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THE

BIRDS OF AUSTRALIA,

COMPRISING

THREE HUNDRED FULL-PAGE ILLUSTRATIONS,

WITH

A DESCRIPTIVE ACCOUNT OF THE LIFE AND CHARACTERISTIC HABITS

OF

OVER SEVEN HUNDRED SPECIES,

BY

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PLATE I.

GENUS ANAS. (Linnaeus.)

The type of this genus is the Mallard or Wild Duck of Europe, represented in every part of the globe by one or more species. Australia possesses three.

ANAS SUPERCILIOSA. (Gmel.).

AUSTRALIAN WILD DUCK. Genus Anas.

In this species, which stands as the Australian representative of the Common Wild Duck (Anas boschas) of Europe, we find a bird of cosmopolitan habits, for it is found in every known latitude of the mainland, in Tasmania, New Zealand, and Norfolk Island, besides many less important islands. No other bird enjoys so wide a range of habitat: from the burning sun of the tropics to the glacier ranges of the South it has spread, adapting itself to climatic differences with the hardihood of a Briton.

In habits, manners, and general economy there is no difference between the Australian Wild Duck and the European Wild Duck, the one being as highly esteemed as an epicurean delicacy as the other; but externally there is a wide difference, and no comparison can be made between the two birds. The European male bird is remarkable, during the greater part of the year, for the beauty of his plumage, while our Australian friend follows the custom of the foliage of the country: he has no periodic "fresh-coatings," and consequently never enjoys the pleasure of an entirely new suit. Hence the mixture of the old and new produces a sombre effect, by which means he approaches more closely to the appearance of his mate, between whom and himself there is little perceptible difference.

It is safe to infer that wherever there is water, either as inland lakes or rivers, lagoons and water-holes, or inlets and arms of the sea, the Wild Duck will be found; but the neighbourhood of man and his gun soon has the effect of driving these birds to seek safer homes. In secluded districts they are confiding and even tame, but they soon grow wary.

The bird is either stationary or only partially migratory, yet it is very careful in the choice of a breeding-place, being apparently much influenced by circumstances: sometimes nests of eggs are found among the long grasses and hedges bordering a lagoon or river, sometimes in hollow boles and spouts of trees. Incubation takes place in the spring, and as many as nine eggs are laid by one bird. They are smooth and white with a faint grassy tinge; length, two inches four lines; breadth, one inch seven lines and a-half.

Head very dark brown, a narrow line above the eye, a broad stripe from the bill under the eye, and the throat buff; neck, striated with buff and dark brown; upper surfaces, wings and tail, dark brown margined with buff; tips of the greater wing-coverts, velvety black; speculum, rich bronzy green; under surfaces, brown edged with pale brown; bill, bluish lead colour; irides, bright hazel; legs, yellowish brown, with darker webs.

Habitats: The whole of Australia, Tasmania, New Zealand, Norfolk Island, South Coast of New Guinea.
GENUS STICTONETTA (Reichenbach).

This is a very singular form, comprising one species, which is nearly allied to Chontelusmus. It is a rare bird and was only known in the southern and western colonies when Gould wrote, though he was of opinion that it would be found in the interior,—a supposition that later research has verified—and now such birds are occasionally found as far east as the seaboard of New South Wales.

STICTONETTA NŒVOSA. (Gould.)

FRECKLED DUCK. Genus Stictonetta.

There is no stronger proof of the rarity of this Duck than the fact that we know nothing of its habits or economy. Two specimens came into Gould’s hands from which he could infer very little. He found upon dissection that the stomach was very muscular, and contained small fish and minute shells.

The freckled plumage seems a permanent garb, and not affected by seasonal changes; the speculum common to most male ducks is absent. The egg is longish in shape and slightly swollen about the upper quarter, and has both ends nearly alike; the surface smooth or greasy; the colour of a greenish white tinge; length, two inches six lines and a-half by one inch eight lines.

The whole of the plumage is a freckled dark brown and white, caused by spots with irregular oblong marks of white in the direction of the feathers; the under surfaces are speckled of a lighter shade; primaries, plain wood brown; secondaries and tertaries, freckled at the tip; irides, light brown; bill, greenish grey, becoming much darker at the tip; legs, bluish green.

Total length, seventeen inches.

Habitats: Richmond and Clarence Rivers Districts (New South Wales); Interior, Victoria and South Australia; West and South-West Australia.
PLATE II.

GENUS CASARCA. (Bonaparte.)

THIS is a somewhat rare genus, comprising not more than four species, of which two belong to New Zealand, and one to Australia. The latter represents *Casarca rutila* of Europe.

CASARCA TADORNOIDES. (Gould.)

CHESTNUT-COLOURED SHIELDRAKE. GENUS: CASARCA.

IN this bird we have the finest and handsomest of all the duck tribe indigenous to the southern continent. It is a splendid bird, larger than a Muscovy duck, while its plumage requires the aid of the brush to do it justice.

The Shieldrake is very generally distributed over New South Wales, Victoria, South and Western Australia, and Tasmania, but is nowhere plentiful. It haunts much the same localities as the Radjah, and subsists on the same food, small fish, crustacea, and mollusks; but it seems to have a soul above rush roots.

At one time it used to resort to the bays, rivers, and estuaries near Hobart, though now civilisation has driven it to the inaccessible inland lakes. In South Australia it used to breed every year in the spring, on the alluvial flats around Gawler; in other places it deposits its eggs in the hollows of lofty gum trees.

The nest is formed of down plucked from the bird’s own breast. As many as thirteen eggs have been taken from a single nest; from another, four. The egg is very smooth to the touch, and in colour a light creamy white. Dimensions, two inches and three-quarters long by nearly two inches broad.

The female is smaller than the male, the markings of her plumage less pure, while there is a distinctive ring of white or mottled feathers round the base of the bill.

Head and upper part of neck glossy dark green; base of neck pure white collar; chest, shoulders, and upper part of back rich chestnut; upper and under surfaces, black, finely freckled with straw yellow; wing coverts, pure white; upper and under tail feathers, black, with green sheen; primaries, dull black; secondaries, rich glossy green on their outer webs, black on their inner; tertiaries, deep chestnut on their outer, and grey on their inner webs; irides, dark brown; bill, black; legs, greyish black.

Habitats: New South Wales, Victoria, South Australia, Tasmania, West and South-West Australia, and New Zealand.
GENUS TADORNA. (Leach.)

The only known species in Australia of this very lovely bird approaches so closely to the *Tadorna vulpanser* of Europe, that Gould traversed the decision of Reichenbach, who had bestowed on it the generic term of Radjah, and made it the antipodean representative of the *Tadornas*.

TADORNA RADJAH. (Gould.)

RADJAH SHIELDRAKE.

In this link between the geese and ducks we have a very beautifully plumaged bird, only less handsome than its near congener *Casarea tadornoides*. It is found in large flocks on all the lakes and swamps of North-West Australia and Queensland; it has the same habit as other members of the family of perching on trees and nesting in the hollow boles and branches. As soon as the young are hatched they are carried to the waters by their parents.

The food during the summer is the root of a species of rush, but when the rainy season sets in and the lakes are too full for the Shieldrakes to reach the roots, they spread themselves over the country, and may be seen wading through the mangrove bushes and over the soft mud left by the falling tides, which swarms with crabs and other crustacea, that are most acceptable to the palate of these birds.

The sexes are alike in size and plumage.

Head, neck, wing-coverts, inner webs, and tips of the outer webs of secondaries, and all under surfaces, pure white; irregular collar across breast on to the back, rich deep chestnut, gradually passing into the dull black of the scapulars, tertaries, back, rump, and tail; whole of wing-coverts, back, tail, and primaries finely freckled with chestnut; outer webs of secondaries metallic green, tips white, with a broad dull band of black between; primaries and spurious wing, black; vent and under tail coverts, brown, freckled with white; irides, yellowish white; bill and legs, reddish flesh-colour, darkest at the extremities; some large specimens have a bluish tinge.

Habitats: Derby (North-West Australia), Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District.
PLATE III.

GENUS NETTAPUS. (Brandt.)

THIS is a purely tropical genus, and contains four known species; one in Africa, one in India, and two in Australia.

nettapus pulchellus. (Gould.)


THIS pocket edition of the Goose family is most interesting, as much from its great beauty as from the fact that it unites in its structure the character and disposition of the two previously known species, Nettapus Coromandelanus and Nettapus Madagascaricus, which vary considerably on these points. The form of the head and the elevation of the upper mandible prove its close identity with the Goose, but its largely webbed feet argue it to be strictly aquatic in its mode of life, a contradictory point that was proved by the evidence of Gilbert, who succeeded in shooting a pair at Port Essington. They were swimming in a quiet secluded lake, shut in on all sides by high grass; he killed both at one shot, which was a piece of rare good fortune, as they are extremely shy birds, and at the slightest hint of alarm dive and remain under the water for a considerable time. Added to this they are by no means plentiful about the Peninsula—Gilbert having only succeeded in obtaining one prior to this. In dissecting the female he found a nearly developed egg in the ovarium, a circumstance which led him to search the neighbourhood for a probable nest, and soon found one built in the long grass about a foot above the water, the bottom of the nest resting on the surface; it was made of long dried grasses, slightly hollowed to receive the eggs, but was quite destitute of any lining. One found subsequently by the natives and brought to him was lined with feathers, and contained six white eggs, one inch and seven-eighths long by one inch and three-eighths broad.

A later authority, Archd. J. Campbell, makes the eggs slightly larger, his measurements being one inch ten lines and a-half, breadth, one inch four lines and a-half.

Mr. Gregory's experience of the Pigmy Goose is decidedly opposed to Gilbert's. During his expedition "this elegantly symmetrical water-fowl was only found in the Sherlock River. It is remarkable for its tameness and for its light and sportive movements in the water. It was seen in flights of eight or ten together."

The sexes closely resemble each other, though there are some noticeable variations of plumage.

The male has the head greenish brown, barred indistinctly with yellow; patch of creamy white below the eye; neck, back, and wings, deep metallic green; feathers of the chest, sides, and back of the neck, white with fine greenish black concentric circles; flanks and tail coverts, the same only more decidedly marked; tail, black glossed with green; under surfaces, dirty white; under tail coverts, black; irides, dark brown; bill, dark greenish grey; legs and feet, blackish brown, with a greenish white nail; under mandible, greenish grey, blotched with a lighter colour, 

The female has the top and back of the head and a stripe down the back of the neck, dark brown; there is no white spot beneath the eye; the chin and upper part of the throat, white mottled with brown; bill, soft grey with a yellowish base; lower mandible, bluish grey; tarsi, fleshy white on the sides, back and front blackish brown; feet, dark brown.

Total length, twelve inches and a-half.
Habitats: Derby, North West Australia; Port Darwin, Port Essington, Gulf of Carpentaria, Cape York. Rockingham Bay, South Coast of New Guinea.

NETTAPUS ALBIPENNIS. (Gould.)

*WHITE-QUILLED PIGMY GOOSE. Genus: Nettapus.*

This species is so closely allied to the *Coromandelianus* of India and Java that the same name was bestowed upon it, but inasmuch as it is much larger, and has a corresponding larger white patch on the primary wing feathers, *Albipennis* was considered by Gould the more appropriate designation.

Though this little goose is very common to the eastern portion of the continent, it seems to have escaped the observation of naturalists, Gould himself confessing that it was one of the few birds in New South Wales he was unable to observe in a state of nature. Consequently it follows that we are unable to give any particulars of its habits and economy, though we may safely infer that what is true of the allied species, *Nettapus Coromandelianus,* is also true of this bird. The former frequents weedy and grassy tanks in moderate or rather large flocks, flies with great rapidity, uttering a cackling call, and is, when undisturbed, very familiar and unwary. It breeds generally in the boles of trees, often at some distance from water, and lays eight or ten white eggs."

The male is so much larger and more brilliant than his mate that the sexes are easily distinguished.

Top of head brown, showing patches of lighter brown; cheeks and neck dirty white, lightly freckled with brown towards shoulders, the brown increasing till it forms a decided ring dividing the white of the neck from the white of the breast and under surfaces; back and wing coverts brown, showing metallic lights; shoulders, tertaries, and secondaries, bright metallic green; primaries, white, tipped with brown; flanks lightly freckled with grey; abdomen and vent light fawn; patch of brown on under tail coverts; upper tail coverts finely freckled brown; tail, wood brown; bill, black; feet, varnish brown; irides, chestnut red.

Habitats: Rockingham Bay, Port Denison, Wide Bay District; Richmond and Clarence River Districts New South Wales.

GENUS CHLAMYDOCHEN. (Bonaparte.)

This genus is nearly allied to the genus *Barnicle,* that Gould called the only known Australian species by the name *Barnicle* in his "Birds of Australia," but later he adopted the term *Chlamydochen,* as being more suitable. Ramsay departs from both names in preference for *Branta.* As a matter of fact our solitary species differs in many minor respects from the true *Barnicle.*

CHLAMYDOCHEN JUBATA.

*MANNED GOOSE, or WOOD DUCK.*

This bird is common to the entire mainland, but has never been seen in the islands of Bass' Straits or in Tasmania, therefore we may safely assume it is not migratory. In New South Wales it was plentiful at one time, and in South Australia it is one of the commonest of water birds about the rivers of the interior.
It moves in companies of from six to thirty, feeding on grasses and aquatic plants, snails, and insects, which it finds in the neighbourhood of the rivers. Its flesh is capital eating. Its voice is a loud barking note, quite unlike the note of any other Goose, and quickly attracts attention. Its disposition is inclined to be tame, though the fact of its resorting to the topmost branches of tall trees in the midst of the bush, reads like a refutation; as does also its choice of a hollow in a large tree for its nest, the spot chosen being often far from water, and in the midst of dense bush.

With reference to this bird Archibald Campbell writes in his pamphlet on the "Oology of Australian Birds:"

"Egg, light cream colour, surface a little smooth or greasy, nearly oval in form. Two eggs taken from a clutch in Queensland measured (1) two inches three lines, by one inch seven lines and a-quarter; (2) three inches two and three-quarter lines, by one inch seven lines. Last season a Wood Duck's nest was taken from a dead red gum tree standing in a lagoon, near Sale, Gippsland. The nest, which was composed of a considerable abundance of light coloured down, was three or four feet in from the entrance of a hollow spout. Clutch, nine eggs, two of which were slightly darker in colour than the Queensland example, and measured (1) two inches one line and a-half, by one inch six lines and a-half, and (2) two inches one line by one inch six lines and a-half."

The sexes differ much in size and the beauty of their plumage, the male being far finer than the female in both respects.

Head and neck, rich brown; the mane-like feathers on the back of the neck, black; chest, upper part of breast, soft grey, each feather having an elongated brown marking; upper half, light brown; lower, finely fringed with white, or freckled; thighs and under wing feathers, finely freckled black and white; on the breast the apex of a triangular patch of dark brown feathers extending to the vent; upper part of back, dark grey, changing to brown and black towards the tail; lesser wing coverts, tertial and scapularis, brownish grey; the scapularis very broadly margined on their external webs with deep velvety black; lower part of back, rump, upper tail coverts, and tail, deep black; greater wing coverts, dark grey, tipped with white; spurious wing and primaries, very dark brown; outer webs of secondaries, rich metallic green, broadly margined with white, their inner webs grey; bill, olive brown; irides, very dark brown; legs and feet, dark brown.

The female has the plumage largely freckled with pale brown cuckoo markings; the shoulders tipped with black; the lower part of the back, black; primaries, brown; secondaries and greater coverts, tipped with white; centre of the abdomen and under tail coverts, white.

Habitats: Derby, North-West Australia, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, Richmond and Clarence River Districts, New South Wales, Interior Victoria, South Australia, Western and South-Western Australia.
PLATE IV.

GENUS ANSERANAS. (Lesson.)

THIS genus, like Cereopsis, is peculiar to Australia, and contains only one species.

ANSERANAS MELANOLEUCA. (Gould.)

SEMI-PALMATED GOOSE.

THIS is a very fine bird, and was once plentiful all over the northern, eastern, and southern colonies; but the same causes that led to the partial extirpation of the Cereopsis Goose, are gradually thinning out the ranks of this bird. At present the Torres Straits' Coast is most affected by it; there it occurs in countless multitudes, and forms one of the staple articles of food to the aborigines, who spear it on the wing with wonderful dexterity. Leichhardt and his party found it a most valuable addition to their larder in their perilous journey across from Moreton Bay to Port Essington. He writes thus of the native mode of capturing them: "It seems that they only spear them when flying, and always crouch down when they see a flight of them approaching; the geese, however, know their enemies so well, that they immediately turn upon seeing a native rise and put his spear into the throwing-stick. Some of my companions asserted that they had often seen them hit their object at the almost incredible distance of two hundred yards."

It is a well-known fact that many natatorial birds possess a very singular conformation of the trachea (windpipe); but no species shows more remarkable convolutions and situation of the organ in question than the Semi-palmated Goose. "The trachea," says Yarrell, in vol. xv. of the Linnean Transactions, p. 383, "is situated on the outside of the pectoral muscle, under the skin, sufficiently raised under the wing that respiration would not be impeded when the bird rested with its breast on the ground, the parallel tubes being firmly attached both to the muscle and the skin by cellular tissue. The clavicle of the right side of the bird is of the usual character, but that on the left is both shorter and wider, having an aperture about the middle, the sides diverging with a projecting point on the inner side, to which the tube of the trachea is firmly attached, about two inches above the bone of divarication. The trachea lying on the left side of the bird, the lower portion of the tube in its passage to the lungs crosses the left branch of the furcula at a right angle, but becoming attached to this projection of the clavicle receives from the point described its centrical direction into the body. The whole length of the windpipe is four feet eight inches."

It is noticeable that there are fewer convolutions in the young bird.

There are local variations in size, those from the north being smaller birds than those from the south, while the knob on the bill rises higher on the forehead.

Egg, brownish white; length, three inches and three-sixteenths (long), two inches and fifteen-sixteenths (round); breadth, two inches and two-sixteenths (long), two inches and two-fifteenths (round).

Head, neck, wings, centre of the back, tail and thighs, glossy greenish black, the rest of the plumage white; irides, blackish brown; bill, reddish brown; feet, yellow.

Habitats: Derby, Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River District, New South Wales, Interior, Victoria, and South Australia.
GENUS CEREOPSIS.  

(Lath.)

Of this family Gould says: "But one species of this singular and strictly Australian fowl has yet been discovered, and I do not think it likely that another will be found."

CEREOPSIS NOVAE HOLLANDIE.  (Lath).

CEREOPSIS GOOSE.  Genus: Cereopsis.

In the early days of Australia this most peculiar form of Goose attracted the attention of every navigator who passed through Bass' Straits, for not only was it very plentiful on the islands and mainland, but it was also a fine eating bird, and so tame that it might be knocked over with a stick, or even caught by hand. Unhappily, these virtues proved its bane, for the work of destruction was carried on systematically, till at the present the Cereopsis Goose is nearly extinct in the settled districts.

In its habits it is terrestrial rather than aquatic, passing much of its time on the ground and seldom taking to the water, and is strictly a vegetable feeder, subsisting principally upon grasses that thrive near the coast; consequently its flesh is most delicate. It can be readily domesticated, and breeds as well in captivity as in freedom, but it is by no means a desirable addition to the farmyard, as its disposition is most quarrelsome, it will attack even pigs, dogs, or any other animal that approaches, inflicting severe wounds with its sharp, hard bill.

Its voice is anything but melodious, being "deep, short, hoarse, clangent, and disagreeable."

The eggs are a smooth creamy white, both ends being nearly alike in shape, with a good bilge; the shell a little limey. Length, three inches and a-quarter by two inches and a-quarter.

The sexes are alike in plumage; the chicks are covered with a soft fawn down, sometimes marked with dirty dark brown stripes on the head and back; eyes and bill, black: they assume the adult plumage at a very early age.

The entire plumage is a light silvery fawn, lightest on the head and deepening to blackish brown on the tail, the under tail coverts, the tips of the secondaries, and the apical half of the primaries; the wing-coverts and scapularies have an oblong spot of brownish black near the tip; the feathers of the back edged with pale brownish grey; beak, black; nostrils, lemon-yellow; irides, vermillion; eye-lash, dark brown; legs, reddish orange; toes, webs, claws, and a streak up the front of the legs, black.

Habitats: Victoria, South Australia, and Tasmania.
PLATE V.

GENUS CHENOPSIS. (Wagl.)

MA NY authorities prefer to classify the one species of this genus as Cygnus, but inasmuch as the Black Swan departs from the true swans in many respects, Gould adopted Wagler's generic term by preference.

CHENOPSIS ATRATA. (Wagl.)

BLACK SWAN. Genus Chenopsis.

I N this bird we have one of those peculiar forms of Antipodean life which distinguish our Continent from the rest of the world. In shape and movement it is a strikingly handsome and graceful bird, while its uniform sooty-black plumage contrasts strikingly with its scarlet bill.

It is very generally distributed over the Continent and Tasmania, but it is more plentiful in the southern and western colonies; indeed, until within recent years, the supposition was that the Black Swan was unknown in the northern districts.

The earliest record we have of this bird dates as far back as 1698, and is found in a letter written by Mr. Witsen to Dr. M. Lister, in which he says: "Here is returned a ship, which by our East India Company was sent to the south land called Hollandia Nova;" and adds that Black Swans, Parrots, and many Sea Cows were found there. Nearly thirty years later two swans were taken alive to Batavia from near Dirk Hartog's Bay. Cook, too, noticed it in several places on the coast. But in spite of the universal interest felt in this bird by naturalists, little or nothing is known of its habits and economy in its wild state.

It is to be found commonly wherever there are rivers, estuaries of the sea, lagoons, and pools of water of any size. Sometimes flocks of many hundreds may be seen congregated in one locality, but that is usually near the sea, where shallow arms pass the beach line and spread into broad, shallow lagoons, sheltered from rough winds, and far from the haunts of man. The natives were not nearly so formidable a foe in their day as the white man is in his. He sees in the thick soft down of the Black Swan's breast a rich harvest, and pursues the poor birds with wanton destruction. From this cause they are gradually becoming scarce, and are never seen in the neighbourhood of settled districts.

Its flight is rapid and high, the course being a direct one. Its disposition is gentle and confiding, unless ill-treated or intruded upon in its home.

The breeding season lasts from October to January, when a clutch of from five to eight eggs is laid in a large nest made of flags, rushes, and other sedgy plants, and placed on an island, or some isolated spot. The eggs are pale green, stained all over with buffy brown. Length, four inches and a-half, by two inches and three-quarters. The chicks when first hatched are covered with a greyish down.

These are singularly hardy birds, and become quickly acclimatised; this quality, with their exceedingly handsome appearance, makes them most popular aviary birds. They breed readily in captivity, though few seem to have surpassed Mr. Samuel Gurney's success in breeding on his estate at Carshalton, on the Wandle, in Surrey. He says: "They were purchased from Baker, of Leadenhall Market, in 1851. They did not breed till 1854, when they laid their first egg on January 1st. It was a most severe winter—snow on the ground, and intense frost nearly the whole time they were sitting. They hatched their young during the greatest cold of
that winter, from which they did not suffer, though they had no shelter of any kind, and their nest was fully exposed to the east wind. Out of the ninety-three young ones hatched by them up to this present year, 1862 (inclusive), about half that number have been reared. Some of them have died from disease; but most of them have been killed by the old ones dragging them about in the fields, when they have fallen into small holes on their backs, and have not been able to recover themselves. They have bred sixteen times in seven years, having laid one hundred and eleven eggs. The nest was composed of a large heap of rushes, collected by themselves, to which they were continually adding during incubation. The male and female would sit alternately on the nest. The male bird was found dead on February 17th, 1862. No cause could be assigned for his death, as he had been in perfect health."

The so-called black plumage is of a shabby hue, and is never really black, for each feather is largely fringed with brownish grey, which gives a dingy effect; the primaries and secondaries are pure white; the under surface of the wing coverts, and the bunch of curled feathers near the tail, are silvery grey on their under sides; bill, bright pinkish-red, crossed near the tip with a broad band of white; extremities of mandibles, white; irides, scarlet; eyelashes and lores, pinky scarlet; feet, black.

Habitats: Derby, N.W.A.; Rockingham Bay; Port Darwin; Wide Bay District; Richmond and Clarence River Districts, New South Wales; Victoria and South Australia; Tasmania; West and South-West Australia.
So far as is known to the contrary, the only species of this genus forms the solitary remnant of a group of birds that were at one time numerous in New Zealand, and the neighbouring islands as far north as Norfolk Island.

**NOTORNIS MANTELLI.** (*Owen*).

*Moho. Genus Notornis.*

A peculiar interest attaches to this bird from the fact that it was known for some time only to naturalists through some fossilised or semi-fossilised remains upon which they constructed a theory much as they did in the case of the Dodo. Then Mr. Walter Mantell was so fortunate as to come across a living specimen during his trip to New Zealand, which is still the only representative we have of what may be considered as an almost extinct species.

Under these circumstances, our knowledge of "the last of the Mohicans" is somewhat barren. Taken verbatim from the "Proceedings of the Zoological Society of London, 1850," it amounts to this:

"This bird was taken by some sealers who were pursuing their avocations in Dusky Bay. Perceiving the trail of a large and unknown bird on the snow with which the ground was then covered, they followed the footprints until they obtained a sight of the *Notornis*, which their dogs instantly pursued, and after a long chase, caught alive in the gully of a sound behind Resolution Island. It ran with great speed, and upon being captured uttered loud screams, and fought and struggled violently; it was kept alive three or four days on board the schooner and then killed, and the body roasted and eaten by the crew, each partaking of the dainty, which was declared to be delicious. My son fortunately secured the skin."

"Mr. Walter Mantell states, that, according to the native traditions, a large Rail was contemporary with the *Moa*, and formed a principal article of food among their ancestors. It was known to the North Islanders by the name of 'Moho,' and to the South Islanders by that of 'Takahe;' but the bird was considered by both natives and Europeans to have been long since exterminated by the wild cats and dogs, not an individual having been seen or heard of since the arrival of the English colonists. That intelligent observer, the Rev. Richard Taylor, who has so long resided in the Islands, has never heard of a bird of this kind having been seen. In his 'Leaf from the Natural History of New Zealand,' under the head of 'Moho,' is the following note: 'Rail, colour black, said to be a wingless bird as large as a fowl, with red beak and legs; it is nearly exterminated by the cat; its cry was keo keo.' The inaccuracy and vagueness of this description prove it to be from native report and not from actual observation. To the natives of the pahs or villages on the homeward route, and at Wellington, the bird was a perfect novelty and excited much interest. I may add, that upon comparing the head of the bird with the fossil cranium and mandibles, and the figures and descriptions in the 'Zoological Transactions,' my son was at once convinced of their identity, and so delighted was he by the discovery of a living
example of one of the supposed extinct contemporaries of the Moa, that he immediately wrote home, and mentioned that the skull and beaks were alike in the recent and fossil specimens, and that the abbreviated and feeble development of the wings, both in their bones and plumage, were in perfect accordance with the indications afforded by the fossil humerus and sternum found by him at Waningagoro, and now in the British Museum, as pointed out by Professor Owen in the Memoirs above referred to.

"In concluding this brief narrative of the discovery of a living example of a genus of birds once contemporary with the colossal Moa, and hitherto only known by its fossil remains, I beg to remark that this highly interesting fact tends to confirm the conclusions expressed in my communications to the Zoological Society, namely, that the Dinornis, Palapteryx, and related forms, were coëval with some of the existing species of birds peculiar to New Zealand, and that their final extinction took place at no very distant period, and long after the advent of the aboriginal Maories."

This bird resembles a Porphyrio in the shape of its bill and general colouring, and a Tribonyx in the structure of its feet, while in its feeble and undeveloped wings and the form of its tail, it differs from both.

Gould is of opinion that the habits and economy of the Moho would resemble the Tribonyx rather than the Porphyrio; that from its exceeding rarity it is of a shy, retiring disposition; that its powers of flight being feeble, it depends upon its swiftness of foot for safely escaping its natural enemies; that from the thickness of its plumage and the great length of its back feathers, we may argue that it prefers low, damp situations, marshes, banks of rivers, and the shelter of dripping ferns. It is probably partly aquatic, but from the structure of its feet, it is more terrestrial in its habits than members of the genus Porphyrio.

Head, neck, breast, upper part of the abdomen, and flanks, purplish blue; rest of upper surfaces, wing coverts, and tertaries, dark olive green tipped with verditer green; a band of rich blue at the nape of the neck separates the purplish blue of the head from the green of the body; wings, rich deep blue; greater wing coverts tipped with metallic green, forming crescentic bands on the expanded wings; tail, dark green; lower part of abdomen, vent and thigh, dull bluish black; under tail coverts, white; bill and feet, bright red.

Total length of body, twenty-six inches.

Habitats: Lord Howe Island, Norfolk Island, New Zealand.
PLATE VII.

GENUS PORZANA. (Vieill.)

The *Porzana* are a genus of birds having representatives in every quarter of the globe, those in Australia very closely resembling the Indian and European species. Like the Rails, they construct open nests of grass, reeds, or other aquatic vegetation, disposed among rushes or herbage in creeks or swamps, or on the banks of rivers. The clutch averages about four or five eggs.

PORZANA TABUENSIS. (Gmel.)


This Crake is more widely distributed than any other, not merely in Australia, but over the Polynesian Islands of Society, Tonga, and Fiji; and, as a consequence, has received more “specific appellations” than any other Rail.

Its habits are similar to those of other Crakes, and, though tolerably abundant, is seldom seen. It swims readily if forced to take to the water, and sports about among the floating leaves of aquatic plants with much grace, in search of snails and other mollusks, of which its food consists, with the addition of insects, seeds, young grass, and other vegetable stuffs. Only on compulsion does it fly.

Gould never succeeded in getting any eggs, and was of opinion that they would prove when found to differ from the eggs of the typical *Porzana*, and also from the true Rails. In this Mr. Campbell has proved him to be mistaken, as he writes: “The eggs of the Little Crake and the Tabuan undoubtedly appear to be typical of the true *Porzana* as contrasted with the Spotted Crake and White-eyebrowed, which appear oologically different, and, as Dr. Rutter remarks, with reference to the last-named, they approach in their type those of the Gallinulinae, and form a well-defined oological sub-group of the family Rallidae, or Rails.” The nest of the Tabuan is found near water, constructed of soft grass, and generally situated under a thick tussock of grass, on the lee side, where it droops over. The complement of eggs appear to be four in number. Egg, in shape, obtuse; ground colour, dirty white, streaked and mottled all over with light brown and light chestnut. Length, one inch two lines; breadth, eleven lines.

In appearance this Crake differs slightly in its outlines from its congeners, being a much fuller-bodied bird, with longer legs, and shorter thighs and claws.

The sexes are alike, and the young when fully fledged are hardly to be distinguished from their parents.

All under surfaces, dark slate grey; the throat, washed with a lighter shade; all upper surfaces, rich ferruginous brown, growing more brown on tail and wings; irides, red; bill, black; feet and legs, dull brick red.

Habitats: Rockingham Bay, Wide Bay District; Richmond and Clarence River Districts, New South Wales; Victoria and South Australia; Tasmania; West and South-West Australia.
PORZANA PALUSTRIS. (Gould.)

LITTLE WATER CRAKE. GENUS: Porzana.

THIS is a much smaller species than the last, but sufficiently like in plumage to be mistaken for an immature specimen, though the colours and markings are less uniform.

Inhabiting much the same localities as the Spotted Water Crane, the Little Water Crane is much less common on the mainland than in Tasmania, owing to the former country being comparatively riverless, and less suitable to its habits. If possible it is a greater reclusus than its larger congener, and confines itself to the densest morasses. Like the rest of its family its swims easily, and escapes many a natural enemy by means of diving. On the ground it threads its way through reeds and tangle with remarkable quickness, so that it may be considered as both terrestrial and aquatic.

The nest is flat, and formed of various grasses; in it are laid four or five eggs, nearly uniform, brownish olive. Length, twelve lines and a-half; breadth, nine lines and a-quarter.

Head and back, brown, finely streaked with blackish brown; sides of neck and shoulders, light fawn; back, dark brown, margined with rusty brown and irregular oblong white marks; rest of upper surfaces dark brown, fringed with rusty brown; two or three of the primaries tipped with white; throat, lores, chest, and breast, light slate; lower part of abdomen and flanks, blackish grey, barred with white; irides, red; bill and feet, olive brown.

Total length, six inches.

Habitats: Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria, South Australia, Tasmania, West and South-West Australia.

PORZANA FLUMINEA. (Gould.)

SPOTTED WATER CRAKE. GENUS: Porzana.

THE natural disposition of this little bird inclines it to live among swampy grounds, reed-beds, or the neighbourhood of rivers densely clothed with undergrowth, consequently it is a work of the utmost difficulty to flush it from its hiding place. Added to this, the perfect accord of its grey and brown plumage with the leaves and stems of its surroundings, provides a disguise and means of defence that makes detection most difficult.

The Spotted Water Crane is found only in the eastern and southern colonies as far as South Australia, and in Queensland does not extend farther north than Port Denison, from which fact we may assume that it affects temperate rather than torrid latitudes.

From the difficulty of observing its habits, little is known of its economy, but we may safely argue that it is the same as the English representatives.

Of its nidification somewhat is known. Mr. A. E. Brent of Tasmania was very successful, through the aid of a Gordon setter, “in finding three of the Spotted Crane’s nests in the reedy lagoons formed by the overflow of the Derwent, and therefore had ample opportunities for identifying the birds. He states that two nests contained each four eggs and the other five. The nests were among bunches of rushes, partly on the water, and constructed of aquatic weeds for foundation, and lined with soft ‘band’ grass, which was damp. A staging or track led up from the water to the nest. In Queensland a nest was found among water-lilies and rushes, and was composed of dead rushes in a wet state.”
Egg, pale olive, very minutely freckled with reddish brown, and also fairly distributed with larger markings, or round blotches of reddish or purplish brown. The shell is comparatively strong, finely grained and polished, and might be taken for a diminutive Black-backed Porphyrio's egg, so close is the resemblance. Length, one inch three lines; breadth, ten lines and a-half.

The sexes are precisely alike.

All the upper surfaces dingy olive green, with a broad stripe of blackish brown down the centre of each feather, and irregular white markings, that grow more regular on the lower part of the back; throat, chest, and breast, slate grey; abdomen and thighs, greyish black barred with white; tail, dark brown, margined with light brown and vandyked on the outer edge with white; under tail coverts, white; primaries and secondaries, brown; irides, bright red; bill, orange red at base and dark olive green for the remainder of its length; feet, dark olive green.

Total length, seven inches.

Habits: Port Denison, Wide Bay District, Richmond and Clarence River Districts (New South Wales), Interior, Victoria, South Australia, Tasmania.

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**GENUS ERYTHRA.** (Reichenbach.)

Gould, in his "Birds of Australia," classifies this Rail as a *Porzana*, under the specific of *leucophrys* but later he determined to follow the views of Professor Reichenbach, and classify it as a distinct genus, because of its peculiar markings. Only one species has been found in Australia, and that within the northern tropic; another is supposed to exist in the Indian Isles.

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**ERYTHRA QUADRISTRIGATA.** (Reichenbach.)

*WHITE EYEBROWED WATER CRAKE. Genus: Erythra.*

Not only does this Crake differ from other Rails in the marking of its plumage, but there are also distinct differences of disposition. Instead of secreting itself in the densest river vegetation, it affects the roots of the thick mangrove clumps that line the banks of the northern rivers, and is a fearless familiar bird, caring little about intrusion, and will run up a branch to gaze at the intruder, uttering at the same time its loud chattering note that sounds like "catche, catche." It is not unusual to hear several of these birds uttering their note in chorus, each one seemingly bent on drowning the noise of the other.

The stomach is very muscular, as it should be to digest the food they prefer—ticks and slugs, leaves of water plants, and sand—which they obtain by swimming or wading.

From the fact that nests containing eggs partly incubated have been found in April, it is safe to assume that more than one brood is reared in the year. The nests are shallow, and made with rushes covered with fine grass, or leaves of rice straw, about three inches and three-quarters in diameter, by one inch and three-eighths deep. The egg is somewhat elongated in form, with the ends well rounded, the ground colour of a bright clay yellow, marked with specks or dots, usually close together, and partly confluent, and blotches of reddish brown. The shell is rather thin, of a fine texture, and rather lustrous. Length, one inch three lines; breadth, ten lines and a-half.
Mr. Archibald J. Campbell, to whom we owe this interesting information, says: "It is of great importance that eggs of all these diminutive waders are now known, because 'doctors differ,' and the birds have been placed under six or more genera. Gould, who was dubious of his own classification, and alluding to one of the Crakes, stated, 'I can assure them (the rising ornithologists, and I may add oologists, of Australia) that the study of the eggs will greatly assist them in assigning the birds to which they belong to their proper genus.'"

The young birds differ from the adults in having faint marks on the face, in having the crown of the head brown instead of brownish black, and the sides of the neck and flanks deep buff instead of grey.

The face has a streak of greyish white from the upper mandible extending behind the eye; from the eye to the gape, a broad patch of black; crown of the head and upper surfaces, brownish black; each feather, except those on the head, margined with a light reddish tinge, which is very conspicuous on the wing coverts and shoulders; wings, pale brown; sides of the head, back, and breast, grey; chin and centre of abdomen, white; flanks and under tail coverts, rufous red; upper mandible, reddish brown; legs and feet, olive green, splashed with bright ash colour.

Total length, six inches and a-half.

Habitats: Port Darwin and Port Essington, Cape York, Rockingham Bay, Port Denison, Wide Bay District.
THIS genus was established for the sole purpose of accommodating a singular species of Rail, inhabiting two localities in the Northern Territory.

EULABEORNIS CUSTANEIVENTRIS. (Gould.)

CHESTNUT-BELLIED RAIL. GENUS: Eulabeornis.

HERE we have a very large bird, quite the king of Rails as to size, and, like the kingly race, by no means common. It inhabits the low muddy shores and mangrove swamps of the northern coast of Australia, the first being killed at the Gulf of Carpentaria by Rear-Admiral Stokes, R.N., who forwarded it to Gould, by whom it was regarded as a great prize. Though he had been able to procure some eggs, the extreme shyness of the bird had prevented his getting a specimen. Not only is it very shy, but also very wary, so that even to catch a glimpse of it in the dense vegetation is a rare achievement. It is a marvellously rapid runner, and is easily alarmed.

The eggs are rather long in shape, of a pale pinky white colour, dotted with reddish chestnut at wide intervals, and some of them appearing as if beneath the surface of the shell, which gives those spots a darker shade. Length, two inches one line and a-half; breadth, one inch seven lines and a-half.

Head and neck, ashen grey; all the upper surfaces, wings, and tail, olive; all under surfaces, greyish chestnut; bill, yellow at the base, horn at tip; legs and feet, brown.

Total length, nineteen inches.

Habitats: Port Darwin, Port Essington, Cape York.
This family belong sixteen species in Australia, comprised under the following genera:—Porphyrio, Fulica, Gallinula, Rallus, and Porzana, all of which have their European representatives; and Parra, Eulabeornus, and Tribonyx—three genera, of which the first is common to India and the Indian Islands, and the other two are confined, as far as we know, to Australia.

GENUS HYPOSTŒNIDIA (Reichenbach).

Cuvier classified this genus as Rallus pectoralis, but as it is very different in structure and habits from the true Rails—more nearly approaching the Crex paratensis of Europe—Reichenbach was fully justified in erecting it into a new genus. Allied species of this form exist in New Zealand, the Celebes, and Fiji.

HYPOSTŒNIDIA PHILIPPENSIS (Linnaeus).

PECTORAL RAIL. GENUS: HYPOSTŒNIDIA.

This Rail is migratory in its habits, passing one half of the year in the southern and the other in the northern part of the colonies. In August it appears in New South Wales, spreading from thence southward, and in February it makes its way northward again.

It is very generally dispersed over the Continent, no locality seeming unsuitable to its habits, which, with its actions and general economy, approximate closely to the Land Rail (Orex pratensis) of Europe. This Pectoral Rail may be found on grassy flats between hills, and in damp spots where the vegetation is most dense. It has a shy retiring disposition, and escapes pursuit by running through the grass; but if flushed from this retreat, it flies low and straight, with a flapping motion of the wings.

The food consists of grasses, seeds, and a good deal of sand, taken probably as a digestant. The flesh of the bird is very good eating, and fair game to any sportsman, as pointers will stand to it without hesitation.

There is scarcely a perceptible difference in the plumage of the sexes, and the young assume the adult dress at a very early period.

This Rail does not seem to distress itself much about a nest, the eggs being deposited on the ground. Four or six make up the clutch. They are cream coloured, largely blotched with irregular marks of dark chestnut at the larger end, and a few smaller ones are distributed over the rest of the surface. Length, 1 inch 5 1/2 lines; breadth, 1 inch 1 1/2 lines.
Top of the head and all upper surfaces olive, many of the feathers having blackish-brown centres, and the outer edges of the feathers barred brown, and white, on the neck and back, giving a flecked appearance; primaries, dark brown, two outer ones crossed by narrow bars of white, and the remainder with broad bars of cinnamon red; throat and neck, grey; chin and stripe over the eye, whitish-grey; at the base of the bill a broad stripe of red sienna begins, passes through the eye, and unites at the occiput; all under surfaces, brownish-black, crossed by narrow well-defined bars of greyish-white; on the breast a red sienna patch; thighs and vent, buff; under tail-coverts, black, barred with white and tipped with buff; bill, red at the base, passing into brown at the tip; irides, reddish-hazel; feet, brown.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales; Interior, Victoria and South Australia, Western and South-Western Australia, Lord Howe Island, Norfolk Island, New Zealand.

GENUS RALLUS (Linneus).

THIS genus is represented in Australia by two species, the type of which is R. aquaticus. It is purely an inhabitant of rivers, marshes, and lagoons.

RALLUS BRACHIPUS (Swainson).

LEWIN'S WATER RAIL.

THIS is not so large a bird as the last, but otherwise sufficiently alike to establish a relationship. It is found abundantly in Tasmania, and on the coast of the mainland as far north as Southern Queensland.

Swainson has described this bird under two names, “Brachipus” and “Lewinii.” The first appellation was given apparently in consequence of the shortness of the toes, a peculiarity that seems only to pertain to those birds inhabiting small islands, where the nails become much worn and blunted by traversing stones and gravelly ground; as on the mainland, where the ground is softer, the nails remain intact.

The stomach is rather muscular, and the food consists of aquatic insects and small shellfish, and possibly the leaves of water plants, with newts, frogs, and small fish.

Gould differs in his description of the eggs from later authority, and to be just to both we will quote each experience.

“A nest I found,” says Gould, “in a lagoon near the river Derwent, in Tasmania, was formed of flags and other aquatic vegetables, placed in a low tuft of rushes, and contained two eggs, one inch and a quarter in length by seven-eighths of an inch in breadth, and of a pale olive colour, blotched all over, but particularly at the larger end, with reddish and dark brown.”

A. J. Campbell, in his “Oology of Australian Birds,” writes:—
"Having received the eggs of this pretty Rail from different quarters, I have deemed it necessary to describe them, because in none can I discern the pale olive ground colour mentioned in Gould and elsewhere, and which is probably referable to the eggs of the Tabuan Water Crake. Lewin's Rail constructs a nest of very fine grasses among the rushes of a swamp. The top of the nest is about six inches above the surface of the water, and generally has a singular stage or ladder leading down from it. Clutch of eggs, from four to six in number.

"Egg, oval in form, shell fine, and surface slightly lustrous; ground colour of a beautiful pinkish-white, fairly marked with spots and blotches of chestnut, light carmine, and dull purple, the last colour appearing as if beneath the shell's surface. Length, 1 inch 3½ lines; breadth, 1 inch."

The male has the head and sides of neck rufous, striated with black on the crown; throat and breast, bluish grey; abdomen, thighs, vent and tail-coverts, blackish-brown, barred with white, the barring growing finer and more indistinct towards the vent; back and tail, brown, striped with olive; shoulders and wings, irregularly barred with black and white like under surfaces; primaries, brown; bill, brownish-red; irides, hazel; feet, flesh colour, becoming darker about the toes. The female is a little less bright in colour.

The young birds, when fully fledged, have the rufous colour on the neck undeveloped, and the barring on the wings, flanks, and abdomen is very faint. The chicks look like bales of silky black down.

Habitats: Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia.

RALLINA TRICOLOR (G. R. Gray).

TRICOLOURED RAIL. Genus: Rallus.

THIS is a bird of restricted habitat, whose home in the Far North is yet so little explored that naturalists have been able to gather but few facts as to its habits or economy.

It was first seen at Cape York, and a skin forwarded to Gould by Mr. C. Coxen; upon comparing which with skins brought from New Guinea and the Aru Islands, Gould found all three specimens were identical.

About Somerset the Tricoloured Rail affects the dry scrubs which border a small creek, and once a nest containing white eggs was discovered there. If these were this bird's eggs, it is the first instance on record of a Rail's eggs being colourless. Among the natives this bird is known as "Tangata," from the peculiar note it utters at night.

The sexes are alike in plumage, but, like the rest of the Rail family, the female is considerably smaller than the male.

Head, neck, nape, and breast, ferruginous red, becoming pale at the throat; under surfaces, light olive brown, each feather transversely fringed with reddish buff; thighs, lighter brown, spotted with dull buff; under wings, spotted with transverse oval spots that show like bars when the wings are extended; back, wings, and tail, dark olive brown; bill, dark green, fading into yellow at tip; legs and feet, greenish-black; irides, red.

Habitats: Cape York, Rockingham Bay, south coast of New Guinea.
PLATE X.

GENUS GALLINULA (Brisson).

The true Gallinula, of which the British Moorhen (G. chloropsis) is a good type, are commonly found all over the world, except in Australia, where the genus is represented by a peculiar species.

GALLINULA TENEBROSA (Gould).

SOMBRE GALLINULE.

As far as observation and research have yet penetrated, this bird seems to be very local in its haunts, but is otherwise widely distributed over the Eastern Continent. It affects the sedgy banks of rivers, creeks, and waterholes.

This Sombre Gallinule is easily distinguished from any other members of the family by the total absence of white marks on the flanks. It is also a good deal larger than the Moorhen of Europe, and the garter above the knee is more vividly coloured. The egg, too, has distinctive characteristics, for Mr. Campbell (who was the first to describe it) writes that the "egg more resembles that of the Coot in shape, colour, and character of markings than any others of the family. Ground colour, dull white, with a very faint greenish tinge, mediunaly marked with round spots of pinkish-red and purple, also very minutely speckled all over with the same colours. Length, 1 inch 10 lines; breadth, 1 inch 4 lines.

In an appendix (1888) to his pamphlet, Mr. Campbell has recorded some further interesting notes. "With the assistance of my friend Mr. R. C. Poole, of Metung, Gippsland," he says, "I have been able to record a few interesting facts concerning this waterhen. In the most beautiful of all the lakes—Lake King—there are several arms of brackish creeks running a quarter of a mile or so into an elevated sloping shore clothed with timber and thick scrub, and margined with ti-tree or melalenca and sedgy flags. These creeks afford a serene and natural retreat for several pairs of Gallinule. In the smallest creek, about 12 yards from where Mr. Poole moors his boats, and about 100 yards from his dwelling, two pairs of birds have taken up their quarters, and have become very tame, so that Mr. Poole experienced no difficulty in observing some of their habits. They have been there for the last three seasons. He kindly forwarded me a pair of eggs, one of which was figured in 'Nests and Eggs of Australian Birds' (Plate No. 567). However, our great Australian ornithologist took exception to the figure. This season the old nest was reconstructed, and the strangest part of the affair is that the two pairs each laid eight eggs in it, although the task of incubating the combined batches appeared to devolve upon one pair only. Mr. Poole kindly secured a pair from each set. One pair was similar to that already described by me, while the other had stouter ovals, ground colour of a warm stone, and with the markings of reddish-brown, much larger, and in the form of larger patches here and there. Removing the eggs in no way inconvenienced the birds; in fact, it was rather the reverse, because one bird had much difficulty to or could scarcely cover the whole sixteen eggs. In about three weeks most of the remaining eggs were hatched, the chickens being attended to by both pairs of old ones.

"The breeding season appears to be between the months of November and December, and probably January.

"Last Christmas I visited the locality, accompanied by another field naturalist. In a neighbouring creek, 'in the cause of science,' we rudely disturbed their wanton quietude by shooting a brace of birds and by taking a nest containing eleven fresh eggs. The eggs were of a type between the two sets from Mr. Poole's nest, being longish ovals, slightly compressed towards the smaller end, and of a dullish grey stone colour, mediunaly marked with round spots of purple and purplish red. Dimensions, 2 inches by 1 inch 4 lines.
"The nest was situated a few feet from the shore in a clump of ti-tree. It was heaped up one foot from the surface of the water, and constructed of dead flags and malecena twigs, and lined with square patches of the paper-like bark of the same tree. It was a foot across the top, with the interior a few inches deep. Mr. Poole's nest was similarly placed, but entirely composed of dead flags.

"The Gallinules have not such a happy lot as may be expected in those romantic sedgy-marginated creeks. There is a troublesome water rat which keeps their ranks reduced by destroying many eggs and young. During our trip we shot one in the very act of robbing a nest. It proved to be of the species known as the White-bellied Beaver Rat (Hydromys leucogaster)—a perfect monster."

It is both terrestrial and aquatic in its habits, and if disturbed on land easily eludes pursuit by running swiftly to a place of safety. It swims well and buoyantly. Its food consists of shellfish and insects.

The female is smaller than her mate, and her bill is often more brightly tipped.

The whole of the plumage a dull greyish-black, except the back and scapulars, which are deep brown; the primaries and tail, nearly pure black, and the under tail-coverts, which are black in the centre and white on either side; frontal plate, orange; base of the bill, deep red, tip greenish-yellow; above the knee a yellow and scarlet garter; joints of the legs and feet, green; under surfaces of the legs and feet, olive; sides of the tarsi and frontal plates of the toes, yellow; frontal plates of the tarsi, yellow, those nearest the knee stained with scarlet; irides, olive. Total length, 15 inches.

Habits: Rockingham Bay, Wide Bay District, Richmond and Clarence River Districts, Victoria and South Australia, south coast of New Guinea.

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**GENUS FULICA (Linnaeus).**

The one solitary Australian species of this widely dispersed genus represents the *Fulica atra* of Europe and is found in every quarter of the Continent.

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**FULICA AUSTRALIS (Gould).**

**AUSTRALIAN COOT.**

The Australian Coot is an exact reproduction of its European congener both in appearance, habits, and general economy. It is also so like *G. tenellorosus* that upon a superficial glance they might easily be confounded, the only difference being that the points are more intensified.

Its favourite haunts are the inland river system and the salt-water lagoons near the coast, places it never forsakes unless in search of food, which consists of aquatic insects and small shellfish.

It constructs a nest of floating aquatic plants, where it lays its eggs and rears its young. The egg is large for the size of the bird, dull white, ground colour marked all over with freckles and small roundish spots of purplish-brown; length, 2 inches 1 line; breadth, 1 inch 5 lines.

Head and neck, black; all upper surfaces, greyish-black; under surfaces, sooty black; irides, bright red; bill, light bluish-grey; crown of the head, greenish-white; legs and feet, peach grey.

In the matured female the plumage is dingier, with shabby grey patches showing through.

Total length, 14 inches.

Habits: Derby (N.W.A.), Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia.
PLATE XI.

GENUS PARRA *(Latham).*

THIS is a tropical form of birds suited to a region where the aquatic vegetation is as rich as the terrestrial, for its feet are constructed, like the legs of a mantis, to spread over a large surface of fallen grasses and leaves, readily supporting the bird. This adaptation gives it facility to pass swiftly over floating leaves and among aquatic plants.

Species of this genus are found in India, Africa, and America.

PARRA GALLINACEA *(Temm).*

COMB-CRESTED PARRA.

THIS is a most grotesque bird in appearance, reminding one of an awkward young fledgling whose balance is not yet true. The long spindle legs, with their mantis-like toes, are a wonderful adaptation by nature of means to ends, but are not otherwise beautiful. The body is small, the neck long, the tail rudimentary, and the wings large; these are partly opened when the birds run across the flat water plants, and materially aid its speed and balance.

This Comb-crested Parra may be taken as one of the most typical members of the genus, its kind toe and claw being more largely developed than those of any other species, by which means it traverses the leaves floating on the water with speed and grace.

Gilbert writes interestingly of it:—"I did not meet with this bird until the latter part of my stay in the country, just before the wet season set in, when I observed it on the large lake near Point Smith, which at this time (the month of December) contained so little water that I could wade over every part of it; and it was fortunate that this was the case, for this bird confines itself so much to the muddy parts of the middle of the lake that it might be looked for in vain from the shores. It would seem to be a very local species, for I did not meet with it in any part of the Peninsula. In the following January after a succession of heavy rains, the lake became so far filled as to be too deep for a person to attempt to cross any part of it, consequently no second opportunity of observing the Parra occurred before my departure. Those observed by me were distributed in four or five small families in different parts of the lake, and were usually occupied in feeding from the floating aquatic plants, over which the great length of their toes and nails enables them to run with great facility. At the slightest alarm they dive down at once or take to flight. Their powers of diving and of remaining under water are equal to those of any bird I have ever met with; on the other hand, their powers of flight are very weak. They will, however, often mount up fifteen or twenty yards, and fly from one end of the lake to the other, a distance of half or three-quarters of a mile; but generally they merely rise above the surface of the water and fly off for about a hundred yards. During flight their long legs are thrown out horizontally to their full length. While feeding they utter a slowly repeated 'cluck-cluck.' The stomach is extremely muscular, and the food consists of aquatic insects and some kind of vegetable matter."

Mr. Elsey procured some specimens "at a large lagoon, surrounded by a dense fringe of polygoniums near Flinders. Among them was a female which contained mature eggs, and had, I feel convinced, a nest somewhere in the polygonium; but I could not find it, though I closely examined the whole circuit. She remained out the whole day without once retiring to it. Its singular calyptra was bright crimson, which colour seems to be due to the excessive vascularity of the membrane, as it was completely blanched before I got the bird out of the water."
The ground colour of the egg is a dark, shiny, raw-sienna tint, over which are traced in various directions a series of broad and fine hair-like contorted lines of browny-black, which, by occasionally uniting laterally and crossing each other, form here and there large blotches. Although these markings are of the same character on each egg, they are somewhat differently distributed. The egg is, moreover, rendered remarkably conspicuous by the singular pointed form of the smaller end, and by its small size as compared with the bird; but, above all, by the form and disposition of the markings, which are as if traced by the hand of a person who had amused himself by attempting to cover the surface with fantastic streaks, blotches, and contorted curves from end to end. Length, 4½ lines; breadth, 16½ lines.

Back of the head, line down the back of the neck, tips of the shoulders, under surface of the wings, flanks, and a broad band crossing the chest and abdomen, deep bluish-black; chin and throat, white; orbits, ear-coverts, sides of the neck and breast, pale glossy yellow, deepening at the edges; back and scapulars, bronzey olive-green, becoming nearly black at the base of the neck and on the rump; wing-coverts, olive-brown; the remainder of the wings and tail, greenish-black; vent and under tail-coverts, buffy-white; irides, light sulphur yellow; bill, greenish-grey at the extreme tip, then black to near the nostrils; the basal portion of the upper mandible and the helmet, aurora-red; base of the lower mandible, light primrose-yellow; legs and feet, greenish-grey.

The young Parra has all the under surface white; crown of the head and occiput, reddish-chestnut; line down the back of the neck, brown, and the back reddish-brown, each feather margined with a still redder line; the helmet only faintly indicated; irides, light brown; bill, aurora-red, except the base of the lower mandible, which is light yellowish-white.

Habitats: Rockingham Bay, Wide Bay District, Port Denison, Richmond and Clarence River Districts, New South Wales, south coast of New Guinea (1).

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GALLINULA RUFI CRIS S A (Gould).

RUFOS GALLINULE. GENUS: GALLINULE.

THOUGH some forty years have elapsed since Gould figured this bird as a new species in his Supplement, very little substantial information has been added to his monograph. That it is not a typical Gallinule is evident from the absence of white spots on the flanks and the uniform pale rufous colouring of the vent and under-tail coverts. In this departure, it approaches more nearly to the G. olivacea, which has the same parts similarly coloured, instead of being black and white as in true Gallinules.

Gould writes thus of its individuality:—"This bird appears to be most nearly allied to the Gallinula olivacea of Meyen; but that species is of larger size, and has legs still more disproportionate to the size of its body. The White-Breasted Indian Gallinule and the Gallinula avocet of the same country are, in my opinion, also nearly allied to it. Prof. Reichenbach has instituted the genus Anserovenis for the reception of Gallinula olivacea with which the late Prince Bonaparte associated the G. femoralis of Tschudi. It is for ornithologists to decide upon the propriety of this subdivision."

Head, all upper surfaces, wings and tail, brownish olive; sides of the neck, throat, and under surfaces, deep olive grey; vent and tail coverts, rufous-red; bill, greenish yellow, with a red mark on the base of the culmen; legs and feet, greenish yellow.

Total length, 10 inches.

Habitats: Wide Bay District; Dawson River, G. B., south coast of New Guinea.
GALLINULA RUFICRISSA (Gould)
hufaüs Gallinula

PARRA GALLINACEA (Temm)
Comb-Crested Parrot
PLATE XII.

GENUS TRIBONYX (Du Bus).

The two known species of this genus differ vastly in their habits and economy from other Gallinules, being more terrestrial than the members of the genus Porphyrio. This modification in habit gives them the longer tarsi and shorter toes that are best suited to wander over plains and open pasturage, instead of keeping to the water or the river banks.

TRIBONYX MORTIERII (Du Bus).

Mortier's Tribonyx is plentiful in Victoria and Tasmania, but owing to the extreme shyness of its disposition, it is a work of the utmost difficulty to get sight of it, for it delights in inaccessible haunts among marshy lands and the sides of rivers.

Gould saw it every day while staying at New Norfolk, Tasmania, for there it frequently left its sedgy retreat to walk about the garden, holding its tail erect like the common hen; but even here the greatest care was necessary to get a sight of it, for at the slightest suspicion of noise the bird would vanish with extraordinary quickness into some thicket, from which it would not emerge till all apparent cause for alarm was over.

The chest and wing muscles of this bird are so feebly developed in proportion to its size that it could not depend upon flight for safety, or even constant locomotion; but to make up for this weakness, the legs and thighs are very large and strong, giving it great running power. In habit and economy the Tribonyx approaches very closely to the European Moorhen (Gallinula chloropus), except that it does not dive and swim like that bird. It is easily caught with a common horsehair noose.

The male bird weighs about three pounds; the stomachs are very thick and muscular, and shew by their contents that aquatic plants, insects, and gravel are the foods on which they subsist.

The nest is a bundle of rushes placed on the edge of a stream, and usually contains seven eggs of a stone colour, marked all over with thinly dispersed, irregular shaped, and variously sized spots and blotches of dark chestnut brown, also very minutely freckled with the same colour. Length, 2½ inches; breadth, 1½ inch.

The sexes are alike, except that the female is smaller and less brilliant than her mate.

All the upper surfaces greyish olive, washed with chestnut brown on the head, back of the neck, back, and the tips of the secondaries; primaries, blackish brown; tail, black; under surfaces, bluish slate colour, becoming black on the abdomen and under tail-coverts; flank feathers largely tipped with white, forming a conspicuous mark on either side; thighs, purplish grey; irides, orange-red; bill, greenish-yellow; legs and feet, leaden-yellow.

Habitats: Victoria and South Australia, Tasmania.
TRIBONYX VENTRALIS (Gould).

BLACK-TAILED TRIBONYX. Genus: Tribonyx.

It is a curious fact that while one species of the genus Tribonyx should be so common in Tasmania, the other should never be seen there. Mortier's Tribonyx is as stolid in its affections to certain localities as the Black-tailed is casual and uncertain. It may be described as a bird of migratory habits, but with no defined destination; it will suddenly appear somewhere where it may never before have been seen, and disappear again as rapidly.

Although it resembles the Gallinules in outward appearance, it really possesses a very different structure, particularly in the form of the tarsi and toes, and in the tail, while its economy is equally different. It is much more terrestrial than aquatic, and is designated by some as simply "Moorhen," which is a better specific name than Black-tailed Tribonyx.

Gilbert says of the bird that "upon one occasion it visited the Swan River colony in myriads, treading down and destroying whole fields of corn in a single night. The natives, not having seen them before, attributed their appearance to the settlers, and for a long time termed them the 'white men's birds.' After the harvest was over they nearly all disappeared as suddenly as they arrived. The natives of the banks of the Upper Swan, on making enquiries respecting these birds of some of the tribes of the interior, were told they came from the north."

"This bird," says Captain Sturt, "appeared suddenly in South Australia in 1840. It came from the north, fresh flights coming up and pushing on those which had preceded them. It was, moreover, evident that they had been unaccustomed to the sight of man, for they dropped in great numbers in the streets and gardens of Adelaide, and ran about like fowls. At last they increased so much in number as to swarm on all the waters and creeks, doing great damage to the crops in their neighbourhood. They took the entire possession of the creek near my house, and broke down and wholly destroyed about an acre and a quarter of wheat as if cattle had bedded on it. They made their first appearance in November, and left in the beginning of March, gradually retiring northward as they had advanced."

"In the autumn of 1854," says Mr. Elsey, "the stations about the Mackenzie were besieged by swarms of this species. They remained some time, then disappeared, and not a single specimen appeared there for certainly the next three years."

It is an ungainly bird, with strong muscular legs intended for speed, with which it runs so rapidly that even on the parched plains destitute of grass or herbage, it would elude pursuit and hide itself in the roots of large trees, or the shelving banks of a river. It rarely uses its wings, even when pursued.

The month of November is the breeding season, when a nest is made on the ground of soft grass and rushes among the long grass-like rushes of the river side. The eggs are seven in number, of a greenish ground colour, very minutely freckled all over with reddish brown specks, with a few large blotches here and there over the shell. Length, 1 inch 8\(\frac{1}{2}\) lines; breadth, 1 inch 2\(\frac{1}{2}\) lines.

The food found in the thick muscular stomach consists of grain, seeds, and other vegetable substances, shelled mollusks, insects, etc.

Head and all under surfaces, dull brown with steely blue lights; flank feathers black, with an oblong mark of white near the tips; tail, black; all upper surfaces, dappled olivaceous brown; primaries, brown, the outer one margined with white; irides, orange; upper mandible, beautiful pea-green, becoming rather paler at the tip; base of the lower mandible, light reddish orange; the tip like that of the upper; legs and feet, deep brick red.

Total length, 15 to 17 inches.

Habitats: Derby (N.W.A.), Gulf of Carpentaria, Port Denison, New South Wales, Interior, Victoria and South Australia, Western and South-Western Australia.
PLATE XIII.

GENUS PORPHYRIO (Brisson).

To this group belong the very largest of the Rallidæ, and also the most brilliantly-plumaged birds, their prevailing colors being blue, or greenish blue, mixed with black. They are nearly allied to extinct Notornes of New Zealand.

PORPHYRIO MELANOTUS (Temm.)

BLACK-BACKED PORPHYRIO. GENUS: Porphyrio.

This is a large, long-legged bird, with a horizontal pose and strong massive beak. It is found very generally distributed over the north, eastern, and southern colonies, and is especially plentiful wherever situations suitable to its habits occur, such as marshes, shallow lagoons, and the sides of rivers. If size is any criterion of beauty, then the temperate latitudes are more suitable to the Black-tailed Porphyrio than the tropics, or the cold regions of Tasmania, for in both these places the birds are smaller than in New South Wales and South Australia.

In Tasmania where its habits have been best observed, the bird sallies forth morning and evening in search of such food as snails, insects, grain, and various vegetable substances. Like the Tribonyx, it runs rapidly, and makes use of this power to escape intrusion, gaining the thickest covert, and threading it with marvellous quickness much after the fashion of the European Moorhen, whose flight is similar, and like this bird it resorts to this mode of progression only when hard pressed.

The Porphyrio soon becomes domesticated, and readily adopts a circumscribed home. Dr. Bennett, of Sydney, knew of one domesticated in a poultry yard, which had the habit of roosting on sheds, and was very fond of perching in some parrot cages. He noticed that it always seized maize or any other vegetable it intended eating in the palm of the foot, holding it so until it was devoured; the owner of this bird corroborated the fact.

The egg has the ground color, light brownish buff, but sometimes of a sagy green tinge, mediumly marked with irregular sized spots and blotches of reddish brown or sienna, and greyish purple, also minutely freckled with the same colours. The surface of some of the shells is somewhat lustrous, that of others is not; the size varies considerably, the average being about 2 inches by 1 ½ inches.

The sexes are alike in colour, but the female is somewhat smaller than the male; in the young the naked space on the crown is less developed and bright.

Face, back of the head, centre of abdomen and thighs, sooty black; back of the neck, breast, and flanks rich deep indigo blue; back wings and tail, shining black; the primaries having a wash of indigo-blue on their outer webs; under tail coverts, pure white; irides bright, orange-red; frontal plate, bill, legs, and feet, red.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison. Wide Bay District, Richmond and Clarence Rivers District, New South Wales, Interior, Victoria and South Australia, Tasmania.
AZURE-BREASTED PORPHYRIO. GENUS: PORPHYRIO.

Nature often strikes a curious balance in the distribution of her gifts; and in no instance is this more striking than in the distribution of the two Porphyrios. Together they inhabit all Australasia, yet neither trends on the precincts of the other. The Melanotus is found everywhere except in Western and North-western Australia, the Bellus nowhere but in these two localities.

However, it makes up for its rarity by its superior size and beauty, being the larger of the two species we possess.

It is very abundant at Swan River, inhabiting the swamps and reed-beds about Perth and Freemantle. In its habits and economy it so closely resembles Porphyrio melanotus that a description of the one is true of the other, and therefore need not be repeated.

The egg is oval in form, slightly swollen towards the larger end. Colour, deep warm stone, fairly marked with spots and patches or blotches of purplish brown of various shades, the dull shades appearing as if under the shell's surface. Length, 2 inches 2½-3½ lines; breadth, 1 inch 7½ lines.

The only difference observable between the sexes is that the male is larger and more brilliantly coloured.

Top of head, blackish brown, passing into the light violet purple, which spreads over the nape, flanks and abdomen; throat, cheeks, fore part of the neck and breast, light azure blue, with metallic lights; all upper surfaces, deep chocolate-brown; shoulders and spurious wings, azure-blue; primaries, blackish-brown; outer webs, strongly tinged with green; under-tail coverts, white; irides, bright red; bill, red; knees, lower part of the tarsi, and inside of the feet, dark greenish grey; remainder of the legs and feet, grass-green.

Total length, 18 inches.

Habitats: Derby, N.W.A.; West and South-west Australia.
PLATE XIV.

GENUS ARDETTA (G. R. Gray).

This genus was instituted for the Little Bittern of the British Islands and several other minute species inhabiting Africa, India, and America.

ARDETTA PUSILLA (Gould).

MINUTE BITTERN. Genus: Ardeetta.

At the time Gould wrote his “Birds of Australia” little or nothing was known of this tiny species, the few individuals collected having been captured between Sydney and Botany Bay. Since then it has been identified all along the Eastern Coast, but nothing is yet known of its habits and economy.

We can only speak of it, then, as the representative of the Little Bittern (Ardetta minuta) of Europe, but it is still smaller in size. In appearance its pose is more horizontal than the other Bitterns, though it has the same solitary, aggressive expression and attitude.

The sexes are quite unlike in plumage, the female shewing black in the upper-tail surfaces, and is entirely mottled in different shades of yellow, brown, and cinnamon; primaries, grey, tipped with black.

The male has the top of the head, back, and tail bronzy-greenish black; sides of face, neck, and shoulders, buff, passing into rich cinnamon on the sides of the head and back of the neck; down the centre of the chin and neck in front a broad irregular stripe of reddish brown; on either side of the chest, a patch of black feathers margined with deep buff; wing coverts, deep buff, with a patch of rich cinnamon on the shoulders and a dash of the same colours on the edges of the wings; primaries, slaty black; space round the eye, bill and feet, yellow; irides, orange.

Habitats: Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River District, New South Wales, Victoria, and South Australia.

GENUS BUTOROIDES (Blyth).

This genus of three species includes the Mangrove Bitterns, which are found frequenting the mangrove swamps and belts and the adjacent low-lying grounds, covered with marshy herbage or reed-beds.

BUTOROIDES MACRORHYNCHA (Gould).

THICK-BILLED MANGROVE BITTERN. Genus: Butoroides.

This is altogether a larger bird than the last; but in respect of locality it is very much restricted, being found only on a small portion of the Eastern coast. Its habits and manners are identical with the Butoroides javanica.

The egg is a pale bluish green, measuring 1 inch 8½ lines by 1 inch 2½ lines.
Head and stripe down back of neck, black with greenish reflexions; neck, wing coverts, and all upper surfaces, greenish olive; wing coverts, finely margined with deep rufous; primaries and tail, slate grey; spurious wing, secondaries, and all but three or four external primaries, with an irregular triangular-shaped spot at the tip; down the centre of the throat a mottled stripe of brown and white that loses itself on the breast in the mingled grey and buff of the abdomen; upper mandible, dark reddish-brown; basal portion of the lower one, oil-green; tibie and hinder part of the tarsi, bright yellow; remainder of the feet and legs, yellowish brown.

Total length, 17 inches.

Habitats: Wide Bay District, Richmond and Clarence River Districts, New South Wales.
PLATE XV.

BUTOROIDES FLAVICOLLIS (Latham).

YELLOW-NECKED MANGROVE BITTERN. Genus: Butoroides.

THIS, the largest and handsomest of the Mangrove Bitterns, is distributed throughout the Continent, except the interior, where the absence of mangrove swamps quite accounts for its non-existence, as it is an exclusive companion of the mangrove. It is by no means an easy matter to dislodge the bird from this safe retreat, for it runs over the mud beneath the rough roots so rapidly that capture is impossible, and it must be very closely followed before it can be forced to take refuge in flight.

Nidification evidently takes place in December, as a nest formed of small sticks resting on a slight horizontal branch of a mangrove was discovered on January 6th, and two eggs taken from it. They were of a much paler-bluish-green, and more rounded than those of any other species of the same group, and were 1½ inch long by 1 inch 1½ broad. But it is evident that the eggs vary both in size and colour, as an authenticated specimen from Queensland is white of a bluish-milky tinge; length, 1 inch 10 lines; breadth, 1 inch 4 lines.

The male has all the upper surfaces bronzy-black; primaries and tail, bluish slate-colour; chin, warm clay-white; throat, deep buff, the feathers down the centre of the chin and throat having their inner webs pale buff, and their tips blackish-brown; elongated feathers of the breast, pale brown, margined with buff; under surfaces greyish-brown stained with buff; irides, yellow; bill, dark horn colour; feet, olive brown.

The female has the colours of the upper surface of a lighter brown than the male's, and the throat feathers less brilliant and contrasting.

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Victoria, and South Australia, Western and South Western Australia, South Coast of New Guinea.

BUTOROIDES JAVANICA (Horsp.).

LITTLE MANGROVE BITTERN. Genus: Butoroides.

NEXT in extent of range comes the Little Mangrove Bittern, which is found dispersed over the whole of the north-eastern and eastern colonies.

It was first noticed in great numbers at Port Essington and other tropical parts of the coast, where there are small islands entirely covered by mangrove scrub, and having low swampy points of land running into the sea. In these dense mangrove beds, where lingers a perpetual shade, the Javanica delights to run about in search of food, which is abundantly supplied by the variety of fish, crustaceans, marine worms, and insects. As soon as the tide rises and covers the muddy shores, and the mangrove roots are deep in water, the Little Mangrove Bittern betakes itself to the higher branches, where it sits motionless till the tide retires and leaves behind a fresh harvest.

Usually this bird is solitary in its habits, but occasionally it will be found in flocks together. Gilbert came across a colony breeding on two small islands in Coral Bay, off Port Essington harbour. There were about thirty nests built, some on the mangroves, and some on the yellow hibiscus. Very frail structures indeed were they, consisting of a few twigs placed across each other on the horizontal branches, and
not more than six feet from the ground. In each were either two young birds or two eggs of an elongated oval shape, pointed at both ends; colour, very pale green. Length, 1 inch 7½ lines; breadth, 1 inch 3 lines.

Head and tuft beneath the eye, black; neck and all under surfaces, mouse-grey, with a vinous tinge that becomes more apparent on the abdomen and under tail-coverts; primated feathers of the back, bluish-grey with lighter shafts; wing coverts, dark slate-grey, narrowly margined with white and buff; remainder of the wings and tail, dark grey; irides, light yellow; orbits and eyelash, gamboge yellow; upper mandible and cutting edge of the lower mandible, dark reddish-brown; the remainder of the lower mandible, oil-green; tibiae and hinder part of the tarsi, bright yellow; remainder of the feet and legs, yellowish-brown.

Total length, 14 inches.

The young have all the upper surfaces brown, and triangular spots of white at the tip of all the wing feathers; the throat striated with brown on a white ground.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria; Cape York, Rockingham Bay, Port Denison, Wide Bay District; Richmond and Clarence River Districts, New South Wales; south coast of New Guinea.
PLATE XVI.

GENUS NYCTICORAX (Stephens).

THE Heron family, especially the nocturnal section, is widely distributed over Europe, Africa, and America, to which Australia contributes one species—the Nycticorax Caledonicus. In manner and habits the whole section strongly resembles the genus Botaurus, particularly in the limpness of their neck plumes. The sexes are similar, but the young for the first year of their existence are blotched and spotted all over. The Australian species only differs from all others of its kind in the rich warm colouring of its feathers.

NYCTICORAX CALEDONICUS (Latham).

NANKEEN NIGHT HERON. GENUS: NYCTICORAX.

THIS is a beautifully plumed bird, the bluish black of the head contrasting well with the rich nankeen upper and snowy under surfaces.

It is quite a matter of regret that so lovely a bird should be seldom seen; for though it is generally distributed over the continent, its nocturnal habits destroy the chances of its being often met with. It is migratory to a certain extent, being only a summer visitant to the southern latitudes of New South Wales and South Australia, where it arrives in August or September, and departs again in February.

Night being the season of its activity, it may be found frequenting swamps, sedgy banks of rivers, and other secluded spots. As soon as morning dawns it retires to the highest trees of the forest, and sleeps, shaded from the sun’s rays, through the day. If discovered it is easily shot, for if forced to quit its retreat, it flies a short distance and then alights.

It flies with a slow flapping motion, its head drawn back between the shoulders, and the legs stretched out behind after the manner of a true Heron; though when perched or resting on the ground it shows none of the grace of these birds.

When searching for food the Nankeen Night Heron shows more animation, as quickness and activity are needed to secure such prey as fishes, water lizards, crabs, frogs, leeches, and insects.

Incubation takes place in the months of November and December, the birds breeding in companies, like the true Herons, in such favourite localities as swampy districts, where an abundance of food can be relied on. The nest—rather large and flat and composed of crooked sticks loosely interwoven—is placed with equal indiscrimination on the branch of a large tree, the point of a shelving rock, or in a cavern. The eggs are usually three in number, and of a pale green color. Their size varies according to the individual experience of different ornithologists; Dr. Ramsay’s measurements differing by half an inch from Gould’s. The latter makes them out 2 inches \(\frac{3}{8}\) in length by \(1\frac{1}{2}\) inches in breadth. Mr. Campbell possesses a pair of eggs in his collection which so nearly correspond with Mr. Gould’s that he considers the latter’s the typical measurements.
The adult bird has the top of the head and nape rich blue black; three occipital plumes white; back of neck, all upper surfaces, wings and tails, rich nankeen or cinnamon-brown; line under eye, chin, throat, and all under surfaces, pure white, merging into pale nankeen on the sides of the neck and under-tail coverts; bare space round the eye, greenish-yellow; irides, orange; bill, in some specimens, black, slightly tipped with yellow, in others black with a streak of greenish-yellow along the lower mandibles, and a wash of the same hue along the lower edge of the upper one; legs and feet, jonquil yellow; claws, black.

For the first year the young have all the upper surface striated with buff and blackish brown, narrow and arrow-shaped on the head and neck, broad and conspicuous on the back and wings; primaries and tail feathers dark chestnut-red, deepening into black near the extremity, and tipped with buffy white; all the under surfaces buffy white with a stripe of brown down the centre of each feather; irides, yellow.

Habitats: Derby (N.W.A), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, South Coast of New Guinea.
PLATE XVII.

FAMILY ARDEIDÆ.

THIS is a large and representative family found in every part of the globe. In Australia representative genera include the Ardea, Herodias, Nycticorax, Botaurus, Ardeotis, etc. It is almost needless to say they vary in size, in habits and economy, some being small, shy, and retiring; while others are large and fearless, loving exposed situations. Their chief food is such reptilian delicacies as frogs and newts, small quadrupeds, fish, crustaceans, aquatic insects, and young water birds. Their nests are usually composed of sticks, often placed in trees, sometimes on shelving rocks, at others on the ground.

GENUS BOTAURUS (Stephens).

THE Bitterns are nocturnal birds, and are found in all parts of the world, both on the mainland and in the islands. At night they may be seen skulking about marshes and the banks of rivers in search of their prey—frogs, snails, water-voles, and insects, which constitute their food. Their days are passed among the reeds, sleeping heavily.

BOTAURUS POICIOLOPTILUS (Wagl.).

AUSTRALIAN BITTERN. Genus: Botaurus.

THIS bird is generally distributed over Australasia where localities are found suitable to its peculiar economy—that is, in that part of the river system where sedgy banks, marshy lagoons, and such reed-like spots occur. In Tasmania, the well-watered features of the country make it especially the habitation of the Australian Bittern, whose hoarse croak is tolerably familiar to settlers in secluded parts of the island. The Botaurus melanotus of New Zealand is identical with this species.

In its habits, economy, mode of flight, and actions it resembles the Botaurus stellaris of Europe; its large and membranous stomach is well suited to the nature of the food upon which it exists—fish, frogs, newts, and all kinds of aquatic insects.

The egg is rather corpulent, and the smaller end nips sharply off; it is of a uniform light dull colour. On examining the surface of the shell, numerous pin-point like indents will be observed, as if struck longitudinally. Length, 2 inches; breadth, 1 ½ inches. (J. A. Campbell.)

The only difference in the sexes is that the female is slightly smaller than the male.

Head and back of the neck, purplish-brown; back and scapularies, dark purplish-brown; wings, buff, conspicuously and largely freckled with brown; car-crests, tawny; throat and all the under surface, deep tawny buff, with irregular markings of deep brown down the centre, giving the whole a mottled appearance; the brown colour, however, prevails on the lower part of the throat; bill, yellowish-olive in some, greenish horn-colour in others; space round the eyes and legs, beautiful pale green; irides, in some yellow, lilac-red in others.

Habitats: Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia and Tasmania, West and South-West Australia, New Zealand. (Ramsay.)
GENUS HERODIAS (Boie).

This branch of the Heron family is found in every part of the world, and most of those belonging to Australia are identical with species found in India.

Herodias Picata (Gould).  

PIED EGRET. GENUS: Herodias.

The graceful contour and lovely plumage characteristic of these birds are not wanting in this the least known of the species. The least known because rarest of Egrets, another difficulty in writing of it is the circumstance that the restricted locality to which it belongs is yet almost a terra incognita to naturalists. One or two explorers to the northern parts of Australia have succeeded in procuring specimens of the Pied Egret, and contribute some scant information upon its habits, with which we must be content for the present. Gilbert found it in the neighbourhood of Port Essington, where it inhabits the inland swamps, and associates together in small families, often in company with other species. On the islands at the head of Van Diemen's Gulf it was found to be very numerous.

A dissection of the stomachs showed them to be capacious and membranous; they contained morsels of fish, aquatic insects, and their larvae. (Gould.)

Upper part of the head, occiput, occipital plumes, the whole of the plumage of the body, wings and tail, bluish slaty-black; chin, neck, chest, and some of the lanceolate feathers depending therefrom, white; some few of the lanceolate feathers of the neck and breast have one web white, the other bluish slaty-black; the remainder are the same colour as the body; bill, legs, and feet, greenish-yellow.

The young birds are easily recognisable by having the whole of the under surface white.

Total length, 17 inches.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria. (Ramsay.)
PLATE XVIII.

GENUS DEMIEGRETTA (Blyth).

To this genus belong the two Reef Herons, which were formerly included in the genus Herodias. Taking D. jugularis as the type, we find that species of this bird are widely distributed over the coasts of the southern parts of the old world, and three species are found in North America.

DEMIEGRETTA JUGULARIS.

BLUE REEF HERON. GENUS: DEMIEGRETTA.

The Blue Reef Heron is commonly found along the shores of the warm coastal waters of eastern Australia, and has even been found as far south as within a few miles north of Sydney. This was probably, however, an accident, as Wide Bay is the ordinary limit of its habitat. Nature has destined this bird for a purely coastal life; it particularly affects rocky shores, and if disturbed, merely takes short seaward flights, returning to some prominent point whence it can survey everything around it, and feel secure. This bird has a very powerful bill and peculiarly constructed feet, whose uses we discover when we learn that its food consists of crabs and shelled mollusks.

"This species," says Mr. Maegillivray, "inhabits the islands of the north-east coast of Australia and Torres Straits, and is abundantly distributed from the Capricorn group in lat. 23° 30' S., as far north as Darnyl Island in lat. 9° 33' S. It procures its food at low water on the coral reef surrounding the low-wooded islands it loves to frequent. Although generally a wary bird even when little disturbed by man, yet on one occasion on Heron Island I knocked down several with a stick. The nest is usually placed on a tree, but on those islands where there are none, such as Raine's Islet and elsewhere, it breeds among the recesses of the rocks. Where the trees are tall, as on Oomaga or Kent's Island, the nests are placed near the summit; on Dugong Island they were placed on the root of a tree, on a low stump, or half-way up a low bushy tree. They are shallow in form, eighteen inches in diameter, and constructed of small sticks and lined with twigs. The eggs are two in number, and of a pale bluish-white, 1½ inch long and 1½ inch broad."

Strange says, "I procured specimens about ten miles north of Sydney Heads. It appears to be strictly confined to the rocky cliffs and ledges of rocks, where it takes great delight in allowing the spray to beat over it. It is very shy and wary, and never stops long in one place."

At Port Essington, Gilbert found it to be "abundant on all the small islands and rocks immediately adjacent to the mainland. It is gregarious in its habits the whole year round, for I remarked that it was congregated in as large numbers before as after the breeding season, which is the month of August. The nest is built of sticks on the ground, and is perfectly round, and from twelve to eighteen inches in height, with a considerable depression for the reception of the eggs. They are always placed in thickets or underwood, and as near the outer edge of the rock as possible. On one small rock I found at least fifty of these nests, some of which were so close as nearly to touch each other. The eggs were sometimes two, and at others three in number."

The sexes can be distinguished only by dissection.

Down the centre of the chin a line of buff in some, white in others; the whole of the plumage dark slaty-black, with a wash of grey on the lengthened scapulars, and the lanceolate feathers pendant from the chest; bill, pale dirty yellowish-green; lores, dull oil-green; tarsi and tibias, pale or apple-green; soles of the feet, dirty yellow. (Goode.)

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District. (Ramsay.)
DEMIEGRETTA GREYI (Gould.)

WHITE REEF HERON. GENUS: DEMIEGRETTA.

Gould was of opinion that this species was abundantly distributed "over the northern and eastern coasts of Australia wherever low islands and reefs of coral running parallel to those coasts occur," but later research has proved him to be slightly incorrect, for it is found to be restricted in its habitats to that part of the eastern coast lying between southern Queensland on the north and New South Wales on the south. His supposition that it would probably prove to be an albino variety of *D. jugularis* has also been exploded by Mr. Maegillivray, who writes as follows:—

"From the circumstances of my having always found this and the dark-coloured species in company, I considered them as the same bird in different states of plumage, their size and proportion being so similar, and was surprised that individuals exhibiting a change from blue to white or vice versa never occurred. At length, while on Dugong Island, I was convinced they were specifically distinct by seeing that the half-grown young from the nest had assumed the distinctive colour of the parents. This was first pointed out to me by Dr. Muirhead, R.N., whose attention I had previously drawn to the subject. The habits of both species are similar; and they procure their food in the same manner at low water on the coral reefs surrounding the low islands they frequent. The nest and eggs are precisely similar, but the young of this bird is white from the nest."

The entire plumage is snow-white; bill, yellowish straw-colour, with a dusky tinge on the culmen and towards the point; irides, primrose-yellow; eyelids, bright yellow; lores and orbits, dull green; soles, orange; claws, pale horn-colour, hind one dark; anterior plates of the toes, bluish-black. *(Gould)*

Habitats: Wide Bay District, Richmond and Clarence River District, New South Wales. *(Ramsay.)*
PLATE XIX.

HERODIAS MELANOPUS.

SPOTLESS EGRET. GENUS: HERODIAS.

THIS beautiful Heron known as the Spotless Egret from the snowy whiteness of its plumage, is very like the Plumed Egret, though it is a much smaller bird, and lacks the aigrette plumes on the breast. It enjoys a very extensive range over the whole of the coastal line of Australia, and is particularly abundant about the Coburg Peninsula "both on the open sea-beach and in the secluded parts of the harbour; it also occurs in all the neighbouring swamps and lakes." "On one occasion," says Gilbert, "while lying at anchor in Van Diemen's Gulf, about half a mile from an isolated rock, covered with a stunted plant growing from the crevices, I saw these birds repairing thither for the purpose of roosting in such numbers, that in a very short time the dark-coloured rock assumed an appearance of snowy whiteness, resembling in the distance, and particularly by moonlight, a pile of snow; at the same time I observed them in different parts of the harbour congregated in flocks, and when seen perched upon the branches overhanging the water, they greatly resembled a flock of Cockatoos, but although they are met with in such numbers, it is by no means easy to procure specimens, for a more shy and wary bird is scarcely to be found."

The sexes are alike, both having (during summer) the long flowing plumes that are so beautiful.

The plumage, pure snow-white; irides, yellow; upper mandible, half the lower mandible, and apical, dark purplish-black; base of the latter, dull yellowish-grey; core and orbits, saffron-yellow; legs, blackish-grey; inner side and back of the tarsi, and the under surface of the feet, siskin-green. (Gould.)

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Richmond and Clarence River District, New South Wales, Victoria and South Australia, West and South-West Australia, South Coast of New Guinea. (Ramsay.)

HERODIAS ASHA (Bonap.).

SOMBRE EGRET. GENUS: HERODIAS.

IN the species before us we have another example of a rare bird. It is known to exist on the eastern coast of Australia, one specimen having been captured near Port Stephens in 1843 and sent to Gould, but as no note of its habits or economy accompanied the bird, he was unable to do more than describe it as a fresh species. Later naturalists have not been more fortunate, which is the more singular, as its slender and graceful form, together with its dark colouring, mark it out from all its confrères.

The entire plumage is glossy-blue or slaty-black, with the exception of the chin, which is pure white; beak, horn-colour; feet and legs, black and horn-colour; irides, straw-yellow.

Total length, 24 inches.

Habitats: Wide Bay District, Richmond and Clarence River Districts, New South Wales. (Ramsay.)
PLATE XX.

HERODIAS EGRETTOIDES (Gould).

PLUMED EGRET. GENUS: HERODIAS.

Of all these beautiful Herons not one is more beautiful than the Plumed Egret, with its snowy plumage rendered more striking by the shower of long acuminated feathers that fall like white spray from the middle of the back and the chest. In size it is larger than the H. alboi and smaller than the H. melanopus, and for this reason is called by V. Hasseley H. intermedia.

It is generally dispersed over the northern, eastern, and southern coasts of Australia, a fact that leads us to suppose these Water Herons to be great wanderers. Except during the breeding season, when the plumes are assumed, and the birds gather together in great numbers, they are very solitary, it being rare to find more than a pair together.

The egg is a regular oval; texture, smooth; colour, pale sea-green. Average length, 1 inch 11 lines; breadth, 1 inch 4 lines. (Legge.)

The plumage, purely white; bill and orbits, yellow; feet and lower part of the tarsi, black; upper part of the tarsi, inclining to flesh-colour. (Gould)

Total length, 24 inches.

Habits: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, New South Wales, Victoria and South Australia, south coast of New Guinea. (Ramsay.)

HERODIAS ALBA (Linn.)

AUSTRALIAN EGRET. GENUS: HERODIAS.

This is the king of the Herons in point of size, and is almost as beautiful as the Plumed Egret in plumage. During spring it has the same beautiful arrangement of plumes on the back, though it lacks them on the chest.

The Australian Egret well deserves its name, as no bird of the genus is more generally distributed over the continent. Wherever rivers and lagoons are to be found not yet too populated by man, there can be met this bird. Its habits are very solitary, for we gather from Mr. Gregory that it is "only found on the banks of rivers and inlets, and in no instance did we see more than one at a time. It flies very slowly, and in form much resembles the Common Crane."

So shy and distrustful is its nature that it can only be approached by the greatest care and precaution. Its flight is rather powerful, and at times long sustained, when it glides through space at a great height in the air. Its food is the same as that of others of its genus—fish, frogs, aquatic insects, etc.

The sexes are alike in outward appearance even to the possession of similar ornamental plumes during the breeding season.
The egg is long and oval, of a light bluish-green. Length, 2 inches 1 line; breadth, 1 inch 5 lines. (J. J. Campbell.)

The whole of the plumage, pure white; bill, beautiful orange; irides, rich straw-yellow; naked space before and behind the eye, fine greenish-yellow; legs above the knee, pale dull yellow, which colour is continued down the centre of the inner part of the tarsi; remainder of the tarsi and feet, black. (Gould.)

This Australian Egret is said to be identical with *H. modesta* of Asia and Africa, which is very common in India, and is known throughout the Old World as the Great White Heron.

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, New Zealand. (Ramsay.)
HERODIAS EORETTOIDES (Gould)
Plumed Egret

HERODIAS ALBA (Gould)
Australian Egret
PLATE XXI.

GENUS ARDEA (Linnaeus).

Of this Genus it is enough to say that it has representatives in all quarters of the globe.

ARDEA NOVÆ HOLLANDIÆ (Lath.)

WHITE-FRONTED HERON. Genus: Ardea.

In the present partially developed state of the Natural History of Australia, it is inevitable that many classifications are little more than tolerably close approximations that will be more correctly defined by each succeeding generation of specialists. In the case of this Heron and its near congener, A. Pacifica, it is almost certain that they are incorrectly placed in the Genus Ardea, from which they differ in their slenderer form, the slightly downward curvature of the mandibles, in their colouring, and in the localities they affect. For these two Herons are not strictly confined to the river system and lagoons of the coast, but penetrate also to the interior where fresh water takes the place of salt. They may be commonly seen wading knee deep in the salt marshes in search of crabs, fish, and marine insects.

It has the same heavy flapping flight as the other Herons, but it is more active on the ground, while in the water it never stands motionless as do the true Herons.

Incubation takes place in October when nests are built on the tops of small gum trees, of sticks and leaves. The eggs are four in number, and measure 1 inch 10 1/2 lines by 1 inch 3 1/2 lines. Campbell says of this Common Heron that it is a persistent breeder. "I heard of five clutches of five eggs each having been taken from one nest, and, notwithstanding, the bird succeeded in rearing a brood before the season expired."

The stomach is very capacious, and the weight of the adult bird about one pound five ounces. (Gould.)

The only difference observable in the sexes is that the female is slightly smaller than the male.

Face and throat, white; head and back of neck, dark slate-colour; all upper surfaces, dark grey; the wings, tinged with brown; elongated features of the back, grey tinged with brown; elongated features of the breast, cinnamon-brown; under surfaces, grey, washed with rufous, which becomes paler towards the tail-coverts; down the lower part of the neck a stripe of buff, gradually blending above with the white of the throat, and below with the cinnamon tint of the breast; irides, in some lead colour, in others yellow, and in others pale buff; orbits and base of the bill, in some pale grey, in others deep lead-colour; base of the lower mandible, flesh-colour. (Gould.)

There are many slight individual variations of colour among the White-Fronted Herons. The Queensland representative, for instance, has the white of the throat extending three-quarters of the way down the chest; the under surfaces become a warm ferruginous grey, and on the edge of the shoulders are long reddish-brown feathers which give to it a rather aggressive expression.

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia. (Ramsay.)
ARDEA PACIFICA (Lath.)

PACIFIC HERON. GENUS: ARDEA.

It would be incorrect to describe any of the Herons as migratory birds, for their habits are not sufficiently fixed to be so classed, but they are nomadic, returning frequently to the same districts at the same seasons year after year. Thus the Pacific Heron is a summer visitant to the southern coasts of Australia, whither it resorts for breeding purposes, returning northward as the shortening days warn it of the coming winter. In New South Wales its visits depend largely upon the seasons. Should there be a wet season, with an abundance of frogs, newts, and other aquatic insects, which it prefers to fish and crustaceans, it may be found with certainty in the overflowing lagoons and rivers, for this is to it one of Pharaoh's fat years; but should a drought parch the land, then it will fly to a moister colony. Its usual practice is to be content to wander from district to district in search of food, but, if necessary, it is capable of performing very extensive journeys.

The Pacific Heron is entirely an ornamental bird, both from the rich contrasting colours of its plumage and from the stabi1eness and grace of its carriage. Like its congener, A. Nova Hulentelia, this bird shows considerable variety of colouring in its plumage. In some the neck is entirely white, while in others the centre part is spotted with black.

The egg is oval, of a light bluish-green colour, with the surface a little rough. Length, 2 inches 2½ lines; breadth, 1 inch 6 lines.

The only difference between the sexes is the slightly smaller size of the female.

Head, neck, and elongated feathers of the breast, creamy-white, tinged with purplish-grey, the throat marked with irregular black spots on the inner side; whole of upper surface, bluish-black, glossed with green on the wings and tail; under surface, chocolate-brown, each feather of the abdomen with a broad stripe of white down the centre; feathers of the breast and the elongated scapularies, deep purplish-red, the tips and outer webs of some of the latter dull green; shoulders and edge of the wings, pure white; upper mandible, black; lower part of the under mandible, yellowish-olive in some specimens, and yellowish horn-colour in others; irides, sometimes primrose-yellow, sometimes very dark brown; upper part of the tarsi, yellowish-olive; feet, black; orbits, greenish-yellow, becoming more yellow immediately before and round the eye. (Gould.)

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia. (Ramsay.)
PLATE XXII.

ARDEA SUMATRANA (Raffles.)

GREAT-BILLED HERON. Genus: Ardea.

This Great-Billed Heron is a solitary bird only to be found in the most secluded creeks or in the open spaces among the mangroves, and is correspondingly shy and watchful, so that the capturing of one dead or alive is a matter of no little difficulty. Gilbert found it breeding in the Coburg Peninsula in February. "The nest was built in an upright fork of a large and lofty melaleuca (ti-tree), at about eighty feet from the ground, and was formed of an outer layer of very strong sticks, with a few small twigs as a lining, and contained two eggs of a light ash-grey. The bird when discovered appeared very reluctant to leave the nest, and instead of the harsh croak usually uttered by it, emitted, on this occasion, a note drawn out to a considerable length, and at times resembling distant thunder, which was suddenly changed to a sound very like the groan of a person in extreme agony." (Gould.)

An egg from Dr. Rutter's collection, taken in the Moluccas, is light-bluish green, a very long oval, and measures 2 inches 8 lines by 1 inch 7½ lines.

Head, neck, and all upper surfaces, vinous-brown, a few of the back feathers with a faint line of white down the centre, and the primaries and tail, washed with grey; chin, white; front of the neck and all the under surface, greyish-brown, the lengthened plumes on the lower part of the neck and chest with a stripe of white down the centre; irides, yellow; bill, blackish-brown; basal half of the low mandible, yellowish-white; apical, half yellow; legs and feet, dark greenish-grey; hinder part of the tarsi and inside of the feet, yellowish-grey. (Gould.)

Total length, 37 inches.

Habitats: Port Darwin and Port Essington; Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts; New South Wales. (Ramsay.)

ARDEA CINEREA (Linn.).

COMMON HERON. Genus: Ardea.

Of all the Ardeas this one has the most restricted habitat in Australia, though, if Mr. Blyth is right in considering it identical with the Ardea cinerea of India and Europe, this species enjoys an extensive range over the whole world.

So far as this local species is concerned, nothing is yet known of its habits or economy.

The egg is of a uniform light green, the surface minutely spotted or otherwise minutely marked with lines. Length 2½ inches; breadth 1 inch 6 lines.

Forehead and upper portion of the crest, white; sides of the neck and lower portion of the crest, deep glossy black; neck, white, washed with vinous and with a series of lanceolate marks of black disposed alternately down the front; all the upper surface, wings, and tail, dark grey, the lanceolate feathers of the back fading into white; edge of the wings, buffy-white; primaries and secondaries, dark slate-colour; flanks and under surface of the wings, grey; chest and abdomen, white, separated from the grey of the flanks by a series of black feathers; under tail-coverts and thighs, white; bill, yellow; tarsi, olive. (Gould.)

The young bird has the whole of the crown of the head, black; all upper surfaces, greyish-brown, and under surfaces, striated with white brown.

Habitats: Richmond and Clarence River Districts, New South Wales, Victoria and South Australia. (Ramsay.)
PLATE XXIII.

FAMILY CICONIDÆ.

REPRESENTATIVES of this family are found in all parts of the world, but like the Cranes, they are rather limited in the number of species, about twelve being all that are known, one of which only falls to the share of Australia.

The family is a migratory one, and one of them, the common European Stork, periodically performs very extensive journeys, and with such exactitude that the Dutch can calculate almost to a day when a bird will arrive in the spring, and when it will depart.

GENUS XENORHYNCHUS (Bonaparte).

THIS splendid species is supposed to be indentical with the bird of the same form inhabiting India, and enjoys a wide range of habitat.

XENORHYNCHUS AUSTRALIS (Bonaparte.)

AUSTRALIAN JABIRU. GENUS: XENORHYNCHUS.

THIS immense bird ranges over the north, north-eastern, and eastern coast of Australia, and was found about Botany Bay in the early colonising days, but civilisation is gradually beating it back to the seclusion its exceedingly shy and wary disposition craves. This inclination leads it to choose the most exposed pieces of ground such as sand pits, large morasses, &c., for its feeding ground and resting places, as such open spots command a wide survey of the surrounding land or water.

The different explorers have fallen in with it in their explorations. Gilbert met with it on the lagoons of the interior when travelling with Leichhardt, and Mr. Gregory killed a specimen in the extreme western part of Australia on the Gascoyne River, which he sent to Mr. Gould informing him that "only two examples of this singular bird were seen, both near Burke's Inlet. It lives in the muddy creeks, and is very difficult of approach. It flies exceedingly slow, with its head, neck, and legs, which measure six feet one inch, extended horizontally to their utmost length, its breadth across the wings being seven feet two inches; it weighs eleven pounds. The colour of its skin and flesh is of a rich salmon tint; the latter has a fishy flavour, too over-powerful to admit of its being eaten by anyone but a hungry explorer."

The Jabiru is almost an omnivorous eater, feeding upon almost every form of animal life inhabiting marshy situations, particularly fish and reptiles. (Gould.)

Dr. Bennett gives a most interesting account of the Jabiru in his "Gatherings of a Naturalist," from which we extract verbatim the following:—"It is very graceful, its attitude and bearing, whether in a state of repose or stalking gently over a lawn or yard with its measured, noiseless steps, have a combination of grace and elegance, and it displays an independence of manners well suited to a bird so wild and roaming in its habits. It is gentle and good tempered, and soon gets reconciled to captivity, and seems to take
pleasure in being noticed and admired, remaining very quiet to be looked at, keeping its bright eyes on the spectators, however, during the time. Although when first seen it has an uncouth appearance from the large size of the mandibles in proportion to the body, yet, on closer acquaintance, its manner wins upon you, and a feeling of attachment arises towards it, from its placid, tame, domesticated manner, elegance of form, graceful carriage, and beautiful metallic brilliancy of plumage, more especially over the head and neck."

In captivity, we learn, it feeds on beef, fish, and reptiles, bruising hard grisly pieces soft with the point of its beak. Its meals are taken with great regularity morning and evening, and as its appetite is voracious, 1 1/2 lb. of meat a day is a fair allowance. In spite of its unwieldy bill, it catches flies with great agility, and can pick up small objects from the ground. It is partial to salt-water creeks and lagoons, in such localities as the entrance of the Clarence and Hunter Rivers, where fish are plentiful. Being both very rare and very shy birds, they choose their feeding grounds and places of rest about sand pits, sand banks, and exposed morasses near the sea coast, where it is impossible to approach them without being seen. The blacks can only capture it by lying concealed among the sedges and stealing upon it unawares—perhaps when sleeping, as it does, upon the tarsi, as the bird takes some time to rise from that position. When alarmed it flaps its powerful wings as if for flight. The Jabiru is easily domesticated, and becomes as tame as the Native Companion. It shows a total disregard of atmospheric changes, and is equally happy to stand in the pelting rain, or to bear the blast of a fierce hot wind.

Mr. J. A. Campbell claims the distinction of being the first naturalist to exhibit and describe the eggs of this Stork. He says: "A pair of eggs exhibited by me, 10th October last, were 2 inches 11 lines long, breadth 2 inches 1 1/2 lines to 2 lines. These, the first recorded eggs of Australia’s only Stork, were taken in the Clarence River District, New South Wales, about the end of August, 1887, from a huge stick nest, lined with grass and other material, and situated in a large tree in the centre of a swamp. The nest was fully 12 ft. in circumference, with a considerable cavity, and so enormous that in taking the eggs a man-hole had to be made from underneath, through which one of the eggs (of which there were three) unfortunately fell into the water and was lost. The full complement would have been probably four eggs. The shape of the eggs a round oval; colour, dull white; the shell somewhat coarse, as if porous or pitted with pin-points, especially at both ends."

Head, neck, and throat, metallic-green with purple lights; greater wing-coverts, both above and beneath shoulders, lower part of back and tail, glossy metallic-green, tinged with gold; remainder of plumage, pure white, except primaries, which are a light ashen-grey; bill, black; irides, dark hazel; legs, pure red.

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, south coast of New Guinea.
PLATE XXIV.

FAMILY GRUIDÆ.

Of this genus only one species is known to Australia, and though there are representatives in various parts of the globe, they are nowhere numerous, and only number fifteen varieties in all. In the New World Cranes are confined to North America; in the Old World they observe no such confined localities.

GENUS GRUS (Linnaeus).

This Australian species is beautifully reproduced in India by the Grus antigone, and in Europe by the Grus cinerea.

GRUS AUSTRALASIANUS (Gould).

NATIVE COMPANION. GENUS: GRUS.

This bird, commonly known as the Native Companion, is quite the largest member of this class of birds, standing, as it does, some four feet high. It possesses in a high degree many qualities that go to make it a most docile and amusing pet. Its love of play and sportive dances are not in the least subdued by confinement; it will dance and pirouette, and run races with its captor, with an imitative capacity that makes it most entertaining. At the same time its temper is uncertain, and prudence inclines one to keep it within bounds, lest it should wreak its anger for some slight affront on most innocent heads. It is fond of indulging in mad races, at the same time uttering a hoarse cry that is most disturbing to a peaceful neighbourhood.

The Native Companion is abundantly distributed all over the continent, except the western colony, and is met with at any time of the year either in pairs, singly, or in companies of from thirty to forty. It is beautiful in appearance, being of a lovely grey colour, with a graceful stately carriage that makes it an artistic adjunct to land or sky scapes.

Mr. Gould tells of a pair of these birds being domesticated under somewhat singular circumstances. "Mr. James Macarthur," he says, "informed me that a pair which he had kept in the immediate neighbourhood of his house at Camden, and which had become perfectly domesticated, so far attracted the notice of a pair of wild birds as to induce them to settle and feed near the house, and, becoming still tamer, to approach the yard, feed from his hand, and even to follow the domestic birds into the kitchen; until unfortunately a servant, imprudently seizing one of the wild birds, and tearing a handful of feathers from its back, the wildness of its disposition was aroused, and darting forth, followed by its companion, it mounted in the air soaring higher and higher at every circle, at the same time uttering its hoarse call, which was responded to by the tame birds below; for several days did they return and perform the same evolutions without alighting, until the dormant impulses of the tame birds being aroused, they also winged their way to some far distant part of the country, and never returned to the home where they had been so long fostered."
When flying at only a moderate distance from the ground, the action of the wings is very laborious and heavy, but when soaring up in the blue atmosphere, the Native Companion moves most gracefully, but its hoarse cry comes down to you with a harsh abruptness that is decidedly startling.

The nests made by these birds are merely slight depressions on the bare plains; and sometimes the low swampy lands in the neighbourhood are resorted to for the purpose of depositing the two eggs. They are cream colour blotted all over, particularly at the larger end, with chestnut and purplish-brown, the latter colour appearing as if beneath the surface of the shell. Length, 3 3/4 inches; breadth, 2 1/2 inches. Should any daring intruder attempt to attack the eggs, these birds fight desperately in defence of their property, and inflict such wounds with their sharp bills as induce him to beat a speedy and undignified retreat.

The natural food includes insects, lizards, bulbous roots and other vegetable substances that are sought for and torn from the earth by the aid of its powerful beak.

The sexes are alike, except that the female is slightly smaller than the male.

The general plumage, deep silvery-grey; the feathers of the back, dark brownish-grey with silver-grey edges; lesser wing-coverts, dark brown; primaries, black; crown of the head and bill, olive-green, the bill becoming lighter towards the tip; irides, fine orange-yellow; raised papillae surrounding the ears and back of the head, fine coral-red, passing into an orange tint above and below the eye, and becoming less brilliant on the sides of the face, which together with the gular pouch is covered with fine black hairs, so closely set on the latter as almost to conceal the red colouring of the skin; upper part of the pouch and bare skin beneath the lower mandible, olive-green; in old males the gular pouch is very pendulous, and forms a conspicuous appendage; legs and feet, purplish-black. (Gould.)

Habitats: (N.W.A.), Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania. (Ramsay.)
PLATE XXV.

GENUS PLATALEA (Linnaeus).

The widely distributed family of Spoonbills is represented in Australia by one species—the *Platalea regia*, which affects a fairly extensive range.

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PLATALEA REGIA (Gould).

ROYAL SPOONBILL. GENUS: PLATALEA.

For a moment this Spoonbill might be confused with the *Platalea leucorodia* of Europe, as in size and the colouring of the plumage little difference exists between the two species, but the lack of feathers over the face and forehead, which are thus rendered bare and black as the bill, make it characteristically distinct. As is the case with the European congener, this bird assumes a fine crest during the pairing and breeding season.

Found indiscriminately along the northern, eastern, and southern seashore, it shows a preference for those marshy inlets of the sea that run inland for a considerable distance, or the banks of rivers and lakes where small-shelled molluscs, frogs, insects, and the fry of fish are to be found and easily captured by the bill so wonderfully adapted to this mode of livelihood.

Scarce any difference is perceptible between the sexes, both having the graceful ornamental crest which they can erect or drop at will.

The whole of the plumage is white; bill, face, legs, and feet, black; on the crown of the head and over each eye, a triangular mark of orange; eye, red. (Gould.)

Total length, 29 inches.

Habitats: Derby (N.W.A.), Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia. (Ramsay.)

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GENUS PLATIBIS (Bonaparte).

The only member of this genus was formerly classified under the *Platalea*, and is so still by some naturalists, but from the fact that it differed from the typical *Platalea* in many points, and had many characteristics in common with the White Ibises of India and Africa, Gould considered it was worthy to be erected into a new genus—a measure he did not venture to undertake himself, but was glad to adopt Bonaparte's innovation when it was made.
PLATIBIS FLAVIPES (Gould).

YELLOW-LEGGED SPOONBILL. Genus: Platibis.

Gould has a short but interesting paper on this bird, from which more can be deduced than he was able actually to verify. Visiting Liverpool Plains during the wet season of 1839, he was struck with the numerous flocks of Yellow-Legged Spoonbills that seemed to have taken possession of every lagoon and creek in the district, along with many other rare birds, particularly the Straw-Necked and White Ibises, with which it was associated. This was the more singular as, in his previous visit during a drought, not one of these birds was observed. He inferred very reasonably that the rains had brought in their train those aquatic insects and shelled mollusks that are the principal foods of these different birds. He speaks of the Flavipes as "shy and distrustful, and it was not without a considerable degree of caution and manœuvring that I could ever approach sufficiently near to make successful shots. I occasionally met with it singly, but more frequently in pairs, or in small companies of from six to eight. When not occupied in procuring food, which it does while skirting the edge of the lagoon, or by wading knee-deep among the grasses and rushes, it may be seen reposing on the dead branches of the highest trees growing near the water, frequently standing on one leg, with the head drawn back and the bill resting on the breast. When thus situated, an approach sufficiently near to procure specimens is almost impossible."

The egg is white, long, and tapering towards the smaller end; the surface of the shell roughly and minutely indented all over. Length, $2\frac{3}{16}$ inches; breadth, $1\frac{13}{32}$ inch.

In appearance the female is slightly smaller than the male.

The entire plumage is a dull creamy-white, with the exception of the outer edge of the tertiaries, which are black; face, white, and devoid of feathers, and bounded by a narrow line of black; bill, primrose-yellow, passing into flesh-pink at the base; irides, straw-white; legs and feet, yellow; nails, black.

Total length, 28 inches.

Habitats: Rockingham Bay, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia. (Remsay.)
PLATELE REGIA (Gould)
Royal Spoonbill

PLATIBIS FLAVIPES (Gould)
Yellow-legged Spoonbill
PLATE XXVI.

GENUS GERONTICUS (G. R. Gray).

This is a very beautiful and curious genus, consisting of one species that is confined in its habitat to Australia.

GERONTICUS SPINICOLLIS (G. R. Gray).

STRAW-NECKED IBIS. Genus Geronticus.

As a type of beauty among the Ibises this special example no doubt ranks high, and is certainly a handsome, if somewhat peculiar, bird. It is found very generally throughout Australia, but can never be depended upon in any locality, as its movements are largely governed by considerations of season. Should it be a wet one, and favourable to the increase of the lower animal life upon which the Ibis lives, it will assemble in immense flocks on the inland plains and such low-lying districts as the country about Liverpool Plains and the coast side of the Liverpool Ranges, where are to be found shallow lagoons. Here it assembles in large flocks, wading knee-deep in search of crustaceans, frogs, and insects of a watery nature; besides this, it is not independent of grasshoppers and insects of an earthy nature. But should droughts supervene, the Ibis seeks more favoured localities.

The Straw-Necked Ibis has a most stately walk and dignified manner. It perches readily on trees, and when flying in large flocks over the plains the effect is very striking—for one moment a sea of white breasts is seen, while in the next a revolution of position exposes dark-coloured backs and snow-white tails. These birds usually describe a semicircular sweep over the plains, and when winging their way for a long flight rise high in the air, after which the entire flock arranges itself in the form of a figure or letter, after the practice so often observed among ducks and geese.

Very few of the wading birds are endowed with musical voices, and this Ibis is no exception, for its note is a loud, hoarse, croaking cry. The flocks feed closely packed, and from the motion of their bills and tails the whole mass seems in constant motion. The natural disposition is inclined to be shy enough to make successful shooting a matter of congratulation. (Gould.)

This Ibis breeds in companies near billabongs and lagoons in the interior. The egg is long in shape, white outside and greenish inside, the surface of the shell being creased in places and minutely pitted all over. Length (1), 2 inches 8 lines, (2), 2 inches 6½ lines; breadth (1), 1 inch 8½ lines, (2), 1 inch 9½ lines.

The sexes are alike in plumage, but the female is smaller, and has the peculiar straw-like feathers on the neck less long and stout than the male. Only the fully mature birds have the head and back of the neck destitute of feathers.

Head and forepart of the neck naked, and a dull inky-black colour; back and sides of the neck covered with white down; on the front of the neck and breast the shafts of the feathers are fine, stiff, tapering processes of a straw-yellow colour; sides and back of neck, breast, and all upper surfaces, metallic-green and purple, crossed on the wing-coverts, scapularies and outer webs of the secondaries with dull black bars; abdomen, flanks, and under tail-coverts and tail, white; bill, black, fritted with transverse yellowish bars; irides, dark brown; thighs, crimson; legs, blackish brown.
Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, South Coast of New Guinea. (Ramsey.)

GENUS THRESKIORNIS (G. R. Gray).

The type of this genus is the Sacred Ibis of Egypt, of which there are several species, all occupants of the Old World.

THRESKIORNIS STRICTIPENNIS (Gould).

WHITE IBIS. Genus: Threskiornis

Like the P. flavipes and the G. spinicollis, this bird is to be met with most plentifully in the wet seasons that produce aquatic reptiles, insects, and luxuriant river herbage, on which it mainly subsists; but, unlike the Yellow-Legged Spoonbill and the Straw-Necked Ibis, which affect equally the lagoons and plains, the White Ibis confines itself to the wet hollows of flats and the banks of rivers or lagoons, where it wades knee-deep among the rushes and succulent herbage in search of frogs, newts and insects. Its appetite satisfied, it retires to the bare branches of some high gum-tree near by, from which sentinel-like spot it can closely observe everything that happens, and cautious indeed must be the sportsman who gets within range of it.

The White Ibis moves about in pairs, or in small flocks of from five to twenty, spending the spring and summer in the eastern and southern colonies, where it breeds and rears its young, after which it wings its way northward. About the Murray nests are built in the reed-beds in November, and sometimes as many as nine eggs laid. These eggs are white and of a long oval shape, the surface of the shell is rather rough, being minutely pitted all over. Length, 2½ inches; breadth, 1³/₁₀ inches. (Campbell.)

Though closely allied to the T. aethiopica (Sacred Ibis) and the T. melanoccephala, the T. strictipennis is easily distinguishable by the lengthened plumes that hang down its neck and give it its specific character.

Head and upper part of the neck bare, crossed at the back by ten narrow distinct bands of colour varying from rose-pink to dull ferruginous-brown in different individuals; on the crown a series of oval spots arranged in the form of a star, varying in shade like the transverse bars; the whole of the body and wings, creamy white; primaries, tipped with deep bluish-green; webs of the tertiaries, very long and re-curved, bluish-black, freckled with white; the feathers on the forepart of the neck long, narrow, lanceolate, and stiff; bill, deep slaty-black; irides, brown; tarsi and feet, light purple; thighs and knees, deep purple.

The sexes are alike except in size, the female being slightly smaller. The young differ only from their parents for the first year or two in having the neck partially covered with white feathers like the rest of the body. (Gould.)

Total length, 30 inches.

Habitats: Derby, N.W.A., Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria, and South Australia. (Ramsey.)
GENUS FALCINELLUS (Bechstein).

The type of this genus is the Common Ibis of the British Islands, which is to be found in all the countries of the old world in both hemispheres.

FALCINELLUS IGNEUS (G. R. Gray).

GLOSSY IBIS. Genus: Falcinellus.

The Glossy Ibis has a wandering disposition that is too erratic to be termed migratory, for it has no fixed home anywhere, but may be met with at all times and seasons within certain wide bounds. Thus in Australia it has been found in all the colonies of the mainland except Western Australia. It does not arrive at the period of fullest development till about its third year, when the plumage of both sexes is alike.

The egg laid by this bird is slightly rough, and of a uniform cold bluish-green. Length, 2 inches 1½ lines; breadth, 1 inch 5 lines.

Head, dark chestnut; neck, throat, under surfaces, top of back, upper edge of wing, rich reddish-chestnut; rest of plumage, rich dark green, with metallic-bronze and purple reflections; orbits, olive-green; irides, brown; bill, legs, and feet, dull olive-brown.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, Interior, Victoria and South Australia. (Ramsay.)
PLATE XXVII.

NUMENIUS UROPYGIALIS (Gould).

AUSTRALIAN WHIMBREL. Genus: Numenius.

The members of this family bear such a close resemblance to each other that a superficial glance would induce one to suppose that the various species were merely individuals at different stages of growth. Thus the example before us is apparently only a larger edition of N. minor; but closer inspection reveals many fine differences, most prominent the lack of brown shoulder feathers.

The Australian Whimbrel is almost identical with the N. phaeopus of Europe, and has the same habits. In appearance it is a paler brown, and has the rump barred and mottled instead of pure white.

Like other Curlews, it affects swampy districts and the banks of rivers, and is found generally dispersed over the whole of Australasia wherever situations suitable to its habits are to be found; but from the fact that no one has yet succeeded in finding a nest or eggs we infer that it betakes itself to remote districts for the purposes of incubation.

The sexes do not differ in any one particular, and can be determined only by dissection.

The entire plumage a freckled brown and buff, caused by an irregular line of buff or of brown down the centre of each feather; centre of back and shoulder feathers, dark olive, spotted on the edges with light buff; wings, coverts, mottled in a lighter shade; primaries, blackish brown, with light shafts; tail, pale brown, barred with dark brown; chin, lower part of abdomen, and under tail-coverts, white; bill, blackish horn-colour, fleshy at base; feet, greyish black.

Total length, 15 inches.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, New Zealand, South Coast of New Guinea. (Ramsay.)

NUMENIUS MINOR (Müller).

LITTLE WHIMBREL. Genus: Numenius.

This little bird is the smallest of the three species known to Australia and is much more freckled than N. cyanopus, while it shows more brown than N. uropygialis. It is quick and active both on the wing and on the ground and makes wide circles through the air sometimes for the distance of a mile, rising higher and higher with each revolution, then it will descend rapidly to the ground and run about excitedly after the manner of Plovers.

It associates in flocks, but where are its breeding grounds naturalists have not yet ascertained, probably, like the N. cyanopus (Australian Curlew) its migratory habits lead it far afield for the purposes of incubation.
Entire plumage freckled and mottled with buff, the upper surfaces being blackish brown with triangular buff spots on the edges of the feathers; shoulders, primaries and secondaries blackish brown, with white shafts to the latter; tail, greyish-brown, barred with black; chin, white; under surfaces, light buff; irides, black; bill, fleshy at the base, olive-brown at tip; feet, bluish flesh-colour.

Total length, 12 inches.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, South Coast of New Guinea. (Ramsay).
NUMENIUS EUROPEIUS, (Gould)

Australian Whimbrel

NUMENIUS MINOR, (Gould)

Old Whimbrel
PLATE XXVIII.

GENUS NUMENIUS (Latham).

THREE species of the genus Curlew inhabit Australia, so far as their nomadie habits will allow of their having a settled place of abode anywhere. During the period of their visits they may be found frequenting flat sandy shores of the ocean or tidal rivers, but retire in spring to the upland districts to breed in their respective homes.

NUMENIUS CYANOPUS (Vicillo).

AUSTRALIAN CURLEW. Genus: NUMENIUS.

THIS bird is well known to inhabitants of the country districts of the colonies from its habit of collecting in flocks of a dozen or so soon after sunset in the autumn and winter evenings, and on bright moonlight nights, when its shrill screams give a most weird effect to the night. Flying in extended horizontal lines over the water, or adjacent sandy shore or meadow land, they give forth their screaming chorus upon the still night air with a force and abruptness that is truly alarming to the suddenly awakened sleeper near at hand. In the distance the effect is softened, and gives a poetic effect to the silvery moonlight; but should the night be dark and tempestuous there is something awful and ghoul-like in the blast of song borne shrilly on the wind.

Of semi-nocturnal habits, the Curlew is often surprised asleep among the bracken or scant herbage of the coastal ranges, and is so stupid then that it is almost incapable of escaping and may be knocked over with a stick.

Found throughout Australasia, it is nowhere more numerous than in Tasmania, where it may be met with in flocks about the rivers and marshy places. Its principal foods are molluses and crabs, which are found abundantly on the banks and flats left bare by the out-going tide.

The only differences between the Australian Curlew and the Common Curlew of Europe lie in the greater length of the bill and the colouring of the rump and upper tail coverts, which are barred with brown instead of being white; the under surfaces are washed with buff.

In speaking of migratory birds, J. A. Campbell cites the experience of Dr. Seebohm with regard to their extensive range of habitat. He (Dr. Seebohm) says "the Australian Curlew breeds in South-Eastern Siberia, from Lake Baikal to the mouth of the River Amoor, passing along the coasts of Japan and China on migrations, and crosses the line to winter in Australia. There have been several occurrences of the Curlew in New Zealand, therefore it must sometimes travel over a hundred degrees of the earth's surface, and if it be not a migrant it certainly is a nomad on a gigantic scale."

Gould was of opinion that when the breeding places were discovered they would prove to be either the high lands of Tasmania or Australia Felix.

The sexes are alike.
The whole of the plumage is brown and greyish buff, mottled and freckled, and warming into buff; the feathers of the throat, back, and breast having dark-brown lanceolate centres, which give a striated appearance; wing-coverts, blackish brown, margined with greyish-white; tail, light-brown, crossed with dark-brown bars; primaries, dark-brown with white stems; tip of beak, blackish-brown, base, flesh colour; legs, bluish-lead colour; irides, dark-brown.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia, New Zealand, South Coast of New Guinea. (Ramsay.)
PLATE XXIX.

FAMILY SCOLOPACIDÆ.

This is a large and numerous family of marsh birds, including all the Snipes and Woodcocks to be found distributed over the face of the globe. Their nests are primitive structures made by hollowing out slight holes in the ground under tufts of grass or other herbage, where are deposited four eggs. These birds are held in high esteem by sportsmen, both for the game they afford and for the epicurean delicacy they provide to jaded appetites.

GENUS GALLINAGO (Leach).

The typical member of this genus is the common European species, G. scolopacius, which has one representative in Australia.

GALLINAGO AUSTRALIS (Lath.).

NEW HOLLAND SNIPE. Genus: Gallinago.

This bird is one of the few examples we have of true game, and is prized accordingly by sportsmen who have been trained to field sports by English associations. It is a much larger species than its European representative, weighing from five to six ounces and a quarter, and is an easier shot, for its flight is correspondingly heavier; and it is less shy, sits closer, and when flushed soon re-alights. Added to these qualities of similarity, the fact that it may be safely looked for wherever there are lagoons, swamps, or even open grassy patches where the ground is soft and likely to produce aquatic insects, and its relation to the English bird becomes close.

In reference to its migratory instincts J. A. Campbell writes:—

"It has been proved beyond all doubt that Snipe migrate from the interior of the continent, and arrive simultaneously in Tasmania and the southern parts of Australia by night, about the period of the full moon nearest the end of August or beginning of September. In January they return northward by degrees, in time for the wet season in the interior, and for the purpose of breeding there. . . . . It has been proved that Snipe incubate or breed in the interior during the wet season, about April or May. I saw a clutch of three eggs which were taken in the Darling District near Bourke. I am in possession of one of these eggs, which I exhibited at the annual conversazione of the Field Naturalists Club, in April, 1882, and which I subsequently described."

"The nest of these remarkable eggs was simply the bare earth, slightly hollowed under tufts of grass." (Gould.)

Captain Sturt informs us that he saw a few of the New Holland Snipe in the interior, but met with great numbers breeding in the Valley of Mypumba, S.A.; and Gilbert, the able coadjutor of the celebrated naturalist, Gould, mentions having met with the birds about Port Essington.
"The egg of this very interesting species in shape and ground colour is not unlike a miniature Oyster Catcher's, only more heavily blotched; ground colour is of a light yellowish-buff or stone, heavily marked all over with large well-defined patches of very dark olive, approaching Chinese ink colour. These patches, some of which cover the area of half a threepenny-bit, assume fanciful figures, and are conjoined with other smaller and streaky markings. Where the ground colour is visible, a few light greyish markings appear as if under the shell's surface. Length, 1 inch $\frac{3}{4}$ lines; breadth, 1 inch 1 line."

Gilbert found that the Port Essington bird was only an occasional visitor to the Coburg Peninsula, arriving with the rainy season about November, and disappearing again in a few weeks, affecting during its stay the grassy flats rather than the lagoons and sandy shores.

The sexes are exactly similar.

Crown of the head, deep brownish-black, divided down the centre by a line of buff; face and chin, buffy-white; sides of the neck, breast, and flanks, washed with pale reddish-brown, and mottled with irregular spots of deep brown, which increase in size, until on the flanks they assume the form of irregular bars; back, dark brownish-black; the scapulars mottled with deep sandy-buff and broadly margined on their external webs with pale buff; wing-coverts, dark brown, largely tipped with pale buff; wings, dark brown, all the feathers slightly fringed with white at the extremities; lengthened flank-feathers, regularly barred with brown and white; centre of the abdomen, white; under tail-coverts, buff, barred with dark brown; four central tail feathers, blackish-brown, crossed near the tip by a broad band of rufous, beyond which is a narrow irregulor line of brown, and the tip white; the lateral feathers alternately barred with dark and lighter brown, and tipped with white; irides, dark brown; basal half of the bill, yellowish-olive, the remainder dark brown; legs, yellowish, tinged with olive. (Gould.)

Habitats: Derby (N.W.A.), Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia. (Ramsay.)

**GENUS RHYNCHAEA (Cuvier).**

This genus comprises four widely dispersed species. One is found in the southernmost parts of America, another in South Africa, a third in India, and a fourth in Australia. They differ from the true Snipe in preferring drier ground and knolls under shrubby bushes near marshy lands, where their food is easily procurable.

**RHYNCHAEA AUSTRALIS (Gould).**

**AUSTRALIAN RHYNCHAEA. GENUS: RHYNCHAEA.**

So little has this unique species attracted the attention of naturalists that we find Gould is the only one who has collected any information concerning it, and his paper we are thus obliged to give verbatim in default of more varied experiences from which to compile. He says in his exhaustive monograph:—"The Australian Rhynchea is a summer visitor to New South Wales, where it arrives in August and September; but whether its visits are regular, or only occur in such wet periods as fill the lagoons and cause a redundancy of rushes and other herbage to spring forth, I know not; in all probability
they are influenced by the character of the season, as none but humid situations appear to suit its habits. During the fine season of 1839, when much rain had fallen and the whole face of the country was covered with the most luxuriant and varied verdure, and every hollow formed a shallow lagoon, this bird was tolerably plentiful in the district of the Upper Hunter, particularly in the flats of Sogenbo, Aberdeen, Soone, &c. Although I did not succeed in finding its nest, no doubt exists in my mind of its breeding in the immediate locality, as on dissecting a female an egg was found in the ovarium of the full size and ready to receive its calcareous covering. In its habits and disposition this bird neither lies so close nor has the crouching manner of the true Snipes, but exposes itself to view like the Sandpipers, running about either among the rushes or on the bare ground at the edge of the water; on being disturbed, those I saw generally flew off towards the brush, seeking shelter among the low bushes, from which they were not easily driven or forced to take wing. Its flight is straighter, slower, more labored, and nearer to the ground than that of the true Snipes. Considerable confusion has always existed respecting the members of the group to which this bird belongs, the opposite sexes of the same species having been described as distinct; from actual dissection, however, of numerous examples, and from seeing these birds mated in a state of nature, I am enabled to affirm that the figures in the plate of the folio edition are accurate representations of an adult male and female. This species will be found on comparison to possess, among other characters, much shorter toes than the Indian and Chinese species, to which it is most nearly allied. On dissection I also observed an anatomical peculiarity of a very extraordinary nature, the more so as it exists in the female alone; I allude to the great elongation of the trachea, which passes down between the skin and the muscles of the breast for the whole length of the body, making four distinct convolutions before entering the lungs. On discovering this extraordinary information I placed a body in spirits for the examination of my late friend, Farrell, who, as is well known, paid great attention to this part of the organisation of birds, and who informed me that the position and form of the trachea in the *Rynchota Australis* is similar to that of the Semi-Palmated Goose (figure in the 15th volume of the "Trans. Linn. Soc." table 14). The Cranes, Swans, Guans, &c., present us with species having the trachea most singularly developed, several of them with extensive convolutions before entering the lungs; some with a receptacle for its folds within the cavity of the keel of the breast-bone, while in others it is situated outside the pectoral muscles, immediately beneath the outer skin of the breast, but in no instance is it more extensively or more curiously developed than in the present bird. The use of this convoluted trachea, so exclusively confined to the female, I could not in any way discover or surmise. No note whatever was heard to proceed from either sex while on the wing or when flushed."

Captain Sturt speaks thus of it:—"This beautiful bird was very scarce in the interior, and, indeed, is not common anywhere. Some three or four couples visit my residence at the Grange yearly, and remain in the high reeds at the bottom of the creek, among which they, doubtless, breed: but we never found one of their nests. They lay basking in the shade of a tree on the sandhills during the day, and separate when alarmed."

The male is much smaller than the female, and has the sides, back, and front of the neck much lighter and mingled with patches of white; wings, more olive, the coverts ornamented with numerous large irregular patches of buff encircled with a narrow line of black; the buff bands on the primaries richer and more distinct; the scapulaires speckled with white; the patch on each side of the chest dark olive, with large patches of white surrounded by a line of black.

Total length, $8\frac{1}{2}$ inches. (Gould.)

The female has a stripe from the bill down the centre of the head, to the nape pale buff, circle surrounding, and a short stripe behind each eye white; back of the neck chestnut, crossed with indistinct narrow bars of greenish-brown; crown, dark brown; sides of the face and the sides and forepart of the neck, chocolate; chin, white; back, olive-green, tinged with grey, and marbled with dark-brown; scapulaires blotched on their external webs with deep buff; wing-coverts, olive-green, crossed by numerous
fine irregular bars of black; tertiaries, olive-green, tinged with grey, crossed by irregular bars, and numerously sprinkled with black; three outer primaries dark brown, crossed on their outer webs with broad irregular patches of deep-buff and sprinkled with grey on the inner; the remainder of the primaries and secondaries grey, crossed by numerous narrow irregular lines of black, and spotted with white surrounded with black; rump and tail grey, like the secondaries, but spotted with both white and buff, each of which colours are bounded with black; breast and all under surfaces white, with a large irregular patch of olive-green narrowly barred with black on each side of the chest; bill, pale green at the base, passing into brownish horn-colour at the tip; irides, rather dark hazel; legs, pale green. (Gould.)

Habitats: Rockingham Bay, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, West and South-West Australia. (Ramsay.)
PLATE XXX.

GENUS TOTANUS (Bechstein).

WHEN Gould wrote his "Birds of Australia," he suspected that the one species of this genus then known to Australia would prove to be identical with the Totanus stagnatilis of the northern hemisphere. From the fact that it is to be found in such intermediate countries as New Guinea and India, we may reasonably accept his supposition as being correctly founded. Since then the species *T. pulverulentus* has been added to the genus under the title of *T. griseopygius*.

TOTANUS STAGNATILIS (Gould).

MARSH SANDPIPER. GENUS: TOTANUS.

It is always unsatisfactory to attempt to make a readable paper out of insufficient material. In this case we have sought unsuccessfully for information concerning this Sandpiper, and are obliged to fall back upon Gould's own slight knowledge—a knowledge, however, sufficient to enable him to identify the Australian with the European specimen, though the former is lighter in colour. This is a fact of considerable importance, as from it we can assume that what is true of one is true of the other, and apply Lord Tilford's "Notes on Birds observed in the Ionian Islands" to this example, making allowances for the differences of seasons:—"Abundant in March, April, and the early part of May on the racecourse of Corfu. Its habits closely resemble those of the Green Sandpiper (*T. ochropus*), but is less shy and not so clamorous. I have had excellent opportunities of observing closely the habits of this and many other allied species on the racecourse, having sometimes seen within a few yards of the spot where I lay hidden *T. glattis*, &c., &c."

The egg is pear-shaped, of a rich buffy stone-colour, mediumiy daubed and blotched all over with rich umber or reddish-brown and dull grey; the last colour appears under the shell's surface.

Length, 1 inch 6 lines; breadth, 12\(\frac{1}{2}\) lines. (J. A. Campbell.)

Face, front of neck, and all under surfaces, white; crown of head and neck grey, streaked with black; upper surface, grey; wings, blackish-brown; tail, white, with diagonal bars of brown; bill, dark greenish-olive, tipped with brown; legs, sickly olive-yellow; irides, blackish-brown. (Gould.)

Habitats: Wide Bay District, New South Wales.

TOTANUS GRISEOPYGIUS (Gould).

GREY-RUMPED SANDPIPER. GENUS: TOTANUS.

This little bird is recognised under such a variety of aliases that it is somewhat puzzling to determine which should be its proper name. *T. inornus* (Gmel.), *Scopulae inornans*, *T. brevipes* (Vieill.), *Gambetta pulverulentus* (Gould), *T. griseopygius* (Gould). The last name we have adopted as it prevents the necessity of a new genus.
The Grey-rumped Sandpiper is an inhabitant of the coast and coastal districts, where tidal rivers promise the measure of salt and brackish water it delights in. About Port Essington, where it was first seen, it frequented the sandy beaches and rocks just above high watermark, also the salt water lakes and swamps about the settlement; there are certain seasons of the year when it congregates in enormous flocks in company with Stints and Plovers.

Like all wading birds, its food consists of aquatic insects and their larva, small shelled molluses, &c., indigestible material easily assimilated by their muscular stomachs.

The colouring of the sexes is almost the same.

The general appearance of this little bird is a delicate grey, which is much lighter in shade in winter than in summer; the under surfaces is a greyish white and destitute of its brown summer freckles; primaries, dark brown; irides, reddish-brown; bill, blackish-brown, except the base of the under mandible, which is scarlet; legs and feet, hyacinth-red.

Total length, $8\frac{3}{4}$ inches.

Habitats: Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, South Coast of New Guinea. (Ramsay.)
PLATE XXXI.

GENUS TEREKIA (Bonaparte).

THIS is a unique genus containing only one species, and characterised by the upward curvature of the bill, which is unlike any other Sandpiper's.

TEREKIA CINEREA (Gould).

TEREK SANDPIPER. Genus: Terekia.

In Australia this little bird seems to be confined to the central part of the eastern seaboard, but in other parts of the world it is very generally distributed. It is common in Java and Sumatra, and penetrates to India, China, Europe, and probably North Africa. In Europe Temminck is of opinion that its appearance is accidental; that its true homes are Russia, Siberia, the borders of the Caspian Sea, Japan, Sumatra, and Borneo; that specimens from the last named island are identical with those captured in Normandy and in the suburbs of Paris. Its natural instincts lead it to the borders of rivers. It has a sonorous voice, and feeds on worms, insects, and small shellfish. According to Pallas the nests are made of plants, which is a departure from the common custom among Sandpipers, who are content to deposit their eggs in a sheltered depression in the ground. (Gould.)

"This neat plumaged little Sandpiper," says Mr. Jerdon, "is not very abundant in the south of India, but is met with more frequently towards the north. It frequents the shores of seas, back-waters, tanks, and rivers in small flocks. In summer plumage its scapulars become black, edged with brown. It breeds in Northern Asia, laying four pale olive-yellow eggs, with brown spots. It is extensively distributed over Europe and Asia to Australia." — "Birds of India," Vol. II., Part II., p. 683.

The name Terek has been adopted from the fact that it is numerous during summer about the Caspian Sea, and especially about the mouth of the Terek River, where it breeds. It is also to be met with in flocks in the marshes about the borders of the salt lakes of that region.

The egg is pear-shaped, ground colour of a stony-grey, with a perceptible greenish tinge, blotched, spotted, and streaked all over with rich umber or reddish-brown, some lighter markings appearing under the surface of the shell. The egg is not unlike that of the Marsh Sandpiper, only the markings are more numerous and smaller. Length, 1 inch 3\(\frac{1}{4}\) lines; breadth, 12\(\frac{1}{2}\) lines.

Head, all the upper surfaces, wings, and tail, pale brown, with a fine line of a darker tint down the centre of each feather; shoulders and primaries, dark brown, with the shaft of the first quill white; secondaries, white; base of the bill, orange-brown, passing into blackish-brown at the tip; irides, black; legs, brownish-orange, the brown tint predominating on the joints. (Gould.)

Habitats: Wide Bay District, New South Wales. (Ramsay.)

GENUS ACTITIS (Illiger).

THIS is a restricted genus, containing at present only two species, one of which inhabits Australia and is common to the Old World; the other is in America.
ACTITIS HYPOLEUCOS (Linn.).

COMMON SANDPIPER. Genus: Actitis.

There is no more widely distributed bird in Australasia than the Common Sandpiper. On every coast and in every cline it is to be found pursuing its innocent life on muddy mangrove banks or the rocky shores of ocean harbours. It is vivacious in its movements, fluttering from mangrove root to root, or rock to rock, in search of worms, insects, and mollusces, its tail being in constant wagging motion the while.

Its habits, manners, and economy are precisely the same as the British variety, and we may therefore conclude that its nest is made on the same plan—that is, a slight structure in a tuft of rushes near a stream, in which it deposits four pointed eggs—large for the size of the bird, and measuring 1 inch 5\(\frac{1}{2}\) lines by 12\(\frac{1}{2}\) lines, a close approximation to the Terek Sandpiper's eggs, which it also resembles in appearance, having a ground colour of a warm stony-grey or cream, sparingly marked, but close about the apex, with roundish spots and blotches of amber, reddish-brown, and obscure grey, the last colour appearing under the surface of the shell.

The sexes are alike in plumage, and show little perceptible difference in size, but the young ones have the brown feathers of the upper surface barred and freckled with darker brown. As these young ones are always more frequently met with than the adult birds, we are led to conjecture either that the race is delicate and dies prematurely, or else the shyness of their disposition increases with age, inducing them to withdraw more and more from civilisation. Always it is a rare thing to meet more than four in company, while it is most usual to find solitary individuals.

The adults have all the upper surface pale glossy or bronzy brown, each feather crossed with irregular bars of dark brown, bounded on either side by a narrow line of pale brown; base and tips of the secondaries, white; primaries, very slightly tipped with white; centre tail-feathers, pale glossy or bronzy brown, with a row of irregular-shaped spots of dark brown along the margins; lateral feathers, white, crossed by irregular blended bars of dark and pale brown; under surface, white, with the exception of the sides of the chest and the shafts of the feathers of the front of the chest, which are pale brown.

Total length, 6\(\frac{1}{2}\) inches. (Gould).

Habitats: Derby (N.W.A.), Port Darwin, Port Essington, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, south coast of New Guinea. (Ramsay.)

GENUS STREPSILAS (Illiger).

There is no more widely distributed bird known than the Turnstone. It is found in almost every country in the world, thus making up for the sparseness of its species, which number at the outside three.
STREPSILAS INTERPRES (Leach).

TURNSTONE. Genus: Strepsilas.

That indefatigable naturalist, Gould, who compared, weighed, and investigated evidence from every possible quarter before he pronounced an opinion, says, that so far as his experience went, he could detect no difference between the Turnstone of Europe, America, or Australia, and was inclined to believe them one and the same species. Should this be a fact, it is a singular contradiction of the local effect of climate upon individuals. The Turnstone is found indiscriminately wherever there are sea shores, yet the tropic and arctic frequencers exhibit no variety such as might be expected to arise out of local influences. This is a true cosmopolite.

It has been noticed that the birds to be met with in the temperate regions, such as Tasmania, are usually miniature specimens, few adults being seen, while in the torrid regions, such as Torres Straits, the converse holds good, and the inference drawn is that the birds breed in the hot countries and the young ones annually migrate to the cooler southern countries.

The food of these birds, as may be expected from their love of the sea shore, consists of marine insects, molluses, and small shell-fish.

The egg is large for the size of the bird, pear-shaped, with a ground colour of a pale olive or warmish-green, daubed and smudged with large and small patches of umber, the larger markings are about the thicker end, where some have the appearance of having been wiped in obliquely with a brush. Altogether, this interesting egg presents a singular appearance. Length, 1 inch 7 lines; breadth, 1 inch 1\(\frac{1}{2}\) lines. (J. A. Campbell.)

The sexes are alike except that the female is slightly less bright than her mate. The young are rather long in developing the full adult plumage, and for some time after they are fully grown are much darker in colour and lack the white face-markings and the chestnut tints that make the older birds so beautiful.

The adult has the forehead, eyebrows, and oval spot before each eye, the centre of the throat, ear-coverts, nape of the neck, lower part of the back, abdomen, and under tail-coverts, white; from eye to eye across the forehead a band of black, which dips downward in the centre of the bill; from the base of the lower mandible proceeds a mark of black, which passes upwards to the eye, dilates backwards towards the nape, covers the front of the chest, and bifurcates towards the insertion of the wing; mantle and scapulaires, reddish-brown, irregularly varied with black; rump, black; wings, black, the basal part of the inner webs and the shafts of the primaries, white; secondaries, broadly tipped with white, forming a conspicuous bar across the wings; bill and irides, black; legs and feet, orange. (Gould.)

In the young the whole of the upper surface is mottled brown and black, the white mark on the throat much larger, and only a slight trace of it on the face and nape.

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, New Zealand, South Coast of New Guinea. (Ramsay.)
PLATE XXXII.

TRINGA CRASSIROSTRIS (Temm. and Schleg.).

GREAT SANDPIPER. Genus: Tringa.

THIS is one of the most singular species of Tringa, equal in size to the Ruff; but beyond this easily observable fact little is known respecting it. It is found to inhabit China and Japan as well as Australia, and is much used as an artistic model in decoration by the ingenious Mongols, its varied plumage lending itself happily to their imitative art.

Crown of the head and the neck, brownish-grey, each feather with a stripe of brown down the centre; back and wings, brown, broadly margined with brownish-grey; primaries, blackish-brown; rump, white, each feather tipped with brown; tail, brownish-grey; feathers of the breast, dark brown, with a crescent of white at the extremity; abdomen and under tail-coverts, white; flanks, mottled with brown; bill, feet, and irides, olive.

Total length, 9½ inches. (Gould.)

Habits: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Wide Bay District, New South Wales, West and South-West Australia, south coast of New Guinea. (Ramsay.)

GENUS GLOTTIS (Nilsson).

THE one species known to Australia is apparently identical with the Glottis canescens of the British Islands, and is called Totanus canescens by Ramsay.

GLOTTIS GLOTTOIDES (Gould).

GREENSHANK. Genus: Glottis.

BEFORE us we have an example of a wandering tribe that is found in every country of Europe, Asia, Africa, and Australia; and like all nomadic tribes it is nowhere plentiful, nor can its presence be depended upon in any given locality, being always of an uncertain character.

It frequents most commonly the sea shore, but is not averse to penetrating arms of the sea and lagoons, though it prefers sandy points and spits, where it associates with the Whimbrel, Curlew, and Oyster Catcher.

Family parties of from seven to ten may be seen, but more often the Greenshank is to be found in pairs.

It is a peculiarity of the Sandpipers to undergo many changes of plumage, the feathers darkening and becoming more blotched and spotted during the breeding season than at any other, and this species is no exception.
The egg is pear-shaped, with a rounded apex, the smaller end nipping sharply off. The colour a rich buff-stone, mediumly daubed and blotched with rich umber and reddish-brown; the usual number of purplish-grey markings appear under the shell's surface. In other specimens the ground colour has a faint greenish tinge, with the markings less numerous and more speckled in form. Length, 2 inches; breadth, 1 inch 4 lines. (*J. A. Campbell.*)

One of the most graceful birds it is possible to imagine, upstanding and easy in its motions, it trips over the ground with a peculiar lightness, and adds not a little to the beauty of the landscape.

The sexes are quite indistinguishable from each other.

Face and all under surfaces, pure white, the sides of the breast streaked with dark brown; tail, margined and freckled with blackish-brown; shoulders and primaries, very dark brown, the outer quill having a pure white shaft; the remainder of the upper surface, light brown, margined, striated, and mottled with grey; bill, dark olive; irides, black; feet and legs, deep olive-green. (*Gould.*)

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia.
PLATE XXXIII.

FAMILY TRINGIDE.

FEW families are more numerous, or more generally distributed over the globe, than this one. As a natural consequence of their wide distribution the Sandpipers show many distinct forms or genera. Some of the Australian species resemble very nearly others inhabiting Europe.

GENUS LIMNOCINCLUS (Gould).

THIS genus is represented by two species, one of which, the Limnocinclus pectoralis, belongs to America, the other to Australia, where it may be looked for and found inhabiting marshy districts and the banks of rivers. They run about among the grass and undergrowth, much after the fashion of the true Snipe.

LIMNOCINCLUS ACUMINATUS.

MARSH TRINGA.

THIS is a small alert bird, dressed in brown and grey. Like the rest of its family it is characterised by a large prominent black eye, which stands out, bead-like, from the head, and gives to it an expression of watchfulness.

This is a pretty little Sandpiper, to be met with both inland and on the coast, the only desiderata being sandy beaches, marshes, or lagoons, that provide the aquatic vegetation so necessary to its existence.

Wherever met the Tringa is invariably found in pairs, or in small parties of from six to sixteen in number, tripping over the leaves of aquatic plants as they rest on the surface of the water, or wading up to its body in search of the insects upon which it feeds. As yet there is no authentic information of its breeding habits, which is the more strange as the bird is by no means shy, but will allow of a very near approach before taking wing; but it is migratory, and probably breeds in Central Asia.

Contrary to the usual law, the male Tringa is larger than his mate. During the first year the birds assume a rufous tinge on the feathers of the breast and flanks: the same tint again appears on the back, except where it is varied with greenish white. The adult bird is almost uniformly grey on the upper surfaces, the only white spot being the centre of the abdomen.

The feathers of all the upper surfaces, very dark brown in the centre and fading into light grey at the edges; crown of head slightly washed with rufous; primaries, brown, with white shafts; under surfaces, white, washed with greyish-brown, each feather having a central dark line; under tail coverts, conspicuously marked with a streak of brown down the centre; bill, olive at base, becoming dark brown at tip; legs, yellowish olive; irises, black.

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia, South Coast of New Guinea.
GENUS ACTODROMAS (Kauf.)

This is the generic name given to the little Sandpipers of Europe, America, and Australia, of which the Tringa minuta may be taken as the type. Only one representative is known to Australia.

ACTODROMAS AUSTRALIS (Gould).

LITTLE SANDPIPER. Genus: Actodromus.

This tiny bird is the exact representative of the Little Dunlin (Actodromus minutus) of Europe in economy and habits. It affects low flat shingly beaches, fringing deep bays and inlets of the sea; salt-water estuaries and sand-spits at the points of small islands are its favourite resorts. As the tide recedes this little Sandpiper may be seen tripping over the wet sands with extraordinary rapidity, in search of those salt-water insects which form part of its food.

Like others of the family, it undergoes seasonal changes of plumage; in the winter the dress is light, in the summer rufous and green tints appear.

Gilbert, in his explorations, found it breeding on the Haatmann’s Abrolhos in December; the two eggs were deposited in a hollow which it had formed in the ridge of a black deposit and salt thrown up by the ripple of the water, and left high and dry some four or five yards from the water’s edge. He saw it again in large flocks around Portu and on Rottnest Island. He observed that it uttered a weak piping cry while on the wing, and that its small muscular stomach was filled with tiny land and water insects and shell-fish. About Port Essington he found it congregating in flocks of hundreds, perching on the mangroves when the flood-tide covered the shores and beaches.

All the upper surfaces striated and mottled with shade of brown or grey; slight ferruginous markings on the shoulders and throat; primaries, blackish-brown, with white shafts; wing coverts, tipped with white; rump, upper tail coverts, and two centre tail feathers, blackish-brown; tail, pale brownish-white, with white shafts; forehead and under surface, white; sides of breast, mottled with dark brown, and stained with rusty red in the centre; irides, brownish black; bill, blackish-brown; tarsi and feet, olive brown. In winter the plumage is paler and destitute of the ferruginous tints, while the spots on the breast are much less marked.

Habitats: Derby (N.W.A.), Port Essington and Port Darwin, Gulf of Carpentaria, Cape York, Rockingham Bay, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria, and South Australia, Tasmania, West and South-West Australia, South Coast of New Guinea.

GENUS AUCYLOCHILUS (Kauf.).

The only species of this genus known is common alike to Europe, America, India, and Australia.
AUCYLOCHILUS SUBARQUATUS.

CURLEW SANDPIPER. GENUS: AUCYLOCHILUS.

THIS bird is not so widely distributed as the two previous ones, though it is found in most quarters. In the same way it is thinly dispersed and most wayward in its location, never being met with for a certainty at any stated times or places. Shingly beaches and estuaries are its favourite resorts. The seasonal changes of plumage from wintry grey to summer red is more striking in this species than in any other.

In summer the upper surface is deep rufous; wings, dark greyish-brown; upper tail coverts, white; tail, grey, barred with black and rufous; head, mottled black and white; all the under surface deep rufous; bill and legs, black, slightly tinged with olive; irides, dark brown.

In winter the rump is white, the remainder of the upper surface greyish-brown; under surface, white, except the chest, which is slightly tinged with grey.

Young birds differ from both in having the upper surface greyish-brown, each feather fringed with grey, and a wash of brown across the chest. (Gould).

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria, South Australia, Tasmania, West and South-west Australia, south coast of New Guinea.
PLATE XXXIV.

FAMILY LIMOSIDÆ.

The birds of this family may be regarded as an intermediate link between the Snipe (Scolopacidae) and the Sandpipers (Tringidae). They are large and powerful, and differ considerably from either of the other groups.

GENUS LIMOSA (Brisson).

The two species inhabiting Australia form quite distinct groups, the one affecting the northern and the other the southern division of the continent.

LIMOSA MELANUROIDES (Gould).

BLACK-TAILED GODWIT. Genus: Limosa.

Of this bird we have still much to learn, nothing having been added to our scanty information since Gilbert met with it at Port Essington, where he found it inhabiting shallow muddy swamps and lakes, and associating in tolerably large flocks. He describes the stomach as extremely muscular, such as would be necessary to digest marine insects.

It is much smaller than its European representative, and differs in other ways, though in respect of habits, actions, and general economy, it doubtless represents its European congener; undergoing the same seasonal changes of plumage—quietly grey in winter, warmly rufous in summer.

The winter costume has “Head and all upper surface, greyish-brown, with a small streak of black down the centre of the feathers; wings, dark brown, shafts white; base of the primaries and secondaries and tips of the great coverts, white, forming a band when the wing is expanded; upper tail coverts, white, forming a conspicuous mark; tail, black, with the exception of the two lateral feathers on each side, which are white at the base and black at the tip; neck, breast, and flanks, greyish-brown; abdomen and undertail coverts, white; irides, brown; bill, greenish-grey, becoming paler on the sides of the upper mandible; legs and feet, greenish-grey.” (Gould)

Total length, 13 inches.

Habitats: Port Darwin and Port Essington, Rockingham Bay, New South Wales.

LIMOSA UROPYGIALIS (Gould).

BARRIED-RUMPED GODWIT. Genus: Limosa.

Here we have another instance of an abundant species with sociable habits, for it is frequently seen in company with Curlews, Oyster Catchers, and Sandpipers, feeding on the sandy spits and mud-flats left bare by the receding tide. In appearance it so closely assimilates to the Bar-tailed Godwit (Limosa eufa) of Europe, that they would at first seem identical. However, closer investigation
shows that the Australian bird has at all times the lower part of the rump strongly barred with brown, while the same part in the Limosa rufa, when in the light-coloured dress, is snow-white.” Both birds take on the rufous summer dress.

The food consists of various marine insects, and small-shelled molluses.

The Barred-rumped Godwit is migratory in its habits, and spends part of the year in Siberia, and visits, in the course of its annual migration, the islands of the Indian Archipelago, Polynesia, Australia, and New Zealand. As yet, nothing is known of its breeding habits, nor have its eggs been discovered.

All the feathers of the upper surface have dark centres, and the edges nearly white, which gives the effect of cuckoo markings in brownish-grey; primaries, brown with white shafts; rump and upper tail coverts, conspicuously barred with brown and white; tail, barred alternately in brown and white; throat and abdomen, white; neck and breast, brownish-grey; under wing coverts and flanks, barred with white; bill, white at the base, becoming brown at the tip; irides, dark brown; legs, brownish-black.

Total length, 15 inches.

The immature bird has the feathers of the back of a much darker hue, and the tertaries are conspicuously touched with white, on their margins.

Habitats: Port Darwin, Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay Districts, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-west Australia, New Zealand.
PLATE XXXV.

GENUS CLADORHYNCHUS (G. R. Gray).

This is a form peculiar to Australia, and though closely assimilating to Recurvirostris in many ways, differs in several minor details, particularly in the structure of the bill.

CLADORHYNCHUS PECTORALIS (Gould).

Banded Stilt. Genus: Cladorhynchus.

This is one of the most lovely and graceful of aquatic birds, and we regret that so little is yet known of its habits. Captain Sturt has supplied all that we know of it in the following short monograph:—"This singular bird, with legs so admirably adapted by their length for wading into the shallow lakes and sheets of water, was seen in large flocks. It was very abundant on Jepson's Lake, to the northward of Cooper's Creek; and on Strezelecki's Creek it was sitting on the water making a singular plaintive whistle."

The Banded Stilt is found to inhabit Eastern, Southern, and Western Australia, living much after the manner of the Red-necked Avocet.

It would seem that the distinguishing mark of $I$, or of the breeding season, is a pectoral band of rich chestnut, shading off to black in the triangular mark on the chest with which the band ends on the abdomen. This is thoroughly developed in the females, but is absent in the males.

The whole of the body, white; wings and centre of abdomen, very dark chestnut or black; bill, black; legs, reddish-yellow.

Habitats: New South Wales, Victoria and South Australia, West and South-west Australia.

FAMILY RECURVIROSTRIDÆ.

In consideration of the singular habits, actions and economy of the Avocets, Gould decided to raise them to the rank of a family.

GENUS RECURVIROSTRA (Linnaeus).

This is a widely distributed genus, having representatives in every part of the globe. Australia, however, like Europe, can only boast of one species.
RECURVIROSTRA RUBRICOLLIS. (Temm).

RED-NECKED AVOCET. GENUS: RECURVIROSTRA.

WHEREVER the sea coast, inland river, lake, or marshy lagoon offer hunting grounds for wading birds, the red necked avocet may be found in Australia. Wading knee-deep in water, or swimming when necessary, it is a beautiful object in nature, and curious as well from the peculiar structure of its bill, which is admirably fitted to gather from the surface of the mud such molusces and insects as it feeds upon. Its feet, too, offer some variation from the ordinary waders, as they are partially webbed to enable it to pass over the soft surface of the ground.

The sexes scarcely vary in size and do not differ in plumage.

Dr. E. P. Ramsay contributes some interesting information concerning the Avocet. He says:—

"Mr. R. H. Bennett informs me that this species lays four eggs for a sitting, and breeds during the months of September to December, laying its eggs on the bare ground without making any nest, and sometimes close to the water's edge. The present specimens were found among the herbage usually growing about the sheep tanks in the interior of the country, and were taken in the Lachlan District; the ground colour varies from light stone colour to creamy yellow, some of the outer tint have a faint olive green shade; some are heavily blotched towards the thicker end, others sparingly covered with spots, dots and freckles of dark amber brown and black, with a few obsolete spots of slate grey. A set measures as follows: (1), 2 inches by 1 inch 4 lines (2), 1 inch 33 lines by 95 lines, (3), 1 inch 4 lines by 95 lines, (4), 1 inch 34 lines by 95 lines. (From Mr. Bennett's Collection)."—(E. P. Ramsay, F.L.S., P.L.S., of N.S.W., Vol. VII, 1882, p. 411).

Thus we see the manner of incubation is much the same as among the European variety, except that four eggs are laid instead of two. It is not yet ascertained what peculiar use the elastic whalebone-like bill serves, but the inference is that it is intended to procure some special food.

Head and neck, chestnut, extending downwards on the front of the neck; middle of the wings, primaries, and part of the scapularies, dark brown or black, the rest of the plumage, white; irides, bright red: bill, black; legs, greyish blue: tarsi and feet, tinged with orange.

Habitats: Derby (N.W.A.), Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania West and South-west Australia, New Zealand.
PLATE XXXVI.

FAMILY HIMANTOPADIDÆ.

At one time the Stilts were ranked with the Plovers and Sandpipers as members of one family, but Gould recognised such startling differences in them, that he decided to raise them to the distinction of a separate family. Stilts are to be found in many parts of both the Old and New Worlds.

GENUS HIMANTOPUS (Brisson).

Of the five species comprising this genus, one is found in Europe, India, and Africa, one in North America, one in South America, one in Australia, and one in New Zealand.

HIMANTOPUS LEUCOCEPHALUS.

WHITE-HEADED STILT. Genus: Himantopus.

A tall, slender, graceful bird, of proportions so delicate that the long legs would seem quite out of keeping with the small body, were not its carriage so easy and well poised that no incongruity is noticeable. It associates in small flocks of from six to twenty in number, haunting shallow streams and adding much to the beauty of the scenery.

It runs easily and lightly, showing many graceful actions; on the wing, on the contrary, it is heavy and clumsy, and presents a most inelegant appearance, with its long legs streaming out behind it.

The food consists entirely of insects, and small snails found on the water’s margin, or captured by wading knee-deep into the stream.

The Stilt is commonly found over the whole of Australia, both on the coast and inland, though it is most plentiful on the inland lakes of the southern districts.

Of its breeding habits nothing was known till Dr. Ramsay’s untiring observations threw some light upon the interesting subject. He says: “As nothing seems to have been published upon the nidification of this fine species, I beg leave to offer a few remarks upon the subject. The Stilted Plover must be considered rather a scarce than a rare bird in New South Wales, its visits being few and far between. When it does come, however, which is usually in some very dry or remarkably wet season, it appears in great numbers and in all stages of plumage. In 1865 large flocks arrived in company with the Straw-necked and White Ibes (Geronticus spinicollis and Threskiornis strictipennis), and took up their abode in the lagoons and swamps in the neighbourhood of Grafton, on the Clarence River, where on my visit to that district in September last (1866), all three species were still enjoying themselves. A few days previously to my arrival in Grafton, a black in the employ of Mr. J. Macgillivray, and a very intelligent collector, discovered a nest of this species containing four eggs, which have been secured for our collection. The nest was a slight structure, consisting merely of a few short pieces of rushes and grass, placed in and around a depression at the foot of a clump of rushes growing near the water’s edge of a lagoon in the neighbourhood of South Grafton. The eggs vary slightly in form, two being pyriform, the other two rather long. The ground colour is of a yellowish-olive or light yellowish-brown—lighter when freshly taken—in some sparingly, in others thickly blotched and spotted with umber and black, the black spots running together and forming large patches on the thick ends.
"Length, from 1\(\frac{1}{3}\) inch to 1\(\frac{1}{4}\) inch; breadth, 1\(\frac{1}{4}\) inch to 1\(\frac{1}{8}\) inch.

The immature birds have the top and back of the head, back of the neck and shoulders, grey, which parts become black, interspersed with white feathers, before finally reaching the plumage of the adult."—E. P. Remsey, C.M.Z., S.P.Z.S. London, 1867. Pg. 600.

There is no difference in the plumage, but in matter of size the male is larger.

Back of neck, back and wings, glossy greenish-black, the rest of the plumage pure white; irides, pink, margined with red externally; bill, black; legs and feet, pink, becoming red after death.

Total length, 15 inches.

In Buller's "Birds of New Zealand" we find the following interesting remarks upon the White-headed Stilt:—"Mr. Potts reports that, according to his experience, it usually commences to breed in October. I have found newly hatched young ones as late as the first week in January. It forms a very rude nest, if indeed it deserves that name, and sometimes deposits its eggs on the bare ground, a mere depression in the surface being selected for the purpose. The eggs are usually four in number, decidedly ovoido-conical in form, measuring 1 7 inch in length by 1 2 inch in breadth, and are of a warm yellowish-brown, handsomely marked and spotted over the entire surface with brownish-black.

"The young can run nimbly almost immediately after leaving the shell. They often elude captivity by squatting close to the ground, and their colors so exactly harmonise with their surroundings, that it is almost impossible to discover them. One which I had found, after an hour's diligent search, squatting on the edge of the sand near a sea-pond, remained perfectly motionless till I had taken it up in my hand, when it struggled to escape and uttered a feeble 'Cheep, cheep!'

"I have observed that the Stilt sometimes feigns lameness to draw intruders away from the vicinity of the nest; and on the occasion to which I have already referred, when I captured the chick, the old birds became excited, flew round me in circles, and repeatedly darted up to within two feet of my head, uttering all the time a sharp yelping cry."

Habitats: Derby (N.W.A.), Port Darwin and Port Essington, Gulf of Carpentaria, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, West and South-West Australia, South Coast of New Guinea, New Zealand.

HIMANTOPUS NOVÆZELANDIE (Gould).

NEW ZEALAND STILT, OR BLACK STILT. Genus: Himantopus.

THIS bird is peculiar to New Zealand, and we are indebted to Buller, in his "Birds of New Zealand," for the following interesting account of it:—"It may be readily distinguished from the preceding species by its darker plumage and by its somewhat shorter legs. Its habits, however, are similar, excepting that it is less gregarious, associating in pairs rather than in flocks; while it appears to prefer the dry shingle-beds to the lagoons and marshy grounds which constitute the favorite breeding resorts of the other species. It is, moreover, a much rarer bird, although it is generally to be found in all the river-courses of the Wellington Province, and further South. . . . A few pairs have for several years past frequented the Rotorua Lake; but it is never seen on Lake Taupo, although the White-headed Stilt is extremely abundant there, single flocks sometimes numbering thirty or forty birds. In Rotomahana also, where the latter bird is very plentiful at all seasons of the year, the Black Stilt is rarely seen. I have met with it more abundantly in the large river courses of the South Island; and Mr. Potts, who has found it nesting there, writes:—'It breeds early in the season, seeking the sandy river-beds for that purpose.
The labor of nidification is very trifling, and sometimes a nest of grass is roughly constructed; and now and then this apology for a nest may be discovered on a log of drift-wood; much more frequently, however, a slight depression in the sandy spit answers all the requirements of the Stilt as a nesting place, and it is never very far from the water. The young can run almost as soon as they are hatched; when disturbed they conceal themselves behind stones or some other shelter in the most artful manner. The parent birds exhibit the utmost assiduity in attempting to lead intruders from their eggs or young, and their numerous cunning devices are carried on with surprising cleverness and perseverance.

The eggs resemble those of the H. leucocephala so closely that a separate description is not necessary. The size, however, is a little larger, the Black Stilt's being 1.8in. by 1.3in.

The sexes are alike except that the female shows less gloss on wings and tail, and a stronger tinge of brown on the under parts. The birds go through so many transitional stages of plumage that naturalists have been led into many mistakes of classification.

The adult in summer has head, neck, and all under surfaces brownish-black, inclining to slatey-grey on the face and towards the base of lower mandible; back, rump, and upper surface of wings and tail, glossy greenish-black; irides and eyelids, crimson; legs and feet, pinky-red.

In winter, the crown and sides of the head, hind part of neck, and the whole of the abdomen, sooty black; wings and tail, glossy greenish-black; rest of plumage, pure white.

Total length, 15in.

The young bird has the forehead, sides of the neck, and all under parts, pure white; crown of head, mantle, and scapulars, blackish-brown, each feather margined at the tip with fulvous; hind part of the neck, and between shoulders, dark grey, notched with paler grey; back and rump, white; upper and lower surface of wings, as well as the auxiliary plumes, black; the upper wing-coverts and the long inner secondaries margined with fulvous, and the primaries tipped with light grey; tail feathers, greyish-brown; the outer ones white on their inner webs, with an apical spot of brown.

The chicks are covered with dark brown down; bill and legs, greyish-black.

Habitat: New Zealand.
PLATE XXXVII.

FAMILY GLAREOLIDÆ.

THE Pratincoles are an isolated group of birds, allied on the one side to Plovers and on the other to Swallows.

GENUS GLAREOLA (Brisson).

THESE birds are confined in their range to the continents of the Eastern Hemisphere.

GLAREOLA GRALLARIA (Temm.)

AUSTRALIAN PRATINCOLE. Genus: Glareola.

THE Australian Pratincole is remarkable among members of its own family for the extraordinary length of its primaries and tarsi, which, with the small size of the head and the graceful contour of the body, combines to make it the most elegant of all the species.

In the economy of nature, the Pratincole is destined to aid in keeping within due bounds the great insect world, and for that purpose it seeks its food both on the wing and on foot. Its flight is very rapid, and, as it skims the earth closely, it is almost impossible to glean any knowledge of its habits before it has passed out of sight.

Dr. E. P. Ramsay writes of this bird:—"The home of the Australian Pratincole is in the interior of New South Wales, and the northern portion of the province of South Australia. It is also found occasionally during the wet seasons in the neighbourhood of Cape York and Port Denison. In New South Wales, I have received specimens from the Lachlan and Darling Rivers, and Mr James Ramsay has noticed it in the Emurie, in the Bourke District. Mr. E. G. Vickery has kindly permitted me to describe an egg from his collection, taken near Wilcannia, on the Darling River, in September, 1880. He informs me that the parent bird was seen to fly from the eggs and, before they were taken, to return again and sit on the nest; so I think there can be little doubt their authenticity. The eggs were three in number. The ground color is of a creamy-white, dull light stone-brown, or light buff, well covered with irregularly-shaped blotches, dots and spots, and freckles of dull umber and sienna-brown, with a few dots and dashes almost black, and obsolete spots here and there of silty-grey. Length, 1-3in. x 1in.; in shape they are slightly oval, slightly swollen at the thickest end, and not pointed. An egg of this species in the collection of Mr. K. H. Bennett measures 1.24in. x 0.95in; none differ materially from Mr. Vickery's specimens. Mr. Bennett informs me that they select a bare spot on the ground where the earth or sand assimilates to the color and markings of the eggs. They breed during October."—E. P. Ramsay, F.L.S., P.L.S. of N.S.W.; Vol. VII., 1882, page 406.

The male has the head, all upper surfaces, wings and breast, light rufous, fading nearly white on the throat; lores, dark brown; abdomen, chestnut; primaries and under-wing surface, black; shaft of the outer primary, white for three-fourths of its length from the base; thighs, upper and under tail coverts, white; central tail feathers, black, margined on the tips with brown, at their inner webs, with white; lateral tail-feathers, white, with an oval spot near the tip of the inner web; bill, red at base, black at tip; legs and feet brown.
The young, in their first year, have all the upper surface light reddish brown; a spot of brown in the centre of the breast; abdominal band, pale chestnut.

Habitats: Derby (N.W.A.), Port Darwin, Port Essington, Cape York, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior.

GLAREOLA ORIENTALIS (Leach).

ORIENTAL PRATINCOLE. GENUS: GLAREOLA.

"THIS Glareola," says Allan Hume, in "Nests and Eggs of Indian Birds," pp. 568, "is gregarious, parties of twenty or thirty choosing a locality and remaining there. Sandy and hot places are chosen in preference. During April and May I several times, in company with friends, carefully quartered several acres of ground, but failed to find anything. When their breeding haunts are invaded, many of the birds (females, I suspect), squat on the ground, expand their wings, stretch out their necks, and try to look as fierce as possible. There is no manner of doubt, I think, that these birds breed abundantly in the Pegu plains. Next year I hope to be more successful. I cannot help suspecting (knowing as I do from dissection that the birds were breeding in April and May) that the female covers the eggs with a sprinkling of sand or dry decayed vegetable matter when she is disturbed. The curious habit of squatting for a few moments with expanded wings requires investigation."

As Australian research has thrown no light upon the habits and economy of this bird, except what goes to prove that it is an inhabitant of India and the intervening islands, and therefore only a visitor to our continent, we may infer that what is true of its habits in its own country may be true of it here.

The Oriental differs from the Australian Pratincole in the shorter dimensions of the primaries, and in its more subdued plumage.

All the upper surfaces, olivaceous brown; primaries, brownish black; secondaries, black glossed with green; tail-coverts and tail, white at base, black at tip; throat, warm white, mottled with a broken ring of black; chest, greyish brown; under surfaces, pale buff, fading into white on the tail-coverts; underwing surfaces, deep ferruginous red; bill, black; gape, yellow; feet, blackish-brown.

Habitats: Cape York, Rockingham Bay, Wide Bay District, New South Wales.
PLATE XXXVIII.

GENUS AEGIALITES (Boie).

Of this genus Gould says:—"The Little King Dottrels—composing the genus Aegialites, inhabit both the Old and the New World. Two species at least are found in Europe and Asia and three in Australia. They are rather dumpy little birds, with large heads, generally banded with black, and have a gorget of the same hue on the chest; their bills are short and pulpy, and are generally yellow at the base, while their legs are fleshy and mostly of this color. The sexes are alike in their markings, and the young attain their full plumage in the second year.

AEGIALITES MONACHA (Geoff.)

HOODED DOTTREL. GENUS AEGIALITES.

CLOSELY allied to the Common Dottrel of Europe, the Hooded Dottrel yet differs from it in one essential habit—it is never found far inland. Upon the sea coast and in the coast district of southern and temperate parts of Tasmania and Australia it is very abundant. Gould says of it:—"I frequently found its two eggs on the shingly beach, in a slight depression hollowed out by the bird for their reception just above high-water mark. These are so similar in appearance to the material upon which they are deposited that they would readily escape the attention of a casual observer. Those I collected were of a pale stone colour, sprinkled over with numerous small irregularly shaped marks of brownish black, and are one inch and a half long by one inch and an eighth broad."

The sexes vary in plumage, the male having the head, which in the female is mottled white on the crown, and neck sooty black; the face and throat are white, the latter margined at the back of the neck by a narrow line of black.

The young birds resemble their mothers, except that the feathers of the back and upper surfaces are fringed with brownish-black.

The male has the head, fore part of neck, and band across the upper part of the back, sooty-black; back of neck and all under surfaces, white; back, shoulders and tertaries, greyish-brown; centre of the wing and the basal portion of the internal webs of the primaries and secondary, white, the rest black; the middle tail feathers, black; the three next on each side, white at the base and tip black in the centre, the remaining feathers wholly white; irides, yellowish or orange-brown; eyelash, rich reddish-orange or scarlet; bill, rich orange at the base, passing into yellow and black at the tip; legs, fleshy colour. (Gould).

Habitats: Wide Bay Districts, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-west Australia.
OCHTHODROMUS INORNATUS (Gould).

ALLIED DOTTLREL. Genus: Ochthodromus or Alyialites.

Of this bird nothing is known with any certainty. Gilbert spoke of it as being plentiful on the sandy points and bays in the neighbourhood of Port Essington, and Gould had two examples of it in his possession for some years. He saw it was a near congener of the Ochthodromus Wilsoni of North America, of which he considered it a beautiful representative, and later naturalists have ascertained that its range extends to New South Wales, but beyond this scant knowledge nothing more is known. Dr. Ramsay, in his “List of Australian Birds,” adds a note that this may be Alyialites Jerdoni, Leggo, P.Z.S., 1880, p. 39; in “Birds of Ceylon,” p. 959 (Salvad., Orn. Pap. et Molne. III., p. 303).

The summer and winter plumage differ in brightness, the latter being more sombre.

“The male in summer has the forehead white, above which is a stripe of black; all the upper surface pale greyish-brown; crown of the head, rufous, which colour is continued on the back and sides of the neck, and, meeting on the centre of the breast, forms a pectoral band; wings, dark brown; the coverts and secondaries margined and tipped with white; the shafts of the primaries are also white; ramp, white; six central tail feathers, dark brown, tipped with white; the lateral feathers, white, tinged with brown in the centre; lores, line below the eye and ear-coverts, black; chin, throat, and all the under surface, white; irides, dark brown; bill, blackish-grey; tarsi, light ash-grey; feet, greenish-grey.” (Gould.)

The winter plumage differs in wanting the rufous tints about the head, neck, and breast; in the ear-coverts being brown; and in having a brown patch like the commencement of a band on either side of the chest.” (Gould.)

Habitat: New South Wales.

GENUS ERYTHROGONYS (Gould).

This genus is represented by one species which is peculiar to Australia. In structure, actions, and economy it stands as a link between the Alyialites on the one hand, and the Schorcieli on the other.

ERYTHROGONYS CINCTUS (Gould).

RED-KNEE DOTTLREL. Genus: Erythrogonys.

The habits of the Red-kneed Dottrel are in exact opposition to those of the Hooded Dottrel, for whereas the former is never found about the coast, the latter has an equal disinclination to the interior.

From the fact that this is a summer visitant to New South Wales, we may infer that it is of migratory habits—habits, too, that are dependent upon the kind of season that may occur. Its natural inclinations leading it to frequent the borders of lagoons, muddy flats, and the banks of rivers, should droughts occur, the bird wings its way to rainy countries. As a rule two are seen together, male and female, searching in muddy banks for the insects on which they live.
In appearance it is an attractive, sprightly little bird with most confiding manners. In its actions and manners it is very peculiar, having the stooping carriage of the Dottrel and the quick, bobbing motion of the head and tail of the Sandpiper.

The sexes are alike.

"Head, ear coverts, back of the neck, and chest, black; a small patch under the eye, throat, chest, sides of the neck, centre of the abdomen, and under tail coverts, white, the latter spotted with dark brown; back centre of the wings and tertiaries, olive, tinged with bronzy-brown; tips of the secondaries and the inner webs of the tips of the six contiguous primaries, white; rump and two middle tail feathers, olive, the remaining tail feathers white; flanks, chestnut; irides, nearly black, with a narrow black eyelash; bill, pulpy, pink-red at the base, black at the tip; thigh, knee, and for a quarter of an inch down the tarsus, pink-red; the remainder of the tarsus and the toes, lively bluish-lead color."—(Gould.)

Habitats: Derby (N.W.A.), Gulf of Carpentaria, Richmond and Clarence River Districts, New South Wales, Interior, Victoria, and South Australia.
PLATE XXXIX.

ÆGIALITES NIGRIFRONS (Cur.)

BLACK-FRONTED DOTTREL. GENUS: ÆGIALITES.

When Gould wrote of this bird, knowledge of its habits was so limited that he believed himself correct in stating that the temperate latitudes were so much its true home that it was never found outside them. Of late years, naturalists have found this generalisation too sweeping. The Black-fronted Dottrel is certainly found most abundantly in medium latitudes, and it is not known in Tasmania: not the less, though, is it found in such tropical localities as Derby (N.W.A.). As a matter of fact, it is universally distributed over the Continent, affecting the shores of fresh water, streams, and lakes in the interior, rather than the boisterous sea-coast.

It is a delicate and beautiful little bird, whose every attitude speaks of quickness and speed, from the long, slender tarsi, to the long and pointed primaries crossing over the tail. Of all the Dottrels, this one is the tamest, for it will allow one to approach near enough to observe the brilliant scarlet ring that surrounds the eye, and even when induced to take flight, will alight again within a very short distance. Occasionally, as if for amusement, they will take lofty flight, wheeling about for some time, and then descending to the earth like stones.

The breeding season lasts through October and November, when a clutch of from two to three eggs is laid. No nest is deemed necessary, the eggs being deposited on the ground near running water; their colour so nearly approaches the earth on which they are placed that it is not an easy matter to detect them. Their shape is like other Dottrel's eggs; that is, considerably pointed at the smaller end: measurement, 1 3-16 in. long, by 1 in broad; “of a pale stone, or dirty white color, very numerously, but minutely speckled with brown.” (Gould.)

The sexes are alike in plumage, but there are some slight differences in size.

The male has a black forehead, running up into a point on the head; a black line from under the eyes meets a broader band under the shoulders, which forms a broad, pointed semi-circular band on the chest, dividing the white throat from the white inner-surfaces, back of the head, back, and tertaries, brown; primaries, black; scapularies. chestnut, which tint appears again on the tail: throat, abdomen, and under-tail coverts, white; two middle tail-feathers, brown at base, and black at tip; the next three on each side white at the base, and merging into blackish-brown, and largely tipped with white; the remainder entirely white; bill, orange at base, and black at tip; feet, sometimes orange, sometimes pale flesh-color; irides, dark brown; eyelash, bright red.

“The young have a crescentic mark of a lighter colour on the feathers of the upper surface, and have the colouring of the plumage and soft parts less brilliantly and well-defined than in the adults.” (Gould).

Habitats: Derby (N.W.A.), Rockingham Bay, Port Denison, Wide Bay District, Dawson River, G.B., Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Interior, West and South-west Australia.

GENUS ÆGIALOPHILUS (Gould).

The species Ægialites cautianus of Europe and the Æ. ruficollis of Australia have been chosen by Gould to form a new genus, not from any specific characteristic, but “in accordance with the spirit of minute subdivision which now pervades all branches of natural science,” and because they are smaller in size than other Plovers.
ÆGIALOPHILUS RUFICAPILLUS (Gould).  

RED-CAPPED DOTTREL. Genera: Ægialophillus.

THIS little Dottrel is the smallest of the Plover tribe, and, like all small creatures, is much more numerous than the larger species. It is universally distributed over the Australian continent, both inland and on the coast, though it shows a decided preference for the latter. Indeed in Western Australia it is never found inland, a peculiarity in exact opposition to the Hooded Dottrel, which is never found on the coast. Shingly ocean beaches, where it finds a plentiful supply of the small mollusca upon which it subsists, are the localities it prefers.

Usually seen in pairs, it is nevertheless occasionally met with in small companies.

The period of incubation extends from September over the three following months, and the eggs are laid variously among the shingle, or on a sandy beach sufficiently above high-water mark to escape wetting. Sometimes a slight depression in the sand is a sufficient shelter, at others a small mound of sand and seaweed is impressed into the service of the primitive nest-builders. The eggs are of a pale stone color, sprinkled all over with small irregular blotches of brownish-black, and measure 1 1/16 inches long by 3/8 of an inch wide.

The parent birds are peculiarly jealous of their eggs or young being discovered, and like the Tringas have recourse to all manner of tricks and subterfuges to decoy the intruder from the sacred spot. They simulate the agonies of death, moving along with one leg dragging brokenly behind, and if followed make ineffectual attempts to fly, as though a wing were broken, and so turn the unwelcome visitor in a different direction, and the eggs remain undiscovered.

The sexes are alike, except that the lines are paler in the female, and the marks about the face are light brown instead of black.

Crown of head, nape, and back of the neck, rich rusty-brown; all upper surfaces and wings, light brown, each feather slightly tipped with stone yellow; primaries, blackish-brown, with shafts and extreme edge of the inner webs white; four central tail feathers, dark brown, the remainder white; forehead and all under surfaces, white, warming into dove color; above the forehead, a line of black, diminishing at the corners of the eye; from the angle of the mouth to the eye, a line of black, which is continued behind the eye down the neck.

Habitats: Port Darwin, Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, Tasmania, West and South-West Australia, South Coast of New Guinea, New Zealand.

OCHTHODROMUS BICINTUS (Gould).

ALLIED DOTTREL. Genera: Ochthodromus.

THIS bird is evidently one of vagrant tendencies, for, though it is generally dispersed over the colonies, no one locality can claim to be its special habitation. Large flocks will visit and remain in a neighbourhood for a few days, and then decamp as suddenly as they came, giving little opportunity for investigation. Gould met with them at Georgetown, in Tasmania, and was led to assign a different habit to them from the truer types of the genus. It associates in large flocks, and prefers meadow-lands to sea-beaches, and probably breeds inland; but of its incubation nothing is yet known.
The adult birds vary so much in plumage that it is impossible to say whether any sexual distinction exists, or whether members of the same gender are alike.

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

Head and all upper surfaces, olivaceous-brown; forehead, cheeks, and throat, white; breast crossed by three bands, one of which is dark brown, the second white, and the third ferruginous-brown; rest of under surfaces, white; outer webs of primaries, blackish-brown; inner webs, paler; two centre tail feathers, greyish-brown, the colour fading into white as it reaches the outer ones; irides, blackish-brown; eyelash, scarlet; bill, olivaceous-black; feet, sickly yellowish-white.

Habitats: Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-West Australia, South Coast of New Guinea, New Zealand.
PLATE XL.

GENUS CHARRADRIUS (Linnaeus).

The single species that represents this genus in Australia, differs from its congener, the C. plurialis of Europe, in having four auxiliaries.

CHARRADRIUS ORIENTALIS (Temm. et Schleg.)

AUSTRALIAN GOLDEN PLOVER. Genus: Charradrius.

The Australian Golden Plover is generally distributed over Australia, but is nowhere abundant, being seen only in small parties at a time. It affects open lands, in the neighborhood of the sea beach, or swampy places; it swims and flies rapidly, and so closely approaches the European Golden Plover that a description of the one is a description of the others.

Dr. Lerdon writes: "The Australian Golden Plover occurs throughout India in open plains, grassy downs, ploughed fields, and on the edges of rivers, lakes, etc., associating in flocks of various magnitudes, and feeding on beetles, and other land insects, worms, etc. Dr. C. Gräfe, writing from Tongatabu, says that it is found on that island all the year round, but is more numerous from October to March, and during the season of emigration. It occurs occasionally on the New Zealand Coast, but apparently only as a straggler, and always in winter plumage. Mr. Swinhoe has given the following account of its identification:—Its eggs, four in number, are laid in a loose nest of dried grasses placed in a hollow. They are of a greenish-grey ground color, blotched and spotted with deep blackish sepia, and having obsolete purplish-grey spots. They do not vary in size, are narrowed near the end, and measure 1-5 in. by 1-1 in."—Buller's "Birds of New Zealand," page 9, chapter 13.

At the commencement of the breeding season the breast plumage undergoes a change, the buffy, mottled tint of winter is replaced by indications of black and white, which becomes entirely black by the height of the summer. This development, however, is seldom seen in the southern latitudes, and the inference is that the birds go elsewhere abroad.

The full summer plumage shows the whole upper surface and tail very dark brown, each feather having a series of yellowish or whitish spots along the margins; primaries, dark brown, with white shafts; toes, sides of face, breast, and all under-surfaces, black, bounded by a broad white mark, which crosses the forehead over the eye, down the sides of the neck, and along the flanks, where it becomes very conspicuous; under wing-coverts, and the lengthened feathers covering the insertion of the wing uniform pale silvery brown; irides, dark brown; bill, dark olive; legs and feet, leaden grey. (Gould.)

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, Port Denison, Wide Bay District, Dawson River (G.B.), Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South-west Australia, South Coast of New Guinea, New Zealand.

GENUS CIRREPIDESMUS (Bonaparte).

This is the generic term bestowed upon the bird now known to science as Endromius Veredus. It is an inland genus, and is conspicuous during summer by the single band of cufous across the breast.
EUDROMIAS VEREDUS (Harting).

CIRREPIDESMUS ASIATICUS (Gould).

ASIATIC DOTTREL. Genus: Cirrepidemus.

Of this rare and little-known bird we find the most exhaustive account yet recorded in "The Ibis," for 1870, p. 209, where Mr. James Edmund Harting writes:—

"Hitherto this bird has generally been considered to be the young of Eudromias Asiaticus (Pale); but that it differs materially from that species in several important particulars, I can only suppose that such a conclusion was arrived at from descriptions, and not from an actual comparison of specimens.

"When Mr. Gould described it for the first time, in 1848 (et supra), he had no adult specimen before him—those which he exhibited from North Australia being young birds, in the brown plumage which is peculiar to all true Dottrels.

"In the same stage of plumage were all the specimens procured in Java by Horsfield, and in that island, Celebes, and the Aru Islands by Mr. Welaee, in New South Wales by Gilbert, and on the Hampton Shoals, as mentioned, by Mr. Krift. Hence, until the adult bird had been obtained, it was almost impossible to arrive at any sound conclusion as to its specific characters, and Mr. Gould has very candidly remarked, in his 'Handbook to the Birds of Australia,' that this bird has been a stumbling-block to all ornithologists, himself included, from the time he first described it to the date of this remark.

"A specimen in full summer plumage has at length been obtained, and gives a solution of the difficulty. This specimen was procured at Shanghai by Mr. Reede, and was forwarded by him to Mr. Gould, who has kindly lent it to me, with leave to figure it in the illustration of the present paper.

"It frequently happens that a general description may apply to two or more allied species, and doubt may in consequence be thrown upon a newly described species from the inability of the reader to distinguish it from an allied form already well known.

"On comparing the two plates it will be seen that there is a striking general resemblance between E. Asiaticus and E. Veredus, and that the two species are evidently closely allied. Nevertheless, there are certain characters, constant in each, and sufficient to enable them to be separated without difficulty. A glance at the respective measurements will show that E. Veredus is much superior in size. In length it exceeds E. Asiaticus by an inch. The wing is an inch longer, and the tarsus is more elongated by three-tenths of an inch.

"Looking to the fact that the only specimen of this bird, in the adult plumage, hitherto reported was procured in China, where it was considered a rarity, and that all the examples from Australia and the Malay Archipelago have proved to be immature, I conclude that the species is Asiatic rather than Australian, as has been supposed, and that its true home will probably be found to be Mongolia and Manchuria, perhaps even further to the north, and that the appearance of so many immature examples south of the equator may be accounted for by supposing that E. Veredus, like many other species, is affected by the same migratory instincts which impels the young to wander southward at the approach of winter."

Adult, in summer (hitherto undescribed): Bill, black, moderately long, slender; crown, upper portion of the back and wings, hair-brown; forehead, eyelids, and chin, pure white; eyebrows and sides of the face and neck, buff; the latter colour extending round the nape, and separating the hair-brown of the crown from that of the back; across the breast, a rufous band, the lowest feathers of which are terminated by a slight edging of darkumber brown; thence to the extremities of the under-tail coverts, pure white; primaries, brownish-black—the shaft of the first and a portion of the second, white, the shafts of the others, brown; secondaries, long, reaching almost to the end of the primaries; axillaries, smoke-grey; tail, long,
the outer web of the outermost rectrix, white, its inner web dusky; in the second rectrix, both webs dusky, the inner one darker; the rest of the rectrices darker as they approach the middle, the two middle the darkest, and somewhat longer than the others; legs, long and slender, a considerable portion of the tibia bare; toes, three, the middle and outer toe connected at their base by a slight membrane; legs and toes, yellowish ochreous.

Adult, in winter: no specimen has been yet reported.

Young: crown, back, and upper portion of the wings, greyish brown, each feather margined with buff; forehead, eyebrows, chin, sides of face and neck, buff, this color extending in the form of a collar round the neck; the pectoral band not well defined, but a cloudy patch of pale buffy brown, extending across the breast, becomes gradually paler, above and below, as it approaches the chin and vent; primaries and axillaries, as in the adult: secondaries, broadly edged with buff; legs and toes, dull yellowish brown.

Total length, 8½ inches.

Habitats: Port Derby, Port Essington, Rockingham Bay, Wide Bay District, Richmond and Clarence River Districts, New South Wales.
CHARADRIUS ORIENTALIS
Australian Golden Plover

CIRREPIDESMUS ASIATICUS
Asiatic Dotterel
PLATE XLI.

GENUS SARCHIOPHORUS (Strickland).

The single species comprising this genus is peculiar to Australia, and is nearly allied to the *Loxivarcula*.

SARCHIOPHORUS PECTORALIS (Gould).

*Black-breasted Plover. Genus: Sarchiophorus.*

The Black-breasted Plover is found to inhabit the eastern, southern, and south-western portions of the Continent, but has not yet been seen in the northern or western colonies. It shows a predilection for open sterile downs lightly covered with grass or vegetation, and for grassy flats near rivers. It is of a tame disposition, and will allow a very near approach before taking alarm. It has a tripping movement over the ground, and when flushed, flies off in a straight line and does not seem to indulge in those airy evolutions and gyrations characteristic of the Lapwings; neither does it associate in flocks, but is content to go in pairs, or, at most, threes.

From the fact that a nearly full-grown young one has been obtained in November, we may assume that breeding takes place early in the season. The number of eggs laid at a time exceeds the generality of Plovers' clutches, being from three to four. They are deposited on the bare ground, with no attempt at nest-building. In colour they are a light olive-grey, very thickly blotched and stained with brown, almost covering the surface, especially at the larger end. Length, 1 inch 9 lines; breadth, 1 inch 3 lines. (J. A. Campbell).

The sexes are alike, except that the lobe before the eye is much smaller in the female than in the male.

Crown of the head, line running from the angle of the mouth, beneath the eye, and down the sides of the neck, and a broad crescent-shaped band across the breast, jet black; stripe from the eye to the back of the neck; chin, throat, chest, flanks, abdomen, upper and under tail-coverts, white; back, ash-brown; primaries, brownish-black; wing-coverts, bronzey-brown, darkening with black at the tip of each feather, and tipped with white; some of the outer secondaries, white, margined on their outer webs with black, then a few entirely white, and the last two marked like the coverts, but largely margined with white; scapulars and lower part of the back, bronzey-brown; rump, dark olive, with bronze reflections; tail, white, crossed by an irregular broad band of black near the tip; tip of upper mandible, horn-colour; the rest of bill, primrose-yellow; naked parts of the thighs and knees, dark pink; tarsi and toes, blackish-brown, the latter inclining to pink-red; irides, yellow, surrounded by a rim of deep primrose, extending in an oblique direction to the fleshy protuberance at the base of the upper mandible, which is blood-red in the male, flesh-red in the female. (Gould).

The chick is covered on the upper surfaces with mottled yellow and brown down; beneath, fluffy yellow; legs, horn-colour.

Habitats: Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia, West and South-west Australia. (Ramsay).
GENUS SQUATAROLA (Cuvier.)

THERE is but one species of this genus which is common to Europe, Asia, North America, and Australia. It differs from Charadrius in having a small hind toe.

SQUATAROLA HELVETICA (Gould).

GREY PLOVER. Genus: SQUATAROLA.

SPECIMENS of this bird collected in different quarters of the globe prove them to be identical. So, when Gould noticed that the Australian representative lacked the rich black colouring of the under surfaces which is so conspicuous a feature in all other Grey Plovers during the breeding season, he concluded that it was only the young birds whose migratory instincts led them so far.

This Plover affects the sea-coast rather than inland districts, and may be found on low muddy shores, and at the mouths of large rivers. Its food consists of worms, insects and their larvae.

Mr. J. A. Campbell tells us, in his "Oology of Australian Birds," that—"Until about three years ago the breeding haunts of the Grey Plover remained undiscovered. In a letter from Mr. Ernest Gibson, Buenos Ayres (who, by the way, is performing work of lasting interest in working up notes of the birds of his adopted country), informs me that an intimate friend of his, Mr. Harvie-Brown, together with Mr. Seebohm, were the first to take eggs of the Grey Plover on the shores of the Arctic Ocean at the mouth of the Petehora River."

The egg is a "greyish or yellowerish-stone colour, blotched and clouded boldly on the larger half, and chiefly round the end, with irregular-edged blotches of blackish-sepia, running mostly in a longitudinal direction; the markings are smaller near the minor end, and beneath the dark colouring are smears and traces of bluish-grey. In shape some eggs are rather pointed and others slightly rounded at the small end. Average length, 2 inches 3/4-line; breadth, 1 inch 5 lines." (Legge.)

Crown of the head, upper surface, and wings, light olive, mottled with white; primaries, blackish-brown, with the basal portion of their inner webs and the apical half of their shafts, white; rump, white; tail, white, crossed by broad bars of light olive; face, and all under surface, white, with numerous brown stripes and a wash of buff on the sides of the neck and across the breast; irises, blackish-brown: bill and feet, blackish-olive. (Gould.)

Habitats: Richmond and Clarence River Districts, New South Wales, Victoria and South Australia, Tasmania, West and South West Australia, South Coast of New Guinea. (Ramsay.)

GENUS EUROMIAS (Boie).

In contradistinction to the last, this is a genus of inland Plovers, of which two species are known, namely, the E. Morinellus of Europe, and the E. Australis of Australia.
EUDROMIAS AUSTRALIS (Gould)

AUSTRALIAN DOTTREL. Genus: Eudromias.

We are indebted to Captain Sturt for the first information concerning this somewhat rare bird. He found it inhabiting the low hills and plains of the interior, much after the fashion of its European prototype, *E. Morinellus*. "This singular bird," he says, "made its appearance in 1841 suddenly on the plains of Adelaide, seeming to have come from the north. It occupied the sand hills at the edge of the Mangrove Swamps, and fed round the puddles of water on the plains. This bird afforded my friend, Mr. Torrens, an abundant round his house; but although few have visited South Australia every subsequent year, they have never appeared in such numbers as on the first occasion. It runs very fast along the ground. Mr. Browne and I met, or rather crossed, several flights of these birds in August of 1845, going south. They were on the large open plains, and were very wild."

Dr. E. P. Ramsay writes of the Australian Dottrel:—"The habitat of the species is the interior portion of the province of South Australia, and the interior of New South Wales; but as far as is yet known, it is nowhere plentiful; sometimes it is met with in the Melbourne markets during the game season, and is considered a rare bird by the dealers. Mr. E. G. Vickery has been fortunate enough to obtain the nest and eggs during a surveying trip in the Darling River District, near Wilcannia. The eggs were placed on the ground among a few loose stones, near the summit of a small hillock or 'rise' in the level country, and placed on a little mound about 2 inches high, probably an old ant-hill. They were three in number; a pair measures as follows: (a) length, 1.45 x 1.05; (b) length, 1.46 x 1.03. In form they are rather less pointed than the usual pyriform shape of the Plover's eggs; the ground color is of a deep rich cream or buff, sparingly sprinkled all over with irregular spots and some elongated crescentic markings of chocolate-black, with a few minute dots and dashes of a lighter tint, the markings look black in certain lights, but of a chocolate tint in others. Specimens in Mr. Bennett's collection were taken during the month of October on the Lachlan River, near Mossgiel."

This is a pretty little bird; the sexes are alike in size, but the plumage of the female is slightly less distinct than in the male; the conspicuous brown hood of the latter being replaced by a fainter brown one, and the crescentic black markings on the chest is also wanting. Individual males vary somewhat, too; the plumage in some assuming a reddish chestnut tint on the abdomen and flanks.

Forehead and all upper surfaces, light sandy buff; a hood of dark brown encircling the face, the same color appearing as a toro around the neck, and ending in a crescentic patch on the breast; throat, buffy-white; chest, flanks, and under surface of wings buff, changing into reddish chestnut on the abdomen; vent and under-tail coverts white; back and wings buffy-brown mottled, the mottlings growing more distinct on the lower part of the back, primaries brownish-black, with sandy buff shafts, and all but the first four broadly margined with buff: tail, brownish-black, centre feathers margined with buff, the outer ones with white; bill, dark olive-brown; feet, yellowish-brown.

Total length, 7½ inches.

Habitats: New South Wales, Interior. Victoria and South Australia. (Ramsay.)
GENUS LOBIVANELLUS (Strickland).

AUSTRALIA claims two species of this genus, one occupying the north and the other the south of the Continent, and, as yet, they are believed to be peculiar to this part of the globe, though they have their representatives in India and Africa.

LOBIVANELLUS LOBATUS.

WATTLED PLOVER. Genus: Lobivanellus.

The Wattled and Masked Plovers are, perhaps, the most beautiful of the family Charadriidae, both in form and plumage. Though inhabiting different latitudes, they seem equally numerous in both.

The Wattled Plover is commonly found throughout the eastern and southern colonies, and as far south as the islands in Bass' Straits, particularly on Green Island, where Gould found it breeding in January, 1839. But in spite of its nearness to Tasmania, this Plover has never been seen there.

It is usually found to prefer open flats, in the vicinity of marshy ground, though high sterile grounds, such as are found in the Straits' Islands, offer equal attractions. It subsists upon insects and worms. It has a noisy, daring disposition, and is locally known as the "Alarm Bird," from the habit it has of rising into the air, wheeling round and round, and uttering shrill cries at the approach of an intruder, which has the effect of forewarning not only its own kind, but every other species of animal in the neighbourhood.

Should its nest or young be near, this Plover hides its alarm and lures the intruder away by a multitude of daring manoeuvres, such as rising into the air and rushing suddenly down upon you with extended spur, with which it can inflict a nasty scratch, and then careening off in some opposite direction; or else it will feign lameness or a broken wing, and so lure you from the sacred spot.

The egg, described for the first time by Mr J. A. Campbell, is "elegantly shaped, contracted towards the smaller end; ground colour, of a rich, warmish green, boldly splashed and blotched all over with markings of a darker shade, and olive. Length, 2 inches; breadth, 1 inch 5 lines."

The sexes are alike; both possess the spur on the shoulder, but it is much more developed in the male than in the female. The wattle is a beautiful primrose colour, a tint that appears again in the bill, and large, bold eye; its legs are a pinky vermilion, and these colours, contrasting with the soft lines of the plumage, make this one of the most beautiful Plovers yet known.

Head, back of the neck, sides of the chest, and primaries, jet black; sides of the face, throat, and all under surfaces, pure white; tail, white, crossed at the extremity by a band of black; back, wing-coverts, and scapularies, dark greyish-brown, inclining to cinnamon; eye and wattles, rich primrose-yellow; bill, pale yellow, with a horn-coloured tip; tarsi, purplish-red; scales, black; spur, yellow.

Habitats: Rockingham Bay, Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales, Interior, Victoria and South Australia. (Ramsay.)
**LOBIVANELLUS PERSONATUS (Gould.)**

**MASKED PLOVER.** GENUS: **LOBIVANELLUS.**

*This* Plover is entirely tropical in its habitat, never having been found further south than Cape York, or, perhaps, Rockingham Bay. Therefore, it and its near congener, the Wattled Plover, share no localities in common.

The *sambropet* "Masked" was bestowed on this species from the fact that it possesses a hood or membranous sheath of the purest gamboge-yellow, which, in life, resembles the petals of a rose. Its purpose is to lie close over the feathers and protect them when the beak is plunged into the sand in search of food.

This Masked Plover is a more beautifully formed bird than the Wattled Plover. The body is the same size, but the legs are longer and the wattles round the eye more fully developed. It is very plentiful about Cape York and the Gulf of Carpentaria, where it inhabits the swamps, the banks of lakes, and open spots among the mangrove stretches. While on the sea shore its food consists of water insects and small shellfish, but when inland it readily adapts itself to the insect food to be found there. It associates in small families, and so frequently utters a cry not unlike the name bestowed on it by the natives (Alga-ra-ra) that it may be regarded as rather a noisy bird. About Breaker Inlet it frequents the sand banks in pairs, and is very shy.

The breeding season lasts from August to September, when two or three eggs are laid in a hollow on the bare ground, quite on the edge of a flat, near a marsh. They are "a dull olive-yellow colour, dashed all over with spots and markings of blackish-brown and dark olive-brown, particularly at the larger end." Measurements—1¾ inch long by 1⅜ inch broad, and it is slightly pointed at the smaller end.

Crown of the head and occiput, jet black; sides of the face, back of the neck, rump, and all under surfaces, pure white; back and scapulaires, light brownish-grey; wing coverts, grey; primaries, deep black; secondaries, white at the base on their inner webs, cinnamon-grey on their outer webs, and largely tipped with black; tail, white at the base, largely tipped with black, the extreme ends of the feathers being cinnamon-grey, particularly the two centre ones; irises, primrose-yellow; wattles, lemon-yellow; bill, lemon-yellow at the base, black at the tip; legs and feet, carmine-red; the scales in front, blackish-green.

Total length, 12 inches. (Gould.)

Habitats: Derby, North-West Australia, Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay. (Ramsay.)
PLATE XLIII.

GENUS HÆMATOPUS (Linneus).

THE Oyster Catchers are so universally distributed that it is doubtful whether they are wanting in any country of the world. At the same time there is a wide difference between the species found in the Northern and those in the Southern Hemispheres.

Two species are known to inhabit Australia. As their name would suggest, they affect the sea coast, especially where the rocky shore line is exposed by every receding tide, which leaves quantities of kelp and corallines behind imprisoned in fissures, and with them molluses, crustaceans, and other small inhabitants of the sea. These form the food of the Oyster Catcher. In the breeding season they sometimes go up rivers, and lay their eggs on the shingle beyond high-water mark. In some species there are slight seasonal changes of plumage, particularly in the colour of the throat.

HÆMATOPUS LONGIROSTRIS (Vieillot).

WHITE-BREASTED OYSTER CATCHER. Genus: Hæmatopus.

With the exception of the interior, and one or two inland districts, this Oyster Catcher is universally distributed over Australia and Tasmania, and is particularly abundant in the latter Colony, the islands of Bass’s Straits, and on the Coast of Western Australia.

Tidal muddy flats, sandy bays, estuaries, lagoons, the mouths of rivers, and marshes are its favorite resorts. In such places it may be seen during the greater part of the year in small companies of from three to ten or more, associating with the Sooty Oyster Catcher, Curlews, Whimbrels, Stints, Sandpipers, and other shore birds, all intent upon securing the flotsam and jetsam of falling tides in the matter of molluses and other marine animals.

The breeding season lasts from September to January, when these birds resort to small islands and rocky promontories, where they lay their eggs and rear their young. From two to three eggs are laid on the bare ground, close to the water’s edge; the colour is a buffy-stone, marked all over with large irregular blotches of dark chestnut-brown; measurements, 2 inches 3 lines; breadth, 1 inch 7½ lines.

The young birds are very soon capable of taking care of themselves, and if danger approaches hide themselves behind a stone or in a crevice of the rocks, while the parents draw the intruder away by uttering loud cries and flying in a contrary direction.

There is no difference in the appearance of the sexes when full-grown; but the young ones from the time they are half-grown till they reach maturity, are easily distinguishable by having each black feathers of the wings and back edged with brown, which form circular marks and bars on nearly the whole of the upper surface.

Head, neck, breast, and upper surfaces, deep greenish-black; the tips of the wing-coverts, abdomen, rump, upper and under tail-coverts, and the bases of the tail feathers, pure white; irides, crimson; bill and eyelash, orange-scarlet; feet, light brick-red.

Habitats: The whole of Australia, Tasmania, and New Guinea, except Derby (N.W.A.), Dawson River (G.B.), and the Interior.
HEMATOPUS FULIGINOSUS (Gould).

SOOTY OYSTER CATCHER. GENUS: HEMATOPUS.

This bird is considerably larger than its ally, Hematopus Longirostris, but, owing to the sombre colour of its plumage, it is not nearly so handsome or attractive. Having the same habits and economy, it is to be found abundantly in the same localities (except the Coast of New Guinea). Indeed, both may be looked for wherever a tiny islet or coast-line occurs. This is a strictly stationary species, breeding year after year in the same spot, unless driven by sense of danger to find a new home in some more isolated spot.

The eggs are two in number, 2 inches 8 lines long, by 1 inch 9 lines broad, of a light stone-colour, blotched all over with large, irregular markings of dark brown, some of which have the appearance of being beneath the surface, and are of a dark purplish hue. (Gould).

Entire plumage, sooty black, slightly glossed on the neck and under-surface with green; bill and eyelash, rich orange-yellow; irides, red; legs and feet, dull brick-red.

Total length, 15 inches.

Habitats: Australia and Tasmania, except Derby (N.W.A.), Dawson River (G.B.), the Interior, and New Guinea.
PLATE XLIV.

GENUS ESACUS (Lesson).

This genus is confined to two known species, one of which inhabits India and the other Australia. It is nearly allied to *Edicincus*, though each performs very different functions in nature's economy. The *Esacus* has a bill adapted for seeking its food on oozy mud banks and flat sea shores, while the *Edicincus* has a bill intended to capture the slugs and worms, &c., found on dry grassy hills.

ESACUS MAGNIOSTRIS (Gould.)

*LARGE-BILLED SHORE PLOVER.* Genus: *Esacus.*

This is a purely tropical bird, being found only in North and North-Western Australia and New Guinea. With such a restricted and inaccessible locality it may be easily conceived that details as to its habits and economy are still to be recorded. For the present we must be content to know that this Large-billed Shore Plover is an inhabitant of low, sandy shores, where crabs and molluscs are abundant. At night it is said to utter a loud cry not unlike its native name, "Wee-lo." Singularly enough this is the name given to the Southern Stone Plover of Western Australia by natives of other tribes who are acquainted with this Plover—another proof of the resemblance between the two genera.

The sexes are so generally alike that no distinct description is necessary, and the young of the first autumn are only distinguishable by the feathers being margined with grey.

The ground colour of the egg is "creamy-white, streaked and marked all over with dark olive-brown, some of the markings being large and bold without assuming any regular form; and others mere blotches about the eighth of an inch in diameter, while many of the streaks were as fine as a hair, and are of a crooked or zig-zag form, two inches and a half long by one inch and three-quarters broad."

"Above and below the eye a broad mark of white, which is continued down the side of the head, the eye and the white marks being surrounded by a large patch of dark blackish-brown; at the angle of the lower mandible is a small patch of blackish-brown; throat and sides of the face, dull white; head and all upper surfaces, light brown, the feathers of the head and neck with a narrow line of dark brown down the centre; lesser wing-coverts, dark brown, the last row crossed with white near the tip, forming a line along the wing; remainder of the coverts grey, deepening into brown on the tertaries; first three primaries, dark brown at the base and tip, and white in the centre, the remainder white, stained with brown near the tip; tail grey, crossed with white, near the tip, which is dark brown; forepart of the neck like the head, but paler; breast, brownish-grey; abdomen and under tail coverts, buffy-white; irides, pale yellow; eyelids, primrose-yellow; base of the bill, sulphur-yellow, which colour is continued along the sides of the upper mandible above the nostrils; remainder of the bill black; tibia, lemon-yellow; tarsi and feet, wine-yellow, the upper edge of the scales of the toes lead colour." (Gould.)

Habitats: Port Darwin and Port Essington, Gulf of Carpentaria, Cape York, Rockingham Bay, South Coast of New Guinea. (Ramsay.)
GENUS Óedicnemus (Temminck).

This is a form common to most parts of the world. Australia has one species which is a cosmopolite as regards temperature, being found in every latitude from Cape York to Cape Otway.

These birds may be regarded as a strong connecting link between the Bustards and Plovers, partaking of the character of both, but particularly of the latter.

Óedicnemus grallarius (Gould).


This is the King of Plovers in matter of size, its body being nearly as large as a hen pheasant’s, and its legs are longer than those of any other species.

Contrary to the habits of the Óescus, the Óedicnemus affects the uplands wherever districts occur that are suitable to its habits. Such localities are sandy plains, the tops and sides of grassy hills, and flats between the mountain ridges, where the outerop of broken stones offers a fitting home for insectivorous life. Here it is met with in pairs as a rule, though sometimes flocks of from eight to ten are to be seen. Naturally a very shy bird, it is most difficult to capture one except by shooting. It runs rapidly, and, if not disposed to fly, it squats on the ground close to a stone or log, and will so remain till almost trodden upon.

Like the Wattled Plover, it is full of cunning devices to lure away an intruder from its nest and young ones; piteous cries are uttered, wing or leg is hung helplessly while the bird frisks and limps along the ground in a contrary direction to the nest.

When seen walking on the plains it is a stately and imposing bird. Its flight is rather quick and laboured; it mounts high in the air, but soon descends again in some open space among the trees, and runs off to hide among the bushes, or squats on the ground.

It is semi-nocturnal in its habits, and welcomes the approach of evening by uttering its harsh loud cry. “Wee-lo,” several times. It feeds upon insects and berries, and principally at night.

The breeding season lasts from September to January, when two eggs are laid on the bare ground. They vary considerably in colour and marking, but are usually pale buff, thickly blotched all over with umber-brown. Length, 2 inches 3 lines; breadth, 1 inch 7½ lines.

The young when first hatched are covered with fine down, grey striped with black on the upper surfaces and on the sides of the chest; under surfaces, pale buff; irides, greenish-yellow. A little later they have all the upper surfaces and crescentic markings on the breast freckled brown and black, with dark primaries and shoulders; back of neck, throat, chest, thighs and abdomen, white; bill and feet, horn-yellow.

There is no difference in the sexes.
Crown of the head, back of the neck, and back grey, each feather with a line of brownish black down the centre; space surrounding the eye white, bounded in front and below with a narrow streak, which, as well as the ear coverts, and a broad stripe down each side of the neck, is dark brown; lores and chin white; scapularies blackish-brown, margined with grey at the base; the upper rows of wing-coverts brown, the lower ones white, tipped with brown, all with a broad stripe of black down the centre; primaries brownish-black, crossed towards the extremities by a broad irregular band of white; tertaries light brown, with a dark stripe down the centre, and margined with white; tail brown, crossed by several bands of white and dark brown, and largely tipped with black; breast and abdomen, buffy-white, with a broad stripe of brownish-black down the centre of each feather; lower part of the abdomen white; bill, black; irides, yellow; eyelash, black; legs, sickly yellowish-olive, passing gradually with the brown of the feet. (Gould.)

Habitats: The whole of Australia, and the South Coast of New Guinea.
PLATE XLV.

FAMILY OTIDIDÆ.

In spite of the fact that Australia is singularly adapted to suit the habits of the Bastard family, only one species is known to exist there.

GENUS CHORIOTIS (Bonaparte.)

This and C. Edwardsi, of the plains of Upper India, are beautiful representatives of each other.

CHORIOTIS AUSTRALIS (Bonaparte).

AUSTRALIAN BUSTARD. Genus: Choriotos.

This is a very handsome bird both in shape and plumage, and is larger than the European Bastard, the male weighing from thirteen to sixteen pounds. The female is altogether smaller, and less beautifully plumaged, and, therefore, not so stately in appearance. When seen slowly stalking over the plains, no Australian bird except the Emu can compare with it for statelyness or independence of carriage.

Gould was of opinion that the Australian Bastard was only a summer visitant to the southern parts of Australia; whether he is right or no remains to be proved. Should such be the case, it is of migratory character, but impartial in its location, for its distribution is universal.

The flesh is so delicate and highly-flavoured that the poor bird has a sorry time of it, and recedes from the abodes of civilisation year by year, as its persecutions increase.

Its food consists of seeds, grasses, and insectivora. If surprised in a tussock of grass, it will lie crouching close to the ground till a favourable opportunity offers, when it will fly swiftly along the ground to a place of greater safety.

Incubation takes place in the latter part of September; the nest is either a very rudimentary structure of grasses, or else a clear spot is chosen in a gully, or on the side of a grassy hill, and the eggs are laid on the bare ground. They are of an olive colour, stained with longitudinal dashes of brown. Measurements, 3 1/8 inches by 2 1/4 inches.

Forehead and head, black; lores, chin, and line above the eye, buff, finely striated with black; neck, throat, and upper part of chest, delicate grey, finely freckled with brown, ending on the chest with an irregular black line, the whole of the upper surface beautifully marked with fine, seaweed-like frecklings, varying in shade from a ferruginous tint to grey; the edge of the wings largely blotched with brown, then white and grey; primaries, brown; under surfaces, creamy-white as far as the abdomen, where there are alternate feathers of brown and creamy-white, freckled and fringed; tail, grey, crossed near the centre by an interrupted band of white, finely freckled with white, margined with brown, and slightly tipped with white; under-tail coverts, greyish-black, tipped with white; irides, greenish-white; bill, horn-colour at base, black at tip of upper mandible; legs and feet, straw-colour.

Total length, 40 inches.

Habits: The whole of Australia, except Derby (N.W.A.) and Tasmania.
PLATE XLVI.

FAMILY APTERYGIDÆ.

THIS is an off-shoot of the Struthious order of birds, and is strictly confined to New Zealand, where four of five species have been identified.

GENUS APTERYX (Shaw).

BULLER, in his “History of the Birds of New Zealand," says:—“Apart from the special interest attaching to species that are rapidly expiring, the Apterygine form is so entirely anomalous among existing birds, that every minute particle of natural economy and life history appears to be worth recording.

"This genus is remarkable as being a form of wingless birds—relics of that great extinct order of Struthious birds of which the Dinornis and Palapteryx are fossil examples. This particular species seems to be solely confined to New Zealand, where five species are already identified; that one known as A. Mantelli being accepted as the typical form.

"It is nocturnal in its habits, and shows great preference for bosky groves and marshes. The days are passed in heavy sleep when the bird rolls itself up like a ball in the deepest shade, its head buried in the peculiar hair-like plumage of the body. It subsists chiefly on glow-worms, which it captures by means of scent and touch, both of which faculties are highly developed. The eggs are abnormally large for the size of the bird, and the male performs the task of incubation."

APTERYX OWENI (Gould).

LITTLE GREY KIWI, OR OWEN'S APTERYX. Genus: Apteryx.

THE eminent Ornithologist, Mr. Buller, has so thoroughly exhausted every information supplied by the best authorities upon the Apterygida, and added so much by his own laborious researches, that no option is left me but to quote him in extenso, acknowledging at the same time my obligation to his genius.

"The Grey Kiwi," he says, "is distributed over a great portion of the South Island, and in some of the remote districts is still very abundant. It does not occur, however, in any part of the North Island.

"It frequents the woods, and being (like its congeners) nocturnal in its habits, must be sought for in prostrate hollow trunks, natural holes or caverns among the roots of the large forest trees, and clefts or fissures in the rocks. It breeds in these localities; and Dr. Haast informs me that he has sometimes taken its nest from under a dense tussock, or from the cavity formed by an over-hanging stone in the slope of a wooded hill." It is very good eating, so much so that, unless measures are taken to preserve it from the gastronomic proclivities of man, there is danger of its speedy extinction.
"This species differs from *A. Mantelli* in having the facial hairs or feelers much shorter, the rudimentary wing is very small, the tarsi are proportionately longer and more slender; the plumage is soft and yielding to the hand when passed along it, but against the grain it is slightly rigid, although it wants the stiffened shafts which give to the feathers of *A. Mantelli* their distinguishing character. On raising the plumage with the hand and viewing it laterally, it has very much the appearance of the thick fur on the neck of a tabby cat.

"The egg of this species is of a long elliptical form, measuring 4.3 inches in length by 2.4 inches in its widest part. It is originally white, but becomes much stained or soiled during incubation, and some examples have the shell traversed with thread-like excrescences, especially at the larger end.

"Total length of male, 17.5 inches; female, 20 inches.

"Independently of the marked difference in size between the sexes, there is a considerable amount of individual variation; and adult specimens are sometimes met with of so small a size as even to suggest the existence of another species. I have remarked this more particularly with examples received from the southern portions of the South Island.

"The ground-tints of the plumage vary in different birds; as a rule, however, the male is of a somewhat darker shade than the female, and the plumage has a more banded or rayed character, while the tips of the feathers on the upper parts are of a bright fulvous.

"Head, throat, and neck, dull yellowish-brown, darker on nape; general plumage of the body, light yellowish-brown, mottled all over and obscurely banded in a wavy manner with blackish-brown; the rigid hair-like points of the feathers being bright fulvous; underparts, paler, the plumage of the abdomen becoming light fulvous obscurely barred with brown; irides, black; bill, dark coke colour; legs and feet, pale brown, the claws coke coloured with transparent tips.

"The young.—Dull greyish-brown, obscurely mottled; sides of the head and throat, greyish-white; the light tips of the feathers very conspicuous, having the appearance of small pencilled lines on a darker ground, the produced hair-like filaments being entirely black.

"Habitat: South Island, New Zealand." (Buller.)

**APTERYX AUSTRALIS** (Buller).

**SOUTH ISLAND KIWI.** Genus: Apteryx.

For a long time there was much uncertainty among ornithologists as to the true classification of this bird, as it was frequently classed with *A. Mantelli*, the typical bird of this genus, with which it was supposed to be identical. However, since the year 1870, Buller, the great New Zealand naturalist, has set all doubt at rest on the disputed point by proving it to be a distinct species. He says:—

"Since 1870 I have had an opportunity of examining a fine series of South Island Apteryxes in the Canterbury Museum, and of comparing them with examples from the North Island, and I am convinced that there are in reality two species of brown Apteryx, readily distinguishable from each other by a very remarkable difference in the structure of their plumage. In the South Island kinds the feathers of the upper parts are soft and yielding when stroked against the grain, whereas in the North Island bird (*A. Mantelli*), owing to a peculiarity in the structure of the shaft, they have stiffened points, and are harsh and prickly to the touch. This characteristic (apart from a slight difference in the colour of the plumage), is constant in all the specimens I have examined, and I have no hesitation
in giving it a specific value, adopting at the same time the distinctive names originally proposed by Mr. Bartlett. In this course I am supported by the unanimous opinion of several of the best ornithologists in England, to whom I have submitted specimens for examination.

"I take this opportunity of saying that the credit of this discovery belongs to Dr. Haast, who, on receiving from me a North Island bird, by comparison with the specimens in the Canterbury Museum, detected this structural difference in the plumage, and informed me of it long before I had an opportunity of verifying the fact for myself.

"As a rule, the South Island birds are larger than those from the North Island, but occasionally examples of Apteryx Mantelli are met with fully equal in size to the largest specimens of A. Australis, and this is therefore of little or no value as a specific character. It may also be observed that in this species the long facial hairs or feelers are, generally speaking, far less abundant than in the North Island Apteryx.

"Apart from the slight differences which constitute it a fresh species, this Apteryx has the same habits and economy as A. Mantelli. The legs and feet are strong and powerful, the wings rudimentary, and entirely concealed by the plumage. It is nocturnal in its habits, and hunts by sense of touch or smell; it is not quite determined which. It is partly insectivorous, stomachs having been found to contain beetles, pebbles, and many hard kernels of the Hinau berry (Elateropus dentatus), though its favourite food is the glowworm.

The skin is so thick and tough that it is more like mammalian hide than a bird's skin, and is quite strong enough to make shoes of.

Incubation takes place between January and March, when the male, after the custom of all struthious birds, hatches the eggs, which are very large, and quite out of proportion to the size of the bird. In shape they are peculiar, being almost a long oval with a not very perceptible difference in the smaller end. Roughly speaking, an egg measures five inches long by three inches broad.

The sexes are alike in plumage, but there is a marked difference in size, the female being several inches larger than the male, the total length of the male being 23 inches, that of the female 27 inches.

The characteristic of the features is that they "are lanceolate, and composed externally of long distimmed filaments, getting downy towards the roots, the features of the back being very rigid on the upper and hind parts of the body, which makes the plumage stiff and harsh to the touch. The A. Australis differs from the A. Mantelli in the lighter colour of its plumage, the feathers being of a sandy or greyish brown, with darker margins, those of the upper parts only slightly tinged near the tips with rufous. The plumage of the rump and back of the neck is less hairy, and the feathers of the back and hind parts are destitute of the lengthened and stiffened points which characterise other species."

A young specimen in the Canterbury Museum has the head dark grey, and the rest of the plumage greyish brown, lighter on the underparts, each feather with a narrow streak of fulvous along the shafts; on the feathers of the upper part this streak is darker towards the tip, and the terminal filaments are black, whereas in the underparts of the body both the tips and filaments are light brown or fulvous; the bill, which measures two inches in length, is light horn colour, the legs and feet are light brown, the metatarsi being covered anteriorly with thin scales, scarcely definable to the eye. In this young condition the quill-tubes are very minute, and the plumage of the body is extremely soft to the touch." (Butler.)

Habitat: South Island, New Zealand. (Butler.)
PLATE XLVII.

FAMILY STRUTHIONIDÆ.

This section of the Grallatores is perhaps, one of the most interesting, for it is now only represented by isolated types in three-fifths of the world, while fossil remains prove to us that there was a period when gigantic types of these strange birds were common inhabitants of our globe. These Struthiones of the past are now represented by the Rheas in America; the Ostriches in Africa; the Cassowaries and Emus in Australia and New Guinea, and in New Zealand by several species of the Aapteryx.

GENUS CASUARIUS (Linnaeus).

Gould assigned the habitat of this genus to New Guinea, and even supposed the species indigenous to Australia would be proved to be the same; however, as scientific investigation has not yet demonstrated the truth or fallacy of his belief, I shall not give it the benefit of the doubt. The Cassowaries are evidently the remains of a great family of Struthious birds closely allied to the Ostriches, Emus, and and extinct Dinornithes of New Zealand, and two species are known to Australia, a third to New Britain.

CASUARIUS AUSTRALIS (Wall).

AUSTRALIAN CASSOWARY. Genus: Casuarius.

The first information of any worth respecting this peculiar bird was contained in a communication to the Zoological Society of London on the 13th December, 1866, by Mr. Sclater, who stated that he had been informed by Mr. Walter Scott, the owner of an extensive sheep run in the Valley of Lagoons, on the Upper Burdekin River, about 100 miles westward of Rockingham Bay, that in the neighbourhood of the latter locality the bird was well-known under the name of the Black Emu, but was shy and very difficult to obtain.

Two days later, December 15th, 1866, on the other side of the world, the well-known eminent botanist, Baron Ferdinand Von Mueller, sent the following notice to The Australasian, a widely known Melbourne paper:—

"For the intelligence of the existence of an Australian Cassowary, and for the means of defining preliminarily its specific characters, I am indebted to G. Randall Johnston, Esq., who, in September last, while on a visit to Rockingham Bay shot in the Gowie Creek scrub the only specimen of this remarkable bird as yet obtained, and whose name I wish it should bear; and I cannot do better than to give in the first instance publicity to the lucid remarks transmitted to me by that gentleman:—'This bird seems to confine itself almost entirely to the more open parts of the scrub, and seldom ventures far out on the plains. During the months of July, August, and September its food consists chiefly of an egg-shaped blue-skinned berry, the fruit of a large tree. This, together with herbage, probably forms its diet, at least for that portion of the year: but at present its habits have been so little observed that hardly anything is known concerning it.'"
There is no doubt this bird is identical with *C. Australis* of Gould.

Mr. Carron, with reference to the specimen in the Sydney Museum, says:—"I have just seen the bird sent to the Museum by Mr. Johnston, and think it identical with that shot by Mr. Wall in the vicinity of Weymouth Bay, in November, 1848. I am aware that in the few remarks on Mr. Wall's bird which appear in my narrative of Kennedy's Expedition, there is an error as to the colour of the helmet or comb, which was black, not red. . . . As I was present when Wall's bird was shot, and helped to eat it, I had a good opportunity of knowing something respecting it. Instead of going in flocks of five or six together, it is certainly a solitary bird, and would appear to be very scarce, as only two others were seen by our party during the whole journey from Rockingham Bay to my furthest camp at Weymouth Bay, in latitude 12° 25' S. This bird had shorter but larger legs, and heavier body and shorter neck than the Emu. It appears to confine itself to the gullies in the thick jungles with the Brush Turkeys and Jungle fowl, feeding on the various fruits found there, even swallowing the large seeds of Castanospermum and Pandanus. Mr. Wall took every care of the skin he was able to do, but it was completely destroyed before he died, together with my own specimens at Weymouth Bay. This bird was certainly very large, and furnished our whole party with a better supper and breakfast than we had enjoyed for some months, or than poor Wall was destined to enjoy again (as he and all his companions, with the exception of myself and one other, had died in six weeks after from want of food). But there was not one in the party who would not have eaten more if he could have got it, every meal having to be divided with the greatest nicety for a long time."

Some naturalists were inclined to doubt whether *C. Australis* would prove to be really distinct from the well-known *C. Galeatus* of Crane, but a more extended acquaintance has proved that they are distinct species. Exception has sometimes been taken to the colouring of the heads and neck, but no hard and fast rule can be laid down with regard to it, as this is a variable feature, dependent upon the seasons; and sometimes the skin is smooth, at others corrugated.

"Egg, of a graceful elliptical form, and is superficially like Shagreen or rough American cloth, but not quite so rough as the Emu's egg. General appearance.—In colour a beautiful pea-green, but if examined critically the raised rough particles of the shell will only be found to be green, while the minute interstices are greenish-white. Length, \(5\frac{1}{2}\) inches; breadth, \(3\frac{19}{32}\) inches."

The above description is taken from a handsome pair of eggs exhibited by Dr. Lucas at the last meeting. The Cassowary eggs are of great interest, not only for their great beauty, but as being the largest of all Australian eggs. The Cassowary inhabits the dense tropical jungles between the Herbert River and Cape York Peninsula. The nest is generally placed near the base of a large tree in the great scrubs, and consists of sticks, leaves, and other debris. A set of eggs is from four to six, generally the latter, which are laid in September, the young making their appearance the following month. The Cardwell aboriginals call the bird "Yun-gun," or in pigeon English, "big fellow chookie-chookie." (J. A. Campbell, February, 1886.)

Total length, 72 inches; height about five feet.

The head is surmounted by a black horney helmet, and destitute of feathers, as is the neck; but about the eye the bare skin has a greenish hue, while the back of the head and front of neck are a deep royal blue; down the sides of the neck are heavy corrugations of brilliant red, which becomes orange towards the shoulders. The plumage is a coarse black spine-like feathers, shewing rusty-brown on the thighs. From the rudimentary wings depend some long black pencil-like quills; irides, brown; legs, scaly horn; toes, black.

Habits: Cape York, Rockingham Bay.—Ramsay.
CASUARIUS AUSTRALIS
Australian Cassowary
PLATE XLVIII.

CASUARIUS UNIAPPENDICULATUS (Blyth).

ONE-CARUNCULATED CASOWARY.  GENUS: CASUARIUS (Linna.)

The obvious unanimity in the accounts of independent observers of this member of the Cassowary tribe completely sets at rest the once vexed question as to whether the characteristic from which it derives its name entitles it to be considered as a distinct variety of the genus. To Mr. Blyth belongs the honour of first describing and naming the distinguishing feature, in a letter to the "Ibis" (1866, p. 193), where he pointed out the peculiarity of the single caruncle, his description given being that of a specimen in the aviary of the Babu Rajendra Mullick, at Calcutta. Mr. Gould's attention being drawn to the matter, he had a faithful drawing made of a specimen in the Zoological Gardens at Amsterdam, which he subsequently published in his Supplement. A close description of the same bird was also sent to the "Ibis" in 1866, by Dr. Bennett, of Sydney, when on a visit to Europe. The "Journal für Ornithologie" (p. 44) of 1861 published an account by G. von Rosenberg of the discovery, in the island of Salawatty, of a new species of the genus Casuarius, which was named Casuarius Renpi. Subsequently, in March, 1866, Mr. Sclater read before the Zoological Society of London, from a letter of Dr. Schlegel, of Leyden, stating that seven specimens of a species of Casuarius had been collected by the traveller Bernstein in Salawatty and on the New Guinea coast nearest to that island. These proved to be identical with the Amsterdam specimen and the one described by Mr. Blyth at Calcutta. There is no recorded instance of this variety having been found in Australia, but when its shy nature and often inaccessible haunts are considered, it will at once be realised that its existence in the Cape York Peninsula and in other practically unexplored northern parts still remains an open question.

The eggs of the captive specimen in the Zoological Gardens at Amsterdam were of the usual form and colour of those of the better known members of the genus.

Besides the possession of the single throat wattle, from which this species derives its name, the colouring of the nude skin on the head and neck helps to distinguish it from the ordinary Cassowary. The single caruncle is yellow, not red, as are the caruncles in the common species; the exposed skin of the neck is bright ochre, and two long strips of this colour run down each side of the throat; the skin is smoother and less wrinkled than that of the Casuarius Australis. A line of bare skin also runs down the medial third of the back, parting the feathers. The cheeks are bluish-green; the casque and other general characteristics are materially the same as in the common species.

The plumage resembles that of the ordinary Cassowary in texture, but is somewhat less pervaded with black.
LIKE the Australian Cassowary, the Mooruk possesses a singular interest, because it represents an almost extinct group of mammoth birds, and, with the C. Galeatus, is considered by Professor Owen to be the nearest allied living type of his genus, Palapteryx. Such being the case, it would not be transcending the bounds of probability to suppose that the habits, economy, plumage, and general characteristics of this bird should throw light upon those of the extinct races, such as the Dinornis and its allies.

The Mooruk is an exclusive, retiring bird, found only in the gullies and humid districts of dense forests, safe from the incursions of man. Here it feeds upon the roots of ferns, and plants natural to such localities. Hence the reason of its peculiar hair-like plumage. Fine feathers would be as much out of place in those gloomy recesses as the filamentous imperishable feathers of the Mooruk would be out of place on the bodies of birds intended for plains-life, like the Ostrich or Rhea. But it is to Dr. Bennett we must turn for details of this interesting Cassowary, he having collected much curious information while a pair were in his possession in Sydney. Up to the present the Mooruk is only known to inhabit the comparatively small island of New Britain, situated off the East Coast of New Guinea. Here the first Mooruk was obtained at a native village under two hills, known as "Mother and Daughter" by traders to that out-of-the-world region; and upon its arrival in Sydney it passed into the hands of Dr. Bennett, who thus describes it:—

"The feet and legs, which are very large and strong, are of a pale ash-color, and exhibit a remarkable peculiarity in the extreme length of the claw of the inner toe on each foot, it being nearly three times the length which obtains in the claws of the other toes. This bird, which is immature, differs from the Casuarius Galeatus, in having a heavy plate, instead of a helmet-like protuberance at the top of the head, which cellous plate has the character of, and resembles mother-of-pearl darkened with black lead. The form of the bill differs considerably from that of the Emu (Dromaeus Nova-Hollandiae), being narrower, longer, and more curved, and having a black and leathery core at the base; behind the plate of the head is a small tuft-of-black hair-like feathers, which are continued in greater or less abundance over most parts of the neck."

Later on the same authority writes to the Zoological Society of London:—"On the 26th of October, 1858, the "Oberon," cutter, of 48 tons, arrived in Sydney, having two fine specimens of the "Mooruk" on board, stated to be male and female. Captain Devlin informed me he had them eight months, that he procured them soon after his arrival at New Britain, and since that time had been trading about the Islands. They were about half the size of the specimens sent to England last year. He also told me that the natives capture them when very young, and rear them by hand. The old birds are very swift of foot, and possess great strength in the legs. On the least alarm they elevate the head, and, seeing danger, dart among the thick bush, thread about in localities where no human being could follow them, and disappear like magic. Their powers of leaping are very extraordinary. It was from this circumstance the first bird brought from New Britain was lost. From its habit of leaping, it one day made a spring on the deck, and went overboard. It was blowing a strong breeze at the time, and the bird perished. I succeeded in purchasing these birds, and Captain Slater, the present Commander of the "Oberon," brought them to my house in a cab, and when placed in the yard they walked about as tame as turkeys. They approached anyone that came into the yard, picking the hand as if desirous of being fed, and were very docile. They began by picking at a bone in the yard, probably not having tasted any meat for some time, and would not, while engaged upon it, touch some boiled potatoes which were thrown to them; indeed, we found afterwards they fed
better out of a dish than from the ground; no doubt having been accustomed early to be fed in that manner. They were as familiar as if born and bred among us for years, and not require time to reconcile them to their new situation, but became sociable and quite at home at once. We found them next day rather too tame, or, like spoiled pets, too often in the way. One or both of them would walk into the kitchen; while one was dodging under the tables and chairs the other would leap upon the table, keeping the cook in a state of excitement; or they would be heard chirping in the hall, or walk into the library in search of food or information, or walk upstairs, and then be seen quickly descending again, making their peculiar chirping, whistling noise; not a door could be left open but in they walked, familiar with all. They kept the servants constantly on the alert. If one of them went to open the door, on turning round she found a "Mooruk" behind her, for they seldom went together, generally wandering apart from each other. If any attempt was made to turn them out by force, they would dart rapidly round the room, dodging about under the tables, chairs, and sofas, and then end by squatting down under a sofa or in a corner, and it was impossible to remove the bird except by carrying it away. On attempting this, the long, powerful, muscular legs, would begin kicking and struggling, and soon get released, when it would politely walk out of its own accord. I found the best method was to entice them out, as if you had something eatable in the hand, when they would follow the direction in which you wished to lead them. The housemaid, attempting to turn the bird out of one of the rooms, gave her a kick and tore her dress. They walked into the stable among the horses, poking their bills into the manger. When writing in my study, a chirping, whistling noise is heard, and in walk the Mooruks, who quietly pace round the room inspecting everything, and then as peaceably go out again. If any attempt is made to turn them out they hop, dart about, and exhibit a wonderful rapidity of movement, which no one would suppose possible from their quiet gait and manner at other times. Even in the very tame state of these birds, I have seen sufficient of them to know that if they were loose in a wood, it would be almost impossible to catch them, and almost as difficult to shoot them. One day, when apparently frightened at something that occurred, I saw one of them scurry round the yard at a swift pace, and speedily disappear under the archway so rapidly that the eye could hardly follow it, upsetting all the poultry in its progress that could not get out of the way. The lower part of the stable door, about four feet high, was kept shut to prevent them going in; but this proved no obstacle, as it was easily leaped over by these birds. They never appeared to take any notice of, or be frightened at, the Jabiru, or Gigantic Crane, which was in the same yard, although that sedate, stately bird was not pleased at their intrusion. One day I remarked the Jabiru spreading his long wings and clattering his beak opposite one of the "Mooruks," as if in ridicule of their wingless condition. "Mooruk," on the other hand, was pruning its feathers and spreading out its funny little apology for wings, as if proud of displaying the stiff horny shafts with which they were adorned. Captain Devlin says the natives consider them to a certain degree sacred, rear them as pets, and have great affection for them. He is not aware that they are used for food, but if so, not generally; indeed their shy disposition and power of rapid running, darting through the brake and bush, would almost preclude their capture. The height of the largest or male of these young birds, to the top of the back, was two feet two inches, and of the female two feet. The height of the largest, or male bird, when erect, to the top of the head, was three feet two inches."

"The pair of Mooruks," says Dr. Schletter in his 'Notes on the Incubation of Strathious Birds,' "which we received from Australia in 1858 have last year, and again this year, bred in the Zoological Gardens. The male performs the duties of incubation, the female not interfering in the matter. Last year, after an incubation which lasted seven weeks, a single young one was hatched on the 4th September, but was unfortunately destroyed by rats the same day. This year the male commenced to sit on the 25th of April, on six eggs, and we hope to be more fortunate.

An egg laid in the Zoological Gardens was "pale grass green, closely freckled with a paler colouring, and much smoother and more finely granulated than that of the common Cassowary. It measured 6.0 inches by 3.45 inches, and weighed 22½ ozs. Its shape is more elongated and pyriform than that of the Cassowary or Emu." (Gould)."
One presented by Dr. Bennett to Mr. Gould was $5\frac{1}{2}$ inches long by $3\frac{1}{2}$ inches broad; the ground colour very pale buff, with the entire surface covered with pale green corrugations.

By comparison with the Cassowary, the Mooruk is a smaller and shorter bird, and has much thicker legs, the helmet branches out with two overhanging lobes, "the horny part which unites them being lowest in the centre—the back part of this elevated double crest being flat and rising rather obliquely from the head near the occiput."

"The plumage is uniformly black, and the brilliant red and orange markings so conspicuous in the Cassowary is replaced on the loose throat with beautiful shades of indigo-blue; legs and feet, pale ash-colour; The young birds show a good deal of rufous colour on the thighs and under-parts; the neck is tinted with lovely shades of purple and blue; the head sparsely covered with blackish hair; the feet, ash-grey.

"Habitat: New Britain." (Gould.)
PLATE I.

GENUS DROMAIUS (Vieillot).

THE Emu represents this form in Australia and Tasmania, to which countries it is restricted. The possession of three toes distinguishes it from the Ostrich, while it differs structurally from the Rheas and Cassowaries in other particulars.

DROMAIUS NOV.EHOLLANDIÆ (G. R. Gray).

THE EMU. GENUS: DROMAIUS.

NOTWITHSTANDING its dull colour and awkward gait, the Emu is nevertheless one of the most remarkable birds in our Ornithology. In size, it is surpassed only by the African Ostrich, and the fact of its having been chosen, with the Kangaroo, as a fitting type of this territory, to stand guard over Australia’s coat of arms, gives it a wide and lasting interest. Powerless of flight, bulky, awkward, and an easy prey to the sportsman, it is deeply to be regretted that the Emu has now almost disappeared from Tasmania, and as civilization spreads in Australia it is being driven back to the sparsely settled, arid districts of the west. Should this wanton slaughter be permitted to continue, it will undoubtedly become extinct in the course of a few years.

Viewed from a short distance, the plumage is like coarse hair, of a dull brown, mottled, particularly underneath, with dirty grey. The hair-like appearance is caused by the fact that the barbs take their origin in pairs from the same shaft, as in the ostrich. The feathers are of no value, but in up-country houses the skin is often used as a mat, giving an agreeable relief to the bare floors. Settlers often extract the oil, which is invaluable for sprains, bruises, and rheumatic pains, besides being a fine lubricant, and excellent for softening leather.

The flesh is much prized by the aborigines, being very like coarse beef; it is seldom eaten by whites when beef and mutton are available, but has often been of great service to pioneers. The eggs, which are of a beautiful dark green, make good wholesome food; they are only slightly stronger in flavour than those of the domestic fowl. Carved, or mounted in silver, they make tasteful ornaments, which are now known and universally prized. In its native state the bird is most inquisitive, and the sportsman can often bring it within easy shot by lying down and kicking his feet in the air. The aborigines bring it close by hiding in the grass and waving a stick with a bunch of rag or feathers attached, which the birds will come to investigate. They also stalk the birds by means of a green bush, which they carry before them, and, thus hidden, get within spearing distance. They cook the flesh of the hind quarters, sometimes by burying it in a hole previously heated by fire, sometimes coating it with clay, and then baking it. Only the flesh of the legs, as a rule, is eaten, the other parts not furnishing much edible meat. The wings are entirely useless for flight, and when laid close to the body are almost invisible. When caught, its chief defence is its kick, which is severe enough to be dangerous to dogs or men. Its note is a loud booming or grunting sound, alternated with a high, soft whistle.
In captivity, especially when taken young, the Emu readily becomes quite tame; in fact, it often proves a nuisance, for its inquisitiveness is boundless. Nothing delicate or breakable is safe; it will squeeze through every possible opening, appearing where least wanted, and no correction can teach it the good manners of a domestic pet. Its appetite is insatiable, and no object, of whatever nature, which it can swallow, is passed over by this omnivorous gourmand. When hunted, it takes a fairly good horse and rider to run it down, such are its speed and powers of doubling.

The Emu is monogamous, and pairs with great constancy.

Usually the eggs are found in numbers ranging from nine to thirteen in one nest. They are of a rich dark-green, and are laid in a cavity scooped in the sand. Each egg measures about 5½ inches long by 3½ inches in breadth. The male takes a large share in the task of incubation.

The dark-brown plumage is so short on the neck and head as to leave the deep bluish shade of the skin clearly visible. The bill and legs are a deep ashen-grey; the exposed skin of the thighs is of the same shade as that of the neck and head.

The sexes are the same in colouring, but the female is slightly smaller than the male.

The young are beautifully marked, having distinct brown stripes on a grey ground-colour. On the head, the bars break up into numerous irregular spots.

A second species of the Emu is usually classified under the name of the Dromaius Irroratus, or Spotted Emu. Gould was of opinion, from specimens he had seen, that this was a distinct species, and he classified it accordingly, as being the representative of the genus in the southern and western parts of Australia, thus distinguishing it from the Dromaius Nova-Hollandiae of the more eastern parts. A specimen of the former is to be seen in the Museum at Adelaide.

After long study and observation, however, the Author is unwilling to divide the class into two separate species. Bearing in mind the apparently endless varieties of markings to be seen in the plumage of the Emu, he is of opinion that the fact of a distinguishing species is not fully proved. He would suggest that inquirers should look at the collection of Emus in any museum, and note the wide variations in their markings, no two specimens being quite similar.

Habitats: Unfrequented portions of Tasmania, and over all the interior of Australia where not closely settled.
PLATE LI.

FAMILY PERDICIDÆ.

GENUS COTURNIX (Mæhring).

OTHER species of this genus occur in New Zealand, India, Africa and Europe. None are found in America; and only one true Quail has, so far, been identified in Australia, where it frequents the open, grassy plains, and especially the arable lands.

COTURNIX PECTORALIS (Gould).

PECTORAL QUAIL. Genus: Coturnix.

ALTHOUGH specimens of this bird have been obtained from many parts of Australia, varying more or less in detail of colouring, and somewhat in size, no other distinct species can be classified here. The one under consideration resembles the European Quail in many ways; it flies, when startled, to some distance in a straight line, and like the European variety, it lies well to the pointer, furnishes good sport, and is an excellent bird for the table. From its mode of feeding it is naturally found most plentifully on cultivated lands, and hence obtains the name, in Tasmania, of the Stubble Quail. September, October, and November are its breeding season, which varies somewhat according to latitude, being later in Tasmania and South Australia.

The favourite food of the species is grain; in parts of the country where cultivation is not carried on, seeds and insects form its diet.

The eggs differ greatly in colouring, according to locality. The ground colour is a faint yellow, with brown markings, the latter varying from blotches to fine specks. The places chosen for nesting also vary, being sometimes found in tufts of herbage on the plains, at others amongst the thick, matted grass on creek flats. Eleven to fourteen eggs are, as a rule, found in one nest.

The female is smaller than the male, the latter averaging about four ounces and a quarter.

The male is brown on the crown of the head, back of the neck, mantle, back, and upper tail-coverts, the individual feathers of all these parts having a fine light yellow line down the centre, and zig-zag markings of black. Over each eye are two parallel lines of white, and a single white line runs along the top of the head. The remainder of the head and throat are of different shades of buff. The primaries and upper part of the chest are black; the abdomen varies in colour, with different specimens, from almost white to different shades of faint yellow, each feather having a black mark down the centre. In the female the black markings of the chest are absent, and the throat is white, not buff. In the male the bill is almost black, but olive in the female. In both sexes the feet are of a pink shade.

The usual length is about 6⅛ inches; bill, 3⅝ inches; tarsi, ½ of an inch.

Habitats: Nearly all parts of Australia where grassy areas and cultivated lands occur.
GENUS SYNOICUS (Gould).

Almost every part of Australia and Tasmania is inhabited by some member of this genus, and the infinite variety of colouring of the various species renders it very difficult to identify them. Although usually classed in Australia as Quails, they resemble much more closely the Common Partridge in their habits and economy. They fly in small coveys, and furnish good sport, rising well to the pointer.

SYNOICUS AUSTRALIS.

SWAMP QUAIL. GENUS: SYNOICUS.

This variety, even more than its allied species, resembles the Partridge, so keenly sought by sportsmen in Great Britain. It has a very similar call, lies close, often until almost trodden upon, and, as a table bird, has almost as fine a flavour as the British variety. It differs from the Partridge chiefly in size, averaging about four ounces and a-half to four ounces and three-quarters. It is found all over New South Wales, South Australia, Tasmania, and in parts of Queensland, the localities frequented by it being the thick grassy flats surrounding lagoons and water-holes. The coveys average from ten to twenty, which rise all together, with the whirr of the Partridge, usually covering less than two hundred yards before alighting.

The eggs are large, and ten to eighteen are generally found in one nest. The colour varies, being sometimes of a faint blue, sometimes speckled with light brown. The nest is laid on the ground, and simply constructed of grass.

In colour, the head and throat have a tinge of blue-grey. The upper surfaces have more accentuated markings of black than in the Pectoral Quail, each feather having the fine white mark down the centre, while the shoulders are of a chestnut shade. The primaries are light brown, with irregular deep-brown markings on the tips. The under-surface is a yellowish grey, with bold zig-zag markings of almost black; the bill is blue, with a black tip; the irides orange; and the feet yellow.

Habitats: Tasmania, Victoria, New South Wales, South Australia, and parts of Queensland.
SYNOICUS DIEMENENSIS (Gould).

TASMANIAN SWAMP QUAIL. GENUS: SYNIOCUS.

This variety differs from the allied species chiefly in its greater size, being quite one-third larger than the ordinary Swamp Quail. It inhabits much the same localities as the latter, frequenting low swampy ground.

The eggs have more of a greenish hue than those of the Synoicus Australis, and are closely spotted with tiny brown specks; the number found in a nest being from twelve to eighteen, which measure 1 inch and 7-16ths by 1 inch and 1-8th.

The forehead is buff; the lores and chin are grey, with a brownish shade; a broad line of buff runs down the crown of the head, on each side of which the feathers are brown. The upper surfaces have beautiful bold markings of various shades of brown and chestnut, each feather with a light stripe down the centre; the point of the wing has a band of blue. The primaries are yellow, with deep brown markings; the under surface is buff, with dark-brown arrow-shaped bars. The bill is blue, with a black tip; the irides, deep yellow; the feet, a lighter shade of yellow.

Total length, 8 1/2 inches; bill, 3/4 inch; wing, 4 1/2 inches; tarsi, 1 1/2 inch.

Habitat: Tasmania.

SYNOICUS SORDIDUS (Gould).


This variety is more rarely met with than those of its allied genera; its peculiarities are, therefore, much less known. Gould records having received but two specimens, both of which came from South Australia. Thus little can be said of its habits, which in all probability resemble those of the better-known species.

As the name indicates, the plumage of this species shows less boldness and variety in its markings than that of other members of the genus. The prevailing tone is a dull brown, with small dark markings; the sides of the head and primaries have a grey tinge; the feathers of the upper parts have a grey stripe down the centre; the under surface is buff, with arrow-shaped brown markings; the bill is slaty-blue, with a black tip, and is narrower than in the rest of the species; the feet are brown.

Total length, 7 inches; bill, 5/8 inch; wing, 3 3/4 inches; tarsi, 3 1/2 inch.

Habitat: South Australia.
PLATE LIII.

GENUS EXCALFATORIA (Bonaparte).

In China, India, Africa, the Indian Islands, and Australia are to be found three or four species of this genus.

EXCALFATORIA AUSTRALIS (Gould).

LEAST SWAMP QUAIL. GENUS: EXCALFATORIA.

This species was distinguished by Gould from the old Perdix Chinensis of earlier authors, for he was satisfied that several species of the form existed, and not one only as previously supposed.

The habits of this tiny representative of the Gallinaceae are not fully known: it is found in large numbers at certain seasons, frequenting swampy ground where the vegetation is luxuriant, but no observations have as yet furnished any authentic record of its history.

The colouring of the upper surfaces of the male is a deep rich brown; the wing feathers have a lighter margin, and most of the back feathers a light brown stripe down the centre; the sides of the head and the breast are a rich blue-grey; the throat is black, with bold white markings, and the abdomen is a deep chestnut; the bill is almost black, and the feet a yellowish-pink.

The general colour of the female is a lighter brown; the under-surface is buff, and the distinctive throat-markings of the male are absent.

Length, 4 1/2 inches; bill, 7/16 inch; wing, 2 2/3 inches; tarsi, 3 3/4 inch.

Habitats: New South Wales, Victoria, South Australia, Tasmania, Queensland.

FAMILY TURNICIDÆ.

Representatives of this family bear a marked resemblance to the Quails and Partridges, though not really allied to them. In many of their habits they resemble the Plover, while they must still be classed with the Gallinacea.

GENUS TURNIX (Bonnaterre).

Members of this genus are found all over Australia, as well as in many of the adjacent islands, and are to be met with, though perhaps not so commonly, in Africa, Europe, and India. Their eggs are always four in number, narrow and sharply pointed, and the nest is simple in construction, consisting of only a few straws placed in a sheltered hollow. They frequent widely different kinds of country, from large grassy plains to stony scrubby ridges.
TURNIX PYRRHOTHORAX.

RED-CHESTED TURNIX. Genus: Turnix.

Observation of this variety has furnished little concerning its history and economy beyond establishing the fact of its distinctive colouring, from which its name is derived. In common with other species of this genus, the female is fully one-third larger than the male, besides showing more strongly-marked and brighter colours, especially on the throat and under surfaces.

In the male, the back of the head is brown, with a lighter streak down the centre; the remaining upper surface is also brown, with small markings of a darker shade running transversely; the wing-feathers have a broad edging of buff, inside which are strong black markings; the feathers of the throat and shoulders, and round the eye, are tipped with dark brown, making small circular marks on those parts: the colour of the throat, almost white, deepens into a strong red-brown on the chest, which fades again to white on the abdomen.

In the female, the markings of the throat and shoulders are more distinct, while the rufous colour of the chest is much deeper than that of the male; in both sexes the bill is a dark bluish-grey, and the feet are yellow.

Size of the female: Length, 3½ inches; bill, 9/16 inch; wing, 3 inches; tarsi, 3/8 inch.

Habitat: New South Wales.

TURNIX VELOX.

SWIFT-FLYING TURNIX. Genus: Turnix.

Specimens of this variety have been obtained from many parts of Australia—thus it is probable that the species inhabits most parts of the continent suitable to its economy. As the name suggests, it is distinguished from other members of the tribe by its powers of rapid flight; lying often until almost trodden upon, it rises suddenly, and flies low and straight, but with extraordinary speed, for a few hundred yards, dropping at last like a stone. It is an excellent bird for sport, and requires a smart shot to bring it down. Sparsely-grassed ridges are its favourite habitation, but it is met with also on the more richly-grassed flats and creek-bottoms. Here, again, the ordinary rule is reversed, the female being the larger bird of the two. It is also migratory, the breeding season being in September and October. As with the foregoing species, the nest is simply constructed. The food consists of seeds and insects. The digestive organs are very powerful, and, when obtainable, grasshoppers and other large insects are consumed.

The eggs are always four in number. The ground colour is a dull white, closely speckled with faint red markings. They vary somewhat in colour in different localities, some being paler, with smaller and fainter markings. Size of the egg, eleven lines and a-half long by nine lines broad.

The upper-surface is a reddish-brown, with sometimes a lighter line down the middle of the head; the feathers of the back, rump, and wings have a broad margin of buff, inside which are black markings, less pronounced than in the foregoing species: the primaries are a lighter brown: the throat and chest of a light sandy-red, which fades into white on the abdomen: the bill is dark grey: the legs and feet a faint yellow.

Length of the female, 3½ inches; bill, ¾ inch; wing, 3 inches; tarsi, ¾ inch.

Habitats: New South Wales, South Australia, Victoria, Western Australia.
PLATE LIV.

GENUS PEDIONOMOUS (Gould.)

ONLY one species of this interesting form has been as yet identified. It differs from the Turaiæs in having a small hind-toe.

PEDIONOMOUS TORQUATUS (Gould).

COLLARED PLAIN-WANDERER. GENUS: Pedionomus.

This variety is specially adapted for habitation of the vast dry areas of inland Australia; it is very likely that further research will prove the existence of other species of the form. The Collared Plain-Wanderer may be likened to a tiny Bustard, possessing, as it does, long agile legs and short round wings, which make its flight laboured and slow. Like the Bustard, too, it hides in scanty patches of herbage, only flying when the disturber is almost upon it. In this variety, as with the Turaiæs, the strange feature is again noticeable of the male being much smaller and less gaudily coloured than the female.

Observations of these birds in confinement, made by Sir George Grey, show many interesting points in their behaviour. They soon grew quite tame, eating boiled rice and other artificial food readily, but preferring flies. Like the Emu, they would frequently stand on the extremities of their toes, and perfectly erect, on the look out for danger. Their call, too, resembled in a tiny way the grunt of the Emu, without its whistling noise. As they never fly, if they can avoid doing so, they are often caught by dogs. Sir George Grey also states that they are migratory, appearing at Adelaide in June, and leaving in January, but where they removed to he could not ascertain.

The egg narrows sharply at the smaller end, having small brown blotches and faint vinous-grey markings; the blotches are more frequent at the larger end. Size of the egg, 1¼ inch by ⅜ inch.

In colour, this variety is chiefly distinguished by the collar of white round the neck of the female, with its black, crescent-shaped markings; the crown of the head and upper-surfaces are brown, the feathers having a broad margin of buff, with alternate black and brown markings; the chest and flanks are fawn coloured, with circular markings of brown; the abdomen is of a lighter shade; the bill and irides are yellow; the feet a greenish-yellow.

The colour of the male is, throughout, more dull, and the white collar is absent, being replaced by a fawn colour, with brown markings.

Size of female: Length, 7 inches; bill, 3/4 inch; wing, 3½ inches; tarsi, ⅜ inch.

Size of male: Length, 4½ inches; bill, 11/10 inch; wing, 3½ inches; tarsi, ⅜ inch.

Habitat: Most of the plain-country of Central Australia.
TURNIX SCINTILLANS (Gould).

SPECKLED TURNIX. Genus: Turnix.

NOTHING is known of the habits of this, the most beautiful variety of the Turnicæ, but it probably closely resembles in its ways the better known members of the tribe. It inhabits the Houtman's Abrolhos, a group of islands off the western coast of Australia, and is found most plentifully on two of these islands, named East and West Wallaby Islands. It resembles most in colour the Turnix Varius, but is more than a third smaller than it, and has more variegated markings and hues.

The upper-surfaces are of a rich reddish-brown; on the head and neck are crescent-shaped markings of black, and on the back the feathers are beautifully barred with rich brown marks, and margined with grey; on the wings the brown markings and grey margins are more pronounced; the sides of the head are white, with the feathers tipped with brown; the sides of the chest are sandy-red, with black circular markings of grey and black; the chest is speckled with dark-grey; primaries, brown; irides, reddish-yellow; bill, yellowish-grey; legs and feet, dark-yellow.

Size of female: Length, 6 inches; bill, 3/4 inch; wing, 3 1/2 inches; tarsi, 3/4 inch.

Size of male: Length, 5 inches; bill, 1 1/16 inch; wing, 3 1/2 inches; tarsi, 1 1/16 inch.

Habitat: Houtman's Abrolhos Islands, off the coast of Western Australia.

TURNIX MELANOTUS (Gould).

BLACK-BACKED TURNIX. Genus: Turnix.

SPECIMENS of this variety have been obtained at Moreton Bay and in several other parts of Australia, but no particulars as to its habits and economy have been furnished by any observer. The colouring of the sexes is the same, and the female is again the larger of the two.

The crown of the head is almost black, with brown markings; round the eye is buff; the throat is grey, with fine, dark markings; the shoulders are reddish-brown, with black markings and a lighter margin: the rump and upper tail-coverts are almost black, with small brown markings; the wing-coverts are a light-brown, each feather marked in the centre with a dark spot; sides of the chest and abdomen, reddish-brown, with circular markings; primaries and chest, buff; centre of the abdomen and under tail-coverts, almost white; bill and feet, yellowish-brown.

Length, 6 1/2 inches; bill, 1 1/2 inch; wing, 3 1/2 inches; tarsi, 3/4 inch.

Habitats: Moreton Bay, Queensland; parts of New South Wales.
PLATE LV.

TURNIX CASTANOTUS.

CHESTNUT-BACKED TURNIX. Genus: Turnix.

The only specimens of this variety were obtained in the northern and north-western parts of Australia.

Notes compiled by Gilbert show that the species inhabits the sides of stony rises; they move in coveys of from fifteen to thirty. When disturbed, they seldom rise together, but run along the ground, only flying when hard pressed and alighting in a short distance. They run in a perfectly erect position, with the head thrown high, and this attitude gives their gait an awkward waddling motion which is most comical. The stomach is extremely muscular, and in those dissected were found seeds, with a large proportion of pebbles.

The back of the head is a blue-grey; cheeks, faint brown, with strong black markings behind the eye; back, shoulders, and tail are a rich chestnut, with fine black and white spots on the shoulders, and a boldly-marked line of feathers margined with a deeper chestnut running down the back; wing feathers edged with white, inside which is a black strip; primaries, brown, with circular markings of buff; centre of the abdomen and under tail-coverts, buff; irides, light yellow; bill, greyish-yellow; nude skin round the eye, dirty grey; tarsi and feet, yellow.

Length, 7 inches; bill, \( \frac{3}{4} \) inch; wing, 3\( \frac{1}{2} \) inches; tarsi, 1 inch.

Habitats: Northern and north-western parts of Australia.

TURNIX VARIUS (Vieillot).

VARIED TURNIX. Genus: Turnix.

This variety is common in Tasmania, where it is larger than in the more northern colonies, and where it frequents low stony hills; in New South Wales and Victoria it may be seen in almost any part of a like dry gravelly nature. Its flesh is not so delicate as that of the Coturnix Pectoralis and Synoicus Australis, but still it is not by any means to be despised by the sportsman. Specimens from West Australia are smaller in size and different in markings, and Gould was of opinion that they might turn out to be a different species. Like the foregoing species, they run in an awkward grotesque fashion, though rapidly, and fly low and straight when they rise. The sexes are alike in colour, but the female is again found to be much larger than the male. Its note is a loud mournful cry repeated many times. The young resemble very closely the Quails and Partridges, and are able to run and feed as soon as hatched. The first coat is soon lost, giving place to feathers closely resembling but less gaudy than those of the full-grown bird.

The food consists of insects, grain, etc., the former in the shape of locusts and grasshoppers is preferred; the gizzard is extremely muscular, and large quantities of sand and fine gravel are taken to aid in digestion.
The eggs are sometimes merely laid on the ground; usually a very simple nest is constructed of grass, in a sheltered depression; four is the invariable number in each nest. The eggs are unusually pointed, having a ground colour of pale buff, with numerous tiny specks of reddish-brown and purplish-grey. Each egg is one inch and a quarter long by one inch broad.

The forehead, nape, crown, and back are rich brown, with circular deep brown markings; feathers of the rump and upper tail-coverts, barred with chestnut and black and edged with white; wings more reddish, margined with white and boldly spotted with black; Behind the eye is a strongly marked patch of buff; a line of white runs over the eye, joining the white of the throat and sides of the neck, which are lightly marked with black; the scapularies are striped with dark brown; chest and flanks, olive yellow; abdomen, yellow; bill, dark yellow; legs, a lighter shade; irides, orange.

Habitats: Widely distributed over Australia in localities suited for its habitation.

**TURNIX MELANOGASTER.**

*BLACK-BREASTED TURNIX. Genus: Turnix.*

This is the largest of the species yet discovered, being fully half the size of the English Partridge.

All the specimens hitherto obtained have been procured on the eastern coast of Australia. The male bird is again the smaller. The illustration is of a female, and the black breast which distinguishes her sex is absent in the male.

Crown of the head, throat, and centre of the abdomen, black, with a brown streak on the top of the head; flanks and sides of the abdomen and chest having a double row of large white crescent-shaped markings; a line of feathers specked with white runs from the back of the eye, merging at the nape into reddish-brown, which extends along the remaining upper surfaces; back feathers marked with black; upper wing-coverts bordered with white, inside which is a strong black marking; lower wing-coverts spotted with white, black on the outside; bill, brownish-yellow; feet, yellow.

Length, 8½ inches; bill, 1 inch; wing, 4½ inches; tail, 3 inch; tarsi, 1½ inch.

Habitats: Eastern parts of Queensland and New South Wales.
PLATE LVI.

FAMILY MEGAPODIDÆ.

IN Australia, three species are found to represent this curious family. While offering some points of resemblance to the Gallinace, the Megapodiide differ widely from them in others; the shape and colour of their eggs and their peculiar manner of incubating bear some resemblance to the Tortoises and Turtles. Other species inhabit New Guinea and the adjacent islands, being found as far north as the Philippines.

GENUS MEGAPODIUS.

REPRESENTATIVES of this most interesting genus are to be found in the Philippine and Indian Islands; one species only is found in Australia.

MEGAPODIUS TUMULUS (Gould).

AUSTRALIAN MEGAPODE. GENUS: MEGAPODIUS.

Even the most casual observer of natural phenomena cannot fail to be deeply interested in seeing a portrait of the Megapode, and reading a description of the extraordinary process of incubation pursued by this anomaly among birds. The two following plates also are no less interesting as representing the Leipoa and the Talegallus—Australian representatives of allied genera which have departed in such a curious way from the time-honoured and almost universal manner of nesting.

The fullest account of the habits of the Megapode is found in Gilbert's notes, which show patient and exhaustive enquiry.

These investigations were carried on at Port Essington, Mr. Gilbert's attention having been drawn to a number of huge mounds of earth which, he was assured by the aborigines, were formed by the Megapode for incubating its eggs. No one had hitherto examined these heaps, and Mr. Gilbert set to work (with the aid of the blacks) to decide the question of their origin. Landing in a secluded part, under the guidance of an intelligent black, he soon found a tumulus, which his guide informed him was a nest of the Megapode. It stood only a few feet above high-water mark, being five feet high, conical, with a circumference at the base of twenty feet, and was formed of sand and shells. On scrambling to the top, his delight was great to find a young bird in a hole about two feet deep. The young one was taken, Mr. Gilbert still remaining in doubt as to the real origin of the heaps. The native would not search for eggs here, as, he said, the old birds had not lately been about, and it seemed impossible that the young should make their way to the surface from so great a depth. The young captive proved untamable, and unfortunately escaped on the third day. During its imprisonment it spent nearly all its time standing on one leg, while with the other foot it took the sand which had been placed in the box and threw it to the other end, actually grasping it, as it were, in handfuls. This occupation seemed the natural outcome of its perpetual restlessness.
The natives continued to bring in eggs said to have been taken from the mounds, but Mr. Gilbert had not the satisfaction of actually seeing one discovered for several months, when he was rewarded by witnessing two eggs taken out from a depth of six feet. The holes ran obliquely outwards from the top, so that, although six feet deep, the eggs were only about three feet from the outside. The finding of the eggs demands great patience and care, as well as hard work. The bird scoops out the hole, a single egg only is placed in each, and the cavity is loosely filled in. The natives follow its course by feeling, with the hand, which way the loose sand runs. A hole often follows a tortuous track, its course being changed if the bird comes against a root or a log when digging. One hillock from which an egg was taken was fifteen feet in height and sixty in circumference. Here the holes ran obliquely from the top towards the centre, and the mound was completely shaded from the sun by dense foliage.

Most of the mounds examined were formed of black vegetable soil, but some near the water were built of sand and shells, one being of pebbly ironstone. The majority were conical, but some were irregularly shaped. Sometimes they were seen in barren, sandy places, where the soil of which they were formed was the only kind of that nature for miles round. In these cases Mr. Gilbert concluded that they had been built of dead leaves, gathered round about, which had decomposed, forming a vegetable mould. The hills are the work of very many years. Some were found with trees growing from their sides, one of which was a foot in diameter. Whether the young, when hatched, free themselves or are liberated by the parents is not known. Only a single pair is believed to frequent the same mound at a time. The eggs are laid at intervals of several days.

The bird is hard to procure; it is shy and very wary, though its flight is slow. On perching it remains outstretched and perfectly motionless. The natives imitate its cry, which sounds like the cackling of a domestic hen, ending in a scream like that of a peacock.

Mr. John Maegillivray has furnished some notes of observations on the Megapode on Nogo or Megapodious Island, in Endeavour Straits. This is a small island of only half a mile in length, and covered with jungle. Here three of the tumuli were found, one of them being eight feet high (or 13 feet 6 inches from the base of the slope to the summit) and 77 feet in circumference. Another mound measured 150 feet in circumference. Its shape was an irregular oval, and its greatest height was 14 feet. No new eggs were found, but many fragments were unearthed, and one dead chick. Here, also, the bird was found to be very shy, and even good sportsmen found it difficult to get specimens.

Gould states he was informed that the mounds of the Megapode were common on the Lower Burdekin, but that they had not been examined; also that they were frequently seen in the scrubs on the Dawson and Mackenzie.

The eggs are laid from the end of August to March; a thin outer shell, discoloured by the soil in which it is buried, chips off easily, and the under-shell is pure white. Both ends are the same shape. The egg is three inches and five lines long by two inches and three lines broad.

In the specimens dissected by Mr. Maegillivray the stomach was "a complete gizzard, being thick and muscular, containing small quartz pebbles, small shells, and black seeds; intestine, 34 inches in length, of the size of a goose-quill, and nearly uniform in thickness, much twisted and contracted at intervals: cecum, slender, dilated at the extremity, and 4½ inches in length."

The head, topknot, back, and wings are a rich dark brown; neck and all of the under-surface, dark slaty-grey; tail-coverts, more chestnut; bill, reddish-brown; tarsi and feet, deep yellow, the front scales of the legs and toes somewhat darker.

The Megapode is about half the size of the English pheasant.

Habitats: Northern and north-eastern coasts of Australia, and on some of the adjoining islands.
PLATE LVII.

GENUS LEIPOA (Gould).

No other species of this curious form has yet been discovered, and its representative is confined to Australia.

LEIPOA OCELLATA (Gould).

NATIVE PHEASANT. Genus: Leipoa

While adopting the same means of incubation as the Megapode, the habits of the Leipoa are perhaps even more interesting, from the greater amount of method which it pursues in the manner of depositing and covering its eggs. Here, again, Gilbert's careful and reliable notes are a most valuable contribution to ornithology, and with these, and some equally valuable observations of the Leipoa made by Sir George Grey, on the Murray, the habits of this wonderful species are fully known. Gilbert's investigations were made in West Australia, where, in a dense scrub flanking the Wongan Hills, the tumuli made by the Leipoa are frequently met with. The soil in that neighbourhood consists of an ironstone gravel, and on examination the interior of the hillocks were found to contain a finer gravel, mixed with vegetable matter, that, during fermentation, generates the heat which hatches the eggs. The temperature of the interior surrounding them was estimated at about 89°. The white ant frequently makes its home in the nest, forming a ready nourishment for the young when they leave the shell. From analysis of several mounds, some containing eggs and some empty, it was found that in the latter the vegetable matter was all turned out, apparently to dry preparatory to the depositing of the eggs; in such cases the mound resembled a miniature crater. When the eggs are about to be laid, the vegetable matter is thrown in; the eggs are placed in a vertical position with the small end downwards, and, again differing from the Megapode, invariably in a circle, with about three inches between each. The ordinary soil is then thrown in, and the whole shaped and beaten down, so that a casual observer might easily mistake it for an ant-hill. All the eggs discovered seemed to be equally fresh, development having apparently been arrested, so that the young should appear about the same time. The largest mound examined was forty-five feet in circumference at the base. Eight eggs is the largest number which has been found in one nest, but the natives state that sometimes more than that number are deposited. The male bird assists in the formation of the heap, and, provided the birds themselves are not disturbed, the female will continue to lay in the same place, even after the nest has been robbed several times. When an egg is abstracted, another is placed to fill the vacant spot, and in the same plane. Sir George Grey, having found eggs laid on a different plane after the nest had been robbed, was of opinion that in some cases successive circles of eggs are laid on different levels. By diligent questioning of the aborigines, Sir George Grey elicited the fact that only one pair makes use of a mound at the same time. They repair those which have been formerly used, and the female begins to lay early in September. Both sexes appear to take an equal share in the labour of excavating and covering the nests. The eggs are laid shortly after sunrise; "four moons" elapse from the commencement of building till all the young are out. When the chicks emerge, the mother, feeding in the neighbourhood, hears them call, and takes them in charge, protecting them until about half-grown. The male bird takes no share in looking after the
The two sexes have different calls, and the female constantly utters her note when going about in charge of the little ones. Even the aborigines seldom see the birds, they are so wary. They run at great speed, roost in the trees, and can exist for a long time without water.

Mr. Richard Schomburgk was of opinion that three or four days elapsed between the laying of the eggs. He also remarked that the bottom of the cavity was sometimes sunk to a depth of twenty-four inches, the cavity being filled with Eucalyptus leaves, on the top of, and surrounding which, the mixture of sand and herbage was placed. An egg which he took out was hatched by a common hen, the young one appearing healthy and able to obtain its food at once.

The diet of the Leipoa consists of insects and the seeds of shrubs. As in the Megapode, the gizzard is very large and powerful.

The eggs vary in colour from a light brown to a salmon-pink, and have the same thin loose shell on the outside as those of the Megapode; they measure three inches and a half in length by two and a quarter in breadth, and are most fragile. Great care must be exercised in removing them from the mounds. The ends are almost the same shape, one being only slightly more pointed than the other.

Head and crest are dark brown; back of the neck and shoulders, deep blue-grey; chest, buff, grey at the edges, which have circular markings of brown; a line of lanceolate feathers, black, with a white streak down the middle of each, runs down the centre of the chest; abdomen, buff; back and wings, beautifully marked with white margin and tips, and alternate bars of brown, black, and blue-grey; tail feathers, brown, tipped with buff and marked with black.

Habitats: West Australia, South Australia, and the western parts of New South Wales.
PLATE LVIII.

GENUS TALEGALLUS (Lesson).

The only example of this species, another variety of the wonderful mound-raising birds, inhabits the eastern parts of Australia.

TALEGALLUS LATHAMI.

BRUSH TURKEY. GENUS: TALEGALLUS.

This species was originally classed by Latham with the Vulturida, and subsequent observations made by others inclined them to the belief that it was allied to that family. Latham, however, before the completion of his "General History of Birds," on becoming further acquainted with its economy, placed the Brush Turkey among the Gallinace, with the generic distinction Alectura, and Dr. Gray, in his "Zoological Miscellany," dedicated the species to its first scientific observer as Alectura Lathami. The present designation, Talegallus (Lesson), was subsequently adopted as the generic name, Alectura having been already used to distinguish a group of Flycatchers.

In his "Classification of Birds," Swainson replaced the Talegallus Lathami among the Vulturida, naming it the Catheturus Australis, but in later years all competent observers seem to agree that the bird does not properly belong to that family.

The Brush Turkey is found principally in the scrub on the eastern slopes of the Main Range, and in many parts of the eastern coast lands of Australia; it has also been found in places on the western spurs of the range. Already in the early days of these colonies, as far back as 1838, representatives of this species which frequented the more open scrub of Illawarra and Maitland had suffered severely at the hands of timber-getters and others. In such localities, where it is easily killed, the species is now almost extinct, but in the denser and more northern scrubs it is still common. To-day, in the matted jungle that clothes the eastern coast of North Queensland, this bird (called there the "Scrub Turkey") is hunted and highly prized by the aborigines for food. Under their guidance, in the far northern scrubs, the stray white traveller will find a very novel and entertaining form of sport in its pursuit.

In its main features, the extraordinary method adopted by the Brush Turkey for the incubation of its eggs resembles that of the Megapode and the Leipoa. The mounds are formed in the same way, the birds raking the soil into a heap by throwing it behind them, for which operation their large, powerful feet are peculiarly adapted. The same nest is used by successive pairs for many seasons. From the large number of eggs found in one nest, it is supposed that in some cases the same mound is used by several pairs of birds. Credible accounts given by settlers and aborigines state that half a bushel of eggs have been taken from one mound. Gould, in his investigations, was informed by the natives that the female bird is constantly in the neighbourhood about the time when the young are likely to appear. She is said to frequently uncover the eggs and cover them up again, apparently on the watch to assist the young birds which may have come out. Other statements go to show that the young make their way to the surface unassisted. When they first emerge, the little ones are already prepared to look after their wants; they are fully clothed with feathers, and able to fly to a safe elevation if attacked; they can also obtain their own food.
The enemy most dreaded by the Wattled Talegallus is the dingo, or native dog. When suddenly attacked, the bird flies to the lowest limb of some neighbouring tree, and gains a safe height by a succession of leaps to higher branches. During the hottest hours of the day, also, they often roost in the trees, and it is then that the blacks most frequently hunt them. When following them for sport, white men frequently use dogs to discover the trees in which the birds are resting. They are excellent table birds, but, like many others, are unfortunately so easy to kill that, as their haunts become more accessible, they become more scarce in proportion.

The egg is pure white, long and oval in form, and is three inches and three-quarters long by two inches and a half in diameter.

The full-grown bird is about the size of a small female Turkey of the domestic kind.

Its note is a loud clucking sound; the male bird takes the same delight in strutting and expanding his wattles as the domestic Turkey, and makes a practice, unfortunately, of often thrashing his mate.

The digestive organs are very powerful, seeds, berries and insects being the diet.

The skin of the head is exposed and of a bright red colour, having scanty hair-like feathers scattered over it; wattle, bright yellow, which is tinged with red where it merges into the neck; all the upper surface, wings and tail, black; under surface, brownish-grey, the feathers being darker at the base, fading into a light silvery-grey at the tip; bill, dark grey; irides and feet, light brown.

Habitats: Eastern scrub lands of New South Wales and Queensland.