mrs. Bowman "Mother" and Mr. Bowman "Father." One day, while at the table they heard loud calls of "Mother! Mother! Mo-o-ther!" becoming more and more pathetic in the inflexions of the voice and also fainter.

Mrs. Bowman said, "I am sure there is something wrong with Maggie. We had better see what it is." Accordingly they rose and went out, and guided by the voice found indeed that poor Maggie had fallen into the well. Mr. Bowman went down himself in the bucket, and fetched up the bird from the water. Certainly the power to call "Mother," and so appeal for help, saved the bird's life.

Mr. A. J. Campbell relates the history of a Black-backed Magpie which he saw in Riverina. "An exceedingly handsome male bird was taken when young from the bush, reared and allowed his freedom about the place. When he was 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 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."

The nest is usually placed in the forked branches of a tree, and is a large open structure built outwardly of dead sticks, twigs and strips of bark, and lined securely inside with a ply of fine bark, grass, hair, feathers, &c. External diameter 13 inches, internal five and depth $3\frac{1}{2}$. The eggs, three to five, usually four, have a bluish-grey ground colour, smudged or clouded all over with a drab or brown; length 1.5 inch. breadth 1.1. There is a great amount of variation even in eggs of the same clutch. Breeding season from July to October.

The Long-billed Magpie.*Gymnorhina longirostris.*

North-west Australia.

Differs from *G. tibicen* in being a little larger. Total length 16.5 inches, the bill narrow, straighter and longer, 2.5 inches, and the tail and tarsus shorter. The coloration is much the same, the white a little more extensive, as over the upper half of the thighs.

The Varied-backed Magpie.*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-brown colour into bluish-black at the tip; irides hazel; legs black. Adult female: Differs conspicuously in having the back black instead of white; back of neck and lower back being of a mottled appearance where the dark feathers are tipped with white, the mottle at back of neck blending into a white nape; the otherwise black plumage is browner in tone than on the male, especially on the under parts and primaries. (Campbell). Male: Total length 15.5 inches, culmen 2.3, wing 10.25, tail 6.1, tarsus 2.1. Female: Total length 16 inches, culmen 2.2, wing 10.5, tail 6.25, tarsus 2.2.

GoULD had noticed that the birds of Swan River presented some differences from the Black-backed Magpie, but did not erect a new species on his observations. RAMSAY listed the West Australian bird as the White-backed Magpie. It was reserved for Mr. A. J. CAMPBELL to solve the mystery. By dissection of birds in the bush and observation of others in captivity, he found to his surprise that the male birds possessed white backs and the female birds black backs, the sexes thus dividing the characters of the plumage of the two Eastern species. He found also that the western bird differed from both in the longer and narrower bill.

The Western Magpie like its congeners lives well in captivity, and forms as amusing and mischievous a pet. Mr. CAMPBELL thought that it rather lacked, however, the joyous hilarity of song so noticeable in both the eastern species.

The nest is constructed outwardly of sticks and twigs and lined inside with fine bark. Outside diameter 11.75, inside 6, depth 2.5 inches. Clutch usually 4. Breeds chiefly in September, October, November.

The White-backed Magpie.

G. leuconota.

Adult male: Generally glossy black, except that the whole of the upper surface except the outer parts of the wings and a terminal band of the tail are white, as also the under wing and tail-coverts and the vent; bill bluish-white through bluish-slate to bluish-black at the tip; iris light hazel; legs black. Adult female: Black colour less intense, hind neck and back grey. Male: Total length 17 inches, culmen 2.2, wing 11.5, tail 7.25, tarsus 2.5. Female: Total length 16.25 inches, culmen 2, wing 10.75, tail 6, tarsus 2.25.

Magpies are the most valiant of our native birds. At breeding time they will attack any bird or beast which approaches the neighbourhood of the nest. Mr. Campbell once saw a pair drive off a Wedge-tailed Eagle. The birds attacked from above—"every thrust making tufts of feathers fly from between the shoulders of the great bird of prey." Hawks are dealt with summarily. It is not at all an exceptional experience in the country, as you approach the tree in which the nest is placed, for the old bird to come whizzing past close to your head. This by way of warning. If you come too near the nest sweep may send your hat flying away. Nearer still and the attack will be still more personal. Small boys climbing for the nest are assaulted without mercy, and the bird is much the more likely to get the best of the encounter.

Magpies are eminently social birds. Out of the breeding season, they scatter to hunt for grubs, insects and lizards in the morning, and collect together at sundown in smaller or larger companies to roost in the trees. Mr. I. Batey of Sunbury, Victoria, relates that as many as 2,000 used to resort to a secluded clump of box-trees (Eucalypts) near his homestead. When thus in company they give forth their beautiful piping notes rendering matins and evensong. "One bird starts the carol, others chime in, and all conclude in a most joyful chorus as of thankfulness to the departing day."

The wooing is after the style of some aboriginal tribes. Mr. Batey, who had extraordinary opportunities for studying the ways of these birds, says "This generally commences in pursuit, and culminates in a pitched battle between the amorous parties on the ground. They tumble over and over, and go at it with beak and claw, screaming all the while, a lot of old birds of

both sexes pretending to assist. When the fracas is ended, the usual solo and chorus is given. After which the married couple fly off together. The union, I think, is lifelong with some of the birds, because one frequently sees an old pair together in one locality sticking to each other in and out of season, and for years using the same tree to nest in."

The male bird is a most attentive and faithful mate during the period of incubation, purveying food supplies for the hen bird with great assiduity and tenderness. Both parents keep an eye on their offspring practically up to the next breeding season, and may occasionally be seen giving grubs or other delicacies to the full-grown birds. If robbed of their young they show unmistakable signs of sorrow, wearing an air of utter dejection. How deep the nesting instinct is implanted was seen in the case of a female bird, kept for many years in captivity by Mr. H. J. Carter, which each year made up an elaborate nest in, alas vain, anticipation of domestic joys. While thus engaged she would call the family with loud squawks to assist her, would take eagerly the proffered twigs and arrange them to her liking, not always with a due appreciation of mechanical principles, for sometimes the bottom fell out.

Magpies have an excess of vitality, which, apart from their exuberant song, they manifest in the wild state in sundry gambols and mirthful frolics, such as running round trees or stumps as if playing at hide and seek; darting at one another as if pretending to want to fight, or trying to catch one another by the tail when on the wing. Hence of all our native birds they make the best pets. No doubt the owner has to put up with a good deal of misdirected energy in the way of amateur gardening as well as the well known habit of hiding away any small bright object which they see lying about, but the birds show a remarkable degree of intelligence and also of affection.

Of intelligence Mr. Batey gives a striking instance: "Our magpie was possessed of extraordinary memory. Her favourite perch was a quince tree down the garden. One night a native cat attacked her, and my brother and myself rushed to the rescue. She never forgot the episode, and ever after would turn up punctually at dusk to be placed on the kitchen cross-beam. It was intensely amusing to watch the pretty coaxing methods she

would resort to, in order to compel you to attend to her wants in this respect. One summer evening when attending to the garden, I pretended to take no notice of her, though she had recourse to all her blandishments in order to induce me to offer her my forefinger. Maggie was not to be put off, so she looked about and caught a beetle, and then jumped on to my knee, uttering a low chirpy noise. Evidently this beetle was meant for me, so stooping down, I opened my mouth, when she coolly dropped it in. Of course I could not resist this last appeal. When we scolded this bird, she would assume an air of humble contrition so irresistibly comic that we could not help laughing. She was very fond of being praised, and showed her appreciation of flattery by joyfully skipping about."

The White-backed Magpie is a more wary and a shier bird than the Black-backed. Mr. Campbell considers that the delightful clear ringing call is fuller and louder than in the other species. He distinguishes the carol or song, a whistle-like call and a long squeak-like note of alarm.

The nesting habits and nest of *G. leuconota* are like those of *G. tibicen*. A nest measured 18 inches across outside, 8 inches inside, and was 3 inches deep. Normally it is constructed of dead twigs and lined with fibres, grass, casuarina needles, wool, &c. The breeding season lasts from August to October.

The Lesser White-backed Magpie.

Gymnorhina hyperleuca.

Adult female: Glossy bluish-black or black, except nape, hind neck, upper and under wing and tail-coverts; tail (except terminal band) and vent, white; bill bluish graduating into black at the tip; iris bright hazel; legs black. Total length 13.5 inches, culmen 1.75, wing 9.4, tail 5.5, tarsus 2. Adult female: Differs in having hind neck and back grey, and terminal band of tail brownish-black.

Confined to Tasmania, where from longer protection it is perhaps the tamest of our Magpies, sometimes building its nest by the wayside of thoroughfares and streets. The nests are similar to those of the continental birds, and the Magpies are always ready to make use of any suitable if unusual material provided by the vicinity of man. Mr. A. E. Brent noticed nests made of wire, and of reaper and binder twine. The breeding season is from August to the end of the year.

Genus Cracticus. Butcher-birds.

Bill like that of *Gymnorhina*, but stouter and strongly hooked. Colour of plumage black, white and grey. Australian region extending into Austro-Malaysia.

Key to the Species.

Adult birds all black: young males rufous. North Australia.	<i>C. rufescens.</i>
Belly white.	
a. Throat black; a white collar round the hind neck.	
Total length 13 inches. All the States	<i>C. nigrigularis.</i>
Total length 11 inches. Northern Territory and North-west.	<i>C. picatus.</i>
b. Throat white.	
Back black, chin black. New Guinea, North Australia.	<i>C. spaldingi.</i>
Back grey, chin white.	
Flanks pale brownish-grey.	
Eastern Australia.	<i>C. destructor.</i>
Tasmania.	<i>C. cinereus.</i>
West Australia.	<i>C. leucopterus.</i>
Flanks and sides of breast pure white.	
North Australia.	<i>C. argenteus.</i>

The Butcher-birds have a sad reputation. They are birds which prey on small game.

“Mice and rats, and such small deer
Have been Tom’s food for seven long year.”

Small quadrupeds, lizards, birds and insects fall victims. The birds of prey at least kill their quarry quickly. The Butcher-bird has another method, when he is not hungry. He impales his victims on sharp thorns, so that they may still be fresh meat when he is ready to feed. He is an inveterate destroyer of small birds, and will come about the houses if canaries are hung in cages to the verandah. In some way he terrifies the birds so that they come near to the meshes of the cage, and the head is off in an instant. He is capable of emptying an aviary in this way, and the only security is to have two layers of netting. The notes of the Butcher-birds are loud and distinctly musical, but one feels that such a character should not possess so pleasing a voice, and in consequence a suspicion of hypocrisy as a further vice. The nest is large, of the style of the Magpie’s, cup-shaped and formed of sticks and lined with fibres of grasses and roots, and placed in trees. Eggs, three in number, of some neutral ground tint with brown spots. Dimensions about 1.25 x .9 inch.

The Black Butcher-bird.*Cracticus rufescens.*

Northern Australia.

Evidently a local race of *C. quoyi*, which is found in the Papuan Islands. The Australian forms seem rather greener in tint, and a little smaller. The young males are rufous in colour, and change into the black plumage about the second year. Dimensions of *C. rufescens*, total length 13.10 inches, culmen 2.3, wing 6.75, tail 5.8, tarsus 1.65.

The Black-throated Butcher-bird.*Cracticus nigrigularis.*

Generally distributed except Northern Territory and North-west Australia.

Head and neck all round, throat and chest glossy-black, remainder of under surface pure white; a distinct white collar around the hind neck; back black, lower back greyish; rump and upper tail-coverts pure white; central pair of tail feathers entirely black, the others broadly tipped with white; wing-coverts pure white, mostly black at base; sexes alike in coloration. Total length 13 inches, culmen 1.9, wing 7.1, tail 5.9, tarsus 1.45.

The Pied Butcher-bird.*Cracticus picatus.*

Northern Territory and North-west.

Like preceding in colouring, but smaller and has a clear whistle for its note; nests in open forest country. Total length 11 inches, culmen 1.5, wing 6.5, tail 5, tarsus 1.3.

The White-winged Butcher-bird.*Cracticus leucopterus.*

West Australia.

Above silvery grey, with faint blackish shaft streaks; greater wing-coverts tinged with brown strongly mottled with white, especially on the outer web, which shows a conspicuous white wing patch; upper tail coverts pure white; all tail feathers black tipped with white; head and middle of hind neck jet black, the colour extending on to the sides of the neck; a large loreal spot; cheeks, part of sides of neck, chin, throat, and rest of under surface pure white, slightly tinged with silvery grey on the sides of the breast; flanks silvery grey. Total length 10 inches, culmen 1.3 to 1.5, wing 5.7 to 6, tail 4.5, tarsus 1.2 to 1.5.

The following species have the same dimensions, but are local races differing somewhat in coloration.

The Silver-backed Butcher-bird, *C. argenteus*.—Northern Australia. Has back of a light silvery grey; the white of the upper surface more extensive, and the whole of the under surface, including the flanks and the sides of the breast pure white.

The Butcher-bird, *C. destructor*. Eastern Australia. Has the upper surface of a dull brownish ashy-grey, with darker brown shaft streaks, and is without the conspicuous white patch on the wing. The female browner and more dingy.

The Grey Butcher-bird, *C. cinereus*. Tasmania. Generally like preceding, but with even less white on the wing, and rather browner above and on flanks.

Sub-family Pachycephalinæ.

Bill rather strong, culmen slightly curved, notched. Nostrils in a groove, with an imperfect operculum and beset with small feathers. Austro-Malaysian and Polynesian subregions.

Key to the Genera.

With a crest of feathers.	
Upper breast yellow.	Falcunculus.
Upper breast brown.	Oreoica.
Without a crest of feathers.	
Bill at nostrils broader than high	Eopsaltria.
Bill at nostrils equal in breadth and height.	Pachycephala.

Genus Falcunculus.

Bill strongly curved and toothed, laterally much compressed. Nostrils basal. Crown with a well-developed crest. Sexes nearly alike in plumage, which contains much yellow; female less brilliant. Australia only. Shrike-Tits.

The Yellow-bellied Shrike-Tit.

Falcunculus frontatus.

All Eastern Australia and South Australia.

General colour above greenish-yellow, with a tinge of grey; upper tail-coverts yellow, tinged with greenish; tail feathers grey, with large white tips; forehead, sides of head above the eyes, and occiput white; the feathers of the crown of the head deep black, forming an erectile crest; a broad black stripe from the outer edge of the eye over the ear; the deep black throat and foreneck separated from this stripe by a broad white one; the whole under-surface of the body bright yellow, the breast shining yellow; bill black, feet bluish-black. Total length 7 inches, culmen .75, wing 3.7, tail 3.4, tarsus .85. Female a little smaller, the colouring more subdued.

The White-bellied Shrike-Tit.

Falcunculus leucogaster.

Western Australia.

Very like preceding but rather smaller, and differing in having the lower part of the breast, the whole abdomen and the flanks entirely

white instead of yellow. Total length 6.8 inches, culmen .75, wing 3.65, tail 3.4, tarsus .85. Female somewhat smaller.

The Shrike-tits are not found in the hotter northern parts of Australia. Around Sydney *F. frontatus* is not infrequently met with amongst the gum-trees. It is a striking looking bird, the yellow breast being very conspicuous from below. It is very lively and active, and resembles the much smaller European Titmice in its habits of clinging to and climbing round the branches. It feeds on insects, which it procures by hunting over the bark and among the foliage of the trees. Gould says of it: "No bird of its size with which I am acquainted possesses greater strength in its mandibles, or is capable of inflicting severer wounds, as I experienced on handling one I had previously winged, and which fastened on my hand in the most ferocious manner." It utters a low plaintive note while engaged in hunting, and now and again erects its crest. The nest is a beautiful inverted cone-shaped structure outwardly composed of shreds of fibrous bark bound round, and held together with spiders' webs like that of a Fantail, the inside being lined with very fine grasses and thin strips of bark, and is usually placed in the thin topmost leafy twigs of a tall Eucalyptus tree, though sometimes in a sapling. It usually nips the end of the twigs off immediately above its nest. The eggs are white, minutely dotted and spotted with slaty-black markings; .89 x .63 inch. I was present with a friend who wished to secure the nest and eggs of a Shrike-Tit which had built near the extremity of a long, rather high, horizontal branch, stretching over a floor of hard and uneven rocks near Cook's River. With great dexterity and daring he succeeded in obtaining the prize, but alas in the descent the eggs were broken. The nest was exceedingly well placed for safety, and I imagine the bird proceeded to build another in a yet more inaccessible situation, and I trust succeeded in bringing up its family undisturbed.

Genus Oreoica.

Bill very convex but without tooth. Nostrils oval. Tail shorter than wing, square. Crown with a crest of feathers. Plumage dull-coloured. Australia only.

The Bell-bird.
Oreoica cristata.

Australia generally.

Reddish-brown above; head light-grey with white forehead and lores; the feathers of the crown of the head forming a deep brownish-black erectile crest; chin and upper throat white enclosed by black stripes; lower throat, neck and upper breast brownish-black; lower breast and abdomen white. Female everywhere lighter coloured. Total length 8.4 inches, culmen .8, wing 4.1, tail 3.5, tarsus 1.1. Feeds on insects.

The Bell Bird is commonly distributed over Australia, especially the drier and inland portions. It is a good ventriloquist, and utters its clear bell-like note from the top of the Eucalyptus trees, where it usually seeks its insect prey. The nest is a deep open structure, composed of strips of bark and leaves, and lined with fine grass. It is usually placed not far from the ground on the top of a stump surrounded by suckers, or in the fork of a grass tree or other shrub. The eggs are from three to four, bluish-white in colour, sparingly but boldly marked with dark sepia blotches. They measure 1.06 x .81 inch.

Not to be confused with the Bell Minah *Manorhina melanophrys*, which is found in gullies near the coast, occurring in large numbers, which make the welkin ring with their single bell notes, bird answering bird, filling the gully with music.

Genus Pachycephala. Thickheads.

Sexes generally differing in colouring, the principal colours in the male plumage earthen-brown, yellow, olive-green and black. Indian and Australian regions. Not in New Zealand. Insectivorous.

These birds are often known locally as the "Little Thrush." The notes are very beautiful, not so bold as those of *Collyriocichla* but numerous and well sustained. The nests are open and cup-shaped, formed by thin twigs, fibrous roots or casuarina shoots, and are usually placed in a fork of a tree six to twelve feet from the ground. The eggs are of some shade of olive-brown or yellowish with brown spots, often forming a zone on the larger end, a little under an inch long and two-thirds of an inch wide.

Genus Eopsaltria. Shrike-Robins.

The genus is intermediate between the *Pachycephalinae* and the *Muscicapinae*. (Gadow). Australia, New Caledonia, New Guinea, Aru Islands.

Key to the Species.

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|--|------------------------|
| 1. Abdomen and lower breast bright yellow. | |
| Chin and upper throat greyish white, chest and breast yellow. Eastern Australia. | |
| Upper tail-coverts yellowish-green. | <i>E. australis.</i> |
| Upper tail-coverts bright yellow. | <i>E. chrysorrhoa.</i> |
| | <i>E. jacksoni.</i> |
| Chin, throat and upper breast white. Western Australia. | <i>E. georgiana.</i> |
| 2. Under parts white, rest of plumage black. Tips of tail feathers white. | <i>E. gularis.</i> |

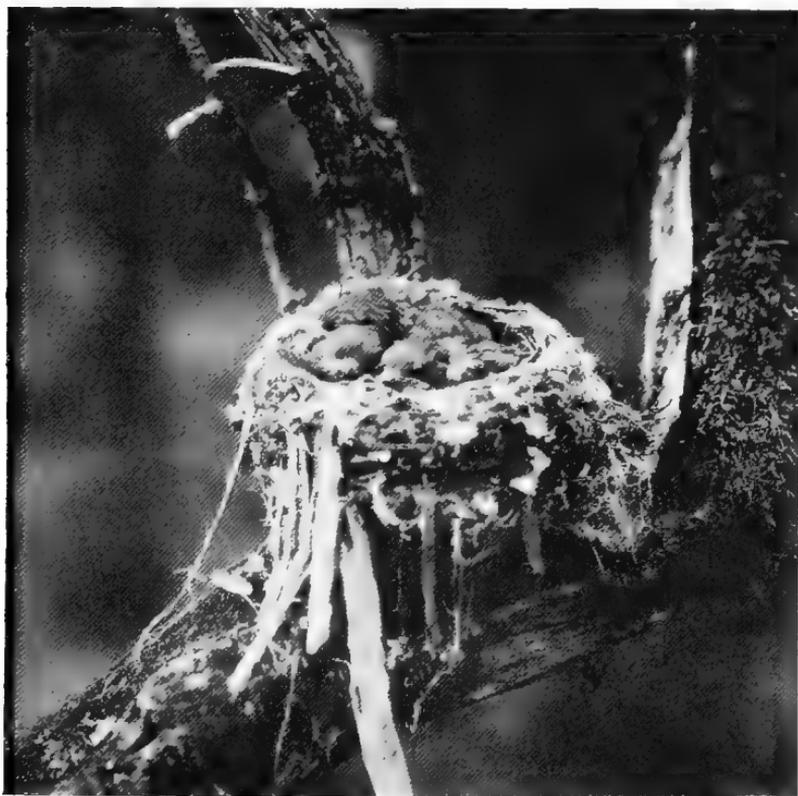
Of the Yellow-breasted Robins *E. australis* is common in Victoria and New South Wales, *E. chrysorrhoa* extends from the Northern Rivers of New South Wales up to Rockingham Bay in Queensland, while *E. georgiana* is confined to Western Australia. The form in which the plumage shows no yellow, *E. gularis*, occurs in West and South Australia. *E. jacksoni* has more white on the throat than *E. chrysorrhoa* and more yellow on the rump, the white on the shoulder not so distinct and the primaries not tipped with ashy-white. It inhabits the open forest and scrub country at an elevation of between 3,000 and 5,000 feet. Type from Herberton Range. Length 5.6 inches, wing 3.45, tail 2.5. *Eopsaltria* means the Harpist of the Dawn, and these beautiful sprightly little birds are well named.

The Yellow-breasted Shrike-Robin.*Eopsaltria australis.*

Above olive-grey, except the hind neck, which is simply grey; wing-coverts blackish-grey, edge of the wing whitish; upper tail-coverts yellowish-green; tail feathers dark-greyish-brown, except the two central pairs, with narrow white tips; under surface, except chin and uppermost part of throat which is greyish-white, all bright yellow; under-surface of wings whitish and grey; bill black, feet brown, iris brown. Total length 6 inches, culmen .7, wing 3.7, tail 2.9, tarsus .75. Female duller.

Abundant in Southern Victoria and the eastern parts of New South Wales. A beautiful and impassively friendly bird, which readily perches near you, remaining quite quiet unless you take steps to frighten it away, and one of the most useful in the orchard or vineyard, for it finds all its food among the insects

and their larvæ. It has a very pleasant and friendly note when it elects to sing, but while you are watching each other the bird generally preserves silence. It breeds throughout the latter half of the year, rearing two or more broods, and is a close sitter. The nest is usually placed on the fork of a low tree, and is a round cup-shaped structure, composed of strips of soft bark and



From life.

D. Le Souëf.

Nest of Yellow-breasted Shrike-Robin: *Eopsaltria australis*.

fibrous matter, the outside and rim beautifully trimmed with lichens, and strips of bark attached by means of cobweb and hung vertically around the nest. It is lined with soft material, wiry grasses or hair. The eggs, 2 or 3 in number, of a bright apple or bluish-green ground colour, speckled and spotted all over with different shades of reddish and chestnut-brown. Dimensions .83 x .62 inch.

*Family Paridæ.**Sub-family Parinæ.*

Bill without notch. Tarsus less than twice the length of the hallux without the nail. Wings rounded. Toes short. Plumage soft, woolly, lax. Sexes alike in plumage.

Small, non-migratory birds, feeding on insects and seeds. The Australian members of the sub-family are the nearest allies we possess to the European Titmice, but differ from them in their very plain plumage. Both genera are confined to Australia.

Genus Aphelocephala (Xerophila). Whitefaces.

Bill higher than broad, robust. Nostrils partly covered. No crest. Tail square. Small birds, brown above and dull-white below; face in front of the eyes white.

The Whiteface, *A. leucopsis*.—Australia except North. Without pectoral band; bill and feet brown. Length 4 inches.

The Chestnut-breasted Whiteface, *A. pectoralis*.—South Australia. With a prominent cinnamon-brown band across the chest; bill and feet black. Length 3.9 inches.

The Black-banded Whiteface, *A. nigricincta*.—Central Australia. With a narrow black pectoral band; bill black, and feet purplish-black. Length 3.9 inches, wing 2.2, tail 1.55.

The Chestnut-bellied Whiteface, *A. castaneiventris*.—Western Australia (Murchison).—Flank and sides uniform chestnut; general cover above dark brown, a patch of light brown feathers encroaching on each side of the chest. Length 4.1 inches, wing 2.4, tail 2, tarsus .75.

The Whitefaces are met with in small flocks, and are sociable in their disposition. They are more frequently seen on the ground than in the trees. They are very busy, and hop about in a lively manner. They are not alarmed by the presence of man, and on his near approach just flit aside into the nearest bush. The nest is rather large, domed, with an entrance-hole near the top, and is composed of dried grasses, moss, wool, webs and dead leaves, lined with grasses or feathers. The eggs are pinkish-white, thickly spotted and smudged with pinkish or reddish chocolate, and measure .71 x .52 inch.

Mr. Robert Hall records a curious instance of their friendliness to, or lack of fear of, man. For years several pairs of Whitefaces, in company with the imported Sparrows, occupied the verandah and outbuildings of a wayside inn at Lake Boga, in the Swan Hill district. They were accustomed to feed on the crumbs and other relics of the inn table, and built their nests and reared their young about the place. The nests were loosely constructed, much like those of the Sparrows, but rather smaller, and like the Sparrows the Whitefaces made use of any suitable odds and ends of materials which presented themselves. There were four or five eggs in each clutch, and several broods were reared in the season. One nest was built within a few feet of the main door of the inn. Another, strangely enough, was built in the end of a loosely-rolled curtain of a waggonette. The vehicle was used on two occasions without the birds being noticed or disturbed. Later on the waggonette was used for a long drive of twenty-two miles, and on the return the curtain was lowered, when, to the surprise of the owner, down came a nest with five eggs, which contained living chicks, and must have been nearly fully incubated in this strange situation.

Genus Sphenostoma.

Bill not higher than broad, wedge-shaped, curved. Nostrils quite exposed. A crest of long feathers on the crown. Insectivorous.

The Wedgebill.

Sphenostoma cristatum.

The inland areas of all the States.

Above uniform earthy-brown; tail feathers with large white tips; beneath dingy white washed with grey or brown. Length 6.5 inches.

It builds an open cup-shaped nest of thin twigs and lined with grasses, generally placed in a low bush, and lays two (sometimes 3) eggs of a light bluish-green ground colour, boldly dotted with small black or dark sepia markings. 1.0 x .68 inch.

Family Sittidæ.

Bill subulate, straight or curved upwards, slightly longer than rest of head, never toothed. Wings long and pointed, double the length of the tail. Tail rounded or square, short. Sexes alike or slightly differing in plumage. Insectivorous. All over the world except the Neotropical and Ethiopian regions.

Genus Neositta. (Sittella).

Bill curved upwards. Nostrils with a cutaneous valve. Tree-runners. Australia, with one species in New Guinea.

Key to the Species.

- I. A large patch of rusty red on the wing, formed of the middle thirds of the quills.
- a. Breast and abdomen dingy white, streaked with brown.
Crown of head dark brown. N. chrysoptera.
Head and neck white all round. N. leucocephala.
 - b. Breast and abdomen pure white, not streaked with brown.
Crown of head black. N. pileata.
Crown of head blackish-brown, wing patch half white, half rusty. N. tenuirostris.
- II. A large patch of pure white on the wing, formed of the middle thirds of the quills.
- a. Head above black.
Breast and abdomen much streaked. N. striata.
Breast and abdomen white without streaks. N. leucoptera.
 - b. Head white all round. N. albata

Small birds about four inches in total length, generally brown above and white below, without bright colours except for the rich rufous or white patch on the wing. They occur in small companies, and run over the branches of the trees with great ease and skill, assuming every possible variety of position, but differ from the Tree-Creepers in hunting down and not up the tree. The flight is quick and darting as it flits from one tree to another.

Nest situated on the bark of an upright dead limb, cup-shaped, composed of downy substances. On the outside are worked on by cobwebs small pieces of bark, which so liken the nest to the rest of the limb that it is extremely difficult to detect. Clutch of eggs three, smooth, whitish, mottled all over with slate-coloured or greenish spots. Dimensions .67 x .54 inch.

The Orange-winged Tree-runner.*Neositta chrysoptera.*

South Australia and the Eastern States.

Crown of head, nape and wing-coverts dark-brown; mantle, back and scapulars pale brownish-grey, each feather with a dark-brown central



Australian Museum.

Orange-winged Tree-Runner : *Neositta chrysoptera.*

streak; rump and upper tail-coverts white, the latter with small subterminal brown cross-bars; wing quills dark-brown with paler tips, the middle third of the webs forming a conspicuously large rich rufous patch on the

opened wing; tail feathers blackish-brown, the outer pairs with white tips; all the under-parts dingy white, most of the feathers with narrow brown shaft streaks; flanks slightly washed with brownish; throat almost white; under wing-coverts dull dark-brown with white edges; under tail-coverts white, with subterminal brown arrow-shaped marks. Iris cream-colour; feet yellow. The female has a darker brown head. Total length 4 inches, culmen .6, wing 3.1, tail 1.5, tarsus .7.

The White-headed Tree-runner.

Neositta leucocephala.

Queensland and New South Wales.

Head and neck all round pure white; under tail-coverts brown tipped with white; otherwise like preceding.

The Pied Tree-runner.

Neositta albata.

North-east Queensland.

Like *E. leucocephala* but with white wing patch instead of rusty one. Wing 3 inches, tail 1.5.

The Black-capped Tree-runner.

Neositta pileata.

All the States except Queensland and Northern Territory.

Crown of head deep black; a narrow white band on the forehead, præocular and superciliary regions and lores; ear-coverts, part of occiput, nape, hind neck, mantle, scapulars and back uniform greyish-brown; rump and lower back pure white; upper tail-coverts white with several blackish-brown cross-bars; tail feathers black with white tips; wings above blackish-brown with rusty red patch; under wing-coverts black; edge of wing white; cheeks, sides of neck, throat, breast and abdomen pure white; under tail-coverts white with large subterminal blackish-brown cross-bars; sides, flanks, thighs greyish-brown; bill yellow at base, black at tip; feet bright yellow, iris buffy-hazel. In the female the whole of the upper parts and sides of the head black. Culmen .6 to .7, wing 3.4 to 3.52; tail 1.65 to 1.7, tarsus .7 to .73.

The Slender-billed Tree-runner.

N. tenuirostris.

Interior of South and West Australia.

The wing patch is paler and the bill is slenderer than in the preceding. It "seems to be a smaller race of *N. pileata* representing the latter in the interior of South Australia." (B.M.C.).

The White-winged Tree-runner.

N. leucoptera.

North Australia.

Resembles *N. pileata* in the head and under parts, but has the wing patch pure white instead of rusty colour.

The Striated Tree-runner.*N. striata.*

North and North-east Australia.

Head all round, sides of neck, throat and upper breast all black; hind neck, mantle, scapulars and back greyish-brown, each feather with a broad blackish-brown shaft streak; wings brown above with large white patch; breast, flanks and abdomen white, each feather with broad dark-brown longitudinal streak. Otherwise like *N. leucoptera*.

Another form, *N. magnirostris*, has been described from Mt. Elliot, inland from Townsville. It is closely allied to *N. striata*, but differs from that bird in its generally larger size and especially the longer and more massive bill, the culmen being 0.63 inch, as compared with 0.53 inch, wing 3.3, tail 1.5. tarsus 0.7.

Family Certhiidae.

Bill slender, generally longer than the rest of the head, curved downwards; culmen keeled, without tooth or notch at tip. Nostrils basal, longitudinal, operculated, exposed, without bristles. Hallux, with its claw longer than the longest toe; claws, especially the hind claw, long, much curved and very sharp. Plain coloured. Insectivorous. All over the world, except South America, New Zealand and Madagascar.

Genus Climacteris.

Tail square, soft, shorter than wing. Tarsus covered in front with one long scutum. Brown and frequently spotted. Tree-creepers. Australia, New Guinea, with one species in the Philippines. In all the Australian forms there is a fawn-coloured band across the wing.

Key to the Species.

- | | |
|--|-------------------------|
| 1. All the upper parts uniform brownish black. | |
| Throat black, with white lanceolate stripes. | <i>C. melanura.</i> |
| Throat dull white, without stripes. | <i>C. melanonota.</i> |
| Underparts chestnut. | <i>C. wellsi.</i> |
| 2. Mantle olive-brown or red-brown. | |
| a. Central pair of tail-feathers, lower back and upper tail-coverts olive-brown. | |
| Under surface rusty-red, flanks without stripes. | <i>C. rufa.</i> |
| Under surface pale buff or fawn, much striated. | <i>C. picumna.</i> |
| b. Central pair of tail-feathers dark grey. | |
| Orbital region brown; whole fore neck white. | <i>C. scandens.</i> |
| Orbital region rich rusty red; dull buff crescent across upper chest. | <i>C. erythroptus.</i> |
| Orbital region white. | <i>C. superciliosa.</i> |

The Black-tailed Tree-creeper.*Climacteris melanura.*

All the Northern Coasts of Australia.

Forehead, all the upper surface, the whole tail and all the wing-coverts brownish-black; wings dark-brown with a conspicuous pale-buff band across the extended wing; chin and throat white, each feather broadly edged with black, giving the throat a striped appearance; under wing-coverts brown edged with whitish and fawn; breast abdomen and thighs ferruginous brown, some of the breast feathers with darker brown central streaks; under tail-coverts brownish-black with buffish cross markings; bill and feet blackish-brown, iris dark red-brown. Total length 6 to 7 inches, culmen .7 to .8, wing 3.75 to 4, tail 2.8 to 3, tarsus 1.

Chestnut-bellied Tree-creeper.*Climacteris wellsi.*

North-west Australia (Upper Gascoyne River district).

Closely allied to *C. melanura*, but differs in having the underparts chestnut instead of brown, and the middle of the breast rufous-buff (instead of smoky-buff) with white black-edged, shaft-streaks; the under tail-coverts are black, strongly barred with white. Length 7.0 to 7.25 inches, wing 3.7 to 3.85, tail 2.7. (Ogilvie Grant).

The Black-backed Tree-creeper.*Climacteris melanonota.*

Northern Territory and North Queensland.

Like preceding, but throat unstriped; under-surface pale vinous-brown; the feathers of the abdomen with a central white shaft stripe with a black stripe on either side of it.

The Rufous Tree-creeper.*Climacteris rufa.*

South and West Australia.

All the upper parts coloured as in *C. scandens*, but the feathers of the rump and upper tail-coverts rufous-brown; sides, head and ear-coverts, cheeks, chin, under wing-coverts and axillaries uniform rusty-red; centre of breast and abdomen, sides and flanks rusty-red.

The White-throated Tree-creeper.*Climacteris picumna (leucophæa).*

South Australia and the Eastern States.

Distinguished from preceding by the paler under-surface and absence of rusty-red; chin, cheeks and upper throat pale-buff; sides of neck and upper breast greyish-buff; all the feathers of the breast, sides, flanks and abdomen having a longitudinal central stripe of dull white, this stripe bordered on each side by a line of black-brown, the whole feather broadly edged with pale-buff.

The Brown Tree-creeper.*Climacteris scandens.*

South Queensland, New South Wales, Victoria, Tasmania, and South Australia.

Crown of head dark or blackish-brown, most of the feathers with greyish edgings; hind neck, mantle and most of upper wing-coverts dark olive-brown; rump, upper tail-coverts and tail feathers dark blue-grey; wings brown with pale-fawn coloured cross band; chin, cheeks, foreneck and centre of breast white, with a creamy-buff tinge on lower breast and centre of abdomen; each feather of sides, flanks and under tail-coverts white, with a subterminal or marginal line of dark-brown; under wing-coverts and axillaries almost white; bill black; feet blackish-brown; iris brown. Total length about 6 inches, culmen .8, wing 3.5, tail 2.5, tarsus .9. The female has a small orange-red spot just below the ear-coverts.

A form with rich rusty-red colour on the rump and upper tail-coverts was formerly separated as *C. pyrrhonota*.

A smaller variety, which is closely allied to *C. scandens*, but has the upper throat and chin only white, with a pale greyish-brown band across the chest, has been described from Queensland under the name of *C. minor*.

The Red-browed Tree-creeper.*Climacteris erythrops.*

Victoria, New South Wales and South Queensland.

Orbital region rich rusty-red. Like *C. picumna* on the upper parts and like *C. scandens* on the lower.

The White-browed Tree-creeper.*Climacteris superciliosa.*

All Australia except the North-west and North.

Orbital region white; otherwise much like *C. erythrops*.

The Tree-Creepers are charming little birds, and may often be seen corkscrewing up the trunks of the trees, or working round the branches, on the under* as on the upper side, in search of insects lodged in the unevennesses of the bark. They always hunt upwards in contrast to the Tree-Runners (*Neositta*) which hunt down the limbs. They spend much of their time on the ground, looking over the surface and the fallen boughs for their insect prey. They pass over the ground in a succession of quick shuffling hops. From the habit of pecking at the bark for insects they are often known locally as Woodpeckers, but

are not related to that family. The note is single, sharp and rather piercing. The nests are composed of soft grass, fur and feathers, and are placed far down hollow branches or stumps. The eggs, 3 in the clutch, are flesh or salmon coloured, blotched all over with reddish-brown; dimensions about .9 x .7 inch.

Family *Zosteropidæ*.

Bill shorter than or as long as the rest of the head. Above olive-green and yellow are the principal colours, below whitish washed with fawn colour and grey. A conspicuous ring of small white feathers surrounds the eye in most species. Sexes nearly alike in plumage. Small birds, from four to six inches in total length. Africa south of the Sahara, India, Burmah, China and Japan, Indo-Malaysia, Papua, Pacific Islands, Australia, Tasmania, New Zealand and the Chatham Islands. The genus *Zosterops* has the characters of the family.

Key to the Species.

A. Upper and under surfaces parti-coloured.

1. Throat white or with a tinge of olive, not yellow.

Smaller, 4.6 inches, wing 2.5. Mantle bluish-grey, flanks chestnut. Tasmania, South Australia, and all the Eastern States, New Zealand, and Chatham Islands.

The White-eye, *Z. cærulescens*.

Yellow-vented White-eye, *Z. vegeta*.—North-east Queensland. Very similar to *Z. cærulescens*, but has lighter flanks, and the under tail-coverts and vent bright yellow like the throat. Length 4.2 inches, wing 2.2, tail 1.7.

2. Throat yellow, mantle grey.

Kangaroo Island White-eye.

Z. halmaturina (Kangaroo Island, S.A.) has greyish back and flanks and yellow throat. Wing 2.25 inches, tarsus .7.

B. Upper surface nearly uniform; under-surface parti-coloured.

- a. Bright olive-green above; sides of body pale chestnut; a small loreal streak of yellow. Cheeks pale olive-yellow; throat bright yellow; fore neck and chest grey; breast ashy; abdomen whitish. 4.3 inches.

Western Australia.

The Green-backed White-eye, *Z. gouldi*.

- b. Very pale olive-yellow above; sides of body ashy; a bright loreal mark. Cheeks, throat and fore neck bright yellow; rest of under surface pale ashy; white in centre of breast and abdomen. 4.6 inches. Central Australia, North Queensland, and Islands of Torres Strait.

The Pale-bellied White-eye, *Z. albiventris*.

Rabbit Island White-eye, *Z. shortridgei*. Rabbit Island, W.A. Most nearly allied to *Z. gouldi*, but differs in having the centre of the breast, the belly, thighs, and under tail-coverts, pale yellow; the sides and flanks greyer and slightly washed with cinnamon. In *Z. gouldi* the thighs are always white. Length 5 inches, wing 2.3, tail 1.9. (Ogilvie Grant).

C. Upper and under surfaces severally uniform.

a. Olive-green above; bright yellow below. 4 inches.

North and North-west Australia.

The Yellow White-eye, *Z. lutea*.

Balston's White-eye, *Z. balstoni*.—Carnarvon, N.W.A. Very similar to *Z. lutea*, but has upper parts more greyish-olive, and the under parts, especially the centre of the breast and belly, less brilliant yellow. Length 4.25 to 4.5 inches, wing 2.2, tail 1.6.

b. Light ashy-brown above, washed with pale olive-yellow; very pale citron below. 4.2 inches.

Northern Territory and North Queensland.

Gulliver's White-eye, *Z. gulliveri*.

The White-eyes are attractive looking little birds, the "Silver Eye" and green coat easily catching the sight. They consume a great many insects, and do an immense amount of good by clearing the trees of aphides in winter and early in spring, but, alas, are so fond of fruit that they are generally the first to find the ripe apricot or the reddened gooseberry, and may visit the orchards and gardens in such numbers that very little of the fruit reaches the rightful owners. The nests are round, deep, cup-shaped and extremely light, composed of dry grasses, moss and wool and neatly lined with fibres of roots and grasses. They are placed among the small branches of trees (often fruit trees) and bushes. The light nests are pensile. "sewed by the rim to supports, otherwise swinging perfectly clear, like a hammock." (Dove). The eggs are of a beautiful uniform pale blue, 3 in the clutch, about .7 x .5 inch.

Family Dicæidæ.

Wing with nine primaries, the first of which is fully developed and usually very long. Like the Sun-birds in habits, but with shorter and stronger bills. The nest is in all cases, whether open or concealed, an elaborate structure. Widely distributed in the tropics of the Eastern Hemisphere.

Bill longer and Creeper-like, the culmen exceeding in length the hind toe and claw.

Dicæum.

Bill shorter and more Finch-like, the culmen not exceeding the tarsus in length.

Pardalotus.

Genus Dicæum.

Widely distributed over India, Burmah, South China, Malay Peninsula and Archipelago, Papua and Islands to the East, with one species in Australia. Flower-peckers.

The Mistletoe-bird.

Dicæum hirundinaceum.

Australia generally, but wanting in Tasmania.

Male: Head and upper surfaces glossy purplish-blue; throat and fore-neck and under tail-coverts scarlet; axillaries and under wing-coverts white; remainder of under-surface yellowish-white with a purplish-blue streak down the middle of the chest and breast; bill blackish-brown; feet dark-brown; iris dark-brown. Total length 3.7 inches, culmen .35, wing 2.5, tail 1.2, tarsus .5. Female: Brownish-black above; throat white; under tail-coverts pale scarlet; rest of under-surface creamy-white, without the purplish-streak. Rather smaller.

The Mistletoe-bird, or Swallow *Dicæum*, is widely diffused throughout the Continent, but is often unobserved, as it keeps much to the tops of the trees and is screened by the foliage. The male is conspicuous enough, if visible, by its rich scarlet breast, and the song is "a very animated and long-continued strain" forming a pretty warbling song. It has a quick darting flight, and does not pry and creep about branches like a Honey-Eater. It takes special delight in visiting the Mistletoes (Loranth) which are parasitic on the trees. Its chief food is insects, but it has a particular weakness for the rather sweet but sickly and sticky berries of the Loranth. The nest is a beautiful purse-like structure composed of the white cottony hairs found in the seed cases of Asclepiads and other plants, and is suspended to branches of the foliage. The eggs are of a chalky white, and measure .75 x .45 inch.

Genus Pardalotus.

Confined to Australia and Tasmania.

Key to the Species.

I Head streaked with white on the hinder crown and occiput.

All the primaries edged with white, forming a large wing-patch; tips of primary coverts scarlet.

Red-tipped Pardalote, *P. ornatus*

Third and fourth primaries edged with white; tips of primary coverts scarlet, orange or yellow.

Orange-tipped Pardalote, *P. assimilis*

Third primary only edged with white; tips of primary coverts always yellow.

Yellow-tipped Pardalote, *P. affinis*

All three range from Queensland through New South Wales to Victoria. *P. ornatus* extends to South and West Australia. *P. assimilis* has been found in Central Australia. *P. affinis* extends to South Australia and across Bass Strait to Tasmania.

II. Head black with round spots of white.

Back mottled, upper tail-coverts crimson, loral spot white; throat and fore neck bright yellow, under tail-coverts yellow.

Rump chestnut.

Spotted Pardalote, *P. punctatus*.

Rump yellow.

Yellow-rumped Pardalote, *P. xanthopygius*.

Back ashy-brown, with faint dusky streaks, upper tail-coverts washed with yellow; loral spot scarlet; throat creamy-white with large pale yellow spot on foreneck; under tail-coverts white.

Red-browed Pardalote, *P. rubricatus*.

P. punctatus all over Australia except the north-west and Northern Queensland. *P. xanthopygius* in New South Wales, Victoria, South and West Australia. *P. rubricatus* in western New South Wales, Queensland, Central Australia, Northern Territory, and North-west Australia.

Pale Red-browed Pardalote.—North west Australia. Very similar to *P. rubricatus*, but much paler in colour and lighter than any other species of the genus. Length 4.0 inch, wing 2.5, tail 1.2.

III. Head all black.

Rump pale brown.

Black-headed Pardalote, *P. melanocephalus*.

Rump yellow.

Chestnut-rumped Pardalote, *P. uropygialis*.

P. melanocephalus is found in Queensland and Northern New South Wales; *P. uropygialis* on all the Northern coasts of Australia.

IV. Head and back olive, with blackish margins to the feathers; ear-coverts yellow; no white wing patch.

Forty-spotted Pardalote, *P. quadragintus*.

This species is confined to Tasmania and King Island.

All the Pardalotes are small, ranging from 3.4 to 4.3 inches in total length. They are fearless and active little birds, and feed entirely on insects. The Spotted Diamond-bird is the commonest, and most widespread, and is often seen in suburban gardens, hunting among the shrubs and low trees. This species and the Red-tipped, the Black-headed, the Red-browed and the

Yellow-rumped Diamond birds build in a tunnel in a bank, the others in the hollow limbs of trees. The eggs are four in number, white, without spots, .6 or .7 inches long x .5.

The entrance to the tunnel of the Spotted Diamond-bird is just large enough for the bird to creep through, and the tunnel itself runs to two or three feet in length, in general horizontal but inclined sufficiently to turn off the rain, and at the extremity a chamber is formed at a rather higher level than the entrance, and in this is constructed and contained a beautiful dome-shaped nest, built of grass or fine bark and lined with finer materials of the same sort. It is remarkable that the bird builds up this structure in the almost complete absence of light.

Family Nectariniidæ.

Bill always much pointed, often elongated and curved. Tongue long, protractile, ending in a tube anteriorly bifid. Nostrils rounded, protected by a coriaceous membrane, without bristles or feathers. Bright coloured birds, ornamented with yellow and green and other colours, often metallic in lustre. Males often with pectoral tufts. Female birds plainer. Non-migratory tropical birds. Ethiopian, Indian and Australian regions. Sun-birds, taking in the East the place of the American Humming-birds.

Genus Cyrtostomus.

Bill much longer than rest of head, much curved and pointed. Indo-Malayan with one species reaching to Cape York and Port Denison.

The Sun-bird.

Cyrtostomus frenatus.

From Celebes over the Moluccas and Papuan Islands to North-east Australia.

Male: Olive-yellow above; cheeks and faint superciliary streak yellow; breast deep yellow; fore-neck and chest dark metallic purplish-blue; the large tips to the tail yellowish-white. Total length 4.7 inches, culmen .85, wing 2.3, tail 1.5, tarsus 6. Female: Without the metallic blue throat and fore-neck; these parts being like the breast of a rich yellow, wing 2.2 inches.

These birds hover before the open flowers, and extract with their long tongue the honey and small insects, the brilliant plumage shining in the sun. The nests are pensive, attached to and hidden by branches of foliage, and have a side entrance. They are composed of the epidermal hairs that grow on the palm stems, rather loosely woven together and lined with cotton and bark fibre. The eggs pearshaped, greenish-grey with obscure dirty brown mottlings over the whole surface. Dimensions .75 x .5 inch.

Family *Meliphagidae*. Honey-eaters.

Bill always with a prominent culmen, and broadened out at the base, curved, almost always with a slight notch, maxilla serrated. Nostrils basal, situated in a large unossified groove. Tongue protractile, bifid, each half broken up into numerous stiff horny fibres, so as to form a brush. The plumage generally inclines to green and yellow; a shade of blue is found on the head of *Entomyza*, and red and black are the dominant colours in *Myzomela*. Parts of the head are bare as in *Tropidorhynchus* and *Philemon*. Wattles are frequently met with on the ears, cheeks and throat, as in *Acanthochæra*.

Most of the genera are endemic in Australia, others are spread over Austro-Malaysia and Polynesia. One, *Promerops*, occurs in isolation in South Africa.

Dr. Gadow divides the family into three sub-families.

- Myzomelinae*.—Small birds of the size of a Sparrow. Bill longer than the rest of the head; very slender and much curved. Sexes mostly very different in coloration. Myzomela, Acanthorhynchus.
- Zosteropinae*.—Bill not longer than rest of head. A ring of short white feathers around the eye. Sexes nearly alike in coloration. (Zosterops), Meliphaga, Plectrorhynchus.
- Meliphaginae*.—All the other genera.

The Honey-eaters are among the most characteristic birds of our bush, and are to be met with in all parts of the Continent. Their shapely rather slender bodies are well adapted to the restless life which they lead amongst the branches of the shrubs and trees. In the search for the most attractive flower clusters, the flight is often broken into little zig-zags and many a curve, and on alighting they creep and twine amongst the branches,

and adopt the quaintest but never ungraceful modes of suspension in order to enable them to probe into the tubular or cup-shaped blossoms. The protractile and brush-like tongue enables them to extract the honey from the many Eucalypts, Tea-trees, Bottle-brushes, Banksias and Heaths, and the poise of the birds during the operation is graceful and easy. With



D. Le Souëf.

Honey-eaters Feeding in Flight. Aviary, Melbourne Zoo.

the honey they take the pollen, and sometimes the buds of the flowers. A large proportion of the food of nearly all the species consists of insects, which they pick out of the flowers, or off the twigs, more rarely on the wing. Hence, though a few are fruit lovers, and in consequence may be orchard robbers, on the whole the family is of considerable service to the agriculturalist. The notes of most of the Honey-eaters are pleasing, and those of the

Bell-bird, of *Ptilotis sonora* and *P. chrysops*, and the Brown Honey-eater are rich, clear and melodious. A few, as the Wattle-birds, utter distinctly harsh and discordant cries. The nests are open and cup-shaped, variously composed of grasses, bark, old spiders' webs, lined with finer grasses, thin strips of bark, hair and wool, and are placed at various heights in forked branches of the trees and saplings, sometimes suspended by the rim, while a few build in bushes. The eggs are two or three in number, and have a strong family likeness, with a uniform ground colour of white or more often flesh-coloured, creamy or buff, ornamented with spots and dots of chestnut-red and purplish-grey. They vary in length from a little over half an inch in the smaller birds to an inch and a quarter in the largest.

Sub-family Zosteropinae.

Tail slightly emarginated. Bright olive, yellow, white and black. *Melithreptus*.

Tail square. Brown above, white below. *Plectrorhamphus*.

Genus Melithreptus.

Bill shorter than rest of head, operculum partly covered with feathers. First primary about one-third of the length of the very long second primary. Tail slightly emarginated. Sexes alike in plumage. Tasmania, Australia, South-east New Guinea.

Key to the Species.

1. Crown of head black.
 - a. White band across the occiput.
 - Chin pure white.
 - Wing 3 inches. Bare space above eye scarlet. *M. atricapillus* (lunulatus).
 - Wing 3 inches. Bare space above eye greenish-white. *M. chloropsis*.
 - Bare space round eye both in summer and winter. *M. whitlocki*
 - Wing 2.7 inches. *M. albigularis*.
 - Chin blackish.
 - Length of culmen .55. Hind neck olive-yellow. *M. gularis*
 - Hind neck bright yellow. *M. laetior*.
 - Length of culmen .50. Hind neck greenish-blue. *M. carpentarianus*.
 - Length of culmen .75. *M. validirostris*.
 - b. Occiput without white band. *M. affinis* (melanocephalus).
M. alisteri.
 2. Crown of head grey. A cream-coloured band across the occiput. *M. brevirostris*.
 - Crown of head blackish grey, a whitish band across the occiput. *M. leucogenys*.
 - Crown of head vinous grey. A white band across the occiput. *M. vinotinctus*.

The White-naped Honey-eater.*Melithreptus atricapillus (lunulatus).*

South Australia, Victoria, Kent Island, Bass Strait, New South Wales, and South Queensland.

Crown and sides of head jet black, a narrow white band across the occiput; wing and tail brown; rest of upper surface uniform with rich olive-yellow; all the underparts white; small bare space above the eye scarlet; bill blackish-brown; feet olive; iris very dark-brown.

The Western White-naped Honey-eater, *M. chloropsis* is rather larger, and has the bare space above the eye greenish-white. West Australia.

Another western form from Wilson's Inlet is described as differing from *M. chloropsis* in having the bare skin round the eye both in summer and winter, and has been named *M. whitlocki*.

The White-throated Honey-eater.*Melithreptus albigularis.*

North-west Australia, Northern Territory and from New South Wales through Queensland to South-east New Guinea.

Rather smaller than *M. atricapillus*; upper parts more yellow and less olive, and the chin pure white.

The Black-chinned Honey-eater.*Melithreptus gularis.*

All Australia except North.

Crown and sides of head black, a narrow white band across the occiput; wings and tail ashy-brown; rest of upper surface olive-yellow; chin blackish; cheeks and sides of throat pure white; throat grey; chest creamy-brown; rest of under parts creamy; bill black; feet brownish-orange; iris hazel; bare skin above eye bluish-green.

The Strong-billed Honey-eater.*M. validirostris.*

Tasmania, King Island, Bass Strait.

Much like *M. gularis* in colouring; the bill is longer and stronger, and the bare skin behind the eye is white tinged with bright green.

The Golden-backed Honey-eater.*M. lætior.*

Queensland, South and North-west Australia.

Has the hind neck and upper tail-coverts bright yellow, the mantle and rest of the back rich olive-yellow; the under parts except the black chin, pure white; naked skin around eye yellow.

M. carpentarianus very similar to *M. lætior*, but differs from it in its generally darker hue and the bare space round the eye being greenish-blue, instead of yellow. Total length 5.75 inches. Northern Australia.

The Brown-headed Honey-eater.

Melithreptus brevirostris.

All Australia except North.

Crown and sides of head pale ashy-brown, a band of dull cream colour from eye to eye across the occiput; mantle, back and upper tail-coverts greyish-olive; wings and tail brown; all the under parts brownish-creamy; chin and chest faint grey; bill .5 inch.

M. maguirostris from Kangaroo Island. A traceable black band below the light collar, and crown and back are darker. A bluish spot in the centre of the bare lower eyelid.

M. leucogenys, West Australia—Less robust generally, bill shorter and more slender, the bare spaces round the eyes are orange and bluish-emerald, the blackish chin is distinctly marked, as also the greyish breast, the cheeks are white, and head blackish-brown.

The Black-headed Honey-eater.

Melithreptus affinis (melanocephalus).

Tasmania, Islands of Bass Strait.

Head all round jet black, without any occipital band; wing-coverts, wings and tail greyish-brown, rest of upper surface olive-yellow; a few feathers along the sides of the neck and upper chest black; rest of under parts white; bill black; feet brown; iris reddish-brown; bare skin over eye pearly-white, slightly tinged with green.

The Grey Honey-eater.

M. vinotinctus.

North Queensland.

Has the crown of the head vinous grey, and a white band across the occiput.

The King Island Honey-eater.

M. alisteri.

Differs from *M. affinis* in having a larger bill and being altogether larger.

Genus Plectrorhamphus.

Bill slightly shorter than rest of head, quite straight and much pointed, culmen rounded. Tail square, nine-tenths the length of the wing. Pattern plain, under parts white, upper brown, mottled with whitish on the head. Australia.

The Striped Honey-eater.*Plectrorhamphus lanceolatus.*

South Australia and the Eastern States.

Crown of head, ear-coverts, sides of neck and hind-neck mottled with blackish brown and white; centre of back greyish-brown, with darker centres to the feathers; wings and tail light-brown; rest of upper surface greyish-brown; cheeks and all the under parts pure white; bill dark bluish horn-colour; feet light-blue; iris brown. Total length 9 inches, culmen .8, wing 4.7, tail 4.4, tarsus 1.1. Female a little smaller.

Sub-family Myzomelinae.

Tail about two-thirds the length of the wing. *Myzomela.*

Tail about equal to the length of the wing. *Acanthorhynchus.*

Genus Myzomela.

Bill longer than rest of head, slender and curved. Tail two-thirds the length of the wing. Principal colours of male red and black. Female generally plain, olive above. Austro-Malayan and Polynesian regions.

Key to the Species.

- I. Upper and under surfaces contrasted in colouring.
- | | |
|--|---------------------------|
| a. Head bright scarlet. | |
| Breast scarlet. | <i>M. sanguinolenta.</i> |
| Breast dull brown. | <i>M. erythrocephala.</i> |
| b. Head black. | |
| Breast white. | <i>M. nigra.</i> |
| Breast white, chest with a black crescent. | <i>M. pectoralis.</i> |
- II. Upper and under surfaces similar in colouring.
- | | |
|---|-----------------------|
| Greyish-brown above, reddish-brown below. | <i>M. obscura.</i> |
| Greyish upper and under surface. | <i>M. grisescens.</i> |

The Sanguineous Honey-eater.*Myzomela sanguinolenta.*

Queensland, New South Wales and Victoria.

Male: Head and neck all round, middle line of back, rump and upper tail-coverts brilliant scarlet; rest of upper surface, including wings and tail, black; breast scarlet; sides of breast, flanks, abdomen yellowish-grey;

under wing and tail-coverts white; bill and feet black; iris brown. Total length about 4 inches. Female: Above generally greyish-brown, wings and tail dark brown. All other parts dull whitish, tinged with buff; feet brown.

The Red-headed Honey-eater.

Myzomela erythrocephala.

All the Northern coasts, extends to South New Guinea.

Male: Head all round, lower neck, rump and upper tail-coverts brilliant scarlet; rest of upper surface blackish-brown; below blackish-brown on chest to brownish-grey behind; under wing-coverts white. Total length 4 inches. Female: Uniform greyish-brown above, paler below; forehead and throat washed with red.

The Black Honey-eater.

Myzomela nigra.

The greater part of Australia, except perhaps Centre and Northern Territory.

Male: Head and neck all round and mantle, black; rest of upper surface blackish-brown; breast and abdomen pure white; under wing-coverts black. Female: Dull blackish-brown above; below dingy white, mottled in parts with dull-blackish. Length 4.2 inches, wing 2.7, tail 1.6.

The Banded Honey-eater.

Myzomela pectoralis.

North-west Australia to Cape York and Port Denison.

Male: All upper parts black, except the rump and upper tail-coverts, which are white; under surfaces pure white; a narrow black crescent across the chest; under wing-coverts black. Female: Coloured like the male, but the mantle mottled with black and buff.

The Dusky Honey-eater.

Myzomela obscura.

Northern Territory and North Queensland.

The sexes are alike in plumage; all the upper parts uniformly greyish-brown, and the lower inclining to reddish-brown. Length 5 inches, wing 2.7, tail 2.1.

Myzomela grisescens.

West Australia.

Differs from *M. obscura* by its greyish upper and under surface, most evident on the throat and breast.

Genus Acanthorhynchus.

Bill very long, slender and curved. Tail square, equal to wings in length.

Key to the Species.

No white streak behind the eye.	A. tenuirostris.
A white streak behind the eye.	A superciliosus.
" " "	A. dubius.

The Spine-bill.*Acanthorhynchus tenuirostris.*

The Eastern half of the Continent.

Crown of head black with a greenish gloss; præocular region, ear-coverts and a crescent on the sides of the neck and chest bronzy-black; mantle reddish-brown from chestnut on hind-neck through olive-grey to bluish-grey on the rump and upper wing- and tail-coverts; rest of wing and six central tail feathers black; the two outer pairs of the latter with large white terminal tips; cheeks, throat, centre of upper chest white, with a dark reddish-brown patch on the centre of the throat; breast, flanks, abdomen and under tail-coverts reddish fawn-coloured; under wing-coverts white; bill black; feet reddish-brown; iris red. Culmen 1.2 inch, wing 2.7, tail 2.35, tarsus .7. Female similar with the crown dark-grey, more or less tinged with olive.

Tasmanian specimens (*A. dubius*) "are generally somewhat brighter-coloured on the under parts," darker on the upper. Wing 2.5.

A. halmaturinus from Kangaroo Island. Crown and collar and throat and abdomen are all lighter in colour. Abdomen ochreous buff. Wing 2.6.

The White-browed Spine-bill.*Acanthorhynchus superciliosus.*

South and West Australia.

Entire crown of head, mantle, back and upper tail- and wing-coverts greyish olive-brown; wings and six centre tail feathers blackish-brown, the three outer pairs of tail feathers with large white subterminal patches; a white streak behind the eye and above the ear-coverts; cheeks and chin white; throat and neck all round chestnut-red; breast, abdomen, flanks and under tail-coverts pale buff; the chest crossed by a conspicuous white crescent followed by another of brownish-black; under wing-coverts whitish.

The Tasmanian Spine-bill.*Acanthorhynchus dubius.*

This species has a patch in the centre of the throat, and the lunated marks on the sides of the neck much deeper, and the whole of the under surface richer chestnut than on the mainland species. It is also smaller in size. Total length 5 inches.

*Sub-family Meliphaginæ.**Genus Glycyphila.*

Bill a little longer than, or as long as, rest of head, broad at base. Nostrils operculated, not covered by the feathers. Tail square or nearly so, a little longer than the wings. Front toes short. Australia, New Caledonia. New Guinea and adjacent islands.

Key to the Species.

Breast and abdomen white in all the four species. The females are rather smaller.

- | | |
|--|---------------|
| a. Throat white. Forehead fulvous or brown. | |
| Forehead fulvous. Chest dull blackish-brown, mottled with white. | G. melanops. |
| All upper parts brown. Chest white with faint brown cross bars. | G. modesta. |
| b. Throat black. Forehead white. | |
| Chest without cross bars. | G. albifrons. |
| Chest white with dark brown cross bars. | G. fasciata. |

The Tawny-crowned Honey-eater.*Glycyphila melanops (fulvifrons).*

Southern half of Continent and Tasmania.

Forehead rich reddish fulvous; a whitish streak from the nostrils over the eye; hind-neck and mantle dark-brown; each feather with a paler streak down the centre; lower back and upper tail-coverts greyish-brown; wings and tail blackish-brown; throat and cheeks white; feathers of chest and sides of neck dull blackish-brown edged with whitish, giving these parts a mottled appearance; centre of breast, abdomen and under tail-coverts dull white; under wing-coverts reddish fulvous; bill blackish-brown; feet greenish-grey; iris brown.

The White-fronted Honey-eater.*Glycyphila albifrons.*

Australia, except Queensland and Northern Territory.

Forehead, lores, a narrow ring round the eye, and a narrow line from the angle of the lower mandible, white; crown of the head black, rest of upper surface brown; the rump and upper tail-coverts redder; chin, throat and fore-neck brownish-black; breast and abdomen white, striped with blackish-brown on the flanks; bill black; feet blackish-brown; iris dark-brown.

The White-breasted Honey-eater.*Glycyphila fasciata.*

North-west Australia, Northern Territory to Queensland.

Crown of head and nape blackish-brown; rest of upper surface generally brown; under surfaces mostly white; the feathers of the chest

and sides of the breast white, with a broad subterminal band to each feather; lower abdomen and under wing- and tail-coverts creamy-buff; bill greenish-grey; feet red; iris reddish-brown.

This bird builds a hanging dome-shaped nest, usually near or over water, with a side entrance. All other Honey-eaters, except *G. modesta*, build open nests.

The Brown-backed Honey-eater.

Glycyphila modesta.

North Queensland, New Guinea and adjacent Islands.

All upper parts uniform brown; part of lores, a spot under the eye, cheeks and all the rest of the under parts white; feathers of fore-neck and chest and the under wing-coverts faintly barred with pale-brownish; bill and feet reddish-brown.

Builds suspended dome-shaped nest.

Genus *Entomophila.*

Bill not longer than rest of head, broad at base. Nostrils not beset with feathers, operculated. First primary extremely short, secondaries about two-thirds of whole wing in length.

The Painted Honey-eater.

Entomophila picta.

South Australia, Victoria, and New South Wales.

The upper parts generally uniform brownish black; most of the primaries and secondaries, and the tail feathers broadly edged with bright yellow; the terminal half or third of the inner webs of most of the tail feathers white. A small spot on the chin blackish, the rest of the under parts pure white. Bill deep pink; feet purplish lead colour; iris hazel. Culmen .63 inch, wing 3.5, tarsus .7. Female less brilliant, but having same pattern of colouring. The single species.

Genus *Lacustroica.*

Exposed portion of bill slightly less than half the length of head, equal in height to breadth at nostril, culmen arched. First primary short, the second equal in length to the seventh. This bird is practically a link between the *Zosterops* and Honey-eaters. Its note is also like that of a *Zosterops*.

White's Honey-eater.*Lacustroica whitei.*

Lake Murchison District, Western Australia.

Single species. General colour above dull greyish-brown, the outer secondaries margined around the apical portion with whitish-brown; tail dark-brown; central feathers lightly tipped with brownish-white, the remainder with a white spot at the tip of the inner web; chin dull white; under surface white. Total length 4 inches, wing 2.4, tail 1.75.

Genus Conopophila.

Bill and nostrils as in *Entomophila*. First primary about one-third the length of the second; secondaries five-sixths of whole wing. Only the two species.

Throat reddish.
Throat white.

C. rufigularis.
C. albigularis.

The Red-throated Honey-eater.*Conopophila rufigularis.*

North-west Australia to North Queensland.

Head and back brown; throat rusty red; sides of head and rest of under parts pale-brownish; bill and feet purplish-brown. In other respects like *C. albigularis*. Culmen .5 inch, wing 2.6, tail 2.5, tarsus .6.

The Rufous-breasted Honey-eater.*Conopophila albigularis.*

Northern Territory, North Queensland, New Guinea, Aru Islands.

Crown and sides of head ashy grey; wings edged with wavy yellow as also the tail feathers; rest of upper part brown; chin and throat, abdomen and under tail-coverts white; chest rufous-brown, forming a conspicuous collar; flanks and under wing-coverts whitish washed with pale brown; bill blackish-grey; feet bluish-grey, iris bright reddish-brown. Culmen .5 inch, wing 2.5, tail 1.7, tarsus .7. Female similar rather smaller.

Eggs (occasionally 3) measure 0.75 x 0.50 inch, and are white in colour, thickly dotted over with reddish markings. The nest is very deep, being about two inches internally.

Genus Certhionyx.

Bill equal to rest of head in length. First primary more than one-third length of second. Only colours black and white. One species only.

The Pied Honey-eater.*Certhionyx variegatus (leucomelas).*

North-west and Western Australia, South Australia, Victoria and New South Wales.

Male: Only colours black and white, the white parts being the medium and lesser wing-coverts, and a great part of the outer and inner webs of the secondaries, the whole producing a very conspicuous white band on the folded wing, the rump, upper tail-coverts, the whole of the central pair and the terminal quarter of the other pairs of the tail feathers, and finally the under parts of the body. Bill bluish-grey; feet greenish-grey; iris reddish-brown. A small fleshy appendage beneath the eye ashy-grey. Culmen .75, wing 3.4, tail 2.5, tarsus .8.

Female: Light-brown above; few of the secondaries and of the greater wing-coverts broadly edged with white; under surface of wings, fore-neck and throat buffy; feathers of chest, breast and flanks with a brown subterminal spot, rest of under parts white. A little smaller than the Male.

The Western Pied Honey-eater.*C. occidentalis.*

North-west Australia (Carnarvon).

Differs from the male of *C. variegatus* in having the white on the inner secondaries confined to the outer web; in the latter species the white extends over the basal part of the inner web, also on two of the secondary feathers. Length 7 inches, wing 3.4, tail 2.75.

Genus Meliphaga.

Bill equal to rest of head, broad at base, curved, culmen with a prominent ridge. Tail much rounded, five-sixths length of wing. Pattern of colour very bright yellow and black, much spotted and barred; inner web of remiges grey, without paler or fulvous edges. Near to *Ptilotis*. The one species is confined to Australia.

The Warty-faced Honey-eater.*Meliphaga phrygia.*

South Australia, Victoria, New South Wales, Queensland.

Head and neck black, except the ocular region and the cheeks, which are bare of feathers and covered with wart-like excrescences; mantle, back and upper wing-coverts black, each feather broadly edged with whitish-yellow; wings and tail black, with large edges or tips of pale yellow; the three or four outer tail feathers with the terminal half yellow. A few feathers on sides of upper chest longer than the others, fluffy and yellow; feathers of breast and flanks black with subterminal

yellowish-white arrow-shaped bar; abdomen and under tail-coverts more uniform whitish-yellow; under wing-coverts black edged with yellowish-white; bill black; feet blackish-brown; iris reddish-brown; warty excrescences dirty yellowish-white. Culmen .84 inch, wing 4.35, tail 4, tarsus .85. Female similarly coloured, rather smaller, wing 4.15.

Genus Stigmatops.

Like *Glycyphila* but with the feathers behind the eye generally peculiar, being short, blackish at base, silky white or yellow at terminal half, giving to the postocular region a spotted appearance. Moluccas to New Caledonia. Small birds of about the size of a sparrow.

Ear coverts brown.

S. ocularis.

Ear coverts and subocular region with silvery white spots.

S. albiauricularis.

The Brown Honey-eater.

Stigmatops ocularis.

Australia, except South Australia and Victoria, New Guinea, Aru Islands.

Upper parts all dark olive-brown, changing into yellowish-brown on rump and upper tail-coverts; all under parts dull yellowish-white, washed with brownish-grey on the fore-neck and breast. Behind the eye a small patch of peculiar short glossy yellow feathers; feathers below the eye very short blackish at base with glossy silvery tips; bill dark-brown; feet grey; iris light red.

An active bird with a cheery musical note, which is frequently heard. It is usually found in gullies or near water-courses. Its eggs are almost quite white, the fine reddish markings on the larger end being very faint.

The Broadbent Honey-eater.

Stigmatops albiauricularis.

Cape York, South-east New Guinea.

Upper parts dingy fuscous; sides of head, neck, breast and abdomen mottled with white and brownish, the feathers being brown edged with white; under tail-coverts and flanks white; subocular region and ear-coverts with silvery-white spots; bill black; feet lead colour.

Genus Ptilotis.

Bill as long as, or slightly longer than, the rest of the head, culmen ridged, slightly curved. Secondaries from four-fifths to five-sixths the length of the wing. Tail square or slightly rounded, generally a little shorter than the wing. Pattern of colour very plain, mostly olive above, dingy yellowish below; inner web of remiges invariably broadly margined with fulvous or yellowish. Skin on sides of head frequently bare of feathers and transformed into wattles. Parotic feathers often stiff, and most frequently white or yellow. Ear-coverts always differently coloured from the rest of the head, frequently silky grey. Length of wing 2.45 to 4.5 inches. Austro-Malayan, Australian and Polynesian Regions. By far the largest genus of true Honey-eaters.

The Yellow-spotted Honey-eater.*Ptilotis analoga.*

Northern Territory to North Queensland, New Guinea, Papuan Islands.

Upper parts uniform olive; ear-coverts, small spot below ear, and feathers behind the ear, pale yellow; feathers of lower back and rump very fluffy, some with terminal whitish spots. Under parts pale olive-grey; centre of abdomen, edge of wing, under wing-coverts and inner margin of quills yellowish. Bill black, feet lead colour, iris black; skin of gape swollen, forming a small yellow wattle. Wing 3.3 inches.

Eggs white, with a very few dark markings, and very similar to those of *P. chrusotis* (*lewini*).

The Little Yellow-spotted Honey-eater.*Ptilotis gracilis.*

Gulf of Carpentaria and Cape York.

Much smaller than *P. analoga*, with bill longer in proportion. Nest, eggs and note different; eggs pink, like most of the honey-eaters, not white, like those of *P. analoga*. Length 5.45 inches, wing 2.85, tail, 2.33, bill 0.67.

The Fuscous Honey-eater.*Ptilotis fusca.*

Victoria, New South Wales and Queensland.

Upper parts olive; ear-coverts dusky olive-grey tipped with brown, a very small patch of pale yellow behind the ear; under parts dull yellowish-grey. Bill yellowish at base, black at tip; feet fleshy brown; iris light yellow; gape yellow. Wing 3.3 inches. Eggs pink.

The Yellow-eared Honey-eater.*Ptilotis chrusotis (lewini).*

Victoria New South Wales and Queensland.

Upper part dull olive-green; ear-coverts blackish silky-grey, a spot below the eye and a larger oval spot behind the ear pale yellow; under parts dull olive-grey; edge of wing, under wing-coverts fulvous yellow; bill yellow at base, black at tip; feet purplish; iris dark lead colour. Length 9 inches, tail 3.85, wing 3.9. Eggs white with very few dark spots, and measure 1.05 x 0.71 inches.

The Macleay Honey-eater.*Ptilotis macleayana.*

North-east Queensland.

Upper parts brownish olive, with a lighter mark towards the tip of each of the feathers; around the eye a bare space, below and extending behind it a bright tuft of yellow feathers; throat greyish-white tinged with olive, the upper breast dull olive-yellow, each feather being streaked with yellow, rest of under surface olive, the feathers being marked in the centre with a lighter shade; no white spot behind the ear, and no black and yellow lines on the side of the head. Length 7 inches, wing 3.46, tail 3.1.

The Singing Honey-eater.*Ptilotis sonora.*

Australia except extreme North.

Upper part earthy-brown with olive tinge; ear-coverts and sub-ocular region bright yellow; a spot of greyish-white behind the ear; a black streak from the lores through the eye, down the sides of the neck; under parts dingy yellowish-grey, with pale-brown streaks; bill black; feet greenish-grey; iris dark-brown. Wing 3.8 inches. The eggs are reddish-buff in colour and rarely have any markings; very similar to those of the Pallid Cuckoo.

Forrest's Honey-eater.*Ptilotis forresti.*

Northern Territory.

Similar to *P. sonora*, but paler on the back and under surface, especially on the rump, which is light-brown. The abdomen and under tail-coverts are unmarked, being of a dirty white colour, washed with isabelline. Total length 7 inches.

The Varied Honey-eater.*Ptilotis versicolor.*

North Queensland, Islands of Torres Strait, South-east New Guinea.

Upper parts brownish-olive; ear-coverts black above, light-yellow below, a whitish spot behind the ear; a blackish stripe from the lores through the eye, over the upper half of the ear-coverts and down the

sides of the neck, a bright yellow stripe under the eye; all the under parts of the body yellow streaked with brown. Is closely allied to *P. sonora*, but larger. Length 7.73 inches, wing 4.1, tail 3.58.

The eggs are buff in colour, slightly darker on the larger end, and have no markings. They measure 0.95 x 0.67 inch.

The Yellow-faced Honey-eater.

Ptilotis chrysops.

South Australia, Victoria, New South Wales and Queensland.

Upper parts ashy-brown; wing-coverts bright-yellow with black upper and lower corners; lores and region below eye and a spot behind the eye bright-yellow; cheeks black, a small spot behind ear white; under parts whitish with brownish streaks; bill blackish-brown; feet leaden-brown; iris dark-brown. Length 6.85 inches, wing 3.1.

The Yellow-throated Honey-eater.

Ptilotis flavicollis (flavigularis).

Tasmania, Islands of Bass Strait.

Crown and sides of head blackish silky-grey, upper parts rich olive-yellow; a few feathers behind ear-opening yellow; chin, throat, edge of wing and part of under wing-coverts bright gamboge-yellow; chest dull smoky-grey changing into dull greyish-yellow on abdomen and flanks; bill black; feet brownish lead-colour, iris wood-brown. Length 8.45 inches, wing 4.2, tail 4.1.

The Fasciated Honey-eater.

Ptilotis fascicularis.

East Queensland.

Upper parts brown, with olive shade; ear-coverts bright yellow, sub-ocular region and part of sides of neck of same colour; a dark-brown line from the lores through the eye and down the sides of the neck; a few white feathers behind the ear; chin and throat freckled with brown and yellowish; chest uniform dusky brown, rest of under parts dingy yellowish-white; bill bluish-black, feet black, iris lead colour, gape yellow. Wing 3.75 inches.

The White-eared Honey-eater.

Ptilotis leucotis.

The southern half of the Continent.

Head grey; mantle and back rich yellowish olive; wings and tail brown; ear-coverts pure white; sides of head, cheeks, throat and fore-neck dull black, chest olive-yellow; breast, abdomen and under tail-coverts yellow; bill black; feet greenish-grey; iris greenish-grey with a narrow ring of wood-brown. Wing 3.7 to 4.2 inches.

New Norcia Honey-eater.*Ptilotis novæ-norciæ.*

Southern districts of West Australia (Wongan Hills).

Similar to *P. leucotis*, except that the hind neck, mantle, and back are greyish-olive, not rich yellowish-olive, and the remainder of plumage duller. The throat, sides of the head and cheeks are black; very narrow white cheek stripes; the secondaries are brown, without olive wash of the tail; bill black. Total length 6.5 inches, wing 3.5.

The Cockerell Honey-eater.*Ptilotis cockerelli.*

Cape York district.

Upper parts brown, grey on forehead; ocular region and ear-coverts silky silvery-grey; a few feathers of the cheeks, the long tufty feathers on the hinder and upper margins of the ear-opening, and the tips of a few feathers on the sides of the upper chest golden-yellow; under parts dull white; bill black; feet horn-colour. Wing 3 inches.

The Yellow-tufted Honey-eater.*Ptilotis melanops (auricomis).*

Victoria, New South Wales and Queensland.

Upper parts pale brown, feathers of crown flat not forming a crest; coloration of head and under parts as in *P. cassidix*. Wing 3.2 to 3.5 inches.

The Helmeted Honey-eater.*Ptilotis cassidix.*

Victoria.

Crown of head and nape dull yellow, feathers of the crown forming a crest or helmet-like elevation; upper parts of body dark olive-brown, wings and tail blackish-brown; ear-coverts, lores and sides of head black, the feathers on the hinder margin of the ear-opening prolonged, forming a long tuft on each side of the neck, rich gamboge yellow; sides of throat rich yellow, fore-neck and rest of under parts also rich yellow. Wing 3.8 to 4.1 inches.

The Wattle-cheeked Honey-eater.*Ptilotis cratitia.*

Victoria, South Australia, Kangaroo Island, West Australia.

Upper parts olive-green; wings and tail light olive-brown; ear-coverts dark silky-grey, a line from the lores through the eye and above the ear-coverts black, feathers behind the ear, cheeks and part of upper throat bright yellow; all the under parts of the body greyish-yellow; bill black; feet dark olive-brown; iris black; a naked lilac-coloured fleshy appendage, five-eighths of an inch long from the gape down each side of the throat. Wing 3.4 inches.

A North-west and West Australian form has been separated as *P. occidentalis*.

The Keartland Honey-eater.

Ptilotis keartlandi.

Central Australia, North-west Australia and North Queensland.

Upper surface olive-brown; ear-coverts silky-grey slightly tipped with blackish-brown, a line in front and the feathers above and below the eye blackish, a conspicuous patch of light-yellow feathers behind the eye; cheeks, chin throat and all the under surface pale lemon-yellow.

The Yellow-plumed Honey-eater.

Ptilotis ornata.

The southern half of the Continent.

Light greyish olive-brown above, crown and sides of head strongly washed with bright olive-yellow; tail and wings brown; ear-coverts pale-brownish, feathers behind them elongated and forming a large patch of bright yellow; under parts dingy yellowish-white, with brown streaks; bill black, feet purplish-brown. Wing 3.1 to 3.6 inches.

The Yellow-fronted Honey-eater.

Ptilotis plumula.

West and South Australia, New South Wales and Queensland.

Upper parts brownish-grey; ear-coverts grey, blackish-brown towards tips, a large bright yellow patch behind the ear-coverts and on the sides of the neck; cheeks and underparts greyish or creamy-yellow without brown streaks; bill black; feet apple-green; iris dark reddish-brown. Wing 3 to 3.2 inches.

The Yellow-tinted Honey-eater.

Ptilotis flavescens.

North-west Australia to North Queensland, New Guinea.

Upper parts yellowish-brown; ear-coverts yellowish-brown, with narrow black transverse marginal stripe; under parts pale yellow. Wing 2.7 inches.

P. germana differs in having yellow stripe behind the eye and the black stripe beneath the ear-coverts more developed. Cape York, Islands of Torres Strait, South-east New Guinea.

The Yellow Honey-eater.

Ptilotis flava.

Northern Territory and North Queensland.

All upper parts uniform olive-yellow; ear-coverts of same colour; all the under parts, including under surface of wings, rich lemon-yellow; bill blackish-brown; feet reddish-brown. Wing 3.6 inches.

The White-plumed Honey-eater (Greenie).*Ptilotis penicillata.*

Central and South Australia, Victoria, New South Wales and South Queensland.

Upper parts greyish olive-brown; sides of head, ear-coverts and region round the eye dull yellow, behind the ear-coverts a patch of long pure silky-white tufted feathers; all the underparts whitish buff; bill black; feet purplish; iris dark-brown. Wing 3.4 inches. Common about the suburbs of Melbourne.

The Carter Honey-eater.*Ptilotis carteri.*

Differs from *P. penicillata* in its smaller size and yellow-tinted plumage, about as yellow as *P. flavescens*. Total length 6.0 inches, tail 2.75, bill .4, tarsus .8, wing 2.8.

The Pallid Honey-eater.*Ptilotis leilavalensis.*

Northern Australia.

Differs from *P. penicillata* by its paler upper and under parts and more brightly coloured head, and from *P. flavescens* in being less yellow on the chin, throat and under surface and in the absence of the distinct blackish line of plumes beneath the ear-coverts. Total length 6.6 inches, wing 3.25, tail 2.9, bill .5, tarsus .8.

The Bridled Honey-eater.*Ptilotis frenata.*

North Queensland.

Upper parts olive-brown; ear-coverts and cheeks blackish-brown, a few feathers above the ear-coverts bright yellow forming a small tuft; chin dull-brown, rest of under parts brownish-grey; a bare sub-ocular space; bill dark-brown, pale at base, small yellow fleshy appendages on the gape. Wing 3.9 inches.

The White-gaped Honey-eater.*Ptilotis unicolor.*

All the northern coasts, South-east New Guinea.

Upper parts greyish olive-brown; auricular region without any white or yellow patches; under parts pale brownish-grey; bill dark olive-brown, feet light ashy-grey; iris obscure red; naked gape fleshy white, passing into yellow at the corner of the mouth. Wing 3.6 to 4 inches.

Genus Xanthotis.

Like *Ptilotis*. The feathers behind the ear-coverts golden-yellow, forming a narrow streak. The one species.

The Streak-naped Honey-eater.*Xanthotis filigera.*

Gulf of Carpentaria, Cape York.

Upper parts brown; ear-coverts silky-grey, subocular region and feathers above the ear-coverts white, those behind the ear-coverts golden-yellow, forming the characteristic streak; throat greyish; rest of under parts fulvous; bill olive-black; feet slate colour; naked space below the eye yellow. Wing 3.5 to 4.1 inches.

Genus Meliornis.

Bill as long as rest of head. Nostrils operculated, not covered with feathers. Tail rounded a little longer than the wing. Australia and Tasmania.

Key to the Species.

Mantle uniform ashy grey.	<i>M. pyrroptera.</i> (australasiana).
Feathers of mantle blackish-brown edged with whitish and brownish-grey.	
Feathers of fore neck hairy, black, edged and tipped with white.	<i>M. novæ-hollandiæ.</i>
Feathers of fore neck short, entirely black.	
Eastern.	<i>M. sericea.</i>
Western.	<i>M. mystacalis.</i>

The Crescent Honey-eater.*Meliornis pyrroptera (australasiana).*

New South Wales, Victoria, South Australia, Islands of Bass Strait, Tasmania.

Upper parts ashy-grey; wing-coverts and tail black; quills partly golden yellow; præocular region and a short stripe through the eye black; chin, throat, cheeks and fore-neck white, rest of underparts whitish with a black semilunar bar on each side of the chest; bill and feet black; iris red. Wing 3 inches.

Mr. A. G. Campbell describes as a sub-species, *M. halmaturina*, from Kangaroo Island. The bill is a little longer, and the plumage duller. The wing patch and the tail greenish-yellow and not bright-yellow; no white centre to the chest. Wing 2.8 inch.



"The Emu."

Crescent Honey-eater (*Meliphaga australiana*) and Nest.

A. P. E. Mattingley.

The White-bearded Honey-eater (Fuchsia-bird).*Meliornis novæ-hollandiæ.*

South Queensland to Tasmania and South Australia.

Crown and sides of the head including the ear-coverts and the chin, black; occiput, hind neck and mantle blackish-brown, edged with whitish and brownish-grey, lower back and upper tail-coverts greyish-brown; outer webs of wings and basal half of some of the tail feathers golden-yellow, most of the tail feathers tipped with white; a stripe along the ridge of the head and a large oval spot on the cheeks and another on the sides of the neck, white; feathers of throat and fore-neck rather hair-like and long, blackish at base and white toward tip; rest of underparts pure white with streaks of blackish-brown especially on the breast; bill and feet black; iris white. Wing 3 inches.

Mr. G. M. Mathews describes as a sub-species *M. diemenensis* from Tasmania, differing from *M. novæ-hollandiæ* in having a small bill and shorter wing. *M. novæ-hollandiæ* culmen 0.95, wing 3.1 inches, *M. diemenensis*, culmen 0.6; wing 2.9 inches.

The Long-billed Honey-eater.*M. longirostris.*

Is the West Australian representative. The bill is a little stronger and longer, and the white cheek patch is less defined.

West Australia.

The White-cheeked Honey-eater.*Meliornis sericea.*

Victoria, New South Wales and Queensland.

Differs from preceding in great development of the feathers of the cheek; they form a broad fan-like shield of pure white on each side of the throat. The chin and throat are dull black.

The Moustached Honey-eater.*M. mystacalis.*

Is the Western representative. The white elongated feathers of the cheeks include some of the ear-coverts and terminate in a point towards the shoulder. Wing 2.7 inches.

West Australia.

Genus Manorhina.

Bill a little shorter than rest of head, laterally compressed and high. Nostrils operculated and partly beset with feathers. Secondaries four-fifths length of wing. Tail rounded, slightly

shorter than wing. Postocular region bare of feathers. The one species.

The Bell Minah.

Manorhina melanophrys.

Victoria, New South Wales and Queensland.

Upper parts uniform olive-green; wings and tail brown; cheeks, eyelids, a few feathers about eye and nostrils blackish; lores and præocular region rather bright-yellow; underparts of body greenish-yellow; bill and feet yellow; iris brownish; an orange-red bare spot below and behind the eye. Wing 3.5 to 3.8 inches.

These birds usually go in flocks, living chiefly among the tops of the Eucalyptus trees, and their tinkling note is easily recognised. They are generally found near water. Their nests are generally suspended from a twig in a low bush or even bracken fern.

Genus *Myzantha.*

Bill as long as rest of head, slightly curved and serrated. Nostrils operculated and partly beset with feathers. Secondaries two-thirds length of wing. Tail rounded, slightly longer than wing. Tasmania and Australia.

Key to the Species.

Rump and upper tail coverts like rest of back.	
Forehead whitish, crown black.	<i>M. garrula.</i>
Forehead and crown grey.	<i>M. obscura.</i>
Rump and upper tail coverts white.	
Smaller: Wing 4.8 to 5.5 inches.	<i>M. flavigula.</i>
Larger: Wing 5.8 inches.	<i>M. lutea.</i>

The Noisy Minah.

M. garrula.

South Australia, Victoria, Tasmania, New South Wales and Southern Queensland.

Forehead greyish-white; crown of head dull black; rest of upper parts greyish-brown; angle of chin lemon-yellow; an indistinct grey streak along centre of throat; rest of under parts of body greyish-white; feathers of fore neck and breast with narrow dusky brown crescent; bill and feet yellow; iris dark hazel; a yellow naked space beneath the eye. Wing 5.5 to 6 inches.

The Dusky Minah.

Myzantha obscura.

Western Australia.

Forehead and crown grey. Otherwise very similar to *M. garrula*. Bill bright yellow; feet reddish-yellow; a patch of bare skin round the eye and bill yellow. Wing 5.3 inches.



Australian Museum.

Noisy Minah (*Myzantha garrula*), Normal Plumage and Albino.

The Yellow-throated Minah.

Myzantha flavigula.

All Australia except West and North-west.

Cheeks, throat, lower rump and upper tail-coverts white; tail largely tipped with white; the yellow on the sides of the neck more developed; fore neck and chest white, the brownish crescent faint. Otherwise like *M. obscura*. Wing 4.8 to 5.5 inches.

The Yellow Minah.*Myzantha lutea.*

West Australia.

Closely allied to preceding, and representing it in the west. Larger and rather more brightly coloured. Wing 5.8 inches.

Genus Acanthochæra.

Bill about length of rest of head, curved. culmen ridged. Nostrils longitudinal, operculated. First primary long. Tail strongly graduated, longer than wing. Wattles on the sides of the gape. Tasmania and Australia.

Key to the Species.

Wattles less than half an inch long.

A. carunculata.

Wattles above an inch long.

A. paradoxa.

The Red Wattle-bird.*Acanthochæra carunculata.*

The southern half of the continent extending to South Queensland.

Forehead and crown blackish-brown; hind neck, mantle and back greyish-brown, each feather with a white central streak; upper tail-coverts brown with white margins; centre of breast and abdomen bright yellow; feathers of rest of under parts white with brown margins; loral and sub-ocular regions silky white; bill dull brown; feet brownish; iris bright hazel red; wattles not half an inch long, blood red; inside of mouth yellow. Wing 6 to 6.4 inches.

The Gill-birds appear in great numbers in mid New South Wales in the winter, and frequent the Banksias, often driving off the smaller birds. They are very noisy, giving out a harsh discordant "Quash." The Honey-suckles are in flower here at this time, and as usual the birds follow the food supply.

The Yellow Wattle-bird.*Acanthochæra paradoxa (inauris).*

Tasmania and King Island in Bass Strait.

Closely resembling preceding in coloration, but the brown and white feathers have the pattern reversed, the centres being brown and the margins white; bill black; feet flesh-coloured; iris black-brown; wattles over an inch long, yellow. Wing 6.2 to 7 inches.

Genus Anellobia.

Like *Acanthocæra* but without wattles. Tail graduated, not longer than wing. Tasmania and Australia.

Key to the Species.

Feathers of mantle with white central streaks.	<i>A. chrysoptera.</i>
Feathers of mantle with no central streaks.	<i>A. lunulata.</i>

The Brush Wattle-bird, *A. chrysoptera* (*mellivora*).—The southern half of the continent, reaching Southern Queensland. Plumage, upper and lower, generally brown, much lined and spotted with white; bill black; feet vinous brown; iris grey. Wing 5.1 to 5.6 inches.

The Little Wattle-bird, *A. lunulata*.—Western Australia. No white streaks to the brown feathers of the upper surface, otherwise like preceding; bill blackish-brown; feet yellowish-grey; iris light hazel. Wing 5.3 inches. The female considerably smaller.

Genus Acanthogenys.

Like *Acanthochæra* but without wattles. Tail square, equal in length to wing. Bristle-like feathers on cheeks and beneath ear-coverts. One species.

The Spiny-cheeked Honey-eater.*Acanthogenys rufigularis.*

All over Australia.

Upper parts dark brown; bristle-like feathers on cheeks white; chin to upper chest rufous; breast, abdomen and under tail-coverts dirty white streaked with brown; bill pink and soft at base; feet olive; iris lead colour; skin between eye and cheeks bare and pinky flesh colour. Wing 4.4 to 4.7 inches.

Genus Entomyza.

Bill as long as rest of head, curved. Nostrils quite bare. First primary more than half as long as second. Tail rounded. Sides of head quite bare and dark coloured. Australia.

The Blue-faced Honey-eater.*Entomyza cyanotis.*

South Queensland, New South Wales, Victoria, and South Australia.

Crown of head, hind neck, ear coverts, lores and subocular region black; a white crescent on sides of occiput; greater part of sides of head, including ocular region, bare of feathers and rich greenish-blue; mantle

and rest of upper parts rich golden-olive; chin to centre of chest blackish; rest of under parts white; feet bluish-grey; iris yellowish-white; eyelash jet black. Wing 5.5 to 6.2 inches.

E. harterti from North Queensland differs from *E. cyanotis* in the buff edgings to the inner webs of the primaries being paler, and more extensive (reaching to the shaft). The primaries,



Australian Museum.

Blue-faced Honey-eater: *Entomyza cyanotis*.

except the two outer ones, have their outer webs narrowly edged with greenish sulphur-yellow, the median band of black feathers on the crown is also much narrower. The bird is of a very much smaller size. Wing 135-139 m.m., tail 108-112 m.m.

The White-quilled Honey-eater.

Entomyza albipennis.

Northern Territory and Gulf of Carpentaria.

Like *E. cyanotis*, but having basal half or more of the inner web of the primaries pure white instead of fulvous. Wing 5.8 inches.

Genus Tropidorhynchus.

Bill longer than rest of head, curved, culmen with prominent ridge and a large hump on the base. No bristles. Nostrils oval or round, open. Parts of head bare. First primary very long. Tail square. Colour dull-brown. Australia to New Guinea and adjacent islands.

Key to the Species.

Whole crown, sides of head and neck all round, bare.	<i>T. corniculatus.</i>
Centre of crown covered with feathers.	
Sides of neck covered with feathers.	<i>T. argenteiceps.</i>
Sides of neck bare.	<i>T. buceroides.</i>

All of a general brown colour, lighter below. The feathers of the fore-neck and chest are all very lanceolate.

The Friar-bird, *T. corniculatus.*—South Australia, Victoria, New South Wales, and Queensland. Wing 5.7 to 6.2 inches.

The Silvery-crowned Friar-bird, *T. argenteiceps.*—North-west Australia to Northern Queensland. Wing 5 to 5.4 inches.

The Helmeted Friar-bird, *T. buceroides.*—Gulf of Carpentaria and North-east Queensland. Wing 6 inches.

These birds have a loud harsh note and frequently go in companies, frequenting the forest trees that may be in blossom. Their suspended open nests are usually built of grass; the Koel Cuckoos frequently deposit their eggs in their nests. Their eggs are pink in colour with darker markings, those of *T. argenteiceps* being the palest in colour.

Genus Philemon.

Like preceding but without any hump on the culmen. Moluccas, Timor, New Guinea, New Britain, New Caledonia and Australia.

The Yellow-throated Friar-bird.*Philemon citreogularis.*

Eastern States with Victoria, South Australia, and North-west Australia.

Upper surface light brown; under parts brownish-white; the upper throat, abdomen, and under tail-coverts almost white; the cheeks only



Friar-bird or Leatherhead: *Philemon corniculatus*. *Australian Museum.*

and the ocular region bare, of a bluish-lead colour; the feathers of the chest remarkable for their peculiar shape, the shafts ending in a small white brush; bill and feet leaden olive; iris and eyelash nearly black. Length 10 inches, wing 5.1.

The Little Friar-bird.

Philemon sordidus.

Northern Australia.

Very similar to preceding, but smaller except in the bill, which is more developed. Wing 4.54 to 4.68 inches.

Family Motacillidæ.

Wing with nine primaries, the first fully developed and usually very long. The inner secondaries nearly as long as the primaries. No bastard primary. Nearly cosmopolitan. Wag-tails and Pipits.

Key to the Genera.

Plumage uniform above, feet black, culmen straight.
Plumage mottled, lark-like, feet pale, culmen swollen.

Motacilla.
Anthus.

Australia possesses but one Pipit (*Anthus*), while only a single individual Wagtail (*Motacilla*) has been observed.

Barnard's Wagtail.

Motacilla barnardi.

The single specimen was observed by Mr. H. G. Barnard at Bindi, on the Dawson River, Queensland. In a letter to Mr. North he says: "I send you a small bird I shot at Bindi on the 10th June, 1905, which is new to me. When first seen it was on the ground, and ran along like the Australian Pipit. During flight the white feathers on each side of the tail were very conspicuous. It is the only one I have ever seen, and my attention was attracted to it by its sharp whistling note." Mr. North says that the bird was an adult male in perfect plumage. It had a blackish narrow band across the forehead; a well pronounced white superciliary stripe, the lores and feathers below the eye black, the chin white, the throat yellow. Total length 6.15 inches, bill .5, wing 3.08, tarsus .9. The bird is closely allied to the European *M. borealis* and *M. cinereicapilla*, and not to

geographically nearer representatives of the genus. It is very remarkable, either as a chance visitor of unusual plumage, or as an isolated race.

The Australian Pipit.

Anthus australis.

Australia generally and Tasmania.

Upper surface tawny buff, lighter on the head; the outer tail feathers on each side all white; lores and eyebrow white, and a ring of buffy-white feathers round the eye; fore neck and breast spotted with triangular brown marks, rest of under surfaces dull white; bill and legs fleshy brown; iris very dark brown. Total length 6.2 inches, culmen .56, wing 3.45, tail 2.75, tarsus .95. Tasmanian birds more rufous, and with more distinct spots on the breast.

The Pipit, or Common Ground Lark, is one of the few birds which are likely rather to increase than diminish in Australia, for the clearing of lands and opening up of the country to cultivation adds ever more and more to its favourite hunting grounds. It is found in undisturbed country on grassy plains, but soon appears even in forest land when a considerable clearing has been made. About the suburbs of the large towns it is quite familiar, and will allow you to approach quite close before it takes a short flight to settle down a little ahead of you. It is known to the settlers and is rarely molested. Its food consists of insects, and small grass and other seeds, but chiefly the former. The nest is placed in a hollow scraped in the ground usually under a tuft of grass or some other light protection. The eggs, three in number, are of a greyish-white, blotched and freckled with light chestnut-brown and purplish-grey; .86 x .65 inch. The breeding season commences in New South Wales in September, and continues till January, two or three broods being reared in the season.

Family Alaudidæ.

Back of the tarsus scutellated, with a series of scales. Cosmopolitan. Australia possesses but one genus. Larks.

Genus Mirafra.

First primary well developed. Nostrils exposed, with a superior membrane. Africa, Madagascar, India, through Malay Archipelago to Australia.

The Bush-Lark.

Mirafra horsfieldi.

South Queensland to Victoria and South Australia.

Above grey-brown with blackish centres to the feathers, hence spotted or barred; wings and tail dark brown; cheeks and throat buffy-white; rest of under surfaces buff, with triangular spots of dark brown on the fore-neck and chest. Total length 5 inches, culmen .5, wing 2.8, tail 1.8, tarsus .7.

It frequents open grassy flats, low heath grounds and cultivation paddocks. When disturbed it flies a few yards only with a peculiar jerky flight, and then suddenly drops into concealment again. It is one of our most pleasing songsters, and may often be heard singing at night while on the wing high in the air, especially on bright moonlight nights during the summer. It constructs a partially domed nest of dry grasses in a slight hollow in the ground, sheltered by a tuft of grass. Eggs three in number, in colour greyish-white, blotched and freckled with light chestnut-brown and purplish-grey, very like those of *Anthus australis*, .8 x .5 inch.

The Lesser Bush-Lark.

Mirafra secunda.

South Australia.

Very like *M. horsfieldi* but rather smaller, and the upper surfaces more rufescent, the shoulder of the wing distinctly rufous. Total length 5 inches, culmen .5, wing 2.8, tail 1.8, tarsus .7.

M. milligani from North-west Australia, has no rufous colouring, the terminal parts of each feather, which are rufous in the other species, are in these birds nearly white, while the greater portion of each feather is brownish-black. Therefore they appear black and white dorsally and pale cream ventrally (Hall).

A pale rufous form of this bird has been described from the Northern Territory as *M. rufescens*. It is closely allied to *M. secunda*, but the brown feathers of the back are less conspicuous, while the striations on the chest are almost obsolete.



FINCHES.

1. Bicheno (or Banded) Finch: *Stictoptera bichenovii*.
2. Gouldian Finch: *Poepaila gouldiae*.—Back view.
3. Painted Finch: *Emblema picta*.
4. Gouldian Finch: *P. gouldiae*.—Front view.
5. Crimson Finch: *Neochmia phaeton*.
6. Fire-tailed Finch: *Zonæginthus bellus*

Family Ploceidæ.

Back of tarsus entire, not broken into a series of scales. Nostrils placed high in the bill nearer to the ridge than to the gape. Africa, Southern Asia, Malay Archipelago to Australia and Islands of West Pacific.

Weaver Birds. Australian Finches.

Key to the Genera.

- | | |
|---|----------------|
| I. Tail shorter than wing, only slightly rounded, the two central feathers not produced beyond the rest.
Nasal orifice nearly or quite hidden by nasal plumes. | |
| 1. Wing pointed; the distance between the tips of the primaries and secondaries at least as great as the length of the tarsus. | |
| Tail not projecting beyond the wings to a distance as great as the length of the tarsus. | Staganopleura. |
| Tail projecting beyond the wings by a distance much greater than the length of the tarsus. | Zonæginthus. |
| 2. Wing more rounded; the distance between the tips of the primaries and secondaries less than the length of the tarsus. | |
| a. Bill pointed, slender, culmen nearly as long as tarsus. | Emblema. |
| b. Bill stouter, culmen at most four-fifths length of tarsus. | |
| Upper and under tail-coverts reaching nearly to end of tail. | Tæniopygia. |
| Upper and under tail-coverts falling short of end of tail by more than the length of the tarsus. | Stictoptera. |
| II. Tail shorter than wing, the two central feathers produced and rather pointed. Nostrils as in I. | |
| 1. The tail still wedge-shaped, the difference between the outer and centre feathers not so great as the length of the tarsus. | |
| a. Bill swollen and rounded, culmen strongly arched. | |
| Tail not reaching beyond wing by distance as great as the length of the tarsus with the middle toe and claw. | Munia. |
| Tail exceeding the wing by at least above length. | Bathilda. |
| b. Bill more slender and straighter. | Ægintha. |
| 2. The tail graduated, the difference between the outer and central feathers greater than the length of the tarsus. | Aidemosyne. |
| III. Tail longer than wing, the two central feathers produced to a fine thread-like point. Nostrils as in I. | Poephila. |
| IV. Tail longer than wing, the central feathers not produced to points. | |
| Nostrils exposed, not entirely hidden by the feathers at the base of the forehead. | Neochmia. |
| Nostrils hidden by plumelets at base of forehead. | Estrilda. |

The nests of all the Finches are dome-shaped and remarkably bulky, composed of grasses with long spout-like entrances, and placed in saplings or bushes. Clutch five or six white eggs. Period of incubation eleven to fifteen days.

It is the misfortune of the Finches that they are grain feeders and so easily kept alive in captivity, and that they are charmingly coloured, so that they are an ornament to the aviary. Easily trapped, thousands of these pretty birds lose their freedom every year, and it is a sad sight to behold them cooped up in dozens in small cages in the shops. In a large aviary with plenty of opportunity of nest-making and bringing up a family, the conditions are not so bad, but it is to be feared that the habit of keeping the little creatures as "pets" in small cages is resulting merely in the depletion of the countryside of many of its prettiest denizens. In the wild state the Finches usually move about in small companies, but the beautiful Gouldian and Scarlet-headed Finches of the North occur in hundreds. The common note is a succession of Twit Twits, but a mournful long drawn out note is produced as well by some species.

Genus Staganopleura.

Sexes alike in plumage. Confined to Australia.

The Spotted-sided Finch.

Staganopleura guttata.

South Queensland to Victoria and South Australia.

Crown of head and hind neck ashy-grey; rump and upper tail-coverts crimson; tail black; rest of upper surfaces brown; lores black; sides of body and flanks black, each feather with a large white sub-terminal spot; under surfaces white, with a black band across the fore-neck; bill blood-red; feet purplish-brown; iris red; eyelash lilac-red. Total length 4.3 inches, culmen .4, wing 2.55, tail 1.55, tarsus .55. Egg white, .75 x .5 inch.

Genus Zonæginthus.

Sexes alike in plumage. Confined to Australia and Tasmania.

The Fire-tailed Finch.

Zonæginthus bellus.

South Queensland to Victoria and South Australia, Tasmania.

Above generally brown, with narrow blackish wavy cross lines especially marked on the back and wing-coverts; lores and a narrow frontal band and a ring round the eye black; lower rump and tail coverts bright crimson; under surfaces silvery-grey more coarsely vermiculated with black cross bars, wider on the breast; abdomen and under tail-coverts black; bill crimson; feet flesh colour; iris very dark brown; eyelash light blue. Total length 4.4 inches, culmen .45, wing 2.2, tail 1.7, tarsus .65. Egg fleshy-white, .7 x .55 inch.

The Red-eared Finch.*Zonæginthus ocellatus.*

West and South-west Australia.

Generally with plumage similar to preceding, but with a crimson ear spot, the throat and neck brown, transversely barred with black; the throat and chest pale brown with black cross bars; rest of under surface largely barred and spotted with white. Total length 4.5 inches, culmen .5, wing 2.2, tail 1.8, tarsus 1.05.

Genus Emblema.

Confined to Australia.

The Painted Finch.*Emblema picta.*

North-west and West Australia, Central and South Australia, occasionally coming over the border into New South Wales.

Male: Upper surface pale brown; rump and tail-coverts rich scarlet; tail feathers blackish with a little scarlet on the edges; lores, a narrow eyebrow, feathers below the eye, and fore part of cheek scarlet; throat and under surface of body black; chin and upper throat with scarlet tipped feathers; centre of fore-neck and breast scarlet; sides of black chest and abdomen spotted with white; upper mandible black tipped with scarlet; lower scarlet with blue at base. Total length 4.2 inches, culmen .45, wing 2.2, tail 1.45, tarsus .55.

Female: Similar to male, but with only the lores and feathers above the eye scarlet; no red on the cheeks or throat, and only a tinge of scarlet on the breast; the throat and fore-neck black, spotted with white; the under surfaces generally browner and more spotted with white.

Genus Tæniopygia.

Australia and the Timor group of islands.

The Chestnut-eared Finch.*Tæniopygia castanotis.*

All Australia.

Above ashy-brown; rump white with a black patch on each side; upper tail-coverts black with a broad white terminal band; tail feathers dark brown; lores and cheeks white, skirted by black lines; ear-coverts and adjacent parts light orange-rufous; throat and neck pearly grey, with narrow blackish cross lines; a black bar across the fore-neck; rest of under surfaces white; sides chestnut spotted with white; bill and feet reddish-orange, iris red. Total length 3.8 inches, culmen .4, wing 2.15, tail 1.4, tarsus .5. Female with sides of face all grey; throat and chest without black cross lines; breast and abdomen buff. Egg bluish white, .6 x .45 inch.

Genus Stictoptera.

Confined to Australia.

The Banded Finch.*Stictoptera bichenovii.*

Australia generally.

Upper surfaces light brown, pencilled with indistinct dusky brown cross bars; a black bar across the rump; upper tail-coverts white; tail feathers black; wings chequered with white; lores, narrow eyebrow and sides of face white; under surface of body yellowish-white, with a narrow black collar across the lower throat and a black band across the breast; under tail-coverts black; under wing-coverts fulvescent; bill pale blue; iris black; eyelash black. Total length 3.8 inches, culmen .4, wing 2.15, tail 1.6, tarsus .6. Female less brilliant, and the black bands on the throat and breast narrower. Egg soft-white, .6 x .4 inch.

The Black-ringed Finch.*Stictoptera annulosa.*

North-west Australia and Northern Territory.

Like preceding, but with rump black instead of white. Total length 4 inches.

Genus Munia.

A large genus extending over the Indian and Indo-Malayan Peninsula, Ceylon, Indo-Chinese Region, through Malaysia to Papua and Australia.

The Chestnut-breasted Finch.*Munia castaneithorax.*

Northern Territory, Queensland and New South Wales.

Head and most of the upper surfaces cinnamon-brown, the feathers obscured by their ashy tips; lower rump, upper tail-coverts and central tail feathers glossy straw colour; lores, sides of face, and throat blackish with tiny brown shaft lines; sides of neck, fore-neck and chest pale cinnamon; breast and abdomen white with a black band across the breast; under tail-coverts black. Total length 4.5 inches, culmen .5, wing 2.15, tail 1.45, tarsus .6. Female a little smaller and paler.

The Yellow-rumped Finch.*Munia ranthoprymna.*

North-west Australia and Northern Territory.

Head all round hoary grey; upper surfaces generally chestnut-brown; the upper tail-coverts golden ochre; throat whiter; rest of under surfaces of body creamy-buff, tinged with fawn on the breast; under tail-coverts black. Total length 4.3 inches, culmen .5, wing 2.2, tail 1.35, tarsus .6.

The White-breasted Finch.*Munia pectoralis.*

All the Northern tracts.

Head and back lavender grey; wing-coverts light brown; wing, tail-coverts, and tail blackish-brown; lores, sides of face, ear-coverts, and throat purplish-black; fore-neck black with a patch of broad white-tipped black feathers; sides of body pale vinaceous brown, ornamented with white bars edged on each side with a black line. Total length 4.7 inches, culmen .5, wing 2.3, tail 1.4, tarsus .6.

Genus Aidemosyne.

Contains three isolated species, one occupying the country from Senegambia to Southern Arabia; a second Ceylon, the Indian Peninsula, Baluchistan and Afghanistan; and the third the Centre and South-east of Australia.

The Plum-headed Finch.*Aidemosyne modesta.*

Central Australia, South Queensland, New South Wales, and Victoria.

Crown of head dark brown, the fore part deep crimson; upper surface generally dark brown; rump and upper tail-coverts with broad white bars or spots at the ends of the feathers; chin and upper throat black; breast, abdomen, and under tail-coverts white, part barred with pale brown; bill black; feet fleshy white; iris reddish-brown; a narrow blackish eyebrow. Total length 4.3 inches, culmen .4, wing 2.2, tail 1.8, tarsus .6. Egg white, .5 x .4 inch.

Genus Ægintha.

Confined to Australia.

The Red-browed Finch.*Ægintha temporalis.*

Queensland, New South Wales, Victoria, and South Australia.

Head and nape slaty-grey; rump and upper tail-coverts crimson; rest of upper surfaces dark olive-brown; lores, eyebrow, and a streak above the ear-coverts crimson; under surfaces ashy grey; the abdomen isabelline; bill blood-red; feet yellowish-white; iris brownish-red; eyelash narrow nut-red and black. Total length 4.5 inches, culmen .4, wing 2.05, tail 1.8, tarsus .55. Egg beautiful flesh white .6 x .45 inch.

The Lesser Red-browed Finch.*Egintha minor.*

Northern Australia.

Smaller than *A. temporalis*; wings and mantle more golden-green, and the under surface lighter coloured; the throat and abdomen being almost white, while the scarlet brow is more intense in colour. Length 3.8 inches, wing 1.86, tail 1.2.

Genus Bathilda.

Confined to Australia.

The Red-faced Finch.*Bathilda ruficauda.*

North-west Australia, Northern Territory, Queensland and New South Wales.

Head and back olive-brown; the forehead, lores, sides of face and chin crimson; the upper tail-coverts crimson with a large rosy spot at end of each feather; tail dull crimson; throat, fore-neck, sides of body and upper breast ashy-olive with large white spots; lower breast and abdomen olive-yellow; bill red; iris orange. Total length 4.3 inches, culmen .4, wing .2, tail 1.75, tarsus .55. Female smaller and duller, with little crimson.

B. clarescens from North Queensland, is smaller than *B. ruficauda*, the red extends nearly over the whole crown, encircles the eye, and extends further down on the throat, and the abdomen is rather bright yellow. Wing .50, tail .45 mm. (Hartert).

Genus Poephila.

Confined to Australia. Remarkable for the long fine point of the tail, formed by the elongation of the two centre tail feathers.

Key to the Species.

I. Back pinkish or cinnamon brown, upper tail-coverts white; tail black.

Head grey, a black band across the rump.

Bill red or yellow, breast pinkish-fawn.

Bill black, breast cinnamon-tawny.

Head like back.

Ear coverts pinkish-brown.

Ear coverts white.

II. Back green, with blue on hinder crown, sides of neck, rump and upper tail-coverts.

Head black followed by broad cobalt blue band on occiput.

P. acuticauda.

P. cincta.

P. personata.

P. leucotis.

P. gouldiae.

The Long-tailed Finch, *P. acuticauda*. North-west Australia and Northern Territory. The long central feathers of tail nearly four inches, projecting a couple of inches beyond rest of tail; loral spot, eyelid and throat black; abdomen pinkish-fawn; under tail-coverts white; a line of black separating white vent from fawn abdomen, feet coral red; iris black. Total length 4.6 inches, culmen .45, wing 2.4, tail 1.9, tarsus .55. Eggs white, and measuring .69 x .45 inch.

The Black-throated Finch, *P. cincta*. Queensland and New South Wales. Feet pink red; iris reddish-brown. Total length 4.4 inches, culmen .4, wing 2.35, tail 1.65, tarsus .6. Egg pinky-white.



Scarlet-headed Finch: *Poephila mirabilis*.



Australian Museum.
Masked Finch: *P. personata*.

The Masked Finch, *P. personata*. North-west Australia, Northern Territory, North Queensland. Black velvety ring on face, surrounding the orange bill; feet fleshy red; iris red. Total length 5.2 inches, culmen .45, wing 2.2, tail 2.05, tarsus .55.

The White-eared Finch, *P. leucotis*. North Australia and North Queensland. Bill yellowish-horn, feet red; iris dark-brown. Total length 4 inches, culmen .45, wing 2.15, tail 1.75, tarsus .55.

The Gouldian Finch, *P. gouldiae*. North-west Australia, Northern Territory and North Queensland. Throat black, followed by a line of bright cobalt blue, and then by a broad band of beautiful lilac across the fore-neck and chest; rest of under surface of body golden-yellow, under tail-coverts white; bill pink and white; feet yellow; iris deep brown. Total length 4.1 inches, culmen .45, wing 2.6, tail 1.9, tarsus .55.

Orange-billed Finch, *Poephila heeki*. Northern Australia. Very similar to *P. acuticauda*, but having an orange-scarlet bill, instead of pale wax-yellow, as in that species. Length 5.5 inches, wing 2.36, tail 2.52.

Black-rumped Finch, *Poephila nigrotecta*. Cape York, Queensland. Very similar to *P. cincta*, but is smaller, and has the upper tail-coverts black like the rump. In *P. cincta* the upper tail-coverts are white.

Genus Neochmia.

Confined to North Australia.

The Crimson Finch.

Neochmia phaeton.

North-west Australia, Northern Territory and North Queensland.

Head and hind-neck ashy-brown, blacker on the crown, rump brown, rest of upper surface crimson; lores, eyebrow, sides of face, throat, chest and breast fiery crimson; centre of breast, abdomen and under tail-coverts black; a few white spots on sides of breast; bill rich carmine. Total length 5 inches, culmen .4, wing 2, tail 2.35, tarsus .55. Female dingier.

Family Oriolidae. Orioles.

Bill with a notch in the upper mandible, nostrils bare.

Genus Oriolus.

Lores feathered, generally a little bare space behind the eye. Sexes with similar plumage.

The Yellow Oriole.

Oriolus flavicinctus.

North and North-east Australia.

Above olivaceous yellow, mottled with black; wings black tipped broadly with yellow, and with a yellow patch; tail black, tipped with yellow; under surface olive-yellow, brighter behind; bill dull red; feet lead-coloured; iris reddish-orange. The larger species, length 11.5, culmen 1.3, wing 5.8, tail 4.4, tarsus 1.05 inches.

The Oriole.

Oriolus sagittarius (viridis).

Eastern Australia.

Above olive; wings and tail brown, many of the feathers tipped with white; under surface white, broadly streaked with black, bill dull red; feet lead-coloured; iris scarlet. Length 10, culmen 1.2, wing 6, tail 4.5, tarsus 1 inch.

The Northern Oriole, *O. affinis*, is smaller, and has a shorter wing and much larger bill. (Gould). It overlaps *O. viridis* in New South Wales, and extends to Cape York.

Joins with the Regent, Satin Bower-birds, Cat-birds, Zosterops, and Magpies in feasting on the fruits of the orchards and of the native fig-trees. On the other hand it also destroys insects. The note is very melodious and varied, and the power of imitating all the other birds which keep it company is most striking. The Oriole and the Lyre-bird are the great Australian mimics, genuine rivals of the Mocking Bird of America. The nest is cup-shaped, lined with grass and hair or wool, and suspended to pendent branches. The eggs, two to four, white or cream, minutely dotted and blotched with umber and blackish-brown; 1.3 x .9 inch.

Genus Sphecotheres.

Lores bare, as also the region around and behind the eye. Sexes differ in plumage.

The males of both the Australian species are yellowish-green above, the head and nape, the primaries and the tail black, the latter with white tips to the feathers; the bill black and the feet flesh-coloured. The females are brown above, and whitish below.

The Fig-bird, *S. maxillaris*. Eastern Australia. Throat and fore-neck of male leaden-grey, rest of under surface dull yellowish-green. Length 9.5 inches.

The Yellow-bellied Fig-bird, *S. flaviventris*. North and North-east Australia. Throat and fore-neck of male bright yellow, as well as the rest of the under surface. Length 10.2 inches.

Stalker's Fig-bird, *S. stalkerii*. Queensland (Mt. Elliot). This bird is most nearly allied to *S. salvadorii*, of New Guinea. The grey on the throat is flecked or faintly streaked with white, especially on the sides of the neck below the auriculars, these parts being of a uniform grey, the back is greyish-green, and pale yellow underneath. Three of the outer tail-feathers are marked with white.

These birds feed chiefly on fruit, especially on the species of figs. They are scarce birds, and travel in flocks while feeding, and are noisy when so doing. Three or four pairs of birds will

frequently build their fragile twig nests in the same forest tree. They are usually built on a fork near the end of a branch. The eggs vary considerably from very light green to brown, and the reddish-brown markings vary in size and tint. They measure 1.2 or 1.3 x .8 inch.

—

Family Dicruridae.

Bill with a notch in the upper mandible. Nostrils more or less covered with bristles. Tail forked, consisting of the unusual number of ten feathers.



In situ.

Drongo Shrike: *Chibia bracteata*.

D. Le Souëf.

The Drongo.

Chibia bracteata.

Australia, especially the North.

The tail in this indigenous genus of Drongos is less forked than usual, in fact nearly square, but the outer feather recurved on itself towards the tip. The head and the body both above and below deep black, the feathers of the crown of the head tipped with green; wings and tail deep glossy green, the latter darker; feathers of the throat and fore-neck tipped with green; under wing-coverts tipped with white; bill and feet blackish-brown; iris brownish-red. Length 10.8 inches.

“This species is one of the commonest birds in the Coburg Peninsula, where it is generally seen in pairs, and may be met with in every variety of situation, but more frequently among the thickets and mangroves than elsewhere. It is at all times exceedingly active, and its food consists entirely of insects, especially Coleoptera and Neuroptera. Its usual note is a loud, disagreeably harsh cackling or creaking whistle, so totally different from that of any other bird, that having been once heard it is readily recognised.” The nests were formed of the dry wiry climbing stalk of a common parasitic plant, without any kind of lining; they were placed on the weakest part of the extremities of the horizontal branches at not less than thirty feet from the ground. (Gilbert).

Family Eulabetidae.

Genus Calornis.

Tail strongly graduated. Andamans through Malaysia to North Australia.

The Shining Starling.

Calornis metallica.

Northern Territory and North Queensland, from the Solomons to the Moluccas.

Crown of head purplish violet; hind-neck brilliant glossy green; mantle purplish-violet; lower back, rump and upper tail-coverts glossy oil green with shade of purple here and there; wing and tail black with metallic colours; fore-neck purplish-violet; cheeks, chin, throat and rest of under surface of body glossy steel-green; under wing and tail-coverts black with metallic green edging; bill and feet black; iris cinnabar. Total length 9.2 inches, culmen .75, wing 4.35, tail 4.1, tarsus .88. The amount of purplish gloss varies in individuals.

“During the early part of our sojourn at Cape York, this bird was often seen passing rapidly over the tops of the trees in small flocks of a dozen or more. In their flight they reminded me of the Starlings, and, like them, made a chattering noise while on the wing. One day a native took me to a breeding-place in the centre of a dense scrub, where I found a gigantic cotton-tree standing alone, with its branches literally hung with the pensile nests of the bird; the nests, averaging two feet in

length and one in breadth, are of a somewhat oval form, slightly compressed, rounded below and above, tapering to a neck, by the end of which they were suspended; the opening is situated in the centre of the widest part; they are almost entirely composed of portions of the stem and the long tendrils of a climbing plant (*Vissus*) matted and woven together, and lined with finer pieces of the same, a few leaves (generally strips of *Pandanus* leaf) the hair-like fibres of a palm (*Caryota cereus*), and similar materials; the eggs, usually two but often three in number, are an inch long by eight-tenths of an inch broad, and of a bluish-grey, speckled with reddish-pink, chiefly at the larger end; some have scarcely any markings, others a few minute dots only. The note of the bird is short, sharp and shrill, and resembles 'twee-twee' repeated, as if angrily, several times in quick succession. On the tree above-mentioned the nests were about fifty in number, often solitary, but usually three or four together in a cluster—sometimes so closely placed as to touch each other." (Macgillivray). The birds feed on fruits, and underneath the nesting tree the ground is literally covered with the seed stones of the fruit they have eaten. The ground is also infested with minute red ticks, which quickly find their way on to any unwary intruder. They crawl up to about the waist, and burrow under one's skin to their host's great discomfort.

Family Ptilonorhynchidæ. Bower-birds.

Genus Ptilonorhynchus.

Bill higher than broad at nostrils, with a lateral sub-terminal notch in the upper mandible. Nostrils entirely covered with silky, dense and recurved feathers.

The Satin Bower-bird.

Ptilonorhynchus violaceus.

East Queensland, New South Wales and Victoria.

An old male has the whole of the plumage of a deep shining blue-black, resembling satin, the wing and tail quills of a truer black; the iris light blue with a circle of red around the pupil. He is probably between six and seven years old when he has assumed this blue colour, till then like the female. Only one blue bird is usually seen with a

flock of these birds. The female has the head and all the upper surface greyish-green; the under surface of a lighter shade, each feather with a crescent shaped dark-brown mark near the tip; the iris of a deeper blue than in the male. Total length 12.5 inches, culmen 1.4, wing 6.6, tail 4.5, tarsus 2.15.

These handsome birds frequent the brushes of the coastal ranges, where the soil is rich and magnificent trees and shrubs with abundant foliage secure moisture and shade, and furnish a sufficient number of fruits of various sorts. They are partial to the native figs, and, unfortunately, when clearings are made in the rich timber land and orchards are planted, they will collect from all around and raid upon the fruit. The settlers then destroy them in numbers, and thus rapidly deplete large areas of the birds.

At the beginning of the breeding season the sexes meet in curious bowers, in which the males display their finery and perform amatory antics. The birds themselves prepare and decorate the bowers. They are made in retired parts of the forest, and under the shelter of the overhanging branches. "The base consists of an extensive and rather complex platform of sticks firmly interwoven, on the centre of which the bower itself is built; this, like the platform on which it is placed, and with which it is interwoven, is formed of sticks and twigs, but of a more slender and flexible description, the tips of the twigs being so arranged as to curve inwards and nearly meet at the top; in the interior the materials are so placed that the forks of the twigs are always presented outwards, by which arrangement not the slightest obstruction is offered to the passage of the birds." (Gould). The bower is decorated with any brilliant or curious odds and ends which the birds can find in their haunts, feathers of Parrots, shells, bleached bones, bits of china, broken glass and the like. The male is the principal workman, though the female lends assistance. The bower is only the scene of courtship. The nests are open structures of twigs, lined with grass and leaves, and are placed in bushes or low trees. Clutch two, the eggs with a ground colour of rich cream to yellowish, irregularly blotched and spotted with umber and brown, with a few purplish-grey markings appearing below the surface of the shell. Dimensions 1.7 inch x 1.2.

They are often kept in captivity, feeding almost entirely on vegetation, such as carrots, and various vegetables, &c. If supplied with a bundle of suitable twigs, the male bird soon has a bower made, usually in an hour or so; the longer twigs are placed in first and then the shorter ones, and the covering of the floor in the run afterwards. If too much disturbed, they will pull their bower to pieces and re-erect it elsewhere. A bower is usually to be seen with these birds in the Melbourne Zoological Gardens.



"Victorian Naturalist."

A. J. North.

Nest and Eggs of Tooth-billed Bower-bird.

Genus Scenopætes.

Bill higher than broad at the nostrils, with a distinct festoon in the upper mandible, formed by two notches on the edge.

The Tooth-billed Bower-bird.

Scenopætes dentirostris.

North-east Queensland.

Above dark olive-brown; ear-coverts and sides of neck dusky-brown streaked with reddish; under surfaces fulvous, with streaks. Total length 10.5 inches, culmen 1.1, wing 5.6, tail 3.7, tarsus 1.3.

The bower is quite rudimentary. The bird merely scratches the dead leaves and rubbish off a piece of ground measuring about three feet by two feet, on which it places a few green leaves, with their lighter-green undersurfaces upwards. These are spaced at about equal distances apart on the ground. There are no berries, shells, feathers or ornaments other than the green leaves, which, however, are always fresh and seem to be picked daily. The place chosen is generally under a bush or overhanging vegetation and the birds seem to be fond of frequenting their ground, uttering their clear liquid notes. Where a bird is heard warbling in the thicket you will most likely find a playing ground. These birds are wonderful mimics. Their shallow stick nest is placed near the top of some scrub tree, in a thick bunch of vegetation, and usually invisible from the ground. The two eggs are a greenish cream-colour, and measure 1.57 x 1.8 inch. They are very similar to those of a cat-bird.

Genus Ælurædus.

Bill higher than broad at the nostrils, with a lateral sub-terminal notch, very stout. Nostrils not completely hidden, but overhung by scanty plumes.

The Cat-bird.

Ælurædus viridis.

North-east Queensland and Eastern New South Wales.

Head and back of neck olive-green, with a narrow line of white down each side of the feathers of the latter; back, wings and tail grass-green with a tinge of blue on the margins of the back feathers; all but the two centre feathers of the tail tipped with white; under surfaces yellowish-green, with a yellowish mark down the centre of each feather.

The habits of the Cat-birds are very similar to those of the Satin Birds, with the important exception that, as far as is known, they do not construct even a rudimentary bower; and they have the same haunts. The name is derived from the cry. Gould says: "In comparing it to the nightly concerts of the domestic cat, I conceive that I am conveying to my readers a more perfect idea of the note of this

species than could be given by pages of description. This concert is performed either by a pair or several individuals, and



Cat-bird: *Aeluroedus viridis*.

Australian Museum.

nothing more is required than for the hearer to shut his eyes to the neighbouring foliage to fancy himself surrounded by London grimalkins of house-top celebrity.”



Tooth-billed Bower-bird *Scenopætes denti-rostris* Ramsay.
(After GOULD-SHARPE.)
[See page 414.]

The Spotted Cat-bird.*Elurædus maculosus.*

North-east Queensland.

Differs from preceding in having the crown of the head dull brown mottled, and the ear-coverts black, not green.

Cat-birds build bulky open nests, usually not far from the ground, and lay two (rarely three) cream-coloured eggs, which measure about 1.73 x 1.22 inch.

Genus Chlamydodera.

Bill longer and thinner than in the Cat-birds, with a lateral subterminal notch. Nostrils not completely hidden.

The Spotted Bower-bird.*Chlamydodera maculata.*

Queensland, New South Wales, Victoria and South Australia.

Crown of head, ear-coverts and throat rich brown, each feather with a narrow rim of black; a beautiful lilac band of elongated feathers crosses the back of the neck forming a broad occipital crest; rest of upper surfaces, wings and tail of a rich brown, the feathers mostly tipped with a round spot of rich buff; under surfaces greyish white. A patch of pink fleshy bare skin at the corner of the mouth. The female does not possess the lilac nape band. Total length 11.25 inches, bill 1.25, wing 6, tail 4.75, tarsus 1.62.

The bowers "are considerably longer and more avenue-like than those of the Satin Bower-bird, being in many cases three feet in length. They are outwardly built of twigs, and beautifully lined with tall grasses so disposed that their heads nearly meet; the decorations are very profuse, and consist of bivalve shells, crania of small mammals and other bones bleached by exposure to the rays of the sun or from the camp fires of the natives. Evident indications of high instinct are manifest throughout the whole of the bower and decorations, particularly in the manner in which the stones are placed within the bower, apparently to keep the grasses with which it is lined fixed firmly in their places; these stones diverge from the mouth of the run on each side so as to form little paths, while the immense collection of decorative materials is placed in a heap before the

entrance of the avenue, the arrangement being the same at both ends. In some of the larger bowers, which had evidently been resorted to for many years, I have seen half a bushel of bones, shells, &c., at each of the entrances. I frequently found these



Australian Museum.
Spotted Bower-bird: *Chlamydodera maculata*.

structures at a considerable distance from the rivers, from the borders of which they could alone have procured the shells and small round pebbly stones; their collection and transportation must therefore be a task of great labour. I fully ascertained that these runs, like those of the Satin Bower-birds, formed the rendezvous of many individuals." This is Gould's classical

description of the bower in the early days, when natives were still camping in the woods, and the birds were in undisturbed natural conditions.

Mr. A. J. Campbell was among the first who discovered the nest and egg of the Spotted Bower-bird. He says that the nest was about 20 feet from the ground, near the top of a sapling in a thick belt of timber along a billabong of the river Darling, near Wentworth. "The hen was sitting, and did not fly off until I had climbed within a few feet of her. I did not notice the male bird in the neighbourhood. The nest was formed something like the common Butcher-bird's (*Cracticus torquatus*), composed of small sticks, and lined with smaller twigs and grass. The egg is very beautiful in appearance, like a fine species of porcelain with hand-painted markings. The ground colour is very light sea-green. There are three distinct characters of markings, firstly light grey blotches that appear on the inner surface of the shell; secondly small stripes of light sienna and umber, painted, as if with a camel-hair brush, in every shape and size round and round the shell; and lastly over these markings a few darker and heavier stripes and smudges of umber. Both ends of the egg are comparatively free from markings. Dimensions 1.65 inch x 1.1.

The Yellow-spotted Bower-bird.

Chlamydodera guttata.

West and Central Australia.

Upper surface deep brownish-black, with a spot of rich buff at the tip of each feather. Head silvery-brown. No lilac band across the nape. Total length 11.5 inches, bill 1.25, wing 6, tail 4.25, tarsus 1.75.

The Great Bower-bird.

Chlamydodera nuchalis.

North-west Australia and Northern Territory.

Head uniform greyish-brown; upper surfaces greyish-brown, feathers tipped with greyish-white. A band of bright lilac across the nape, the tips of the plumes distinct, rounded and turning inwards; under surfaces yellowish-grey. Sometimes lays only one egg instead of the usual clutch of two.

The Queensland Bower-bird.*Chlamydodera orientalis.*

North and north-east Australia.

Head mottled with silvery tips to the feathers; upper surfaces similar. The band of bright lilac on the nape.

*Australian Museum.*Bower of Queensland Bower-bird (*Chlamydodera orientalis*).**The Fawn-breasted Bower-bird.***Chlamydodera cerviniventris.*

South New Guinea, Louisiade Archipelago, Cape York.

Upper surface brown, each feather of the back and wings margined and tipped with buffy white; no lilac band on the nape; throat striated with greyish-brown and buff; under surface of shoulder, abdomen, thighs and under tail-coverts pure light-fawn colour. Total length 11.5 inches, bill 1.25, wing 5.75, tail 5, tarsus 1.62.

All the last four above-mentioned Bower-birds make large bowers, very similar to that of the Spotted Bower-bird. The nest and eggs are also very similar in colour and markings.

Genus Sericulus.

Bill at nostrils as high as broad. Brilliant black and gold male birds.

The Regent-bird.*Sericulus chrysocephalus.*

South-east Queensland and North-east New South Wales.

Adult male: Head, neck and upper mantle rich bright velvety orange-yellow; secondaries bright gamboge-yellow; the rest of plumage deep velvety black. Adult female: Head and throat dull brownish-white. the rest of the upper surface olive brown, the feathers of the back with whitish marks near the tips; a large patch of deep black on the crown; chin and sides of throat reddish, centre and lower throat black; rest of under surfaces brownish white.

This regal bird is restricted now to the brushes of the northern rivers of New South Wales and South Queensland, and is becoming scarcer and scarcer with the advance of settlement. It usually resorts to the topmost branches of the trees, but descends to feed on berries and wild fruits and insects. The introduction of the pokeweed or inkweed (*Phytolacca*), though a nuisance to the settlers, is a godsend to the birds, which feast on the plentiful black berries. The males are extremely pugnacious, and when in full dress frequently attack one another. In flight the perfect male can be at once distinguished by the golden yellow patches on the wings. The only calls of the Regent-bird are a single whistle, and a squeaky "whit whit" when alarmed.

The bower is less dome-shaped, and straighter in the sides, than that of the Satin Bower-bird, and has a much smaller platform, and the inside of the bower is smaller. Mr. A. Campbell, junr., gives the following description of one which he examined in the Richmond River district. It "was a very neat structure, situated within a circle of Lawyer Palms, in a clear space about four feet in diameter. The walls of the bower, which were above eight inches long and six inches high, were fixed into a layer or bed consisting of small pieces of stick so tightly trampled down that they were quite compact. This bed was in the form of an oval, measuring 22 inches across one way and 19 inches the other. I may mention that this is quite an unusual addition, for the walls as a rule are fixed into the ground, and a bed of sticks of the dimensions just given is very rarely seen. The first time

this bower was noticed three birds, all drab-coloured, were playing in it: each carried an empty Snail's shell, and in turn went into the bower, and after bobbing up and down a few times with half-opened wings would toss the shell out over the wall to be picked up by one of the others, which would drop its own for the purpose. The two birds remaining outside performed various antics, brushing the ground with their wings, as a consequence of which the soil within the enclosure of cane roots was quite bare. I visited the bower several times subsequently, but the birds were not at home, and all I noticed was that three or four young purplish-tinted leaves were placed in the centre, and the three shells were laid near. I could see that each day the withering leaves were replaced by freshly plucked ones." The ornaments are chiefly land-shells and berries. The nest is merely a frail platform of sticks situated in a bunch of creepers, and the eggs resemble very much those of the Spotted Bower-bird, but the ground colour instead of being greenish is a yellow tint.

Genus Prionodura.

Bill short, shallow, with a feeble tooth in the upper mandible, and a regularly arched culmen compressed over the nostrils. Nostrils sunken, subbasal, partly hidden by plumes and surrounded by a few weak bristles.

The Golden Bower-bird.

Prionodura newtoniana.

North-east Queensland.

Male, golden-yellow with a broad crest on the crown of the head; female, olive-green. The colours rapidly fade in strong light.

Mr. G. Sharp, with the help of the Aborigines, was the first to discover the nests and eggs of the Golden or Newton's Bower-bird. He says: "Some of the bowers on the one side were over eight feet in height, and several of these stick-formed walls were beautifully arched over the lower side. It was amusing to watch a bird perched on the bough or stick, that runs crosswise near the bottom of these structures, stretch out as far as it could to ornament the inside of the higher wall with a flower, usually an

orchid. Several times I removed pieces of moss, which is of one kind only, and hung them on shrubs close by, and then drew into concealment and watched, and each time the birds showed every kind of resentment at my actions, and they were quickly replaced by one of them on the stick across the bower and close to the lower wall. At the larger bowers only the males assembled, and rarely a female, doubtless being engaged in the duties of incubation or tending their young. My blackboys informed me that these birds bathed every day before assembling in the bower,



"Victorian Naturalist."

A. J. North.

Nest and Eggs of Newton's Bower-bird.

which was always about mid-day. The female builds a bower for herself, generally about twenty yards away from the one at which the males assemble. It is in every respect similar to that constructed by the male, but is much smaller, not being half the size."

The nest, as described by Mr. Sharp, is an open cup-shaped structure, formed externally of dead leaves and portions of leaves, including fragments of stag-horn ferns and a small quantity of dry mosses, and is lined inside at the bottom with thin dead twigs. It is built in clefts or holes in the trunks, or in

a buttress, of a fig tree, a few feet from the ground. Clutch 2, the eggs are of a uniform lustrous white, 1.4 x 1 inch.

Family Paradiseidæ.

Bill without a distinct subterminal notch in the upper mandible. Toes abnormal; outer toe a little shorter than the middle one, longer than the inner toe, hallux very large, as long as or longer than the middle toe.

Sub-family Epamachinæ.

Bill elongated and slender, the culmen longer than the tarsus.

Genus Ptilorhis. Rifle-birds.

Tail not equal in length to the body of the bird. A shield of metallic plumes occupying the throat and fore-neck in the males. The general plumage of the males is velvety-black appearing rich purple in certain lights, with areas of steel-blue and coppery-green; that of the females brown with black bars and white streaks. They frequent the brushes of Northern New South Wales and Queensland. There are three Australian species, and a larger one in New Guinea, and they constitute the most southerly extension of the family of the Birds of Paradise. Words cannot fairly describe the wonderful plumage of the magnificent male birds; to appreciate the beauty one must watch them amid the luxuriant foliage of the great brush jungle, as they preen their feathers and open and close the wings, the tints and lustre varying with the varying incidence of the light. It will be a disgrace indeed to Australia if these exquisite birds are lost to the continent from lack of efficient protection.

The Rifle-bird.

Ptilorhis paradisea.

Eastern Australia from the Hunter to Moreton Bay, but now sadly reduced in range and numbers.

The adult male above velvety black, changing to deep fiery-purple when viewed away from the light; crown of head burnished coppery-green; wings black; tail velvety black; the two centre feathers rich shining metallic-green; sides of face, throat and sides of neck black; a burnished



Rifle-bird: *Ptilorhis paradisea*.

Australian Museum.

green patch on the lower throat and fore-neck; breast velvety-purple; abdomen olive-green; under wing and tail-coverts black; long silky plumes are attached to the flanks, but do not reach beyond the under tail-coverts; bill and legs black. Length 11.5, culmen 2, wing 6.2, tail 4.4, tarsus 1.45 inches.



In situ.

Nest of Victoria Rifle-bird: *Ptilorhis victoriae*.

D. Le Souëf.

The adult female ashy-brown above; a white eyebrow; the under surface buff, mottled with black; the lower abdomen, flanks, and under tail-coverts barred with blackish.

Mr. A. J. Campbell thus describes the nest, the first example of which was only obtained 71 years after the bird itself was

described. It was found in the Richmond River scrub in a sapling at a height of about forty feet from the ground, in an entanglement of vines, which covered the top of the tree. A peculiar feature of the nest was its adornment with shed snake skins, the largest pieces being on the top, while a few small bits were in the nest. The nest was somewhat bulky, constructed chiefly of the green stems and fronds of a climbing fern, with a few other broad leaves at the base, and lined inside with wire-like rootlets, and measured between eight and nine inches across and four in depth. The egg flesh-coloured, boldly streaked longitudinally with reddish and purplish brown, and measured 1.29 x .98 inch.

The Victoria Rifle-bird.

Ptilorhis victoriae.

Queensland.

The male similar to that of preceding, the outer tail feathers velvety-purple; a strong gloss of fiery copper on the chin and sides of the throat; green throat shield smaller, the purple of the breast extending further forward over the fore-neck. The female also similar to that of *P. paradisea*, but the under surface is fawn-coloured, spotted on the breast and barred on the flanks with brownish. The smallest of the Rifle-birds. Length 10, culmen 1.5, wing 5.3, tail 3.3, tarsus 1.4 inches.

The Albert Rifle-bird.

Craspedophora (Ptilorhis) alberti.

Cape York Peninsula.

The male is distinguished from the males of the other two species by the longer silky plumes borne on the flanks, which reach beyond the tail. The female ashy-brown on head and nape, shading into olivaceous-brown on the back; under surface dull-white mottled with blackish cross bars. The largest of our three Rifle-birds. Length 12.2, culmen 2.2, wing 6.6, tail 4.25, tarsus 1.65.

Nest and eggs very similar to those of the other two species. These birds have a harsh note and are found only in the dense scrub.

Sub-family Paradiseinae.

Bill more or less stout, the culmen not so long as the tarsus.

The Manucode.*Phonygama gouldi.*

North-east Australia.

Tail slightly rounded, the central feathers not exceeding the others; above steel-green; wings and tail purplish-black; head green with two long plumes projecting from each side of the occiput; under parts green; bill and legs black. Length 11.5, culmen 1.25, wing 6.15, tail 5.15, tarsus 1.55 inches.

Its nest is composed of curly vine tendrils, and is fixed in a fork near the end of the branch of a forest tree but usually near scrub. The two eggs are a purplish-pink, with longitudinal reddish and purple streaks, especially in the apex; they measure 1.42 x .95 inch. These birds are nowhere plentiful and are very shy, and have a loud note.

Group Coliiformæ.

Wing with ten primaries, the first reduced in size; claw of middle toe oblique; bill stout, large and straight, chin angle produced beyond the line of the nostrils; tongue thick and fleshy, horny at tip and sometimes split up into threads; feet strong.

Family Corvidæ.

Bill without a distinct subterminal notch in the upper mandible; toes normal, the hallux very strong, but not as long as mid toe.

Key to the Genera.

- | | |
|---|-------------|
| A. Nostrils placed high in the maxilla, never nearer to the lower edge of the maxilla than to the culmen. | |
| 1. Wings long, distance between tip of wing and tip of tail not greater than length of tarsus. | |
| Nostrils concealed with bristles. | |
| First primary not shorter than innermost secondaries. | Corvus. |
| First primary shorter than innermost secondaries. | Corone. |
| Nostrils bare. | Strepera. |
| 2. Wings shorter, distance between tip of wing and tip of tail greater than length of tarsus. | |
| Bill conical. | Struthidea. |
| B. Nostrils placed low in the maxilla, nearer to its lower edge than to the culmen. | Corcorax. |

The Crow or Hazel-eyed Crow.*Corvus coronoides.*

Australia (especially north and west).

Plumage uniform purple blue-black; all the body feathers snow-white at the base; iris brown; bill and legs black. Length 17.5, culmen 2.25, wing 12.9, tail 7.2, tarsus 2.45.



Australian Museum.

Crow: *Corvus coronoides.*

The Small-billed Crow.*Corvus bennetti.*

South Australia, Victoria, and Western New South Wales.

Similar to *C. coronoides*, but smaller in all its measurements; iris white. Length 16 inches, wing 12.3, tail 7.3, bill 1.85, tarsus 2.2.

The Raven or White-eyed Crow.*Corone australis.*

Australia and Tasmania.

Plumage uniform purple blue-black; all the body feathers dusky-brown or black at the base; iris white or dark-brown; bill and legs black. Length 18.5, culmen 2.45, wing 13.7, tail 8, tarsus 2.6.

These three birds are as similar in their habits as in their plumage, and the name Crow is used in Australia indifferently for each. They all fly high and utter a rather prolonged and melancholy harsh caw, and will, like the Vultures, assemble in numbers from great distances, whenever a carcass or a plentiful supply of newly-sown corn is espied from their lookout. The settlers feel the strongest resentment against these birds, on account of the habit of pecking out the eyes of a dying or wounded animal, and on account of the depredations on their crops. They will often assemble around a camp in the bush, sitting on the trees with sinister aspect, as if anticipating some mishap to the party, but probably with the humbler object of picking up scraps. A curious example of the power of congregating, and one more to the credit of the birds, was seen this summer on one of the Victoria Railways. A block having occurred on the telegraph line, an officer was sent along the line to inquire into the fault, and it was found to be due to the presence of "some thousands" of crows perched on the wires, the weight of the birds causing the top wires to join the lower ones—the presence of the crows was due to the myriads of grasshoppers in the locality. As soon as the birds were driven off, communication was restored. The large nest is formed of sticks and placed near the top of a high tree. The eggs are three or four in number, long, dull pale-green, blotched and freckled all over with umber-brown, and measure 1.75 x 1.1 inch.

GoULD considered that the Raven and the Crow were the same bird, and that the eye is always white in the adult. It is rather curious to note in regard to this point that the Victorian Field Naturalists on capturing a Crow on an excursion to Melton, near Melbourne, found that one of the eyes of the bird was white and the other hazel. The constant differences in colour of the bases of the body feathers, however, settles the matter. We need not make two species of Crow because of the colour of the eyes; but the Raven is certainly distinct from the Crow; and has never been found with a white eye.



Pied Crow-Shrike: *Strepera graculina*.

Australian Museum.

Genus Strepera. Crow-Shrikes.

Confined to Australia and Tasmania. Large black, blackish-brown or grey birds, with limited white markings. The iris is yellow and the bill and feet black. The stronghold and apparent centre of distribution is in the South. They feed on grasshoppers and other large insects, and on such fruits as are available, and seek their food on or near the ground. They hop along the ground with remarkable agility, and make leaps from branch to branch; only if disturbed, or if changing the feeding ground, flying over the tops of the trees. They are mostly seen in companies of four to six in number, probably the parents with the family of the year. They utter a peculiar shrill cry, calling to and fro to one another. They build open cup-shaped nests, as large as that of the Crow, made of sticks and lined with grasses or bark, and placed on the branches of a low tree. The eggs three or four, of some shade of brown and mottled with blotches of darker, and measure over 1.5 x under 1.25 inch.

A.—Pied, black and white.

The Pied Crow-Shrike, *S. graculina.* Eastern Australia. Glossy bluish-black, with three marked white areas, a large patch formed by the white bases of the primaries of the wings, a broad white band across the basal third of the tail, and the under tail-coverts; the tail feathers are also narrowly tipped with white. Length 18.5 inches, tail 8.9.

B.—General colour black, the white of the base of the wing not forming a large patch, and no white band across the base of the tail.

1. Dull blackish-brown; under tail-coverts white.

The Hill Crow-Shrike, *S. arguta.* Tasmania. Inner web of the base of the primaries and the tips of the secondaries white; the tail feathers except the two centre ones, broadly tipped with white. Female much greyer. Length 21 inches, tail over 10 inches.

The Black-winged Crow-Shrike, *S. melanoptera (intermedia).* South Australia (Kangaroo Island). Wings all black above and below; all the tail feathers with white tips. Length 19 inches, tail 9.5.

2. Glossy black; under tail-coverts blackish.

The Black Crow-Shrike, *S. fuliginosa.* South-east Australia and Tasmania. All black except the tips of the primaries, and the tips of the tail feathers, the white tips, however, nearly 1.5 inch in breadth, not exceeding .25 inch in the other species. Length 19 inches, tail 8.5.



Golden Bower-bird: *Prionodura newtoniana*, De Vis
(After GOULD-SHARPE.)
[See page 422.]



Nest of Grey Jumper: *Struthidea cinerea*.



Nest of White-winged Chough: *Corcorax melanorhamphus*. Australian Museum.

C.—General colour grey; wings and tail blackish.

The Grey Crow-Shrike, *S. versicolor* (*cuneicaudata*). New South Wales, Central and South Australia. Brownish-grey. Length 19 inches, tail 8.7.

The Leaden Crow-Shrike, *S. plumbea*. West Australia. Deep leaden-grey. Length 19 inches, tail 9.5.

In both species the inner web of the basal half and the tips of the primaries, the tips of the tail feathers, and the under tail-coverts are white, very much as in *S. arguta*.

The Brown Crow-Shrike, *S. fusca*. South Australia (Eyre Peninsula). Plumage uniform dusky-brown, four outer feathers on each side of tail broadly tipped with white, the two centre tail feathers very slightly tipped with white; under tail-coverts white. Length 20 inches, tarsi 3 inches, bill $3\frac{1}{4}$ inches.

The Grey Jumper.

Struthidea cinerea.

The sole representative of this genus, which is restricted to Australia.

Grey above and below; wings pale brown; tail glossy black; middle feathers glossed with green; iris pearly-white; bill and feet black. Length 12.7 inches, wing 5.9, tail 6.4.

An inland bird, always seen in small companies of three or four among trees. The common name is derived from the habit of leaping from branch to branch; as they leap, they throw up and spread the wings and the tail, and give forth a harsh note. They feed on large insects, particularly beetles. The nest is a deep basin of mud, resembling those of the Magpie Lark and White-winged Chough. It is lined with fine grass and placed on a horizontal limb of a tree. The eggs, five to seven, white, sparingly blotched, principally at the large end, with reddish-brown and purplish and greenish-grey, and measure 1.2 x .85 inch.

The White-winged Chough.

Corcorax melanorhamphus.

Australia, except North and West.

The solitary representative of the genus, which is exclusively Australian, and remarkable as being so widely isolated from its congeners of the Chough subfamily, which are confined to the continents of the Old World. Black above and below, with purplish and greenish gloss, with

the exception of the inner webs of the primary wing feathers, which are white, except at the bases and the tips; bill and feet black, iris scarlet. Length 16 inches, wing 9.9, tail 9.2. Young much browner.

It usually occurs in groups of six to ten, feeding upon the ground, over which it can run quickly. The habits are very like those of the Grey Jumper, but at times when perched it "makes the woods ring with its peculiar soft, low, very pleasing but mournful pipe." When paying his addresses to the female, the male bird spreads out his wings and tail to the utmost, lowers his head, and puffs out his feathers, his whole frame animated with excitement and zeal. The nest is like that of *Struthidea*, and contains a clutch of the same number of eggs, which are yellowish-white, boldly blotched all over with olive and purplish-brown, and measure 1.5 x 1.1 inch.

INTRODUCED BIRDS.

A number of kinds of birds has been introduced into Australia, and set free in the hope that they would establish themselves and prove of service in the new country. The most extended experiments in this direction were made by the Acclimatisation Society of Victoria from 1863 onwards. Amongst the birds liberated were Canaries, Blackbirds, Thrushes, Californian and Chinese Quail, English Wild Ducks and Robins, Java and Chinese Sparrows, the Common House Sparrow, Starlings, Skylarks, Greenfinches, Goldfinches, Chaffinches, Ortolans, Yellow-Hammers, Siskins, Indian Minahs and Turtle Doves, Indian Jungle Fowl, Pea Fowl, Guinea Fowls, Lesser Pintaile Sand-Grouse, Ceylon and French Partridges, Egyptian Geese and White Swan. A few of these birds were also liberated around Sydney. In some cases the numbers of the birds were insufficient, in others the localities selected for liberation were unsuitable, and in others the birds failed to make good their footing in face of the natural and imported foes or fell victims to the poison laid about for pests. The list of survivors then is much shorter, and comprises both House and Tree Sparrows, Starlings, Thrushes and Blackbirds, Greenfinches and Goldfinches, Skylarks and the Indian Minahs and Doves. All these have now become thoroughly acclimatised, and are multiplying with greater or less rapidity. Around Sydney the Sparrow, Starling, Doves, and to a less extent the Skylark are the only foreign birds which have obtained a real hold. All the birds in the list are to be met with around Melbourne.

The Common Sparrow, whatever be his virtues or his failings, has come to stay. He is present not merely in the large capitals, but follows the railways, and where the white man can settle the Sparrow can follow him. Many judges and juries have sat upon his case, but it matters little to the bird, which defies all attempts to exterminate him. He can feed on most things, fruit, seeds, insects, worms, scraps, and can thus always pick up a living in the townships, though fortunately he does not seem

to fancy wild life in the bush. There is always plenty of dry grass for his bulky and roughly-constructed nest, and trees or hedges or hollows under the eaves enough in which to build it. Two or three broods are produced in the season, with five eggs to the sitting, so that the rate of increase is very high. It is no wonder then that the birds appear in large flocks, and that the gardens are full of them. There is no doubt that they consume a multitude of noxious insects, and so do something to retrieve their character, but it is hard to persuade a farmer whose sowing and whose reaping have been spoilt by mobs of the birds in quest of the grain that the Sparrow is anything but an unmitigated nuisance.

Starlings have been only less successful than the Sparrow in establishing themselves in the great centres of population, and are spreading, though more slowly, over the whole of the Southern States. They live in flocks, and for eleven months in the year do most useful work in destroying the wireworms and other ground insect larvæ. They make themselves quite at home among the grazing cattle, and birds may occasionally be seen on the backs of the beasts. It is in the time when the fruit is ripening that they make their enemies, for they raid the orchards, especially in a very dry season, in the early morning, and from their size and numbers are capable of doing much destruction. The nest is almost as uncouth and rough as that of the Sparrow, and made in any natural or artificial cavity which is available. The clutch also consists of from four to six pale-blue eggs, so that the reproductive powers are considerable. They are pugnacious birds, well able to take their own part, even against the birds of prey. "If a bird of prey is seen, a large flock will rise as one bird, and circle round and over the object of their fear as it flies along. I have seen a flock of considerably over a thousand Starlings doing this." (Surgeon-Colonel C. Ryan). The Hawk is so much harassed that all its wits are needed to extricate itself from its pursuers.

The Thrushes and Blackbirds have not spread to any great extent, but are occasionally seen and heard in the environs of Melbourne and Sydney as they seem to thrive only in the gardens. Both birds are prolific, and they can find abundance of the

familiar snail of the old world gardens. They both also show a partiality for fruit, especially that which has fallen from the tree, and this is rather damaging to their prospects. As they build in the shrubs of the gardens too, the young are liable to fall victims to the ubiquitous town cat. Still the birds have persisted now for many years, and as the suburbs are continually growing, the chances of survival seem to be fairly hopeful.

The Greenfinches which were liberated in the Sixties have done fairly well, and are now established near Melbourne and in the tea-tree scrubs about Port Phillip. Being of an inconspicuous colour, and living in fairly thick cover, they do not suffer from birds of prey as much as birds which come more into the open. The Goldfinches are much more in evidence. About Geelong they are especially numerous, nesting in the trees planted in the streets. About Hobart, too, they are seen in great numbers amongst the hawthorn hedges. They are everywhere welcomed, as they confine their attention to the haws and to seeds and do not molest the orchards.

The Skylarks are increasing, but slowly. The birds do not scatter readily, and grassland areas are not extensive near the capitals. Numbers find a home in the great Centennial Park of Sydney, on the Emu Plains, and on the flats to the north and west of Melbourne, and their blithe aspiring songs bring back to many the meadows of Old England.

The Indian Minah (*Acridotheres tristis*) is almost confined to the neighbourhood of Melbourne, where it was introduced. In the city and suburbs it is quite common, and attracts attention by its not unmusical but disjointed notes. It feeds on insects and seeds, and also has a keener taste for fruit than the Black-bird, and on the other hand is not so handsome or so musical.

The Indian Doves (*Turtur suratensis*) are plentiful about both capitals, Melbourne and Sydney, and are seen in numbers in the Parks and larger gardens. In these situations they are secure, but where they have been sent to smaller towns, it is found that they generally fall victims to the birds of prey.

Ostriches have never been set at liberty to find their own living in the bush, but several farms have been stocked with these birds, and there seems to be no reason why a profitable industry should not be established in the plumes. At the

Hawkesbury College these birds breed freely, and no difficulty has been experienced in rearing the young. Sir Samuel Wilson undertook the charge of the Ostriches procured by the Victorian Acclimatisation Society, and he found that the birds bred freely, but that if turned out of the paddock and allowed to go free over the run they became so wild that it was practically impossible to yard them at the proper season for stripping. Hence it is necessary to keep the birds in limited enclosures and accustomed to their keepers. Ostriches actually in the open would have even less chance than the Emu of escaping the universal gun.

The advantage of the general policy of introducing foreign birds into Australia seems to be open to much doubt. The classes of birds which would presumably be welcomed are insectivorous birds, birds of attractive plumage or song, and game birds. Of purely insectivorous birds, the Skylark is the only success amongst those which have been tried, and that as we have seen only so far in very limited areas. Such birds are difficult to transport and transplant. We have large numbers of indigenous birds which perform the same good offices, and the wisest policy seems to be to give adequate State or Federal protection to these, and to foster amongst all classes, and especially amongst the agricultural class, who are most directly interested, knowledge of the invaluable work performed by the birds and an ardent desire to preserve them. Birds of beautiful and striking plumage or pleasing song, if grain or fruit feeders, are only likely to be shot down in the same ruthless fashion as are the Parrots and Satin Birds. About the gardens of the towns, where sentiment is stronger and interests are less seriously affected, such birds as the Blackbird, Thrush and Goldfinch may be able to hold their own. In the country, where the natural cover is destroyed over large holdings and the timber rung, and where more intense cultivation is very limited, it is plain that the chances of the birds for survival are small, especially as in fruiting time they naturally collect from all around to raid the orchards, and so raise the country side against them. The grain feeders in the same way attack the newly-sown seed, and their presence is similarly resented. These inconveniences, super-added to the natural difficulties of adaptation to new climate,

new foods, and new enemies, seem to render it highly improbable that much success would attend the introduction of such birds. There remain the Game Birds. The Pheasant and Partridge preserves of Europe are practically more extensive poultry farms, and the birds are as carefully looked after as the domestic turkey is with us. Where then we can rear turkeys successfully we might rear Pheasants and Partridges. But if liberated in the open, where the Fox and the poison bait are rampant, and the bush fires rage, such simple-minded birds would only be exposed to certain destruction. On the other hand there does seem to be more hope for such birds as Grouse and Quail in our heath lands, which from their poorness of soil are generally left severely alone, and which ought to provide the birds with sufficient subsistence; though, in order to enable them to persist, an honestly enforced and recognised close season would have to be instituted. And if the birds were once established, we should most likely need a "Lacey Act" such as is in force in the United States, to prevent wholesale slaughter for the supply of the city markets. In any case, introduction of foreign birds should only be effected with great caution, under the auspices and support of the Government, and under expert scientific advice. Casual acclimatisations, as in the past, may easily be productive of as much evil as good.

ADDENDA.

Puffinus sphenurus replaces *P. chlororhynchus* in Mathews' Hand-list. That Gould was right in his determination is proved by observations made by Mr. D. Le Souëf last spring (1910), on the bird in the flesh. "Bill greyish-black. Feet and legs blackish on outside, pinkish white on inside and on web, whitish underneath, toes white, small amount of dark shading on the skin just above the toes. White spot under each eye."

Grey v. White Goshawks. Mr. H. G. Barnard, writing from Cape York, says that he observed a pure white male bird, answering to *Astur novæ-hollandiæ*, mating with a grey female bird, answering to *A. cinereus*. Both birds were shot at the nest, so that there could be no doubt of the observation. It seems almost certain that the two species are really identical.

Trichoglossus coli, Cole's Lorikeet. Mr. D. Le Souëf has described a new Lorikeet from Queensland. The four outer tail feathers spatulate; upper parts green shaded with dark markings; the scarlet feathers of the breast mostly tipped with blue. Total length 11 inches, wing 5.75, tail 4.5, culmen .75, tarsus .5.

Cypselus pacificus. The White-rumped Swift is a visitor to Australia and Tasmania, but breeds in the North.

Pseudogerygone cantator, the Queensland Canary. Described by Mr. W. E. Weatherill, of the Queensland Museum. It differs from *P. fusca* as follows:—

P. fusca.—Flanks and under tail coverts washed with buff; feet and legs weak. Total length 3.85 inches, wing 1.9, tail 1.7, culmen .34, tarsus .66.

P. cantator.—Flanks ashy grey; under tail coverts white; feet and legs strong. Total length 4.56 inches, wing 2.24, tail 1.8, culmen .4, tarsus .8.

Suspended nest of the usual type. Clutch of eggs three, pale pink with reddish-brown spots all over, or forming a dark zone at the larger end. Dimensions about .75 by .5 inch.

This bird is a denizen of the coast, and lives among the mangrove bushes on the islands of Moreton Bay, and along the banks of the rivers and creeks in South-east Queensland. The

song is so sweet and well-sustained that the residents of the Brisbane District call it the "Queensland Canary."

Mr. A. J. Campbell has recently described two new birds in "The Emu," as follows:—

Falcunculus whitei (Yellow Shrike-Tit).

Napier Broome Bay, North-west Australia.

Male: Next the bill small white patch; sides of the head and neck white, divided by a black band passing through the eye to the nape; crown of head black; throat mottled greenish, black and grey; back, wing coverts, and upper tail coverts light olive-green; primaries and secondaries dark brown, margined with greenish-yellow and lighter colour; tail also dark brown, margined with greenish-yellow, except the two outer feathers margined with dull white; all under surface, including tail coverts, lemon chrome-yellow, brightest on the chest. Iris umber, bill black, tarsus French grey (Hill). Length, 6; wing, $3\frac{1}{4}$; tail, $2\frac{1}{4}$; bill $\frac{9}{16}$; tarsus, $\frac{15}{16}$ inches.

Female: Similar to above, but smaller in dimensions.

This very distinct new bird approaches nearest to *E. leucogaster* (Gld.), but differs in having the whole of the under surface yellow, while in general colouring it is more yellowish than either of the other two known species.

It is classically named in honour of Mr. H. L. White, who so liberally subsidized Mr. G. F. Hill in the far North-West field for a season, and may be known on the vernacular list as the Yellow Shrike-Tit.

Eopsaltria hilli (Hill Shrike-Robin).

Hecla Island, Parry Harbour, North-west Australia.

Female: Crown of head, sides of neck, and back grey; lower back tinged with olive-green blending into light olive-green; upper tail coverts, primaries, and secondaries dark brown, margined with grey; tail feathers brownish beneath, with light olive-green wash above; throat whitish, slightly mottled with grey, chest light brownish-grey, blending into abdomen and under tail-coverts, which are light lemon chrome-yellow. Iris dark brown, bill black, tarsus slate-grey (Hill). Length, 6; wing, $3\frac{1}{4}$; tail $2\frac{1}{2}$; bill, $\frac{9}{16}$; tarsus, $\frac{7}{8}$ inches.

This new Shrike-Robin most resembles *E. griseogularis* (Gld.), but has not the conspicuous bright yellow rump and upper tail coverts.

It is named after its discoverer, Mr. Gerald Freer Hill.

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SYSTEMATIC TABLE OF AUSTRALIAN BIRDS.

(The numbers refer to the pages.)

CLASS AVES: 1.

SUB-CLASS PALAEOGNATHÆ.

ORDER CASUARIFORMES: 1

Family Dromæidæ: 1.

Dromæus novæ-hollandiæ (Emu).

Casuarus australis (Australian Cassowary).

SUB-CLASS NEOGNATHÆ.

ORDER GALLIFORMES: 7.

Family Megapodiidæ: 7.

Megapodius tumulus (Scrub Fowl).

Lipoa ocellata (Mallee Fowl).

Catheturus lathamii (Yellow-wattled Brush Turkey).

„ *purpureicollis* (Barnard's Scrub Turkey).

Family Phasianidæ: 15.

Coturnix pectoralis (Stubble Quail).

Synœcus australis (Brown Quail).

„ *diemenensis* (Brown Quail).

„ *sordidus* („)

„ *cervinus* („)

Excalfactoria lineata (Chestnut-bellied Quail).

ORDER TURNICIFORMES: 18.

Family Turnicidæ: 18.

Turnix maculosa (Red-backed Quail).

„ *melanogaster* (Black-breasted Quail).

„ *varia* (Painted Quail).

„ *castanota* (Chestnut-backed Quail).

„ *olivei* (Olive's Quail).

„ *pyrrhоторax* (Red-chested Quail).

„ *velox* (Little Quail).

Pedionomus torquatus (Plain Wanderer).

ORDER COLUMBIFORMES: 21.

Family Treronidæ: 21.

- Ptilopus alligator* (Black-banded Fruit Pigeon).
 „ *swainsoni* (Red-crowned Fruit Pigeon).
 „ *ewingii* (Rose-crowned Fruit Pigeon).
 „ *superba* (Purple-crowned Fruit Pigeon).
 „ *magnifica* (Purple-breasted Fruit Pigeon).
 „ *assimilis* (Lesser Purple-breasted Fruit Pigeon).
Myristicivora spilorrhoea (Nutmeg Pigeon).
Lopholæmus antarcticus (Top-knot Pigeon).

Family Columbidae: 25.

- Columba leucomela* (White-headed Fruit Pigeon).
Macropygia phasianella (Pheasant Pigeon).

Family Peristeridae: 26.

- Geopelia humeralis* (Barred-shouldered Dove).
 „ *tranquilla* (Peaceful Dove).
 „ *cuneata* (Little Dove).
Chalcophaps chrysochlora (Little Green Pigeon).
 „ *occidentalis* (Lilac-mantled Pigeon).
Phaps chalcoptera (Bronzewing Pigeon).
 „ *elegans* (Bush Bronzewing Pigeon).
Histriophaps histrionica (Flock Pigeon).
Petrophassa albipennis (White-quilled Rock Pigeon).
 „ *rufipennis* (Chestnut-quilled Rock Pigeon).
Geophaps scripta (Partridge Pigeon).
 „ *smithi* (Naked-eyed Partridge Pigeon).
Lophophaps plumifera (Plumed Pigeon).
 „ *ferruginea* (Red-plumed Pigeon).
 „ *leucogaster* (White-bellied Plumed Pigeon).
Ocyphaps lophotes (Crested Pigeon).
Leucosarcia picata (Wonga-Wonga Pigeon).

ORDER RALLIFORMES: 35.

Family Rallidae: 35.

- Hypotaenidia brachypus* (Slate-breasted Rail).
 „ *philippinensis* (Pectoral Rail).
Eulabeornis castaneiventris (Chestnut-bellied Rail).
Rallina tricolor (Red-necked Rail).
Porzana fluminea (Spotted Crake).
 „ *palustris* (Little Crake).
 „ *plumbea* (Spotless Crake).
Poliolimnas cinereus (White-browed Crake).
Amaurornis moluccana (Rufous-tailed Crake).
Tribonyx mortieri (Native Hen).

Family Rallidæ—continued

- Microtribonyx ventralis* (Black-tailed Native Hen).
Gallinula tenebrosa (Black Moor Hen).
 „ *frontata* (Dark-grey Moor Hen).
Porphyrio bellus (Blue Bald Coot).
 „ *melanotus* (Bald Coot).
Fulica australis (Coot).

ORDER PODICIPEDIFORMES: 42.

Family Podicipedidæ: 42.

- Podiceps novæ-hollandiæ* (Black-throated Grebe).
 „ *poliocephalus* (Hoary-headed Grebe).
 „ *cristatus* (Tippet Grebe).

ORDER SPHENISCIFORMES: 45.

Family Spheniscidæ: 45.

- Aptenodytes forsteri* (King Penguin).
Catarrhactes chrysome (Crested Penguin).
Eudyptula minor (Blue Penguin).
 „ *undina* (Little Blue Penguin).

ORDER PROCELLARIIFORMES (TUBINARES): 50.

Family Procellariidæ: 50.

- Oceanites oceanicus* (Yellow-webbed Storm Petrel).
Garrodia nereis (Grey-backed Storm Petrel).
Pelagodroma marina (White-faced Storm Petrel).
Fregetta melanogaster (Black-bellied Storm Petrel).
 „ *grallaria* (White-bellied Storm Petrel).

Family Puffinidæ: 52.

- Puffinus leucomelas* (White-fronted Shearwater).
 „ *sphenurus* (Wedge-tailed Shearwater).
 „ *gavia* (Forster Shearwater).
 „ *assimilis* (Allied Shearwater).
 „ *carneipes* (Fleshy-footed Shearwater).
 „ *griseus* (Sombre Shearwater).
 „ *tenuirostris* (Short-tailed Shearwater).
Priofinus cinereus (Brown Petrel).
Thalassœca antarctica (Antarctic Petrel).
Priocella glacialoides (Silvery-grey Petrel).
Majaqueus æquinoctialis (Spectacled Petrel).
 „ *parkinsoni* (Black Petrel).
Cestrelata macroptera (Great-winged Petrel).
 „ *lessoni* (White-headed Petrel).
 „ *mollis* (Soft-plumaged Petrel).
 „ *brevipes* (White-throated Petrel).
 „ *solanderi* (Brown-headed Petrel).

Family Puffinidæ—continued

- Estrelata gularis* (Mottled Petrel).
 „ *neglecta* (Schlegel's Petrel).
 „ *leucoptera* (White-winged Petrel).
 „ *cooki* (Cook Petrel).
Macronectes gigantea (Giant Petrel).
Daption capensis (Cape Pigeon).
Halobæna cærulea (Blue Petrel).
Prion vittatus (Broad-billed Dove Petrel).
 „ *banksi* (Banks Dove Petrel).
 „ *desolatus* (Dove Petrel).
 „ *ariel* (Fairy Dove Petrel).

Family Pelecanoididæ: 64.

- Pelecanoides urinatrix* (Diving Petrel).

Family Diomedeidæ: 65.

- Diomedea exulans* (Wandering Albatross).
 „ *chionoptera* (White-winged Albatross).
 „ *regia* (Royal Albatross).
 „ *albatrus* (Short-tailed Albatross).
 „ *melanophrys* (Black-browed Albatross).
Thalassogeron cautus (White-capped Albatross).
 „ *culminatus* (Flat-billed Albatross).
 „ *chlororhynchus* (Yellow-nosed Albatross).
 „ *carteri* (Carter Albatross).
Phœbetria fuliginosa (Sooty Albatross).

ORDER LARIFORMES: 71.

Family Laridæ: 71.

- Hydrochelidon leucoptera* (White-winged Black Tern).
 „ *hybrida* (Marsh or Whiskered Tern).
Gelochelidon anglica (Gull-billed Tern).
Hydroprogne caspia (Caspian Tern).
Sterna gracilis (Roseate Tern).
 „ *media* (Lesser Crested Tern).
 „ *bergii* (Crested Tern).
 „ *frontalis* (White-fronted Tern).
 „ *anæsthera* (Brown-winged Tern).
 „ *fuliginosa* (Sooty Tern).
 „ *nereis* (White-faced Ternlet).
 „ *sinensis* (White-shafted Ternlet).
 „ *melanauchen* (Black-naped Tern).
Procelsterna cinerea (Grey Noddy).
Anous stolidus (Noddy Tern).
Micranous tenuirostris (Lesser Noddy).
 „ *leucocapillus* (White-capped Noddy).

Family Luridæ—continued

- Gygis alba* (White Tern).
Larus novæ-hollandiæ (Silver Gull).
Gabianus pacificus (Pacific Gull).

Family Stercorariidæ: 86.

- Megalestris antarctica* (Southern Skua).
Stercorarius pomatorhinus (Pomarine Skua).
 „ *crepidatus* (Richardson Skua).

ORDER CHARADRIFORMES: 90.

Family Charadriidæ: 90.

- Arenaria interpres* (Turnstone).
Hæmatopus longirostris (Pied Oyster-catcher).
 „ *fuliginosus* (Black Oyster-catcher).
Erythrogonys cinctus (Red-kneed Dottrel).
Lobivanellus lobatus (Spur-winged Plover).
 „ *miles* (Masked Plover).
Zonifer tricolor (Black-breasted Plover).
Squatarola helvetica (Grey Plover).
Charadrius dominicus (Lesser Golden Plover).
Ochthodromus bicinctus (Double-banded Dottrel).
 „ *geoffroyi* (Greater Sand Dottrel).
 „ *mongolus* (Mongolian Sand Dottrel).
 „ *veredus* (Oriental Dottrel).
Ægialitis hiaticola (Ringed Plover).
 „ *ruficapilla* (Red-capped Dottrel).
 „ *melanops* (Black-fronted Dottrel).
 „ *cucullata* (Hooded Dottrel).
Peltohyas australis (Australian Dottrel).
Himantopus leucocephalus (White-headed Stilt).
Cladorhynchus leucocephalus (Banded Stilt).
Recurvirostra novæ-hollandiæ (Red-necked Avocet).
Numenius cyanopus (Curlew).
 „ *variegatus* (Whimbrel).
Mesoscolopax minutus (Little Whimbrel).
Limosa novæ-zealandiæ (Barred-rumped Godwit).
 „ *limosa* (Black-tailed Godwit).
Totanus stagnatilis (Little Greenshank).
Helodromas ochropus (Green Sandpiper).
Heteractitis brevipes (Grey-rumped Sandpiper).
 „ *ineanus* (American Grey-rumped Sandpiper).
Tringoides hypoleucus (Common Sandpiper).
Terekia cinerea (Terek Sandpiper).
Glottis nebularius (Greenshank).
Rhyacophilus glareola (Wood Sandpiper).
Bartramia longicauda (Bartram Sandpiper).

Family Charadriidæ—continued

- Calidrys arenaria* (Sanderling).
Pisobia ruficollis (Little Stint).
 „ *damacensis* (Middendorff Stint).
Heteropygia aurita (Sharp-tailed Stint).
Ancyclochilus subarquatus (Curlew Stint).
Tringa canutus (Knot).
 „ *crassirostris* (Great Sandpiper).
Gallinago australis (Snipe).
Rostratula australis (Painted Snipe).

Family Parridæ: 116.

- Hydralector gallinaceus* (Comb-crested Jacana or Parra).

Family Glareolidæ: 116.

- Stiltia isabella* (Pratincole).
Glareola orientalis (Oriental Pratincole).

Family Oedictnemidæ: 118.

- Burhinus grallarius* (Stone Plover).
Orthorhamphus magnirostris (Long-billed Stone Plover).

Family Otididæ: 120.

- Eupodotis australis* (Australian Bustard).

ORDER GRUIFORMES: 121.

Family Gruidæ: 121.

- Antigone australasiana* (Crane or Native Companion).

ORDER ARDEIFORMES: 123.

Family Ibirdidæ: 123.

- Ibis molucca* (White Ibis).
Carphibis spinicollis (Straw-necked Ibis).
Plegadis falcinellus (Glossy Ibis).

Family Plataleidæ: 126.

- Platalea regia* (Black-billed Spoonbill).
Platibis flavipes (Yellow-legged Spoonbill).

Family Ciconiinae: 127.

- Xenorhynchus asiaticus* (Jabiru).

Family Ardeidæ: 128.

- Ardea sumatrana* (Great-billed Heron).
 „ *cinerea* (Grey Heron).
Mesophoyx plumifera (Plumed Egret).
Herodias timoriensis (Egret).

Family Ardeidæ—continued

- Notophoxyx novæ-hollandiæ* (White-fronted Heron).
 „ *pacifica* (White-necked Heron).
 „ *flavirostris* (Pied Egret).
 „ *aruensis* (White-headed Egret).
Garzetta nigripes (Lesser Egret).
Demiegretta sacra (Reef Heron).
Nycticorax caledonicus (Nankeen Night-Heron).
Butorides stagnatilis (Thick-billed Green Bittern).
Ardetta sinensis (Little Yellow Bittern).
 „ *pusilla* (Minute Bittern).
Dupetor gouldi (Yellow-necked Bittern).
Botaurus pæciloptilus (Bittern).

ORDER ANSERIFORMES: 141.

Family Anatidæ: 141.

- Chenopsis atrata* (Black Swan).
Anseranas semipalmata (Pied Goose).
Nettopus pulchellus (Green Dwarf Goose).
 „ *albipennis* (White-quilled Dwarf Goose).
Cereopsis novæ-hollandiæ (Cape Barren Goose).
Chenonetta jubata (Maned Goose).
Dendrocyena arcuata (Whistling Duck).
D. eytoni (Plumed Whistling Duck).
Tadorna ruftergum (White-headed Sheldrake).
Casarca tadornoides (Chestnut-coloured Sheldrake).
Anas superciliosa (Black Duck).
Nettion castaneum (Chestnut-breasted Teal).
 „ *gibberifrons* (Grey Teal).
Querquedula querquedula (Garganey).
Spatula clypeata (Common Shoveller).
 „ *rhynchotis* (Australian Shoveller).
Malacorhynchus membranaceus (Pink-eared Duck).
Stictonetta nævosa (Freckled Duck).
Aythya australis (White-eyed Duck).
Erismatura australis (Blue-billed Duck).
Biziura lobata (Musk Duck).

ORDER PELECANIFORMES: 154.

Family Phalacrocoracidæ: 154.

- Phalacrocorax carbo* (Black Cormorant).
 „ *sulcirostris* (Little Black Cormorant).
 „ *gouldi* (White-breasted Cormorant).
 „ *hypoleucus* (Pied Cormorant).
 „ *melanoleucus* (Little Black and White
 Cormorant).

Family Plotidæ: 158.

Plotus novæ-hollandiæ (Darter).

Family Sulidæ: 159.

Sula serrator (Gannet).

„ *cyanops* (Masked Gannet).

„ *piscatrix* (Red-legged Gannet).

„ *leucogaster* (Brown Gannet).

Family Fregatidæ: 165.

Fregata aquila (Great Frigate-bird).

„ *ariel* (Lesser Frigate-bird).

Family Phaethonidæ: 166.

Phaethon rubricauda (Red-tailed Tropic-bird).

„ *lepturus* (White-tailed Tropic-bird).

Family Pelecanidæ: 168.

Pelecanus conspicillatus (Pelican).

ORDER ACCIPITRIFORMES: 169.

Family Falconidæ: 169.

Circus assimilis (Spotted Harrier).

„ *gouldi* (Harrier).

Astur clarus (Grey Goshawk).

„ *novæ-hollandiæ* (White Goshawk).

„ *leucosomus* (Lesser White Goshawk).

„ *fasciatus* (Goshawk).

„ *cruentus* (Western Goshawk).

Accipiter cirrhocephalus (Sparrow Hawk).

Erythrotriorchis radiatus (Buzzard).

Uroaetus audax (Wedge-tailed Eagle).

Eutolmaetus morphnoides (Little Eagle).

Haliaetus leucogaster (White-bellied Sea-Eagle).

Haliastur girrenera (White-headed Sea-Eagle).

„ *sphenurus* (Whistling Eagle).

Milvus affinis (Kite).

Lophoictinia isura (Square-tailed Kite).

Gypoictinia melanosternum (Black-breasted Buzzard).

Elanus axillaris (Black-shouldered Kite).

„ *scriptus* (Letter-winged Kite).

Baza suberistata (Crested Hawk).

Falco melanogenys (Black-cheeked Falcon).

„ *hypoleucus* (Grey Falcon).

„ *subniger* (Black Falcon).

„ *lunulatus* (Little Falcon).

Family Falconidæ—continued

- Hieracidea berigora* (Striped Brown Hawk).
 „ *orientalis* (Brown Hawk).
Cerchneis cenchroides (Kestrel).
Pandion leucocephalus (Osprey).

ORDER STRIGIFORMES: 188.

Family Bubonidæ: 189.

- Ninox boobook* (Boobook Owl).
 „ *ocellata* (Marbled Owl).
 „ *maculata* (Spotted Owl).
 „ *lurida* (Lurid Owl).
 „ *connivens* (Winking Owl).
 „ *occidentalis* (Western Winking Owl).
 „ *peninsularis* (Cape York Owl).
 „ *strenua* (Powerful Owl).
 „ *rufa* (Rufous Owl).

Family Strigidæ: 193.

- Strix novæ-hollandiæ* (Chestnut-faced Owl).
 „ *delicatula* (Delicate Owl).
 „ *castanops* (Masked Owl).
 „ *tenebricosa* (Sooty Owl).
 „ *candida* (Grass Owl).

ORDER PSITTACIFORMES: 195.

Family Loriidæ: 197.

- Trichoglossus novæ-hollandiæ* (Blue-bellied Lorikeet).
 „ *septentrionalis* (Northern Blue-bellied Lorikeet).
 „ *rubritorques* (Red-collared Lorikeet).
Psittenteles chlorolepidotus (Scaly-breasted Lorikeet).
 „ *neglectus* (Northern Scaly-breasted Lorikeet).
Ptilosclera versicolor (Red-crowned Lorikeet).
Glossopsittacus concinnus (Musk Lorikeet).
 „ *porphyrocephalus* (Purple-crowned Lorikeet).
 „ *pusillus* (Little Lorikeet).

Family Cyclopsittacidæ: 200.

- Cyclopsittacus coxeni* (Red-faced Lorikeet).
 „ *maccoyi* (Blue-faced Lorikeet).

Family Cacatuidæ: 201.

- Microglossus aterrimus* (Palm Cockatoo).
Calyptorhynchus baudini (White-tailed Cockatoo).
 „ *funereus* (Yellow-eared Black Cockatoo).
 „ *banksi* (Banksian Cockatoo).
 „ *macrorhynchus* (Great-billed Cockatoo).

Family Cacatuidæ—continued

- Calyptorhynchus stellatus* (Red-tailed Cockatoo).
 „ *viridis* (Glossy Cockatoo).
Callocephalum galeatum (Gang-Gang Cockatoo).
Cacatua galerita (White Cockatoo).
 „ *leadbeateri* (Pink Cockatoo).
 „ *gymnopsis* (Bare-eyed Cockatoo).
 „ *sanguinea* (Blood-stained Cockatoo).
 „ *roseicapilla* (Galah).
Liometis nasica (Corella).
 „ *pastinator* (Dampier Cockatoo).
Calopsittacus novæ-hollandiæ (Cockatoo Parrakeet).
Polytelis barrabandi (Green-leek Parrakeet).
 „ *melanura* (Rock Peddler).
Spathopterus alexandræ (Alexandra Parrakeet).
Ptistes erythropterus (Red-winged Parrakeet).
 „ *coccineopterus* (Crimson-winged Parrakeet).
Aprosmictus cyanopygius (King Parrot).
Platycercus elegans (Crimson Parrot).
 „ *nigrescens* (Campbell Parrakeet).
 „ *adelaidæ* (Adelaide Rosella).
 „ *flaveolus* (Yellow Parrakeet).
 „ *flaviventris* (Green Parrakeet).
 „ *pallidiceps* (Pale-headed Parrakeet).
 „ *amathusia* (Blue-cheeked Parrakeet).
 „ *browni* (Smutty Parrakeet).
 „ *erythropeplus* (Red-backed Rosella).
 „ *eximius* (Rosella).
 „ *splendidus* (Yellow-mantled Parrakeet).
 „ *mastersianus* (Masters Parrakeet).
 „ *xanthogenys* (Red-mantled Parrakeet).
 „ *icterotis* (Yellow-cheeked Parrakeet).
Porphyrocephalus spurius (Red-capped Parrakeet).
Barnardius barnardi (Mallee Parrakeet).
 „ *semitorquatus* (Yellow-collared Parrakeet).
 „ *zonarius* (Yellow-banded Parrakeet).
 „ *occidentalis* (Western Collared Parrakeet).
 „ *macgillivrayi* (MacGillivray's Collared Parrakeet).
Psephotus hæmatorrhous (Red-vented Parrakeet).
 „ *xanthorrhous* (Yellow-vented Parrakeet).
 „ *pallescens* (Pale Parrakeet).
 „ *pulcherrimus* (Beautiful Parrakeet).
 „ *dissimilis* (Chestnut-crowned Parrakeet).
 „ *chrysopterygius* (Golden-shouldered Parrakeet).
 „ *multicolor* (Many-coloured Parrakeet).
 „ *hæmatonotus* (Red-backed Parrakeet).
Neophema bourkei (Bourke Grass-Parrakeet).
 „ *venusta* (Blue-winged Grass-Parrakeet).

Family Cacatuidæ—continued

- Neophema elegans* (Grass-Parrakeet).
 „ *chrysogaster* (Orange-bellied Grass-Parrakeet).
 „ *petrophila* (Rock Parrakeet).
 „ *pulchella* (Red-shouldered Grass-Parrakeet).
 „ *splendida* (Scarlet-throated Grass-Parrakeet).
Euphema discolor (Swift Lorikeet).
Melopsittacus undulatus (Warbling Grass-Parrakeet).
Pezoporus terrestris (Ground Parrakeet).
Geopsittacus occidentalis (Night Parrakeet).

ORDER CORACIIFORMES: 229.

Family Podargidæ: 229.

- Podargus papuensis* (Plumed Frogmouth).
 „ *strigoides* (Tawny Frogmouth).
 „ *phalænoides* (Freckled Frogmouth).
 „ *marmoratus* (Marbled Frogmouth).
 „ *brachypterus* (Short-winged Frogmouth).
Ægotheles novæ-hollandiæ (Owlet Nightjar).
 „ *rufa* (Rufous Nightjar).

Family Coraciidæ: 232.

- Eurystomus pacificus* (Dollar-bird).

Family Alcedinidæ: 234.

- Alyone azurea* (Blue Kingfisher).
 „ *pulchra* (Purple Kingfisher).
 „ *pusilla* (Little Kingfisher).
Syma flavirostris (Yellow-billed Kingfisher).
Dacelo gigas (Kookaburra).
 „ *leachi* (Leach's Kingfisher).
 „ *cervina* (Fawn-breasted Kingfisher).
Haleyon macleayi (Forest Kingfisher).
 „ *pyrrhopygius* (Red-backed Kingfisher).
 „ *sanctus* (Sacred Kingfisher).
 „ *westralasianus* (West Australian Sacred Kingfisher).
 „ *sordidus* (Mangrove Kingfisher).
Tanysiptera sylvia (White-tailed Kingfisher).

Family Meropidæ: 241.

- Merops ornatus* (Bee-eater).

Family Caprimulgidæ: 242.

- Eurostopus albigularis* (White-throated Nightjar).
 „ *argus* (Spotted Nightjar).
Caprimulgus macrurus (Large-tailed Nightjar).

Family Cypselidæ: 244.

- Salangana esculenta (Edible-nest Swiftlet).
 „ francica (Grey-rumped Swiftlet).
 Chætura caudacuta (Spine-tailed Swiftlet).
 Cypselus pacificus (White-rumped Swift).

ORDER COCCYGES: 246.

Family Cuculidæ: 246.

- Cuculus saturatus (Oriental Cuckoo).
 „ inornatus (Pallid Cuckoo).
 Cacomantis rufulus (Fan-tailed Cuckoo).
 „ flabelliformis (Brush Cuckoo).
 „ castaneiventris (Chestnut-breasted Cuckoo).
 Mesocalius palliolatus (Black-eared Cuckoo).
 Chalcococcyx basalis (Narrow-billed Bronze Cuckoo).
 „ lucidus (Broad-billed Bronze Cuckoo).
 „ plagosus (Bronze Cuckoo).
 „ malayanus (Little Bronze Cuckoo).
 „ pœcilurus (Rufous-throated Bronze Cuckoo).
 Eudynamis cyanocephala (Koel).
 Scythrops novæ-hollandiæ (Channel-bill).
 Centropus phasianus (Coucal).

ORDER MENURIFORMES: 256.

Family Menuridæ: 256.

- Menura superba (Lyre-bird).
 „ victoriæ (Victoria Lyre-bird).
 „ alberti (Albert Lyre-bird).

ORDER PASSERIFORMES: 263.

Family Pittidæ: 264.

- Pitta strepitans (Noisy Pitta).
 „ simillima (Lesser Pitta).
 „ mackloti (Blue-breasted Pitta).
 „ iris (Rainbow Pitta).

Family Atrichornithidæ: 265.

- Atrichornis clamosa (Noisy Scrub-bird).
 „ rufescens (Rufous Scrub-bird).

Family Hirundinidæ: 266.

- Hirundo gutturalis (Chimney Swallow).
 „ javanica (Eastern Swallow).
 „ neoxena (Australian Swallow).
 Cheramœca leucosternum (Black and White Swallow).
 Petrochelidon nigricans (Tree Martin).
 „ ariel (Fairy Martin).

Family Muscicapidæ: 271.

- Microœca fascians* (Brown Fly-catcher).
 „ *flaviventris* (Lemon-breasted Fly-catcher).
Petroœca leggei (Scarlet-breasted Robin).
 „ *campbelli* (Western Scarlet-breasted Robin).
 „ *phœnicea* (Flame-breasted Robin).
 „ *rhodinogaster* (Pink-breasted Robin).
 „ *rosea* (Rose-breasted Robin).
 „ *goodenovii* (Red-capped Robin).
 „ *ramsayi* (Red-throated Robin).
 „ *bicolor* (Hooded Robin).
 „ *picata* (Pied Robin).
 „ *vittata* (Dusky Robin).
Smicrornis brevirostris (Short-billed Tree-tit).
 „ *flavescens* (Yellow-tinted Tree-tit).
Gerygone albigularis (White-throated Fly-eater).
 „ *cinerascens* (Grey Fly-eater).
Pseudogerygone culicivora (Western Fly-eater).
 „ *magnirostris* (Large-billed Fly-eater).
 „ *fusca* (Brown Fly-eater).
 „ *pallida* (Pale Fly-eater).
 „ *brunneipectus* (Brown-breasted Fly-eater).
 „ *lævigaster* (Buff-breasted Fly-eater).
 „ *tenebrosa* (Dusky Fly-eater).
 „ *chloronota* (Green-backed Fly-eater).
 „ *personata* (Black-throated Fly-eater).
 „ *cantator* (Singing Fly-eater).
Heteromyias cinereifrons (Ashy-fronted Robin).
Pœcilodryas cerviniventris (Buff-sided Robin).
 „ *superciliosa* (White-browed Robin).
 „ *cinereiceps* (Grey-headed Robin).
 „ *albifacies* (White-faced Robin).
 „ *capito* (Large-headed Robin).
Rhipidura albiscapa (White-shafted Fantail).
 „ *diemenensis* (Dusky Fantail).
 „ *albicauda* (White-tailed Fantail).
 „ *preissi* (Western Fantail).
 „ *phasiana* (White-fronted Fantail).
 „ *ruffrons* (Rufous Fantail).
 „ *intermedia* (Rufescent Fantail).
 „ *dryas* (Wood Fantail).
 „ *setosa* (Northern Fantail).
 „ *tricolor* (Black and White Fantail).
Myiagra rubecula (Leaden Fly-catcher).
 „ *concinna* (Blue Fly-catcher).
 „ *nitida* (Satin Fly-catcher).
 „ *latirostris* (Broad-billed Fly-catcher).

Family Muscicapidæ—continued

- Machærirhynchus flaviventer* (Yellow-breasted Fly-catcher).
Sisura inquieta (Restless Fly-catcher).
 „ *nana* (Little Fly-catcher).
Arses kaupi (Pied Fly-catcher).
 „ *lorealis* (Frill-necked Fly-catcher).
Piezorhynchus nitidus (Shining Fly-catcher).
 „ *albiventer* (White-bellied Fly-catcher).
 „ *gouldi* (Spectacled Fly-catcher).
 „ *leucotis* (White-eared Fly-catcher).
Monarcha melanopsis (Black-faced Fly-catcher).
 „ *canescens* (Pearly Fly-catcher).

Family Campophagidæ: 290.

- Pteropodocys phasianella* (Ground Cuckoo-Shrike).
Coracina (*Graucalus*) *robusta* (Black-faced Cuckoo-Shrike).
 „ *parvirostris* (Small-billed Cuckoo-Shrike).
 „ *hypoleuca* (White-bellied Cuckoo-Shrike).
 „ *mentalis* (Little Cuckoo-Shrike).
 „ *lineata* (Barred Cuckoo-Shrike).
Edoliisoma tenuirostre (Caterpillar-eater).
Lalage tricolor (White-shouldered Caterpillar-eater).
 „ *leucomelæna* (White-eyebrowed Caterpillar-eater).

Family Timeliidæ: 293.

- Orthonyx temmincki* (Spine-tailed Log-runner).
 „ *spaldingi* (Black-headed Log-runner).
Cinclosoma punctatum (Spotted Ground-Thrush).
 „ *castanonotum* (Chestnut-backed Ground-Thrush).
 „ *cinnamomeum* (Cinnamon Ground-Thrush).
 „ *castanothorax* (Chestnut-breasted Ground-Thrush).
 „ *marginatum* (Black-vented Ground-Thrush).
Pycnoptilus floccosus (Pilot Bird).
Drymacædus brunneipygius (Scrub-Robin).
 „ *pallidus* (Pale Scrub-Robin).
 „ *superciliaris* (Eastern Scrub-Robin).
Hylacola pyrrhopygia (Chestnut-rumped Ground Wren).
 „ *cauta* (Red-rumped Ground Wren).
Psophodes crepitans (Coach-whip Bird).
 „ *lateralis* (Northern Coach-whip Bird).
 „ *nigrogularis* (Black-throated Coach-whip Bird).
Pomatorhinus frivolus (Babbler).
 „ *superciliosus* (White-browed Babbler).
 „ *ruficeps* (Chestnut-crowned Babbler).
 „ *rubeculus* (Red-breasted Babbler).
Calamanthus fuliginosus (Striated Field Wren).
 „ *albiloris* (White-lored Field Wren).
 „ *montanellus* (Rock Field Wren).

Family Timeliidæ—continued

- Calamanthus campestris* (Field Wren).
 „ *isabellinus* (Desert Wren).
Cinclorhamphus cruralis (Brown Song Lark).
 „ *rufescens* (Rufous Song Lark).

Family Turdidæ: 304.

- Merula fuliginosa* (Norfolk Island Ouzel).
 „ *vinotincta* (Lord Howe Ouzel).
Oreocichla cuneata (Broadbent Ground-Thrush).
 „ *heinii* (Russet-tailed Ground-Thrush).
 „ *lunulata* (Ground-Thrush).
 „ *macrorhyncha* (Large-billed Ground Thrush).
Ephthianura albifrons (White-fronted Chat).
 „ *tricolor* (Tri-coloured Chat).
 „ *aurifrons* (Orange-fronted Chat).
 „ *crocea* (Yellow-breasted Chat).

Family Sylviidæ: 308.

- Acrocephalus gouldi* (Long-billed Reed-Warbler).
 „ *australis* (Reed-Warbler).
Cisticola exilis (Grass-Warbler).
Megalurus gramineus (Grass-bird).
 „ *galactotes* (Tawny Grass-bird).
 „ *striatus* (Striated Grass-bird).
Eremiornis carteri (Carter's Desert-bird).
Origma rubricata (Rock-Warbler).
Chthonicola sagittata (Little Field Lark).
Acanthiza nana (Little Tit).
 „ *inornata* (Plain-coloured Tit).
 „ *pusilla* (Brown Tit).
 „ *squamata* (Scaly-breasted Tit).
 „ *zietzi* (Dusky Tit).
 „ *magnirostris* (Large-billed Tit).
 „ *diemenensis* (Brown-rumped Tit).
 „ *apicalis* (Broad-tailed Tit).
 „ *robustirostris* (Thick-billed Tit).
 „ *pyrrhopygia* (Red-rumped Tit).
 „ *lineata* (Striated Tit).
 „ *mastersi* (Masters' Tit).
 „ *whitlocki* (Whitlock's Tit).
 „ *mathewsi* (Mathews' Tit).
 „ *uropygialis* (Chestnut-rumped Tit).
 „ *chrysorrhoa* (Yellow-rumped Tit).
 „ *reguloides* (Buff-rumped Tit).
 „ *flaviventris* (Plain-fronted Tit).
 „ *australis* (South Australian Tit).

Family Sylviidae—continued

- Acanthiza leighi* (Leigh's Tit).
 „ *pallida* (Pallid Tit).
 „ *ewingi* (Ewing's Tit).
 „ *tenuirostris* (Small-billed Tit).
 „ *modesta* (Modest Tit).
 „ *katherina* (Katherine Tit).
Sericornis brunnea (Red-Throat).
 „ *barbara* (Yellow-throated Scrub-Wren).
 „ *magnirostris* (Large-billed Scrub-Wren).
 „ *lavigastra* (Buff-breasted Scrub-Wren).
 „ *maculata* (Spotted Scrub-Wren).
 „ *magna* (Scrub Tit).
 „ *balstoni* (Bernier Island Scrub-Wren).
 „ *frontalis* (White-browed Scrub-Wren).
 „ *humilis* (Brown Scrub-Wren).
 „ *minimus* (Little Scrub-Wren).
Oreoscopus gutturalis (Collared Scrub-Wren).
Malurus cyanocephalus (Blue Wren).
 „ *dulcis* (Lavender-flanked Blue Wren).
 „ *gouldi* (Gould's Blue Wren).
 „ *elizabethæ* (Dark Blue Wren).
 „ *melanonotus* (Black-backed Wren).
 „ *callainus* (Turquoise Wren).
 „ *splendens* (Banded Wren).
 „ *leucopterus* (White-winged Wren).
 „ *leuconotus* (White-backed Wren).
 „ *elegans* (Graceful Blue Wren).
 „ *lamberti* (Variegated Blue Wren).
 „ *assimilis* (Purple-backed Blue Wren).
 „ *bernieri* (Bernier Island Blue Wren).
 „ *amabilis* (Lovely Wren).
 „ *pulcherrimus* (Blue-breasted Wren).
 „ *coronatus* (Purple-crowned Wren).
 „ *melanocephalus* (Orange-backed Wren).
 „ *cruentatus* (Red-backed Wren).
 „ *edouardi* (Black and White Wren).
Stipiturus malachurus (Emu Wren).
 „ *ruficeps* (Rufous-crowned Emu Wren).
 „ *mallee* (Mallee Emu Wren).
Sphenura brachyptera (Bristle-bird).
 „ *longirostris* (Long-billed Bristle-bird).
 „ *broadbenti* (Rufous Bristle-bird).
 „ *littoralis* (Lesser Rufous Bristle-bird).
Amytornis textilis (Grass-Wren).
 „ *macrurus* (Large-tailed Grass-Wren).
 „ *modestus* (Modest Grass-Wren).

Family Sylviidæ—continued

- Amytornis striatus* (Striated Grass-Wren).
 „ *goyderi* (Goyder Grass-Wren).
 „ *megalurus* (Western Grass-Wren).
 „ *housei* (Black Grass-Wren).
 „ *woodwardi* (Woodward's Grass-Wren).
 „ *varia* (Marloch Grass-Wren).

Family Artamidæ: 333.

- Artamus leucogaster* (White-rumped Wood-Swallow).
 „ *superciliosus* (White-browed Wood-Swallow).
 „ *personatus* (Masked Wood-Swallow).
 „ *cinereus* (Grey-breasted Wood-Swallow).
 „ *hypoleucus* (White-bellied Wood-Swallow).
 „ *melanops* (Black-faced Wood-Swallow).
 „ *venustus* (White-vented Wood-Swallow).
 „ *tenebrosus* (Wood-Swallow).
 „ *minor* (Little Wood-Swallow).

Family Prionopidæ: 336.

- Collyriocichla harmonica* (Grey Shrike-Thrush).
 „ *rectirostris* (Whistling Shrike-Thrush).
 „ *brunnea* (Brown Shrike-Thrush).
 „ *rufiventris* (Buff-bellied Shrike-Thrush).
 „ *woodwardi* (Woodward's Shrike-Thrush).
 „ *superciliosa* (White-browed Shrike-Thrush).
 „ *cerviniventris* (Fawn-breasted Shrike-Thrush).
Pinarolestes parvulus (Little Shrike-Thrush).
 „ *rufiventris* (Rusty-breasted Shrike-Thrush).
 „ *boweri* (Bower's Shrike-Thrush).
Grallina picata (Magpie Lark).

Family Laniidæ: 341.

- Gymnorhina tibicen* (Black-backed Magpie).
 „ *longirostris* (Long-billed Magpie).
 „ *dorsalis* (Varied-backed Magpie).
 „ *leuconota* (White-backed Magpie).
 „ *hyperleuca* (Lesser White-backed Magpie).
Cracticus spaldingi (Spalding's Butcher-bird).
 „ *rufescens* (Black Butcher-bird).
 „ *nigrigularis* (Black-throated Butcher-bird).
 „ *picatus* (Pied Butcher-bird).
 „ *leucopterus* (White-winged Butcher-bird).
 „ *argenteus* (Silver-backed Butcher-bird).
 „ *destructor* (Butcher-bird).
 „ *cinereus* (Grey Butcher-bird).

Family Laniidæ—continued

- Falcunculus frontatus* (Yellow-bellied Shrike-Tit).
 „ *leucogaster* (White-bellied Shrike-Tit).
 „ *whitei* (Yellow Shrike-Tit).
Oreica cristata (Bell-bird).
Pachycephala melanura (Black-tailed Thickhead).
 „ *pectoralis* (White-throated Thickhead).
 „ *occidentalis* (Western Thickhead).
 „ *glaucura* (Grey-tailed Thickhead).
 „ *falcata* (Northern Thickhead).
 „ *pallida* (Pale-breasted Thickhead).
 „ *rufiventris* (Rufous-breasted Thickhead).
 „ *gilberti* (Red-throated Thickhead).
 „ *olivacea* (Olive Thickhead).
 „ *simplex* (Brown Thickhead).
 „ *lanioides* (White-bellied Thickhead).
 „ *fretorum* (Torres Strait Thickhead).
Less Known—*P. robusta*, *P. queenslandica*, *P. peninsulae*,
P. meridionalis, *P. spinicauda*, *P. mestoni*.
Eopsaltria australis (Yellow-breasted Shrike-Robin).
 „ *chrysoorhoa* (Yellow-rumped Shrike-Robin).
 „ *gularis* (White-breasted Shrike-Robin).
 „ *georgiana* (Grey-breasted Shrike-Robin).
 „ *magnirostris* (Large-billed Shrike-Robin).
 „ *inornata* (Plain-coloured Shrike-Robin).
 „ *jacksoni* (Jackson's Shrike-Robin).
 „ *hilli* (Hill Shrike-Robin).

Family Paridæ: 356.

- Aphelocephala leucopsis* (White-face).
 „ *pectoralis* (Chestnut-breasted White-face).
 „ *nigricincta* (Black-banded White-face).
 „ *castaneiventris* (Chestnut-bellied White-face).
Sphenostoma cristatum (Wedge-bill).

Family Sittidæ: 358.

- Neositta chrysoptera* (Orange-winged Tree-runner).
 „ *leucocephala* (White-headed Tree-runner).
 „ *albata* (Pied Tree-runner).
 „ *pileata* (Black-capped Tree-runner).
 „ *tenuirostris* (Slender-billed Tree-runner).
 „ *leucoptera* (White-winged Tree-runner).
 „ *striata* (Striated Tree-runner).

Family Certhiidæ: 361.

- Climacteris melanura* (Black-tailed Tree-creeper).

Family Certhiidae—continued

- Climacteris wellsi* (Chestnut-bellied Tree-creeper).
 „ *melanonota* (Black-backed Tree-creeper).
 „ *rufa* (Rufous Tree-creeper).
 „ *picumna* (White-throated Tree-creeper).
 „ *scandens* (Brown Tree-creeper).
 „ *erythroptus* (Red-browed Tree-creeper).
 „ *superciliaris* (White-browed Tree-creeper).
 „ *minor* (Lesser Brown Tree-creeper).

Family Zosteropidae: 364.

- Zosterops carulescens* (White-eye).
 „ *vegeta* (Yellow-vented White-eye).
 „ *halmaturina* (Kangaroo Island White-eye).
 „ *gouldi* (Green-backed White-eye).
 „ *albiventris* (Pale-bellied White-eye).
 „ *shortridgei* (Rabbit Island White-eye).
 „ *lutea* (Yellow White-eye).
 „ *balstoni* (Balston's White-eye).
 „ *gulliveri* (Gulliver's White-eye).

Family Dicæidæ: 365.

- Dicæum hirundinaceum* (Mistletoe-bird).
Pardalotus ornatus (Red-tipped Pardalote).
 „ *assimilis* (Orange-tipped Pardalote).
 „ *affinis* (Yellow-tipped Pardalote).
 „ *punctatus* (Spotted Pardalote).
 „ *xanthopygius* (Yellow-rumped Pardalote).
 „ *rubricatus* (Red-browed Pardalote).
 „ *melanocephalus* (Black-headed Pardalote).
 „ *uropygialis* (Chestnut-rumped Pardalote).
 „ *quadragintus* (Forty-spotted Pardalote).

Family Nectariniidæ: 368.

- Cyrtostomus frenatus* (Sun-bird).

Family Meliphagidæ: 369.

- Melithreptus atricapillus* (White-naped Honey-eater).
 „ *chloropsis* (Western White-naped Honey-eater).
 „ *whitlocki* (Whitlock's Honey-eater).
 „ *albigularis* (White-throated Honey-eater).
 „ *gularis* (Black-chinned Honey-eater).
 „ *validirostris* (Strong-billed Honey-eater).
 „ *lætior* (Golden-backed Honey-eater).
 „ *carpenterianus*
 „ *brevirostris* (Brown-headed Honey-eater).
 „ *magnirostris*.

Family Meliphagidæ—continued

- Melithreptus leucogenys*.
 „ *affinis* (Black-headed Honey-eater).
 „ *vinotinctus* (Grey Honey-eater).
 „ *alisteri* (King Island Honey-eater).
Plectrohampus lanceolatus (Striped Honey-eater).
Myzomela sanguinolenta (Sanguineous Honey-eater).
 „ *erythrocephala* (Red-headed Honey-eater).
 „ *nigra* (Black Honey-eater).
 „ *pectoralis* (Banded Honey-eater).
 „ *obscura* (Dusky Honey-eater).
 „ *grisescens*.
Acanthorhynchus tenuirostris (Spine-bill).
 „ *dubius* (Tasmanian Spine-bill).
 „ *halmaturinus* (Kangaroo Island Spine-bill).
 „ *superciliosus* (White-browed Spine-bill).
Glycyphila melanops (Tawny-crowned Honey-eater).
 „ *albifrons* (White-fronted Honey-eater).
 „ *fasciata* (White-breasted Honey-eater).
 „ *modesta* (Brown-backed Honey-eater).
Entomophila picta (Painted Honey-eater).
Lacustroica whitei (White's Honey-eater).
Conopophila rufigularis (Red-throated Honey-eater).
 „ *albigularis* (Rufous-breasted Honey-eater).
Certhionyx variegatus (Pied Honey-eater).
 „ *occidentalis* (Western Pied Honey-eater).
Meliphaga phrygia (Warty-faced Honey-eater).
Stigmatops ocellaris (Brown Honey-eater).
 „ *albiauricularis* (Broadbent Honey-eater).
Ptilotis analoga (Yellow-spotted Honey-eater).
 „ *gracilis* (Little Yellow-spotted Honey-eater).
 „ *fusca* (Fuscous Honey-eater).
 „ *chrusotis* (Yellow-eared Honey-eater).
 „ *macleayana* (Macleay Honey-eater).
 „ *sonora* (Singing Honey-eater).
 „ *forresti* (Forrest's Honey-eater).
 „ *versicolor* (Varied Honey-eater).
 „ *chrysops* (Yellow-faced Honey-eater).
 „ *flavicollis* (Yellow-throated Honey-eater).
 „ *fascicularis* (Fasciated Honey-eater).
 „ *leucotis* (White-eared Honey-eater).
 „ *novæ-norciæ* (New Norcia Honey-eater).
 „ *cockerelli* (Cockerell Honey-eater).
 „ *melanops (auricomis)* (Yellow-tufted Honey-eater).
 „ *cassidix* (Helmeted Honey-eater).
 „ *cratitia* (Wattle-cheeked Honey-eater).
 „ *occidentalis* (Western Wattle-cheeked Honey-eater).

Family Meliphagidæ—continued

- Ptilotis keartlandi* (Kearland Honey-eater).
 „ *ornata* (Ornate Honey-eater).
 „ *plumula* (Yellow-plumed Honey-eater).
 „ *flavescens* (Yellow-tinted Honey-eater).
 „ *germana* (York Honey-eater).
 „ *flava* (Yellow Honey-eater).
 „ *penicillata* (White-plumed Honey-eater).
 „ *carteri* (Carter Honey-eater).
 „ *leilavalensis* (Pallid Honey-eater).
 „ *frenata* (Bridled Honey-eater).
 „ *unicolor* (White-gaped Honey-eater).
Xanthotis filigera (Streak-naped Honey-eater).
Meliornis pyrroptera (Crescent Honey-eater).
 „ *halmaturina* (Kangaroo Island Crescent Honey-eater).
 „ *novæ-hollandiæ* (White-bearded Honey-eater).
 „ *diemenensis* (Tasmanian White-bearded Honey-eater).
 „ *longirostris* (Long-billed Honey-eater).
 „ *sericea* (White-cheeked Honey-eater).
 „ *mystacalis* (Moustached Honey-eater).
Manorhina melanophrys (Bell Minah).
Myzantha garrula (Noisy Minah).
 „ *obscura* (Dusky Minah).
 „ *flavigula* (Yellow-throated Minah).
 „ *lutea* (Yellow Minah).
Acanthochæra carunculata (Red Wattle-bird).
 „ *paradoxa* (Yellow Wattle-bird).
Anellobia chrysoptera (Brush Wattle-bird).
 „ *lunulata* (Little Wattle-bird).
Acanthogenys rufigularis (Spiny-cheeked Honey-eater).
Entomyza cyanotis (Blue-faced Honey-eater).
 „ *harterti* (Hartert's Honey-eater).
 „ *albipennis* (White-quilled Honey-eater).
Tropidorhynchus corniculatus (Friar-bird).
 „ *argenteiceps* (Silvery-crowned Friar-bird).
 „ *buceroides* (Helmeted Friar-bird).
Philemon citreogularis (Yellow-throated Friar-bird).
 „ *sordidus* (Little Friar-bird).

Family Motacillidæ: 398.

- Motacilla barnardi* (Barnard's Wagtail).
Anthus australis (Australian Pipit).

Family Alaudidæ: 399.

- Mirafra horsfieldi* (Bush Lark).

Family Alaudidæ—continued

- Mirafra secunda* (Lesser Bush Lark).
 „ *milligani* (Milligan's Bush Lark).
 „ *rufescens* (Rufescent Bush Lark).

Family Ploceidæ: 401.

- Stagonopleura guttata* (Spotted-sided Finch).
Zonæginthus bellus (Fire-tailed Finch).
 „ *oculatus* (Red-eared Finch).
Emblema picta (Painted Finch).
Tæniopygia castanotis (Chestnut-eared Finch).
Stictoptera bichenovii (Banded Finch).
 „ *annulosa* (Black-ringed Finch).
Munia castaneithorax (Chestnut-breasted Finch).
 „ *xanthopyrna* (Yellow-rumped Finch).
 „ *pectoralis* (White-breasted Finch).
Aidemosyne modesta (Plum-headed Finch).
Ægintha temporalis (Red-browed Finch).
 „ *minor* (Lesser Red-browed Finch).
Bathilda ruficauda (Red-faced Finch).
 „ *clarescens*.
Poephila acuticauda (Long-tailed Finch).
 „ *cincta* (Black-throated Finch).
 „ *personata* (Masked Finch).
 „ *leucotis* (White-eared Finch).
 „ *gouldiæ* (Gouldian Finch).
 „ *hecki* (Orange-billed Finch).
 „ *nigrotecta* (Black-rumped Finch).
 „ *neglecta*.
Neochmia phaeton (Crimson Finch).

Family Oriolidæ: 408.

- Oriolus flavicinctus* (Yellow Oriole).
 „ *sagittarius* (Oriole).
 „ *affinis* (Northern Oriole).
Sphecotheres maxillaris (Fig-bird).
 „ *flaviventris* (Yellow-bellied Fig-bird).
 „ *stalker* (Stalker's Fig-bird).

Family Dicruridæ: 410.

- Chibia bracteata* (Drongo).

Family Eulabetidæ: 411.

- Calornis metallica* (Shining Starling).

Family Ptilonorhynchidæ: 412.

- Ptilonorhynchus violaceus* (Satin Bower-bird).

Family Ptilonorhyncoidea—continued—

- Scenopætes dentirostris* (Tooth-billed Bower-bird).
Ælurædus viridis (Cat-bird).
 " *maculosus* (Spotted Cat-bird).
Chlamydodera maculata (Spotted Bower-bird).
 " *guttata* (Yellow-spotted Bower-bird).
 " *nuchalis* (Great Bower-bird).
 " *orientalis* (Queensland Bower-bird).
 " *cerviniventris* (Fawn-breasted Bower-bird).
Sericulus chrysocephalus (Regent-bird).
Prionodura newtoniana (Golden Bower-bird).

Family Paradiseidae: 424.

- Ptilorhis paradisea* (Rifle-bird).
 " *victoriæ* (Victoria Rifle-bird).
Craspedophora alberti (Albert Rifle-bird).
Phonygama gouldi (Manucode).

Family Corvidæ: 428.

- Corvus coronoides* (Crow).
 " *bennetti* (Small-billed Crow).
Corone australis (Raven).
Strepera graculina (Pied Crow-Shrike).
 " *arguta* (Hill Crow-Shrike).
 " *melanoptera* (Black-winged Crow-Shrike).
 " *fuliginosa* (Black Crow-Shrike).
 " *versicolor* (Grey Crow-Shrike).
 " *plumbea* (Leaden Crow-Shrike).
 " *fusca* (Brown Crow-Shrike).
Struthidea cinerea (Grey Jumper).
Corcorax melanorhamphus (White-winged Chough).

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