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The Emu

A Quarterly Magazine to popularize the Study and Protection of Native Birds and to record Results of Scientific Research in Ornithology.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



Editor: J. A. LEACH, D.Sc., C.M.B.O.U.
(“Eyrecourt,” Canterbury.)

Assistant Editor: R. H. CROLL, R.A.O.U.
(Education Department, Melbourne.)

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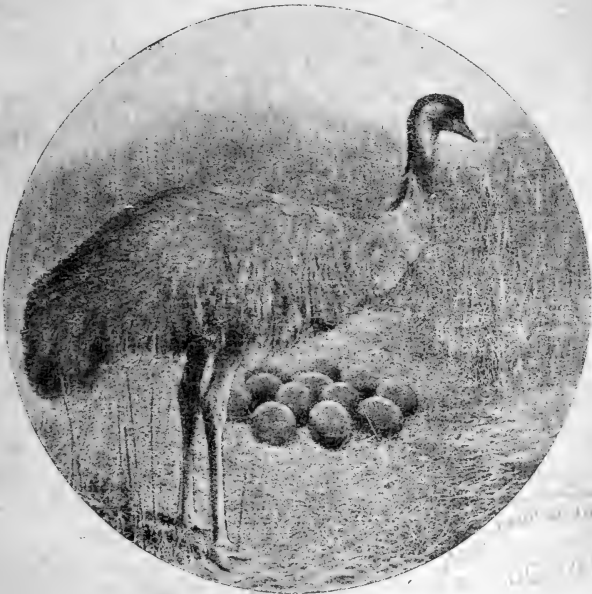
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Editors { J. A. LEACH, D.Sc., Col. M. B.O.U.
CHARLES BARRETT, C.M.Z.S.

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CENTRAL AUSTRALIAN YELLOW-BANDED PARROT

Barnardius zonarius myrtæ

FEMALE AND MALE.

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XVI.]

1ST JULY, 1916.

[PART I.]

An Ornithological Cruise Among the Islands of St. Vincent and Spencer Gulfs, S.A.

BY (CAPT.) S. A. WHITE, M.B.O.U., PRESIDENT R.A.O.U.

FOR some time past I had been anxious to procure specimens of a Skua, which had been often seen by ornithologists passing up and down the Gulf, but, owing to passenger steamers not being able to stop on the voyage, specimens had never been handled; it had been thought desirable for some time that "The Pages," two large rocks at the entrance of Backstairs Passage, should be investigated, there being no record of any ornithologist having landed on them; a strange White-breasted Petrel had been seen by Dr. A. M. Morgan and the writer, but never identified; and, lastly, we had been anxious to carry out research work among the Cormorants of our seaboard.

It can be well understood that when Messrs. A. G. and E. S. Rymill invited us to join them in a cruise through some of the islands off our coast-line, we were exceedingly pleased at the prospect of carrying out our desires, as stated above. The Messrs. Rymill's yacht, the *Avocet*, was an ideal boat for our purpose, being a well-appointed craft 52 feet in length, driven by powerful motor engines, and also well equipped with sailing power. Above all, our kind friends practically placed their yacht at our disposal, and did everything in their power to assist ornithological research.

The *Avocet* left her moorings at Port Adelaide on 1st January, 1916, and anchored for the night at the Outer Harbour. Here our research work began, for many Cormorants (all *Hypoleucos varius hypoleucus*) were returning from their fishing grounds to the mangroves in the Port River. Several specimens were obtained; temperatures, measurements, and notes upon the soft parts were taken; stomach contents were investigated and listed. The results will be found in the list which follows this narrative.

An early start was made next morning down the Gulf, and we coasted fairly closely inshore. A shimmering heat haze could be seen over the mainland, and, although the day was very pleasant with us, we heard later that it had been 106° F. in the shade in the city. After rounding Rapid Head, we sighted Cape Jervis lighthouse. Cape Jervis is the extreme southern end of the

Mount Lofty Ranges, and was named by Capt. Matthew Flinders, R.N., on 23rd March, 1802. Péron (who accompanied Baudin), coming after Flinders, ignored the English name, and called it Fleurieu Peninsula. About 1871 a lighthouse was built on Cape Jervis. This is necessary to keep vessels passing through the narrow strait (between the mainland and Kangaroo Island), known as Backstairs Passage, from running upon the dangerous reef that lies at right angles to the coast. There is an old native legend connected with this cape. The natives are almost gone now, but they tell of a great spirit named Ooroondooil, who, after making the country to the east, formed the Murray or eastern tribes first, then the tribes at the Murray mouth, giving to these peoples all they possessed of the knowledge of life, and instructing them in mysteries and strange customs to be passed on from generation to generation. The great spirit then entered the water at Cape Jervis and swam off to make other lands. Two of his lubras or wives followed him, but were drowned, and turned into stone, and are now the rocks called "The Pages." The spirit Ooroondooil then made Kangaroo Island. He is still going towards the setting sun, making lands and people as he goes. This is one of those old legends of the natives which are known to few.

After steaming round the cape, at the entrance of Backstairs Passage we met a very strong wind from the south-east, and, with a rising sea, we had to give up all hope of landing upon The Pages, for it is only in very favourable weather conditions that a landing can be effected. Our course was now altered, and just about this time a small flock of the White-breasted Petrels was seen; they kept well out of range, but even had one been shot it would have been impossible to pick it up, owing to the big sea that was running. We stood down along the coast of Kangaroo Island, and brought up for the night, in calm water, at the entrance to the Bay of Shoals, the anchor being dropped in two fathoms inside Beatrice Spit. We landed before dark on the Spit, which is a low sand-bank almost closing the entrance of the Bay of Shoals. It is about three miles long and only a few inches above high-water mark, and is mostly covered in low bush of a salsolaceous nature. I remember landing here in the late seventies from my father's yacht, and we could not place a foot between the nests of eggs and young birds; then a few years ago I visited the place again, in company of my wife, and a sad sight met our eyes, for great numbers of Cormorant bodies were lying about minus their heads. Someone had been killing these birds and selling their heads for the magnificent sum of one penny per head. I am glad to say that is all changed now, for the Spit is proclaimed a sanctuary, and the Government has shown wisdom in ceasing to pay royalty on the heads of Cormorants, which, as this narrative will indicate, are not injurious birds.

We found Penguins in their burrows under the bushes; Red-capped Dottrels, Little Stints, Sharp-tailed Stints, Sooty and

Pied Oyster-catchers, and Hooded Dottrels were seen running along the shore; Caspian Terns (breeding), uttering their harsh cries as they circled over us, Crested Terns in numbers, Little Terns (breeding), Silver Gulls, Pacific Gulls, were all seen, as well as a few Swans. Both the White-breasted Cormorant and the Pied Cormorant were there in numbers. Five Pelicans were upon the waters of a small bay, the remnants, most likely, of the vast hordes that Flinders found in Pelican Lagoon (only a few miles from the Spit) when he discovered this coast-line. Rock-Parrots were seen amongst the low bushes and sea-grasses. A few White-fronted Chats were there, also a number of Little Grass-Birds and one or two Ground-Larks. We rowed off to the yacht after dark, having spent a most enjoyable and instructive time ashore.

Early next morning we left the Spit and stood along the north coast of Kangaroo Island. Emu Bay and Smith Bay were passed, and when we came abreast of Cape Cassini we made a more northerly course for the Althorpe Islands. Numbers of Gannets were now seen plunging from great heights into the water after fish; it was noticed that they mostly showed the mottled plumage of immaturity.

Early in the afternoon we reached the Little Althorpes, two large rocks. The yacht was brought up carefully to the more easterly one, and the anchor dropped in very deep water over a rocky bottom. The sea was calm, but a heavy ground swell from the Southern Ocean made landing dangerous. Mr. E. S. Rymill took the landing party—Mr. A. G. Rymill, Dr. Morgan, and the writer—off in the dinghy. We were soon surrounded by huge sea lions, many of which came close to our boat and frolicked about like so many water-dogs—a sight which we enjoyed. A landing was effected upon the slippery rocks, up which the great swell surged. The first bird seen was a Black-faced or White-breasted Cormorant; the former name is the better one, for three species have a white breast. After scrambling some distance up the rocks, we saw a female seal, which was sleeping so soundly that a photograph was taken. The click of the shutter aroused the animal, and her amazement was great when she beheld three strangers confronting her. Pausing a second or two, she wriggled and flapped over the rocks to the water below. Climbing still higher, we found a little vegetation growing among the rocks, the dark granite having given place now to calciferous sandstone, which is rapidly breaking away and being washed by rains and blown by the winds into the sea. Where this decomposed sandstone has lodged between the rocks, some vegetation of a saline nature was found. A small shrub (*Nitraria Schæbis*) bearing a quantity of berries seems to attract the Rock-Parrots, for we flushed several birds from amongst the bushes. One of the true salt-bush family (*Atriplex cinerea*) was found, and a bright little pink-flowering *Frankenia* (*F. pauciflora*) was creeping over the rocks; a few bunches of barley-grass (*Hordeum murinum*) were seen in sheltered places. We disturbed a Crow from amongst the boulders,

and wondered why he was there. Soon we observed the reason, for high up on the side of the rocks several dry carcasses of sea lions were making their vicinity very odorous. We wondered why these animals had come together to die, but upon picking up a Winchester rifle cartridge we understood, and regretted much that such fine and harmless animals should be so wantonly destroyed.

Returning to the surging ocean, we were taken off the rocks by the ship's boat, and, having got under weigh, the *Avocet* stood over to the Althorpe Lighthouse, we dropping anchor in four fathoms of water over a good sandy bottom in a small cove on the north side, sheltered by a high and perpendicular cliff on the south of the island and by a short reef to the west. Dr. Morgan, Mr. A. G. Rymill, and the writer landed, and climbed to the top of the cliff, 300 feet up a narrow track cut in the face of the almost perpendicular cliff by the lighthouse people. We found Penguins in their nesting burrows 250 feet above the sea; it is really wonderful how these birds, seemingly so helpless on land, can climb to such a height. The island is almost level on top, and about half a mile long by a few hundred yards wide. Low, scrubby bush was growing over a shallow sandy soil, which was one huge Mutton-Bird rookery. Each burrow contained a brooding bird. There not being sufficient burrows to accommodate the population, many eggs are laid out on the surface, and in some instances in collections of half a dozen or so under bushes. Many Mutton-Birds were removed from their burrows while their temperatures were taken, and were then replaced on their eggs. Temperatures of these birds were found to range from 103.2° F. to 100° F. We then descended into a large cave on the south side of the island.

Returning to the yacht, the anchor was weighed, and we stood over to the mainland—the foot of Yorke Peninsula. We passed on the way the wrecked barque *Ethel*, which was driven ashore in a gale, with loss of life. Passing round West Cape, which is beset with reefs, we steamed into the beautiful little harbour called Pondalowie Bay, and dropped anchor in two fathoms over sand. The bay is almost land-locked by two islands across the entrance, a deep channel opening towards the west and one to the north. It was fairly late when we came to anchor, and, after skinning a Cormorant secured at the Althorpes, it was too late to go ashore. Next morning, after an early breakfast, Mr. A. G. Rymill, Dr. Morgan, and the writer landed on the beach, and, scrambling over the sand-dunes, walked up a wide flat, timbered with sheoaks, tea-trees, and a dwarf gum (*E. diersofovia*). Birds were fairly plentiful. The fresh tracks and droppings of Emus were seen in many places, as well as many kangaroo tracks. We returned to the yacht to lunch, and then Dr. Morgan and I were landed on the nearest island, which we thoroughly searched. Caspian Terns were making a great fuss as they flew overhead, giving us the idea that they were nesting; but no nests were seen. Several

Pacific Gulls were also flying round. On the rocky, wind-swept part of the islands great quantities of broken shells of the large periwinkle or warrener (*Turbo stamineus*) were found, all in a broken condition. These are supposed to be carried up in the air by Pacific Gulls and dropped on the rocks to break the shells, so that the birds may extract the animals. I have never seen the Pacific Gulls or any other bird do this. It is the opinion of Dr. Morgan that the Osprey does so (I shall allude to this later). Several Grass-Birds (*Megalurus gramineus*, sub-sp.?) were flushed from the dwarf vegetation.

Our friends having called for us with the boat, in which a motor engine was fixed, we were soon conveyed to the other island, and found it high and difficult to climb. After some little trouble Dr. Morgan and I gained the top. We found that it was one large Mutton-Bird rookery. Penguins were also seen. A nest of the White-bellied Sea-Eagle was discovered on a ledge of rock near the beetling cliff, on top; a young bird, fully fledged in the brown feathers of the first year's plumage, sat on the side of the nest. The top of this island, called "Goat Island," was covered in a stunted bush (*Acacia anceps*), not more than 2 to 3 feet high, a eucalyptus of a very dwarf nature, not growing any larger than the acacia, which Mr. Black has identified as *E. diersofolia*, and another conspicuous plant was *Lasiopetalum discolor*. Leaving Goat Island, we cruised right round its ocean side; and, the wind having risen, we were spectators of the great seas dashing in on the rocks with relentless fury, and were fairly wet by the spray by the time we reached the yacht. At 7.30 next morning our little ship was ducking her bows into a big head sea and north-westerly wind as we made over to Wedge Island. A few White-fronted Petrels and a Mutton-Bird or two were seen skimming over the water. The further we got out the stronger the wind blew and the bigger became the seas. We were glad to run under the lee of Gambier Island, which is situated off the end of Wedge Island; the anchor was let go in very deep water over rocks, with a big swell running in. Great numbers of swallow-tail (a scarlet fish shaped like a schnapper) were caught here. The wind shifting suddenly, we had to get away without delay, and made for the south side of Wedge Island in an open bay, where we anchored in four fathoms over sand. A big swell setting in made the yacht roll very much. Wedge Island is about $3\frac{1}{2}$ miles long and a mile wide; it was sighted by Flinders on the 24th February, 1802, who, in his journal, says:—"I obtained bearings of Cape Wiles, of the furthest extremity of Thistle's Island, and of a group of four islands and two rocks five leagues beyond it to the east-south-east. The largest of these was named Wedge Island, from its shape, and the group Gambier's Isles, in honour of the worthy admiral."

The south side of Wedge Island is very bold and grand, for the cliffs rise perpendicularly from the ocean to 700 feet. Two strange sugarloaf rocks are situated at the south-east end, and are about a quarter of a mile from the island; they are called the

"Haycock Rocks." Like all the other islands, this one has a base of dark granite capped by calciferous sandstone. Messrs. Golley Bros., who own the island, live upon it and breed a good stamp of pony. We landed that evening, but did not stay on shore long. Next morning, after breakfast, Mr. A. G. Rymill, Dr. Morgan, one of the Golleys, and the writer set out for the far end of the island. After leaving the bay, with its sandy beach, we passed over a clear, level country covered in high dry grass, mostly barley-grass (*Hordeum murinum*) and wild oats. Then the land began to rise towards the south-east, and we passed



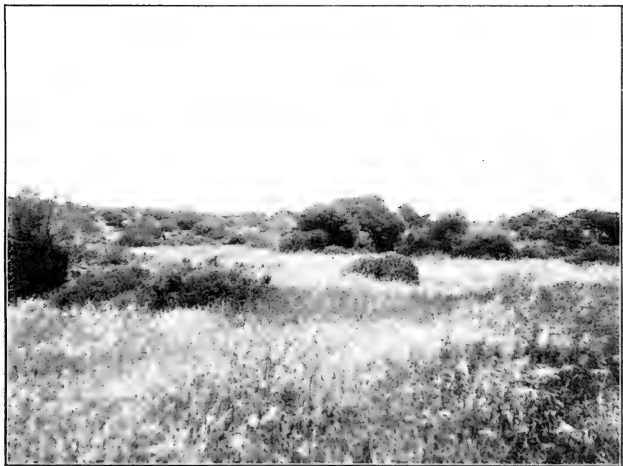
Sheoak on Wedge Island—Nesting Site of Brown Hawk.

FROM A PHOTO. BY S. A. WHITE.

through clumps, extending over 15 or 20 acres, of sheoak (*Casuarina stricta*), where we saw many Southern Stone-Curlew or Stone-Plover. May they always remain there, for they are free from the scourge of the Australian fauna, the fox. Passing over another bare space covered in high dry grass (and rising all the time), we entered a wide gully where large *Myoporum* bushes (*M. insulare*) were growing, and here we saw many White-eyes (*Zosterops*) and Scrub-Wrens (*Sericornis*). Leaving the hillocks and *Myoporum* bushes, we found we were ascending a steeply-sloping shelf, from which the sandy covering had been



Cliffs on South Side of Wedge Island.



Vegetation on Wedge Island.

blown away in places, showing a thick travertine crust with very dwarfed vegetation. We reached the highest point upon the island, which is the edge of the cliffs on the south-eastern end, where we looked upon the ocean, 700 feet below us, dashing into foam upon the granite rock which forms the bed of the island. About a quarter of a mile out was the strange sugarloaf "Haycock Rock," in the form of a hay-stack. A little to the east is another, but much more rounded off. The ocean swell was breaking with great fury upon these rocks, leaving a circle of foam of great width all round them. Upon the flatter rock of the two great numbers of seals were seen. On this vantage point a self-adjusting light is placed, which goes out with the daylight and lights up again with the darkness. Upon our way up a Hawk was secured, and proved to be *Ieracidea berigora occidentalis*. As we returned along the north side of the island some Ground-Larks or Pipts were flushed, and a small party of White-fronted Chats ("Tintacs") and both the Spur-wing and Banded Plover were seen. Some large bushes of *Logania* (*L. crassifolia*) were seen near the beach. Going on board, our time was fully occupied till bed-time preserving material collected during the day.

Next morning I was up early and finished my bird-skinning. Upon being told by one of the owners of the island that a brown Owl, which did not call "Boobook," was often seen in the thick scrub, I landed, and beat every piece of cover, but without seeing any sign of the Owl. In some places there were thickets of tea-tree (*Melaleuca pauciflora*) which would make splendid cover for night birds. The new sub-species of *Sericornis* was again seen and a Stubble-Quail was flushed. After some photographs had been taken and we had said good-bye to the Golley Brothers, the yacht was boarded. It stood across to the mainland, with a very big swell running in from the south. We made Pondalowie Bay that night, and anchored in calm water. Next morning, the 8th January, we heaved anchor at 9 o'clock and made a start for home. When we passed through Investigator Strait a big ocean swell was sweeping in, and the wind freshened from the west, with rain squalls. Later in the day we passed the Adelaide Steamship Company's vessel, the s.s. *Willyama*, fast upon a rock in Marion Bay. The rock pierced the hull at the bottom, but the vessel looked as if it were quietly riding at anchor. About 3 o'clock in the afternoon a Skua was sighted. Our friends manœuvred their yacht so that Mr. E. S. Rymill was able to shoot the bird, and the vessel was put about to pick it up. It proved to be one of the light forms. Very soon afterwards another was seen; this was a dark form, and it was added to the collection. We were very fortunate in securing these birds, and they are the first ever taken in South Australian waters. Mr. E. S. Rymill shot both birds.

At 6.30 p.m. we fetched up at Troubridge Light, and dropped anchor in two fathoms over weed. Dr. Morgan, Mr. Acraman, and the writer landed on the sandy island which has formed

round the lighthouse. When the light was first built there was only a small sand-bank; now the island is half a mile long, and covered in *Myoporum* bushes, spinifex, and other coastal flora. Cormorants of both species were seen here, the Yellow-faced bird (*H. varius*) being the more plentiful. Rock-Parrots were seen, as well as Grass-Birds, Pipits, and many species of Terns and Dottrels and other sea birds. We pulled off to the yacht at dark, and we were very busy with our work all the evening. Some rain squalls broke over us during the early part of the night. Next morning we left the anchorage at 10 a.m. and stood across the Gulf to Port Adelaide. We had a strong wind and sea right aft. There was little to interest us, though a few Mutton-Birds and Gannets were seen. The *Avocet* reached her moorings in the Port River at 5 p.m., and so ended a most interesting and profitable cruise.

Following is a list of birds observed during the trip, with observations upon them. The nomenclature is after G. M. Mathews's, F.R.S., "A List of the Birds of Australia," 1913, with Check-list names in parentheses:—

Dromiceius n. novæhollandiæ (*Dromaius novæ-hollandiæ*). Emu.—The country worked for some considerable distance round a water-hole at Pondalowie Bay (foot of Yorke Peninsula) revealed many tracks and fresh droppings of these birds.

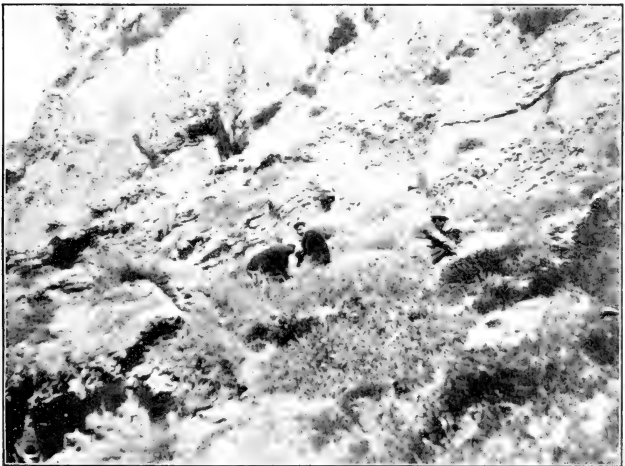
Eudyptula minor undina (*Eudyptula minor*). Little Penguin.—These birds were met with in a moulting condition on all the islands called at and at Pondalowie Bay, on the mainland. I feel sure there is some work to be done amongst these Penguins, for the difference in size between the birds inhabiting the islands in Spencer and St. Vincent Gulfs and those found further along the coast to the east is very marked. One of the most remarkable traits in this bird's character is the way in which it climbs up practically perpendicular cliffs to the summit of islands to nest. At Big Althorpe Island we found them 250 feet up the cliff, which, until lately, had to be ascended by a ladder, but now has a very steep winding track cut in the face of the rock. Dr. Morgan took the temperatures of two birds, which registered 108.8° F. and 102.6° F. respectively. The iris of these birds when alive is grey, with a lighter ring round the pupil. Their wailing at night is mournful, and while anchored off Wedge Island at night their cries came off to us in a rise and fall in the volume of sound like hundreds of young children in great pain.

Coturnix p. pectoralis (*Coturnix pectoralis*). Eastern Stubble-Quail.—Great numbers of these birds visit Wedge Island in December and January some seasons, but only one was flushed by the writer, from dry grass in the scrub:

Cosmopelia elegans neglecta (*Phaps elegans*). Brush Bronze-winged Pigeon.—These Pigeons were rather plentiful round the water-hole already mentioned at Pondalowie Bay. They seem to be well distributed along the coast-line of South Australia, and have a great liking for the sand-dune country. They lie low in the low bush till almost trodden on, when they get up quickly, but only go a short distance with a zigzagging flight, to drop into the bush again.



Dr. Morgan Taking Temperature of Penguins.



Hunting for Penguins at Althorpe Island.

Hypotænidia philippensis australis (*H. philippensis*). Eastern Buff-banded Rail.—When climbing to the top of Goat Island in Pondalowie Bay we disturbed one of these birds in the rocks close to the water. The Golley Bros., on Wedge Island, stated that these birds were in numbers at times amongst the rocks, and that they came to the house and ate hen and turkey eggs.

Pelagodroma marina howei (*P. marina*). Eastern White-faced Storm-Petrel.—A few of these Storm-Petrels were seen flying over the water as we approached Wedge Island.

Neonectris tenuirostris brevicaudus (*Puffinus brevicaudus*). Short-tailed Petrel.—A few birds were seen skimming over the open sea. The top of Big Althorpe Island is a huge rookery of them, and they have been so pressed for room that they have burrowed right up to the lighthouse and the buildings round. The keeper of the light (Mr. McLean) told us that 16 dozen eggs were collected under bushes in the close vicinity of this cottage. The birds are very little disturbed, for the light-keepers, at the time of our visit, were not using young or eggs for food. All burrows contained heavily-incubated eggs. The temperatures of four sitting birds, taken by Dr. Morgan as we pulled them out of the burrows, were 103.2°, 101.2°, 100°, and 101° F. Iris in the living birds is dark brown; legs and feet black. This Petrel was also nesting in numbers upon Goat Island, in Pondalowie Bay.

Petrel (sp. ?)—This Petrel, which we had been on the look-out for, was unfortunately not secured, and still remains to be identified. From the distance it certainly resembles Mr. Basset Hull's new bird, the Fluttering Petrel.

Hydroprogne tschegrava strenua (*Sylochelidon caspia*). Australian Caspian Tern.—A number was observed during the cruise, and the birds were nesting on Beatrice Spit. A nest containing three eggs was seen, also one containing a chipped egg and a young bird.

Thalasseus bergi poliocercus (*Sterna cristata*). Crested Tern.—These Terns are very plentiful all along the coast-line—in fact, they were the most numerous of the sea-birds, and far outnumbered the Silver Gulls. We met with them flying over the water (with their sharp bills pointing straight down), ever on the watch for food, when we were at sea, and at many places they were congregated in numbers on the sandy spits. When disturbed they flew round with great noise. At Beatrice Spit we found one egg in the sand; but whether this was a pair of birds nesting late or the first egg laid of a party of Terns it is difficult to judge.

Sternula n. nereis (*Sternula nereis*). White-faced Ternlet.—These beautiful little birds were seen in large parties at several of the islands we visited. They were breeding at Beatrice Spit, having fully fledged young at one end of the Spit, while at the other numbers were sitting on their eggs. All the nests had two eggs, and the nests were placed in rows parallel to each other.

Bruchigavia ethelæ (*Larus novæ-hollandiæ*). Southern Silver Gull.—Very few were seen. I have never been along our coast and seen so few; one can only suppose they were away nesting.

Gabianus p. pacificus (*Gabianus pacificus*). Pacific Gull.—A few birds were often found at the islands we visited; they stood upon the

rocks near the water, and made excursions over the water in search of food. Should a bird alight upon the water it would be the signal for all the others to take flight, and fly or settle round him. On one of the islands at the entrance of Pondalowie Bay a great number of shells known as "warreners" (*Turbo stamineus*) was found broken upon the rocks. It has always been supposed that the Pacific Gulls carry these shells to a great height and let them fall upon the rocks to smash them, so that the animals can be extracted. The Golley Bros. on Wedge Island said they had seen the Gulls doing this, and that sometimes the shells were carried up several times before they were broken.

Stercorarius parasiticus (*Stercorarius crepidatus*). Arctic Skua.—I was very lucky in securing two of these birds—one of each of the dark and the light phase. Both were females in a non-breeding condition. These are the first skins taken in South Australian waters. I have hardly ever travelled up and down the Gulf without seeing these birds. They are very easily picked out by their seemingly lazy, flopping flight; but as soon as they sight Gulls or Terns with food it is wonderful how quickly they will overhaul and harass them till they make them give up the food. Light form measured—total length 16 inches, stretch of wing, tip to tip, 43 inches; wing, axilla to tip, 19 inches; iris dark brown; legs and feet black; nails very curved and sharp. Stomach contents: pieces of crab claws, one broken and one unbroken shell (*Thalotia conica*). Dark phase measured—total length, 16 inches; wing, 20 inches; spread from tip to tip of wing, 45 inches; soft parts same as light form; stomach contents: piece of crab's claw, one broken and one unbroken sea-shell (the same as in light form). Dr Morgan took the temperature as soon (in one case) as life left the body, and in the other before it died. The result was—dark form, 106.2° F.; light bird, 102.4° F. I handed the skeletons to Dr. Morgan, and he states that "the light bird was the younger, judging by the incomplete ossification of the posterior border of the sternum. The light bird had an extra pair of cervical ribs, making nine in all, to the dark bird's eight pairs." Each bird weighed 1 lb.

Hæmatopus ostralegus longirostris (*H. longirostris*). Pied Oyster-catcher.—These birds were seen wherever there was a stretch of sandy beach.

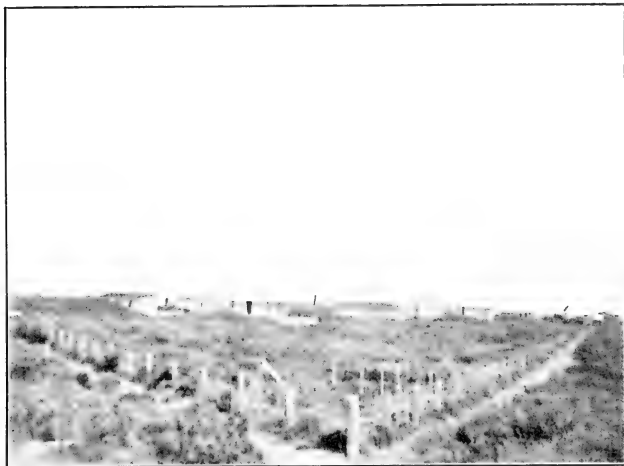
Hæmatopus niger fuliginosus (*H. fuliginosus*). Eastern Black Oyster-catcher.—Seen almost everywhere we touched. Although the Pied species is seldom if ever seen on the rocks, the dark species is often seen on the sandy beach or spits; still, it shows a far greater liking for the rocky coast.

Lobhyx novæhollandiæ (*Lobivanellus lobatus*). Spur-winged Plover.—Seen on the mainland at Pondalowie Bay and on Wedge Island.

Zonifer t. tricolor (*Z. pectoralis*). Black-breasted Plover.—Two or three birds were seen on Wedge Island.

Leucopoliis r. ruficapillus (*Ægialitis ruficapilla*). Red-capped Dottrel.—Every place we touched at where there was a sandy beach these birds were seen. At Troubridge Island several were behaving as if they had nests, but none was seen.

Charadrius c. cucullatus (*Ægialitis monarcha*) (?). Hooded Dottrel.—Mostly seen in pairs, but not nesting.



Althorpe Light—Site of Mutton-Bird Rookery.



Haycock Rock.

Numenius cyanopus (*N. cyanopus*). Australian Curlew.—These birds were seen and heard at the sand-bank at the mouth of the Port River.

Pisobia minuta ruficollis (*P. ruficollis*). Red-necked Stint.—A small flock was seen on Beatrice Spit.

Limnocinctus acuminatus (*Pisobia acuminata*). Sharp-tailed Stint.—Numbers were seen on Beatrice Spit.

Burhinus m. magnirostris (*Edicnemus grallarius*). Eastern Stone-plover.—A great number of these birds had congregated in the Casuarina scrub on Wedge Island.

Notophox novæhollandiæ (*N. novæ-hollandiæ*). White-fronted Heron.—These birds were seen on the way down the Port River, and one at Pondalowie Bay.

Chenopsis atrata (*C. atrata*). Black Swan.—Several of these graceful birds were seen at Beatrice Spit.

Hypoleucus fuscescens (*Phalacrocorax gouldi*). White-breasted Cormorant.—This bird keeps to the open sea, and is seldom if ever seen up the gulfs. Numbers were seen on Beatrice Spit, and on all the islands, where it was by far the commoner bird.

Four specimens were taken; they measured:—No. 1, ♂—length, 24 $\frac{3}{4}$ inches; wing from body to tip, 19 inches; spread of wings, 41 inches. No. 2, ♀—length, 24 inches; wing from body to tip, 18 inches; spread of wings, 39 inches. No. 3, ♂—length, 27 inches; wing from body to tip, 19 inches; spread of wings, 44 inches. No. 4 (?)—length, 25 $\frac{3}{4}$ inches; wing from body to tip, 18 $\frac{1}{2}$ inches; spread of wings, 38 $\frac{1}{2}$ inches. No. 2 weighed 4 $\frac{1}{2}$ lbs. and No. 3 3 lbs.

Soft parts—iris sea-green; gular pouch black, except in one instance, when it was grey, which, I feel sure, is due to immaturity; legs and feet black; bare skin of face black; bill black. This bird has always been described as having a purple face, but every skin that has yet come under my notice has been black. It is possible that it may have a purple sheen at breeding time, and birds must be examined at that time to make sure, for none of the above birds was in a breeding condition.

The stomach contents were as follows:—No. 1, fish-bones and remains; No. 2, one leatherjacket, parasitic worms; No. 3, one weed-fish, also worms; No. 4, one weed-fish.

Hypoleucus varius hypoleucus (*Phalacrocorax hypoleucus*). Eastern Pied Cormorant.—These Cormorants like the upper part of the gulfs, and haunt the mangrove creeks, where they nest. They were by far the most numerous at Troubridge Island, but became less as we approached the open sea. Not a single bird was seen at the Althorpes, but a few were at Wedge Island.

Five specimens were examined, and the measurements were:—No. 1, ♂—length, 32 $\frac{1}{2}$ inches; wing from body to tip, 22 inches; spread of wings, 49 inches. No. 2 (?)—length, 28 inches; wing from body to tip, 19 inches; spread of wings, 42 inches. No. 3, ♂—length, 33 inches; wing from body to tip, 23 inches; spread of wings, 48 inches. No. 4, ♂—length, 31 inches; wing from body to tip, 22 inches; spread of wings, 47 inches. No. 5, ♂—length, 32 inches; wing from body to tip, 21 inches; spread of wings, 46 inches. No. 3 weighed 5 $\frac{1}{2}$ lbs., No. 4 4 lbs., and No. 5 4 lbs.

Bare space in front of the eye orange, bare space round the eye

blue; lower eyelid metallic green; gular pouch flesh colour; bill black, with horn-coloured tip; legs, feet, and nails black; iris sea-green. A young bird (No. 4) had the skin in front of the eye orange, bare skin round the eye light yellow; bill grey, culmen brown; legs, feet, and nails black. Stomach contents consisted mostly of weed-fish, and no marketable fish was found in this or the preceding species. Stomach contents were as follow:—No. 1, two weed-fish; No. 2, not examined; No. 3, one leatherjacket, 8 rounded stones (7 granite and one sandstone), weighing $2\frac{1}{4}$ ozs.; one was as round as and the size of a large marble. There is no doubt the stones are swallowed to help the digestion, and not picked up accidentally. We know it is a common practice with seals to swallow large granite stones for the same purpose.

Dr. Morgan registered some of the temperatures as follows:—No. 1 (seven minutes dead), 101.2° F.; No. 2 (ten minutes dead), 101° F.

The contents of these birds' stomachs show that they confine themselves almost entirely to fish living amongst weed, and it is my firm opinion that they do not fish over sandy bottoms, simply because the fish can see them, and so escape.

Morus serrator dyotti (*Sula australis*). Australian Gannet.—A good many of these birds were seen, mostly being immature, showing their first year's mottled plumage.

Catoptropelicanus c. conspicillatus (*Pelecanus conspicillatus*). Eastern Pelican.—Five birds were seen in the water near the Spit. They would have numbered as many hundreds many years ago.

Circus approximans gouldi (*Circus gouldi*). Allied Harrier or Swamp-Hawk.—Several were seen sweeping over the long dry grass on Wedge Island.

Uroaetus a. audax (*U. audax*). Wedge-tailed Eagle.—Only one bird was seen, and that was on Wedge Island.

Cuncuma leucogaster (*Haliaetus leucogaster*). White-bellied Sea-Eagle.—Nearly every island seems to have a pair of these birds. Upon Goat Island, in Pondalowie Bay, a pair of these birds was nesting upon a ledge of rock facing the north-east, just under the overhanging top of the island. A large, fully-fledged young one, in its first year's dark brown plumage, was sitting on the edge of the nest. When walking round the top of the island, Dr. Morgan and myself found the remains of Penguins, Mutton-Birds, and crayfish—evidently the food of these birds.

Ieracidea berigora occidentalis (*Hieracidea occidentalis*). Western Brown Hawk.—Several birds seen on Wedge Island, and one secured had the stomach much distended with great numbers of lizards. Soft parts in the living bird were:—Iris brown; bill slaty-blue; legs and feet grey-blue; nails dark brown. In my opinion this is strictly a coastal form, and *Ieracidea b. berigora* takes its place inland.

Cerchneis c. cenchroides (*Cerchneis cenchroides*). Nankeen Kestrel.—Strange to say, a bird flew from the Althorpe light-tower and one from the unattended light on Wedge Island.

Pandion halliaetus cristatus (*P. leucocephalus*). White-headed Osprey.—First saw this bird at Gambier Island, then at Wedge Island. These islands being within a mile of one another, it is quite

possible that we saw the same birds. One was seen patrolling the beach on several occasions. Messrs. Golley Bros., of Wedge Island, say that these birds will nest in the deserted nests of the White-bellied Sea-Eagle.

Spiloglaux (sp.) (*Ninox*?)—The Messrs. Golley say that a brown Owl, which does not call "Boobook," has often been seen in the bushes. I made every effort to discover one, without success.

***Neonanodes petrophilus zietzi** (*Euphema petrophila*). Eastern Rock-Parrot.—Seen in small parties upon Beatrice Spit, Little Althorpe, Wedge Island, and Troubridge Island. At the first and last localities there are no rocks, but they evidently frequent the low bush in search of food, and repair to the rocky islands to nest.

Neochalcites basalis mellori (*Chalcococcyx basalis*). Narrow-billed Bronze-Cuckoo.—Several birds were seen in the scrub at the back of the sand-dunes at Pondalowie Bay, and they were calling at times. A young bird was taken on Wedge Island that was chased around by *Sericornis*, which no doubt proved that it had been hatched on the island.

Hirundo n. neoxena (*H. neoxena*). Welcome Swallow.—These birds were seen at every stopping-place, especially when high cliffs were met with. The Messrs. Golley Bros. told us that these Swallows remained with them on Wedge Island all the year round. Numbers were seen some distance off shore (quite three miles) when we were passing along the coast-line between the Outer Harbour and Glenelg; they were chasing insect life carried out by a land breeze.

Hylochelidon nigricans caleyi (*Petrochelidon nigricans*). Tree-Martin.—Soon after leaving the Outer Harbour these birds were seen with the preceding species, about three miles off shore.

Whiteornis g. goodenovii (*Petroica goodenovii*). Southern Red-capped Robin.—Several were seen at Pondalowie Bay. Quite an immature male bird was taken on Wedge Island, which would lead one to suppose they bred there.

Melanodryas cucullata vigorsii (*M. bicolor*). Southern Hooded Robin.—Several seen at Pondalowie Bay, where an immature male was taken.

Leucocircia t. tricolor (*Rhipidura motacilloides*). Black-and-White Fantail.—One or two birds seen at Pondalowie Bay.

Drymodes b. brunneopygia (*D. brunneopygia*). Scrub-Robin.—Large masses of dense tea-tree were found to be the home of this bird at Pondalowie Bay; one bird was taken there.

Epthianura a. albifrons (*E. albifrons*). White-fronted Chat.—We first met with these birds on Beatrice Spit, and found them quite numerous on Wedge Island.

Poodytes gramineus halmaturinus (*Megalurus gramineus*). Kangaroo Island Grass-Bird.—Numbers were seen upon Beatrice Spit, which are sure to be the above; they were also seen on an island in Pondalowie Bay, as well as on Troubridge Island. As no specimen was secured, it cannot be said to which sub-species they belong.

Geobasilus chrysorrhous perksi (*Acanthiza chrysorrhous*). Southern Yellow-rumped Tit.—Several of these birds were seen at Pondalowie Bay.

Sericornis maculatus rymilli, sub-sp. nov.—Wedge Island Scrub-Wren.—All the upper surface, wings, and tail light greyish-brown; all the tail feathers having a large blotch of black, almost crossing the feathers near the tip, the extremity of the feathers having a very faint line of white; spurious wing feathers black, margined with white; wing coverts black; lores black; a white line extending from the base of the bill to the back of the eye, with a small patch of white under the eye; throat, breast, and centre of abdomen dull white; feathers of the throat marked with a few oblong markings of black; rump and upper tail coverts ruddy-brown; flanks and under tail coverts buff, the latter tipped with white; bill brown; iris dull white; feet reddish-brown. Female somewhat lighter in coloration, the markings not so distinct, and the lores are buff-coloured instead of black.

Type.—A mature male collected on Wedge Island on 6th January, 1916, now in the "Wetunga" collection. Range, Wedge Island.

This new sub-species was fairly numerous on Wedge Island; its habits seemed identical with other members of the genus. I have collected specimens from the nearest point of the mainland (Pondalowie Bay), which is under 20 miles distant from Wedge Island. These birds from the mainland are much darker, and agree with the typical *Sericornis m. osculans* from Port Adelaide. Specimens from Eyre Peninsula (*Sericornis m. mellori*), from the other side of the island, are before me, and the above new sub-species differs from them in being much lighter and not nearly so strongly marked.

I have much pleasure in naming this bird in honour of the Messrs. Rymill (father and son), who have assisted ornithology in such a marked degree by giving their services and use of their yacht to assist this branch of science.

Leggeornis lamberti assimilis (*Malurus assimilis*). Purple-backed Wren.—Several parties of these birds were seen in the thick scrub covering the sand-dunes at Pondalowie Bay.

Pseudartamus cyanopterus (*Artamus sordidus*). Wood-Swallow.—Quite a number seen at Pondalowie Bay.

Colluricincla harmonica victoriæ (*C. harmonica*). Victorian Grey Shrike-Thrush.—Several seen at Pondalowie Bay.

Bulestes torquatus ethelæ (*Cracticus destructor*). Southern Butcher-Bird.—Seen and heard calling loudly.

Oreoica cristata clelandi (*O. cristata*). Southern Crested Bell-Bird.—Quite numerous at Pondalowie Bay; an immature male was collected.

Zosterops lateralis westernensis (*Z. dorsalis*). Southern White-eye.—Plentiful on the Althorpe Islands and at Pondalowie Bay, on mainland, also on Wedge Island. I have not put this bird under *Z. l. halmaturina*, because I am quite sure the Kangaroo Island and mainland birds are the same.

Gliciphila melanops chandleri (*Gliciphila fulvifrons*). Victorian Tawny-crowned Honey-eater.—These birds were fairly plentiful in the scrub amongst the sand-dunes. They always draw attention by their erratic movements, darting straight up to the top of a bush or dry twig and back again. An immature bird was taken.

Meliphaga s. sonora (*Ptilotis sonora*). Southern Singing Honey-eater.—They were plentiful at Pondalowie Bay and Wedge Island, and were seen at the Althorpes.

Coleia carunculata tregellasi (*Anthochæra carunculata*). Victorian Red Wattle-Bird.—Numbers were seen at Pondalowie Bay:

Acanthogenys rufogularis cygnus (*A. rufogularis*). Southern Spiny-cheeked Honey-eater.—Numbers were calling in their quaint way at Pondalowie Bay; an immature bird was taken.

Anthus australis adelaidensis (*A. australis*). Southern Pipit.—First met with on Beatrice Spit, then at Pondalowie Bay; they were numerous on Wedge Island.

Corvus coronoides perplexus (*C. coronoides*). Southern Raven.—A bird was seen on Little Althorpe Island, no doubt attracted by the dead seals.

Strepera, sp.—A bird was seen at Pondalowie Bay; in spite of every effort it could not be secured, so the species was not determined.

INTRODUCED BIRDS.

Passer domesticus. House-Sparrow.—Well established on Althorpe and Wedge Islands, and has become a great nuisance on the latter.

Sturnus vulgaris. Starling.—Were seen on Althorpe Island, and large numbers were observed running along the beach at Wedge Island and also at Pondalowie Bay. The low bush growing upon the islands and the coast of the mainland bears quantities of fruit, which would supply good food for these birds. They also seem to pick up much food along the beach after the tide goes out.

(*To be continued.*)

Bird Life on Yanko Creek (N.S.W.)

BY CHARLES BARRETT, C.M.Z.S., R.A.O.U., MELBOURNE.

RAMBLES in Riverina in the nesting season are not, perhaps, always so profitable as those I enjoyed in November, 1913. I owed my success to the late Mr. Max Egger, a keen observer, who was intimately acquainted with the bird life of Jerilderie and surrounding districts. Delightful days we spent together, wandering across the plains and along the banks of Yanko Creek. My companion seemed to know the nesting haunt of every species within a radius of 40 miles. I arrived in Jerilderie with 12 dozen plates, and few remained unexposed when I left. Many of the photographs obtained were of subjects that have rarely faced a camera. My harvest of sun pictures was large, and every hour spent among the birds was filled with interest. Besides, Mr. Egger gave liberally from his stock of bird lore, which appeared to be inexhaustible.

A few days were spent in and around the town. White-browed Wood-Swallows (*Artamus superciliosus*) were nesting in every tree along the streets, on fence-posts, and other sites. Nests of the Sordid Wood-Swallow (*A. sordidus*) were also noted. From the hotel balcony I watched a pair of the former species feeding three fledgelings, perched in a tree whose branches brushed the railing. Every few minutes one or other of the parent birds would come swooping from the sky with a bunch of insects held

in its beak, distribute the food, and shoot into the blue again. At any time in the day, if one looked overhead, Wood-Swallows could be seen flocking the sky, some at a great height. "Sky" is the local name for all the species of *Artamus* that frequent Jerilderie, and it is both pleasing and suitable, for the birds seem to revel in their beautiful flight.

In my companion's garden many birds were nesting, Wood-Swallows, of course, being in the majority. A box-thorn hedge, fencing the western side of a paddock, was favoured by Tri-



Tricoloured Bush-Chat (♂) on Nest.

FROM A PHOTO, BY CHARLES BARRETT.

coloured Bush-Chats (*Ephthianura tricolor*), and I spent nearly a whole afternoon with the camera at a nest which contained three heavily-incubated eggs. The temperature was over 100° in the shade, and, though I protected the camera with the focussing cloth, the base was cracked by the heat, and several plates were fogged. But I secured good photographs of the male and female Chats at the nest. The male was much the bolder of the pair, and my long vigil was due chiefly to the timidity of the female. In bright sunlight, the scarlet cap and breast of the male, as it sat in the nest, shone like flakes of fire.

Many nests of the Tricoloured Bush-Chat were found in a bed of star thistles on the outskirts of the town, and others among long, dry grass in the paddocks. Later, when travelling across the plains, specimens of the Orange-fronted species (*E. aurifrons*) were observed, but no nest was discovered.

With Mr. Egger I made two trips to Yanko Creek, about 16 miles from Jerilderie. On the first occasion we visited, *en route*, a great rookery of the Straw-necked Ibis (*Carphibis spinicollis*) in a shallow lignum swamp on Yanko Station. The birds are strictly protected. We estimated that between 15,000 and 20,000 were nesting at the time of our visit. Some of the bushes supported a dozen or more nests. There were fresh eggs in nests on the outskirts of the rookery, while many of those nearer the centre contained chicks a few days old; at the hub of the rookery there were broods nearly ready for flight. The older birds declined to remain in their nests when the camera was erected near them; many climbed to the top of the bush and clustered; while others scrambled or fell into the muddy water, and splashed into the thickest cover. Alone in a nest was an albino fledgeling; its plumage was not pure white, but of a creamy colour, and it was conspicuous among scores of dusky chicks in neighbouring nests.

Travelling across the plains, I was impressed by the work of the Ibises. In every paddock there were hundreds of the birds warring on young grasshoppers. It was easy to see that the Ibises enjoy protection, for they allowed our vehicle to approach fairly close to them before rising to fly a few yards, and resume their feeding. Without *Carphibis spinicollis* to keep them in check, the grasshoppers would indeed become a terrible burden in Riverina. While we were at the rookery a boundary-rider galloped up, but he was reassured when he recognized Max Egger, who had done much to spread knowledge of the value of the Ibis to pastoralists.

Pink-eared Ducks (*Malacorhynchus membranaceus*) breed among the lignum in this swamp, but we failed to find a nest. It was rather risky work searching the bushes, for they are favourite resorts of black snakes. We did not actually see a reptile, but as I thrust a stick into one bush there was a slithering noise, and I prudently retired.

On the journey to the creek many nests of the Australian Crow (*Corvus coronoides*) were observed in dead trees. Most of them were at no great height, and they were conspicuous objects even at a distance. Though nests were so numerous, few Crows were seen. Signs of their presence were noted in the Ibis rookery, where many eggs and nestlings must be destroyed by the black marauders. As the swamp dries up, Ibises that were late in nesting desert the unhatched eggs, which are eagerly devoured by Crows and rats.

Yanko Creek is a fine stream, whose banks are lined with big eucalypts, while the trunks of dead gum-trees rise like twisted

grey columns from the water. We camped in a pleasant spot, where the ashes of old fires told of former camps enjoyed by my friend and others. On the morrow, a voyage among the dead gums in a "flattie" took us to the nests of Ducks, Cockatoos, and Parrots. Thousands of Rose-breasted Cockatoos (*Cacatua roseicapilla*) were breeding in the hollows, and the clamour made by the birds when they returned from the feeding grounds was deafening. But their harsh cries were forgiven, because of the birds' beauty. Wheeling above the trees, the noisy flocks presented a picture that will not soon fade from memory. Rose-pink and silver-grey in the early sunlight glowed and gleamed alternately against a pale blue sky. The nestlings offered a harsh contrast to their parents; they are grotesque and querulous creatures, at the very antipodes of grace and beauty. Taken from a hollow, two infant Galahs protested vigorously, and, when placed on a stump, menaced each other as well as the photographer. Placing my bare hand and arm deep into a Galah's nesting hollow, I wondered how the young birds could stand the high temperature during the blazing November days. One would hardly be surprised to find their flesh baked brown; but the heat really agrees with them. There were hollows in every tree, which in the great majority of cases were occupied by Galahs. In one tree we noted seven nests, and many each had three or four.

Several pairs of Cockatoo-Parrots (*Calopsitta novæ-hollandiæ*) were nesting in hollow limbs of dead trees in the creek. One nest contained young birds, and we watched them at dinner. The parent birds shared the duty of feeding the brood. Flying to the end of the broken branch, the male was greeted by gaping beaks, and into these, in turn, he regurgitated food. Then he flew away, and presently the female appeared, and the process was repeated. Unfortunately, a camera could not be used, as the nursery was in a slender bough, about 30 feet above the water. Later, a more accessible nest was discovered, and photographs of young Cockatoo-Parrots were secured.

Continuing our voyage in the flattie, we next examined the nest of a pair of Yellow Parrots (*Platycercus flaveolus*) in a deep hollow. The tree trunk was hard and smooth, and to climb to the nest I was compelled to chop steps in the tough wood; even then I had a fall into the boat, and barked my shins severely, before the object was attained. The nest contained four fairly fresh eggs. My companion remarked that the Yellow Parrot was becoming rare in the district, but in the course of the day two other nests were found.

In a shallow knot-hole on a huge bent limb a pair of White-rumped Wood-Swallows (*A. leucogaster*) had a nest, which seemed beyond our reach. But my companion, after a stiff climb, and at the risk of a ducking, secured the three nestlings, and we took them ashore. They were just able to fly, and gave much trouble to the photographer. One bird, in fact, flew into a tree, where it was welcomed by the parents. Then the old birds continued



At the Nest of the Yellow Parrot.

FROM A PHOTO. BY (THE LATE) MAX EGGER.

their efforts to rescue the other fledgelings. Repeatedly they darted down to the branch on which the young ones were perched, and occasionally made vicious dives at my head. Finally, the whole family was united again, but the parents were not content until we left the vicinity of the tree among whose branches the brood was concealed.

An interesting nest was that of a pair of Black-cheeked Falcons (*Falco melanogenys*), in a big hollow, at a height of about 40 feet. The birds have nested in the same place every season for a number of years, though I believe that the eggs have been taken more than once. Several nests of the Nankeen Kestrel (*Cerchneis cenchroides*) were discovered, some being at a great height in living gum-trees. One nest was in a hollow of a dead tree, on the bank of the creek. The brood consisted of five, and, as the birds were well grown, they were awkward to handle. We got them all out of the hollow eventually, and, ranged on a bough, they made a fine picture. Four were returned to the nest, but the fifth eluded us, and tumbled into the creek. We feared it would drown, but, using its wings as paddles, it managed to reach the other bank, and scrambled ashore, safe, though bedraggled. The Kestrel preys mostly on small lizards, field mice, and insects, but when driving into Jerilderie we saw one swoop at a Wood-Swallow, and bear it aloft in its talons. Such an occurrence, surely, is rare.

On the return journey to Jerilderie we called again at the boundary riders' huts where we had spent the night on the way to the creek. We learned that White Cockatoos (*C. galerita*) were nesting in the vicinity, but could not spare the time for a side excursion to the spot. As we neared the town a dust storm overtook us, and for at least three minutes pony, jinker, and ornithologists were enveloped in darkness. The dust was so thick that we could hardly breathe, and when the storm had passed we were coated in grey from head to feet. The dust swooped on us like a moving wall that towered into the sky. On the plains in summer these storms frequently occur.

Max Egger, during portion of the year, followed the occupation of bird-trapping; he sent large numbers of Galahs and Warbling Grass-Parrots (*Melopsittacus undulatus*) to dealers in Sydney, receiving for the former birds about ninepence each, and less for the Budgerigars. He asked me to accompany him and two assistants on a trapping expedition, and I accepted the invitation. My friend explained that if he did not trap the Galahs the birds would be poisoned or shot in thousands, as they were regarded as pests by men on the land. And I found that the trappers were welcomed wherever land was devoted to wheat-growing. I did not actually see a Galah attacking wheat, but was shown a field where the ears had been stripped and the stalks were mostly broken; this was declared to be the work of Cockatoos. The evil of poisoning is that not only Galahs, but other birds, that are certainly not pests, suffer.

The trapper's outfit consisted of a waggon surmounted by a large cage, divided into compartments, a jinker, nets, stakes, call birds, and so forth. The large vehicle was drawn by two horses. Leaving Jerilderie early one morning, we travelled slowly northward across the plains, and towards sundown entered a farm paddock, where we outspanned for the night. The farmer welcomed us, and said that the "Galahs were eating him out." In the evening, nets and poles, bagging, and other articles were carried to a crop paddock, and the trappers soon had everything ready for operations next day.

We were astir before sunrise, for only in the early morning can trapping be carried on with a good chance of success. Each net is controlled by a long rope, and the trapper, crouched behind a screen of bagging against the fence, holds the free end, ready to give a sharp pull at the right moment. Soon after the eastern sky became flushed with rose-pink, the colour of the Galah's breast, small flocks of the birds came flying toward the paddock from the trees along Yanko Creek. Gradually the size of the flocks increased, till there were thousands of birds in sight. The call birds, tethered to the nets, "spoke" to those in the air, and presently a flock of about 30 Galahs circled over the net I was watching, and then alighted. The trapper pulled the rope, the poles leaped together, and a babel of harsh cries arose. Eleven birds had been caught, and they were quickly transferred to a box. In the course of an hour the nets were sprung three times, and the tally of captives was 87; this was not considered a particularly good result. The Cockatoos were transferred to the big cage on the waggon, where they huddled on the long bamboo perches. Sulky at first, they soon became resigned to their lot, and ate and drank. In addition to netting the adult birds, the trappers gather nestlings and rear them.

We moved toward fresh fields before noon, and spent the night at a farmhouse. One of the two ladies of the homestead was a lover of wild birds, and had tamed several Galahs without caging them. All day, she said, these birds were away with the flocks, but toward sunset they returned to the homestead, where they remained during the night. I was lucky enough to see three of these tame wild birds early in the morning, and secured photographs of them on their favourite perch. The trappers, who had been at work before I awoke, reported an albino Galah, which they failed to capture. Max Egger, from a nest in the Jerilderie district, each season for three years in succession took two albino fledgelings, and reared them all. He had one in his aviary, which I photographed.

Several nests of the "Blue-bonnet" (*Psephotus xanthorrhous*) were found in hollows of gum-trees in a paddock near the farmhouse. One nest was right on the ground, within a hollow trunk, the entrance hole being some 12 feet above. On another farm we were introduced to a young Australian Crane or Native Companion (*Antigone australasiana*), which the children had



Yanko Creek—Haunt of the Delicate Owl.

FROM A PHOTO. BY CHARLES BARRETT, R.A.O.U.

captured and reared as a pet. The bird, which had the freedom of a small paddock, was friendly, though it showed some fear of the camera. Its plumage was similar to that of the adult Crane, but there was still a mass of beautiful silvery-grey down on the rump and flanks. The legs were sufficiently developed to enable the young bird to run briskly and dodge its pursuers very cleverly when it tired of posing for a portrait. We heard that, in another locality, no fewer than 400 of these noble birds had been destroyed by poison.

Yanko Creek was reached at noon on the third day out from Jerilderie, and the shade of the gums was very welcome after the sun-glare and dust of the plains. Max Egger and I had come here together in the jinker, leaving his two assistants to continue trapping on the wheat lands. We camped in the old spot. While the billy boiled we sat in the shade and watched the bird-life of the creek. A flock of Maned Geese (*Chlamydochen jubata*) paddled down stream, within a stone's throw of our camp. (We had also seen Wood-Duck earlier in the day, resting under a gum-tree near the Ibis Swamp.) Galahs, Yellow Parrots, and many other birds were noted. After the meal we made a voyage in the flattie, and my harvest of photographs was increased. On the following day we struck camp and drove along the creek for several miles, to a beautiful spot, the haunt of a pair of Delicate Owls (*Strix delicatula*). The nest, which had been found by my companion some weeks previously, was in a deep hollow of a dead gum-tree standing in the creek. A natural causeway of logs and *débris* enabled us to reach the tree dryshod, but it was not so easy to climb the hard, polished trunk. But Max Egger, who was a skilled and fearless climber, won to the nest, and descended carrying a young Owl. The queer little bird was almost enveloped in creamy white down, softer than teased silk, but its tail and wing feathers were well developed. Perched on a bough, it blinked sleepily, and made scarce an effort to escape.

When the Owls' nest was discovered, more than a month previously, it contained eggs. On a second visit, Mr. Egger found two nestlings, one of which was evidently several days older than the other, in the hollow. Now there was only one Owlet, the first-born, no doubt, being somewhere among the trees with its parents. The beak and legs of the Owlet we photographed were well developed, but the latter were not strong enough to keep the bird securely on its perch.

This quiet reach of the creek was also the haunt of a pair of Boobook Owls (*Ninox boobook*), whose nest was in a hollow of a dead tree a few feet from the bank. It would have been pleasant to camp there for the night, and watch the Owls flitting on noiseless wings through the shadows and moonbeams among the ancient trees. But our plans would not permit of this. (The Owlet was taken to Jerilderie, and would have been reared, as a gift to the Zoological Gardens, but it escaped from its box one evening. While in captivity it ate sparingly of raw meat.)

Leaving the Owls' haunt, we walked to a billabong where hundreds of Budgerigars were nesting in the dead eucalypts. Many birds were seen entering and quitting hollows, but our boat was miles away, and all the nest-trees were in deep water. So we had to be content with watching the Warbling Grass-Parrots. Crossing the plains, vast flocks of these lovely little birds were observed. In a big hollow, near a wheat field, we noticed at least a thousand Budgerigars feeding on the dry grass. They were so



Young Delicate Owl.

FROM A PHOTO. BY CHARLES BARRETT.

absorbed that they were unaware of our presence till we stood on the edge of the depression, only a few feet from the nearest birds. Then some of the little Parrots raised their heads, the alarm spread like flame in stubble, and the whole flock rose simultaneously and flew swiftly to a dead tree a hundred yards away. When the birds settled, every branch of the tree seemed suddenly to be clothed in green and yellow leaves, which stood erect instead of being pendent. On the wing, Budgerigars resemble large butterflies, and a flock in flight is one of the most charming sights I have seen in all my



Young Cockatoo-Parrot.

wanderings through Australian wilds. Many of these birds are killed in flight by striking against telegraph wires. On the road near Jerilderie I counted over a score of bodies, and my companion said that this was not unusual.

In very dry seasons Warbling Grass-Parrots travel far south, and small flocks were observed in the summer of 1915 amid the tea-tree at Black Rock, on Port Phillip Bay. "Old Bushman," in his charming book, "Bush Wanderings of a Naturalist," mentions this species in the chapter on the ornithology of Port Phillip. "Occasionally, but very rarely," he writes, "a flock of the Budgerigar, or Shell-Paroquet, would pay us a visit; and I recollect, in the middle of the summer, 1854, our gum-trees swarmed with them. They stayed about a month, when they suddenly disappeared, and only an odd straggler or so has been since seen in our district." On the Riverina plains, in a good season, thousands of Budgerigars are captured by the trappers, and the market is glutted, with the result that the birds realize only a few pence apiece. I am a staunch advocate of bird protection, but I cannot truthfully state that trapping has any appreciable effects on either Galahs or Warbling Grass-Parrots. With regard to the former species, my friend declared that they were even more numerous in 1913 than they were several years before. But we should be watchful, for some birds that are now extinct—the Great Auk and the Passenger Pigeon, for instance—formerly existed in vast numbers.

After returning to Jerilderie, I spent a day with Mr. Egger, hunting for a nest of the Australian Dottrel (*Eudromias australis*). The place where we searched is not far from the town—a desolate area, with scanty vegetation. There are large barren patches of greyish-white soil, surrounded by beds of star thistles and other lowly plants. Signs of the birds were seen, and more than once we felt sure that a nest would soon reward our patient patrolling; but always came disappointment. My friend had secured two clutches of eggs from this locality. One was discovered by a boundary rider, who saw the Dottrel go to her nest. The birds are extremely wary, and nests are most difficult to find.

Before bidding my friend farewell, I asked him to write a paper for *The Emu*, and he promised to do so when he had leisure. But death intervened, and we have lost a very valuable contribution to the knowledge of Riverina bird-life. Mr. Egger was a true naturalist, and no man has had a more genial and kindly companion than I had in my Riverina rambles.

MR. C. F. Belcher, M.A., LL.B., at one time co-editor of *The Emu*, has been appointed by the Governor of Uganda District Judge at Entebbe, which is the administrative centre of the Protectorate.

Observations at Bremer Bay (W.A.)

BY W. B. ALEXANDER, M.A., R.A.O.U., CURATOR, MUSEUM,
PERTH.

PROBABLY few parts of southern Australia are less known at the present day than the southern coast-line of Western Australia between King George's Sound and the Great Australian Bight. In the extent of about 400 miles there are only two small towns, Hopetoun and Esperance—the former the port of the copper-mining town of Ravensthorpe, the latter the centre of a small agricultural area, and the nearest point on the coast to the Coolgardie goldfields. Before the construction of the railway from Perth to Kalgoorlie Esperance was a thriving port, as it has a fine harbour. The opening of the railway diverted the gold-fields traffic to Fremantle; but, on the completion of the railway at present under construction to connect Esperance with Coolgardie, the port will doubtless regain some of its former prosperity. Apart from these two towns, the only other habitations along the coast-line are a few isolated sheep-stations and the relay stations on the overland telegraph line which connects Western with South Australia. When, therefore, I was invited to join a party of sportsmen who were proposing to spend a holiday at Bremer Bay, in January, 1916, I gladly accepted the invitation, in the hope of learning something of the natural history of this little-known region.

We left Albany at 1 o'clock in the afternoon of Wednesday, 19th January, by the s.s. *Eucla*, and steamed out of King George's Sound against a strong easterly wind, which made our voyage decidedly unpleasant. It was an agreeable surprise to me to note the presence of a number of Albatrosses, which proved to be the Black-browed (*Thalassarche melanophrys*), a species as to whose claims to inclusion in the Western Australian list I recently raised a doubt.* Some of the birds seen were apparently adult, but in others, which I judged to be immature, only the base of the bill was yellow, the tip being dark. Captain Fred. Douglas, who has been engaged in the navigation of the coast between Albany and Esperance for 50 years, was acting as a temporary officer on the *Eucla*, and his knowledge of this coast-line is unrivalled. In reply to questions, he informed me that "Albatrosses" were only to be seen in winter, and then generally well out to sea; but the "Molly-hawks" were always on the coast. He had never seen their nests, but believed that they nested on some of the islands of the Recherche Archipelago, as he had often seen them settled on these islands. More numerous than the "Mollymawks" were Mutton-Birds, which I at once noticed were different from those seen on the west coast, as they lacked the wedge tail of *Thyellodroma pacifica*, and a pale patch at the base of the beak was conspicuous. This was the Flesh-

* *Emu*, vol. xv., p. 183.

footed Petrel (*Hemipuffinus carneipes*). Their numbers increased towards Bald Island, where they probably breed. Except for the features mentioned, they seemed to resemble the western species in every way, their flight being precisely like that which has earned their British relatives the name of Shearwaters.

Soon after we had passed between Bald Island and the mainland night set in, and the early hours of the following morning found us at our destination, where we were landed on the open beach in a little sheltered cove. Bremer Bay is about 100 miles from Albany and 70 from Hopetoun. The capes which form its extremities are about 12 miles apart, and are composed of granitic rocks, on which the rollers of the Southern Ocean break perpetually. Between them the contour of the bay is divided by several other rocky points into a number of sandy beaches. The country near the coast is chiefly low and undulating, composed of a hard limestone from which rise several rounded granite hills to a height of several hundred feet. In places, especially close to the coast, the limestone is covered by sand-hills, and there are several large areas of drift-sand, with hardly a scrap of vegetation to break their dazzling white surface. These miniature deserts slowly blow inland, smothering the trees and bushes, until they become sufficiently attenuated for the vegetation to conquer them in its turn. In two places these moving sand-hills have blocked up the lower ends of valleys, forming considerable lakes of fresh water. One of these, named Lake Maxwell, was about three miles to the west of our camp; the other, known as the Hunter River, two miles east. The gradual rise of the water-level in these lakes had killed the trees which formerly grew on their banks, and the dead stems and branches of these trees projected from the water all round their margins, making a fine shelter for the Ducks and other waterfowl, but giving a most desolate appearance to the scene.

In the middle of the bay is a large, shallow salt-water lagoon, known as the Wellstead Estuary, which receives several small streams at its upper end and every few years breaks out into the sea in the winter. In places it is almost a mile broad, and it extends in a winding fashion inland for about 10 miles, assuming the aspect of a river for the last five or six. In the winter before our visit the water had broken out to the sea, but when we were there it was separated by a bar about 300 yards broad. The low water, owing to the recent outbreak, exposed many sand-flats and mud-banks which had been under water for some years, and, in consequence, great numbers of Ducks and Waders found abundance of food in the shallows and on the banks. From any point from which a view was obtained, the most striking feature was West Mount Barren, a rugged peak, 12 miles to the north-east, rising sharply from the plain. Still further to the east, Mount Bland and the Fitzgerald Range continued the line of hills almost to Hopetoun. On clear days the distant peaks of the Stirling Range, over 70 miles away to the west, stood out above

the low intervening country. The more sandy tracts of country were covered by a low, heathy type of vegetation, characteristic of the Western Australian sand-plains, but on the more stony parts and the slopes of the hills this gave place to a thick mallee scrub. The more sheltered hollows were occupied by clumps of yate-trees (*Eucalyptus cornuta*), while the valleys among the sand-hills near the coast contained groves of the elegant peppermint-tree (*Agonis flexuosa*). Bordering the swamps and the estuary were tea-trees (*Melaleuca*).

Having attempted to describe briefly the chief features of their habitat, I will now proceed to the proper subject of my paper and describe the birds I met with. But before doing so, it seems necessary, in the present state of affairs, to explain the nomenclature I use. As these are field notes, and in only a few cases did I handle specimens, I cannot state definitely what sub-species I am dealing with, and in consequence I am using the species names as given in Mathews's 1913 list. In my opinion, it would be better not to attempt to give separate English names to all the sub-species, but to use a single name for the species. The experts who can determine the sub-species will probably use the Latin names in any case, while the field naturalist, who uses the English name, cannot tell for certain what sub-species he is dealing with. This difficulty may not appeal to ornithologists in the Eastern States, where the forms are better known, so much as it does to those in the West, where, perhaps, two sub-species of a bird have been described—one, say, from Wilson's Inlet on the south coast, another from Broome Hill inland, no further details of the distribution of either form being known. To which sub-species would a bird at Bremer Bay belong? Broome Hill is nearer, but Wilson's Inlet is, like Bremer, on the coast. With these remarks I proceed to deal with the 81 species which I identified in the locality. As neither the sand-plain nor the mallee country, nor the sandy seashore, were very attractive for walking in the summer sun, most of our time was spent either on the water of the estuary or on the shores of the lakes, consequently such observations as I was able to make on the habits of the birds were almost confined to the aquatic species.

Brown Quail (*Synoicus ypsilophorus*) (?).—A few birds seen near the coast were probably of this species.

Brush Bronze-winged Pigeon (*Cosmopelia elegans*).—Fairly common.

Spotless Crake (*Porzanaidea plumbea*).—Several were seen feeding among the reeds on the muddy shores of Lake Maxwell. They moved about with deliberate steps, constantly flirting the tail, which was kept raised. In one place about eight were seen together. When alarmed they immediately ran for the nearest reed-bed, and disappeared in a few seconds. One was secured for the Museum, and proved to be a male. It differs from the bird figured in Mathews's "Birds of Australia" in lacking the white margins to the edge of the bastard-wing feathers as well as in the coloration of the legs. The

coloration of these is difficult to describe in words, as they are very parti-coloured, the joints being brown, while the centres of the tarsi and of each of the phalanges are light brick-red. In this connection I may perhaps point out that the figure of *Porphyrio bellus* in the same work shows a bird with uniformly green legs, whereas they are usually parti-coloured, the joints alone being green, while the centres of the tarsi and of the phalanges are red. This may be the explanation of the sub-species of *Porphyrio melanonotus*, described as inhabiting Western Australia, which is stated to be distinguished from *P. bellus* by the possession of red legs.* The Black Moor-Hen (*Gallinula tenebrosa*) has also parti-coloured legs, the joints being green and the front portion of the tarsi and phalanges orange-red. Is this type of coloration universal in this family?

Black Moor-Hen (*Gallinula tenebrosa*).—Reported as seen on the Hunter River by one of the party, but not seen by me.

Coot (*Fulica atra*).—A few seen on a small lake near the Hunter.

Great Crested Grebe (*Podiceps cristatus*).—A single bird in full plumage was seen on the Hunter River, and it remained on the surface long enough to give us an excellent view. It then dived, and, though a sharp look-out was kept for it, was not seen again. As already mentioned, the dead trees in the water provided plenty of cover on this lake (miscalled a river).

Hoary-headed Grebe (*Poliiocephalus poliocephalus*).—Numerous on all the sheets of water. On several occasions when we ascended the estuary a little flock of these birds kept flying ahead of the boat instead of taking refuge in the usual way by diving. The flights gradually became shorter as the birds obviously tired, until after about a mile they summoned up courage to turn and fly back past the boat.

Caspian Tern (*Hydroprogne tschegrava*).—Small flocks were frequently seen on the estuary. It is perhaps worth noting that Crested Terns (*Thalasseus bergii*) were not seen either on the estuary or on the sea-coast during the three weeks, yet they are common in the harbour at Albany, and are the most plentiful sea-bird on the coast near Fremantle and on the Swan River except for Shags.

White-faced Ternlet (*Sternula nereis*).—Flocks were frequently seen flying over the shallows at the lower end of the estuary.

Silver Gull (*Bruchigavia novæhollandiæ*).—Frequently seen.

Pacific Gull (*Gabianus pacificus*).—A few were generally to be seen on the coast. Towards the end of our stay two adults and five young birds in very dark plumage took up their quarters at the mouth of the estuary, and were constantly to be seen wading about in the shallows or flying. They seemed not to care for swimming, for if they were wading in any direction, and the water became too deep, they would take to the wing.

Pied Oyster-catcher (*Hæmatopus ostralegus*).—About a dozen were almost always to be seen by day, resting on a sand-bank in the middle of the estuary. Their feeding seemed to be done at night, as they were generally heard flying past the camp after dark.

Black Oyster-catcher (*Hæmatopus niger*).—A few solitary birds were seen on the rocks in the bay.

* *Austral Avian Record*, vol. i., p. 29 (1912).

Golden Plover (*Pluvialis dominicus*).—A flock of about 20 of these birds took up their quarters in a marshy tract of ground formed by the water which percolated through the sand-hills from the Hunter River. They were first seen about the end of January, and were seen at the same place on every subsequent visit to it.

Large Sand-Dottrel (*Pagoa leschenaulti*) (?).—I several times saw birds which I believe were of this species among flocks of Hooded Dottrels on the beach, but as no specimen was obtained the record must remain doubtful.

Red-capped Dottrel (*Leucopolius ruficapillus*).—Very abundant on the beach, among the sand-hills, and on the sand-flats in the lower parts of the estuary. Young birds were perhaps a trifle in excess of the adults;

Hooded Dottrel (*Charadrius cucullatus*).—Though not so numerous as the last species, these were very common in similar localities, and among them also the young were about as numerous as the adults.

Black-fronted Dottrel (*Euseya melanops*).—Seen in pairs on the shores of all the fresh-water lakes and swamps, and on one occasion on the bank of the salt-water estuary. Judging by their habits, and particularly their flight, but without any knowledge of their anatomy, one would suppose that this species was a small member of the Lapwing group. Its rapid, nervous movements, and the readiness with which it takes to flight, contrast strongly with the somewhat deliberate trot of the Ringed Plovers and their allies, and their preference for running rather than flying when approached.

Banded Stilt (*Cladorhynchus leucocephalus*).—A party of about 10 of these birds, which are always known in Western Australia as "Rottnest Snipe," from their abundance on the island of Rottnest, were seen on the estuary for the first two days of our visit.

Red-necked Avocet (*Recurvirostra novæhollandiæ*).—A flock of about 20 was seen on one occasion sleeping on a muddy bank in the upper part of the estuary:

Greenshank (*Glottis nebularius*).—Rather numerous in the upper reaches of the estuary in parties of from two to about a dozen. They frequented the muddy parts of the shore, on which they ran about feeding, and constantly flew from one place to another. They were much more wary than the other waders, and flew off uttering their shrill notes when approached at all nearly, and it was only when one was shot that I could be sure of their identity.

Little Stint (*Pisobia minuta*).—Very plentiful on the lower parts of the estuary, feeding on the sand-flats in company with the Red-capped and Hooded Dottrels. In contrast with these two species they appeared to be much more diligent, as they were perpetually moving about with heads down, picking up minute objects from the sand.

Sharp-tailed Stint (*Limnocinclus acuminatus*).—Fairly numerous, associating in considerable flocks, and generally keeping to themselves on the more muddy flats, though sometimes mixed with the Little Stints and the two species of Dottrels.

Great Knot (*Anteliotringa tenuirostris*).—A solitary bird, which I saw almost every day among a flock of Hooded Dottrels, puzzled me considerably. Ultimately it was shot for identification, and proved to be an example of this species, which, as far as I can judge from the

literature, has not previously been obtained on the southern coast of Australia. There is a specimen in the Western Australian Museum obtained on the Houtman's Abrolhos islands, which form the southern limit of the range of many northern forms, but the present record extends the range of the species by several hundred miles. The bird was very tame, and allowed of a close approach, so much so that when I walked towards it it kept its distance by walking away, and it was necessary almost to run to make it fly and reveal the colouring of the back and rump, which I hoped would enable me to identify it. Even when disturbed in this way it flew only a few yards before settling again. Having become acquainted with the species in this way, I hope to recognize it if I ever meet with it again, without the necessity of holding it in my hand, as there is really no bird with which it can be confused.

White-fronted Heron (*Notophox novæhollandiæ*).—Plentiful everywhere—by the estuary as well as on all the fresh-water lakes and swamps—often associating in flocks of upwards of 30 individuals.

Nankeen Night-Heron (*Nycticorax caledonicus*).—Seen only on two occasions, when disturbed from the trees on the upper reaches of the estuary.

Black Swan (*Chenopsis atrata*).—Numerous, flocks of from a dozen to 50 being almost always seen on the larger sheets of water, and on a few occasions, probably when they had been disturbed, out at sea. During the day-time they generally kept out in the middle of the lakes or on the more open parts of the estuary, but at night-time they moved about, being often heard flying past the camp, probably going to their feeding grounds.

Mountain-Duck (*Casarca tadornoides*).—The great abundance of these fine birds was the feature of the district. It was no uncommon matter, on rounding the promontory which concealed our approach to their favourite reach of the estuary, to find at least a couple of thousand of the Sheldrake standing on the banks or in the shallow water, and the sight of such a number rising into the air together is one which I shall not forget readily. It is noteworthy how very quickly these heavy birds can reach a great height in the air, which suggested to us that the common name of the species might be a corruption of mounting Duck. Very possibly this has been suggested before. I learnt that the Mountain-Ducks had only appeared in the district about a week before our arrival, and were more plentiful than usual, perhaps on account of the great amount of shallow water exposed.

Black Duck (*Anas superciliosa*).—Abundant, but not numerous in the lower reaches of the estuary, the haunt of the Mountain-Ducks. This species preferred the fresh-water lakes, especially the margins full of dead timber and the upper reaches of the estuary where the banks were overhung by bushes.

Green-headed Teal (*Virago castanea*).—Met with on several occasions among flights of the next species. I was anxious to secure one of this species in its grey plumage, and therefore weighed a number of birds, as several writers have maintained that the two species may be readily separated by this means. The following were the weights recorded:—19 ozs., 1 (grey); 18 ozs., 3 (two grey, one green-headed); 17 ozs., 5 (four grey, one green-headed); 16 ozs., 0; 15 ozs., 2 (grey);

14 ozs., 1 (grey); 13 ozs., 1 (grey); 12 ozs., 0; 11 ozs., 1 (grey). Since my return home I have studied the figures given for these birds, as quoted by Mathews in "The Birds of Australia." Keartland is given as authority for the statement that Chestnut Teals average—males, 25 ozs., and females (grey), 24 ozs.; whilst Grey Teals average—males, 18 ozs.; females, 17 ozs. According to these figures, all my birds, including the two green-headed birds, were Grey Teals! Do both species sometimes assume the chestnut plumage with green heads? I regret now that I did not weigh and sex all the Teal shot during our stay. The only one that I examined was the green-headed bird which weighed 18 ozs., which proved to be a male.

Grey Teal (*Virago gibberifrons*).—Very abundant, especially on the upper reaches of the estuary.

Shoveller (*Spatula rhynchotis*).—A female "Blue-wing" was shot by one of the party at the fresh-water swamp near the Hunter River.

White-eyed Duck (*Nyroca australis*).—Seen several times among the flocks of Grey Teal. It is commonly called "White-wings" in Western Australia, and it may be readily recognized by this character when seen flying overhead.

Musk-Duck (*Biziura lobata*).—Common on all the sheets of water in the district, generally associating in small flocks. On two occasions individuals approached by the boat, instead of diving, as usual, escaped by flapping along the surface of the water in the fashion that has earned them the name of "Steamer," presumably in the days of paddle-steamers. I had never seen them do this before, and cannot account for this departure from the ordinary custom of diving on these two occasions out of the dozens of times when we disturbed these common birds. On the small swamp or lake near the Hunter River, to which I have already alluded, there was a number of these birds, including an old drake with a very large flap below the bill, and from the bank I was several times a witness of his curious amatory performance. When the party was near together he would swim in among them with his head held low, so that the bottom of the membranous flap was touching the water, and his stiff tail-feathers turned right forwards over his back, standing out from one another. Then all of a sudden he uttered his curious "ponk" note, and at the same moment flapped both his wings, splashing up the water on each side. The loudness of the "ponk" sound I attribute to the flap acting as a sounding-board to convey it to the surface of the water.* The note and splash were repeated 20 or 30 times at intervals of a few seconds, the bird swimming about among the others in his curious attitude all the time. They appeared to take very little notice of his performance.

* Since my return home I have noticed that other observers attribute the splash to the feet and not to the wings. Having subsequently had an opportunity of watching another bird performing these antics, I think this is correct, though it is difficult to see how such a considerable splash is produced by the feet. Careful watching, however, does not reveal any movement of the wings. In another respect this bird differed from that watched at Bremer in that its membranous flap was held clear of the water, yet the "ponk" was equally loud. Sometimes the sound produced was a loud whistle quite unlike the usual ponk, but the accompanying movements were exactly the same.

Little Black Cormorant (*Mesocarbo ater*).—Common on the upper reaches of the estuary and on the Hunter River.

Little Cormorant (*Microcarbo melanoleuca*).—Numerous on the Hunter River.

Darter (*Anhinga novæhollandiæ*).—In considerable numbers on the estuary and on the Hunter River. The majority of those seen were in the grey plumage with white breast, females and young birds of both sexes in immature plumage, but there was a fair number of black adult males. The Darters were fond of sitting on stumps, with their wings hanging down; when disturbed they flew rather heavily, gradually mounting into the air, but when they attained a certain height they sailed round with their wings widespread, giving a number of rapid flaps at short intervals to retain the necessary velocity. By this characteristic flight they could be recognized even at a distance. When flying the neck is bent into a sharp crook. There was a colony of their nests in the dead trees at the upper end of the Hunter River, in one of which I found two very young birds, probably only a few days old. My attention was attracted to this nest by the shrill cries of the young birds, and I proceeded to investigate it. The water round the tree was nearly 6 feet deep, and the nest was built rather loosely of dead sticks, about 3 feet above the water-level, on a sloping branch, at a point where a side branchlet was given off. The young birds were quite naked, with parchment-coloured skins, sufficiently transparent to show the colour of the underlying organs where it was tightly stretched, especially on the top of the head, through which the skull was dimly visible. The inside of the mouth was dull yellow. They scrambled about in the nest by the use of both wings and legs, raising their necks (which were about equal in length to the body) and calling shrilly. They did not seem able to hold the neck up for long, and mostly lay with the neck turned back along the side. When placed in the water they made no attempt to swim, and would undoubtedly have been drowned if left there. In order to be quite sure of their identity, I went on, and on returning half an hour later found that the mother had returned, and was sitting at the bottom of the tree, just above the water, with her wings hanging down; she flew away again at my approach. I removed the nest with the young birds, and they are now on exhibition at the Western Australian Museum. Until this discovery I had not thought it worth while to investigate the nests, as I supposed the breeding season would be over; but, as these birds were so young, it seemed possible that some of the other nests might contain young. I therefore investigated about 30 other nests, without further success. In two cases, as I approached, fully-fledged young climbed on to the edge of the nest, hesitated there for a little while, and finally dropped into the water and dived, coming up at a distance. The nests were all built of sticks, and were from 3 feet to 10 feet above the water-level, sometimes as many as four or five in the same tree; mingled with them, but apparently always in different trees, were more solid nests, built of smaller sticks mixed with herbaceous stems, which I believed to be those of Cormorants; if so, these birds had finished breeding. It is worthy of note that in all three cases there were two young Darters in the nest, while the usual clutch is said to be four.

Pelican (*Catoptropelicanus conspicillatus*).—A few of these birds were generally to be seen on the estuary;

Wedge-tailed Eagle (*Uroaëtus audax*).—Two were seen, or possibly the same bird on two occasions. One flew round above the water trying to make up its mind to attack a wounded Teal, but, seeing us on the bank, thought better of it.

Whistling Eagle (*Haliastur sphenurus*).—A pair seen occasionally circling over the water.

Brown Hawk (*Ieracidea berigora*).—Frequent, hunting over the open country, especially where it had been burnt by bush-fires. It is interesting to note that this bird has the hovering habit of the Kestrel group, but is not nearly so expert as the latter, hovering only for a few seconds.

Nankeen Kestrel (*Cerchneis cenchroides*).—Seen only once.

Osprey (*Pandion haliaëtus*).—A few observed.

White-tailed Black Cockatoo (*Zanda baudinii*).—Common. Noisy flocks of these birds were often to be seen, especially in the more open country. It is generally supposed that these birds are chiefly inhabitants of the gum-tree forests; but, in my experience, they are more plentiful in the open country, finding most of their food in the low shrubs or on the ground. When settled they make a curious croaking note, very difficult to describe, but directly they fly they begin to utter their loud screams, and keep them up all the time as they travel, so that they are often heard approaching before they come in sight. To my mind, their loud, harsh cries are the wildest of all the sounds of the bush, and harmonize with the somewhat dreary country in which they are found.

Western Australian Rosella (*Platycercus icterotis*).—One was shot by a member of the party.

Western Australian King Parrot (*Purpureicephalus spurius*).—An inhabitant of the gum-trees in the valleys. The call-note is much harsher than that of the more familiar "Twenty-eight" (*Barnardius zonarius*), and it is worthy of note that the latter species was not seen.

Frogmouth (*Podargus strigoides*).—A pair were seen on the sand-plain in a very small bush, yet their wonderfully softly-tinted plumage rendered them so inconspicuous that we almost walked on to them before they rose.

Sacred Kingfisher (*Sauropatis sancta*).—Frequent.

Bee-eater (*Cosmærops ornatus*).—A few pairs.

Swallow (*Hirundo neoxena*).—Common.

Tree-Martin (*Hylochelidon nigricans*).—Common.

Scarlet-breasted Robin (*Petroica multicolor*).—A few pairs.

Short-billed Tree-Tit (*Smicromnis brevirostris*).—Seen once.

Black-and-White Fantail (*Leucocirca tricolor*).—Very numerous.

Restless Flycatcher (*Seisura inquieta*).—Frequent.

Black-faced Cuckoo-Shrike (*Coracina novæhollandiæ*).—Frequent.

Striated Field-Wren (*Calamanthus fuliginosus* (?)—A skulking bird, seen several times among the bushes in the sand-plain country, was perhaps this species.

White-fronted Chat (*Epthianura albifrons*).—Common on the sand-hills.

Brown Tit (*Acanthiza pusilla*).—Frequent.

Yellow-rumped Tit (*Geobasileus chrysorrhous*).—One party seen.

Spotted Scrub-Wren (*Sericornis maculatus*).—On the coastal hills:

Banded Blue-Wren (*Malurus splendens*).—Common:

Wood-Swallow (*Angroyan cyanopterus*).—Common.

Magpie-Lark (*Grallina cyanoleuca*).—Frequent.

Magpie (*Gymnorhina hypoleuca*).—Frequent.

Butcher-Bird (*Bulestes torquatus*).—Frequent

Green-backed White-eye (*Zosterops gouldi*).—Very abundant.

Striated Pardalote (*Pardalotinus striatus*).—Seen several times, but the individuals were very pale in colour, and seemed to me to belong to a different race from those found near Perth. They may, however, have been young birds.

White-naped Honey-eater (*Melithreptus lunatus*).—Common.

White-browed Spinebill (*Acanthorhynchus suffuscula*).—Frequent.

Tawny-crowned Honey-eater (*Gliciphila melanops*).—A few pairs seen.

Singing Honey-eater (*Meliphaga sonora*).—Frequent.

Wattle-cheeked Honey-eater (*Lichenostomus cratitius*).—One pair seen.

Goldwing Honey-eater (*Meliornis novæhollandiæ*).—Common.

Miner (*Myzantha flavigula*).—Common.

Red Wattle-Bird (*Coleia carunculata*).—Frequent.

Spiny-cheeked Honey-eater (*Acanthogenys rufogularis*).—One pair seen.

Ground-Lark (*Anthus australis*).—Common.

Red-eared Finch (*Zonæginthus ocellatus*).—Frequent.

Crow (*Corvus coronoides*).—Frequent:

Squeaker (*Neostrepera versicolor*).—Common.

Protection of Birds of Paradise.

A DEPUTATION from the Royal Australasian Ornithologists' Union waited on the Minister for Customs, Mr. F. G. Tudor, on 18th April, 1916, to bring under his notice the destruction of Birds-of-Paradise in Rabaul, and urge that the export of these birds' plumes be prohibited. There were present Colonel G. Horne, Dr. E. B. Nicholls, and Messrs. C. Barrett, A. C. Stone, and D. Le Souëf, the honorary secretary. The deputation was cordially received, but the Minister informed it that the islands were at present under the control of the Minister for Defence. Nevertheless, he listened closely to the statements made, and said that he would himself communicate with the Minister for Defence and place before him the views of the deputation on the subject.

Changes in Name to be Made to my "List of the Birds of Australia," 1913.

BY GREGORY M. MATHEWS, F.R.S.E., R.A.O.U.

(See also *Austral Avian Record*, vol. iii., pp. 63-68.)

- p. 5. *Megapodius reinwardt*, Dumont, Dict. Sci. Nat., vol. xxix., p. 416, 27th Dec., 1823, Aru Islands (*Amboina errore*).
Megapodius reinwardt reinwardti, Dumont.
 " " *tumulus*, Gould.
 " " *melvillensis*, Mathews, is a synonym.
 " " *assimilis*, Masters.
- p. 58. *Pagoa leschenaulti*, Lesson, Dict. Sci. Nat., vol. xlii., p. 36 (1826), replaces *P. geoffroyi*, Wagler, 1827.
- p. 70. *Totanus damacensis*, Horsfield, is a synonym of *Pisobia ruficollis*, Pallas, 1776, and read in its place *Pisobia subminuta*, Middendorff.
- p. 91.—Read—
Virago castanea.
 " " *castanea*, Eyton.
 " " *alexanderi*, Mathews.
 " *gibberifrons*.
 " " *gibberifrons*, Muller.
 " " *rogersi*, Mathews.
- p. 137. *Psephotellus chrysopterygius chrysopterygius*, Gould.
 " " *dissimilis*, Collett.
- p. 157. *Neochalcites minutillus*.
 " " *minutillus*, Gould.
 " " *perplexus*, Mathews.
 " " *russatus*, Gould.
 " " *barnardi*, Mathews.
- p. 183. Read—
Eopsaltria gularis.
 " " *gularis*, Quoy et Gaimard.
 " " *griseogularis*, Gould.
 " " *rosinæ*, Mathews.
- p. 198. Read—
Samuela alisteri, Mathews.
 " *cinnamomea cinnamomea*, Gould.
 " " *samueli*, Mathews.
 " " *castaneothorax*, Gould.
 " " *marginatum*, Sharp.
 " " *nea*, Mathews.
- p. 213. Read—
Acanthiza albiventris.
 " " *albiventris*, North.
- p. 214. " " *venus*, Mathews.
 " " *hamiltoni*, Mathews.

- p. 214. *Acanthiza albiventris consobrina*, Mathews.
 " " *gayi*, Mathews, is a synonym.
 " " *whillocki*, North.
 p. 215. " " *tanami*, Mathews.
 p. 222. Read—
Tasmanornis humilis gularis, Legge.
 p. 223. " " *insularis*, Cole.
 p. 230. Read—
Sphenura brachyptera brachyptera, Latham.
 " " *victoriæ*, Mathews.
 " " *longirostris*, Gould.
 p. 246. Read—
Aphelocephala leucopsis leucopsis, Gould.
 " " *pallida*, Mathews.
 " " *whitei*, Mathews.
 " " *castaneiventris*, Milligan.
 " *pectoralis pectoralis*, Gould.
 " " *nigricincta*, North (synonym).
 " " *tanami*, Mathews.
 p. 261. *Melithreptus gularis validirostris*, Gould.
 " " *kingi*, Mathews.
 p. 292. For *Neophilemon buceroides* read—
Neophilemon yorkei.
 " " *yorkei*, Mathews:
 " " *gordoni*, Mathews.

NEW NAMES.

Arenaria leucophæa carteri for the bird figured and described in my "Birds of Australia," vol. iii., p. 241, pl. 158.

Type—Point Cloates, Western Australia.

Pisobia subminuta boweri, for the bird figured and described in my "Birds of Australia," vol. iii., pl. 159 (as *P. damacensis*), p. 252.

Type—Fitzroy River, North-West Australia.

Pagoa zanda for the bird figured and described in my "Birds of Australia," vol. iii., p. 100, pl. 136.

Type—Point Torment, North-West Australia.

Birds which have not occurred three times should be kept in a separate list as stragglers.

- p. 3. *Aptenodytes patagonica*, one occurrence.
 13. *Globiceera pacifica*, two occurrences.
 24. *Crex crex*, one occurrence.
 32. *Fregatta tropica*, one occurrence.
Fregattornis grallarius, data too unsatisfactory.
 35. *Procellaria parkinsoni*, one occurrence.
 37. *Pterodroma melanopus*, one occurrence.
 41. *Diomedea epomophora*, no occurrence.
 50. *Procelsterna cerulea*, no occurrence.
Gygis alba, no occurrence.

- p. 65. *Tringa ocropus*, no occurrence.
 68. *Bartramia longicauda*, one occurrence.
 70. *Pisobia damacensis*, one occurrence.
 80. *Ardea cinerea*, data too unsatisfactory.
 91. *Querquedula querquedula*, two skins (one occurrence).
 92. *Spatula clypeata*, data too unsatisfactory.
 106. *Butastur teesa*, data too unsatisfactory.
 152. *Collocalia esculenta*, data too unsatisfactory.
 163. *Hirundo rustica*, one occurrence.
 164. *Hypurolepis javanica*, data too unsatisfactory.
 222. *Sericornis tyrannulus*, De Vis, 1905, must be put down
 as indeterminable at present.
 294. *Budytes flava*, one occurrence.
 307. *Sphecotheres salvadorii*, two skins (one occurrence).
 p. 33. Has *Puffinus assimilis*, Gould, been taken on the east
 coast of Australia?

The following species have been added since my List was published:—

- p. 32. *Cinathisma cyaneoleuca*, Hull.
 37. *Pterodroma inexpectata*, Forster, one occurrence.
 53. *Coprotheres pomarinus*, Temminck, one occurrence.
 128. *Geoffroyus geoffroyi*, Bechstein.
Lorius pectoralis, Muller.
 270. *Macgillivrayornis claudi*, Mathews.
 300. *Erythura trichroa*, Kittlitz.

The following should be added to my "List of the Birds of the Phillipian Sub-region":—

- Raperia godmanæ*, Mathews, Lord Howe Island (extinct).
Fregetornis royanus, Mathews "
 ,, *insularis*, Mathews "
 ,, *alisteri*, Mathews "
 ,, *innominatus*, Mathews, Lord Howe Island.
Pterodroma neglecta (Schlegel), Norfolk and Lord Howe Islands.
 ,, *melanopus* (Gmelin) " " "
Procelsterna cerulea (Bennett) " " "
Gygis alba (Sparman) " " "

Ancient Cockatoo.—The death of "Cockey Bennett," the ancient Cockatoo, of Tom Ugly's Point, Sydney, N.S.W., was reported in the Melbourne *Herald* of 26th May, 1916. "He was said to be 120 years of age, and was known all over Australia," says the report. "The remains are now in the hands of a taxidermist. The bird died at Canterbury yesterday, after an illness lasting some days. Mrs. Sarah Bennett, to whom the bird had come down as an heirloom, left the hotel at Tom Ugly's Point twelve months ago, and handed the bird over to the care of her nephew."

Field Notes on Three Species of the Pachycephalinæ.

BY A. H. CHISHOLM, R.A.O.U. (BRISBANE).

My field acquaintance with that fine genus, *Pachycephala*, is confined to three species—namely, *P. rufiventris*, *P. gutturalis*, and *P. gilberti*. The observations embodied in the following notes were made over a wide area, but most belong to the bird-haunted bush surrounding Maryborough (Vic.) There the three Whistlers mentioned were to be found, *P. rufiventris* being plentiful and *P. gutturalis* occasionally well represented, while *P. gilberti* always was rare. In my experience none of the three species was stationary, nor was any species migratory. All three were simply nomads, coming and going as the spirit moved them.

P. rufiventris.—Spring in Victoria would not be complete without the Rufous-breasted Whistler. Its rich, clear warble, "with ring and with ripple," is one of the most joyous lilts in the bush and country towns from late August to mid-December. Occasionally the birds—male and female are both songsters—may be seen and heard in and about towns during the autumn and winter months, but it is seldom then that the song has the emphasis, the power, and the joyous abandon of the spring pæon. Into this the male particularly seems to throw his whole spirit. His body vibrates with the melody. It is a curious fact, too, that the birds can sing finely when their beaks are full of insects. When photographing young Whistlers I have seen the parent birds emitting a vigorous musical protest from bills that were crammed full of orchard flies. On one occasion a male Whistler flew to an apple-tree in a favourite old bush orchard, and sang delightfully. His beak held a large, red worm, which, by the way, he ate himself.

The loud, rippling song does not exhaust the Whistler's repertoire. When the spring is over and gone, specimens of each sex may sometimes be detected pensively uttering a sweet little soliloquy, much akin to the autumn song of the Silver-eye (*Zosterops*). This habit of "thinking aloud" is, I believe, characteristic of the whole family; probably of many other birds also.

Occasionally the Whistler sings from a high tree-top, but more often it is content with whistling and singing in fruit-trees. It is this predilection for orchards that has earned the valuable bird the name of "Gardener" in some parts. "Joey-joe" is another colloquial title, derived, presumably, from the series of notes that follow the whip-like crack. Apparently the birds are constant to the one locality. Year after year a pair returned to the same pear-tree in the bush orchard mentioned.

These birds could always be expected about the first week in September. No one ever saw them arrive. On one day there would be no hint of their presence, and at dawn next morning the garden was vocal with melody. A week or so later and house-keeping commences. The fragile nest involves very little labour, and most of this is done by the female. Her consort, however,

takes his turn at brooding, and is also attentive to the young. Three is the greatest number I have found in a brood. Nesting probably extends well into January. On 3rd January, 1914, I found a nest, containing three young birds, situate at a height of about 20 feet in a pine-tree (*Pinus insignis*) in a Maryborough public park.

P. gutturalis.—The opinion is held by some that the Yellow-breasted Whistler's notes are more melodious than those of the Rufous-breasted species. One can disagree entirely with this contention, and yet admire *P. gutturalis* as a sweet-voiced bird. What its strain lacks is continuity. On Tambourine Mountain (South Queensland) last spring (1915), however, a settler called our attention to the finely-sustained song of a Yellow-breasted Whistler. "Is not that just like the opening notes of a gavotte?" he remarked.

This species was fairly numerous about the mountain scrubs, but not nearly so plentiful as the species is in the Mallacoota Inlet scrubs. Members of the R.A.O.U. party of 1914 found the Yellow-breasted Whistler exceedingly common about the Inlet. The surrounding bush rang with their voices. Several nests were found, mostly placed in the tea-tree.

These bright-plumaged birds nested in the Maryborough (Vic.) district, but I saw very little of them in the spring. It was during the cooler months that the birds were most to be observed, and then they made an even more engrossing study than at the nest. The sexes seem always to separate at the end of summer. Time after time I have watched solitary males and females respectively, but only on *one* occasion (9th May, 1915) have I seen a mated pair between the end of March and the beginning of September. Each bird spends its time chiefly in working among the leaf-insects of the eucalypts. An indication of its presence (and of the value of the work) is given by the constant "Crack-crack" in the trees it frequents. In this the bird resembles the Yellow-bellied Shrike-Tit (*Falcunculus frontatus*), as the male does also in plumage. On one occasion I saw a male *F. frontatus* and a male *P. gutturalis* working almost side by side. They made a striking picture. By reason of his coloration, the male Whistler is easier to locate than the female. In my experience, however, he is more of a wanderer. During the cool months of the past few years I frequently met this handsome bird, but always by chance; whereas there were at least four gullies around Maryborough where I could depend on finding a female—*one* to each area. That is to say, the bird was constant to the one spot, but the "finding" was a different matter.

A creature of curious impulses, the female sometimes remains quiet for hours at a time, and on other occasions becomes melodious. I first began to pay close attention to these birds in April, 1914. On the 14th, one emitted its rich, spasmodic calls "Whee! wee-wee!" and then came down and "Charr-charred" at me so much in the manner of a chiding Yellow-breasted Shrike-



Yellow-breasted Whistler. ♀ on Nest.

FROM A PHOTO. BY R. T. LITTLEJOHNS, R.A.O.U.



Nest and Eggs of Yellow-breasted Whistler.

FROM A PHOTO. BY A. H. E. MATTINGLEY, C.M.Z.S., R.A.O.U.



Robin (*Eopsaltria australis*) that one of these birds excitedly flew up to investigate. After that it became apparent to me that the grey-garbed bird with the touch of red in the wings was really a beautiful autumnal melodist.

It is not straining at a fancy to say that the bar most frequently uttered by the solitary female wanderer suggests the words, "Be quick, quick, O-please-do-be-quick!" Silence for a while, and then the strain is changed to "Sweet, sweet; oh, it's pretty, it is pretty—*pretty*." Almost every bar is preceded by the curious indrawn note characteristic of the genus. At times, too, the female uses the "half-indrawn" call, a slender "Peeee." or "Sweet," which frequently was heard coming from the musical male Whistlers at Mallacoota. Then there is, more rarely, a remarkably rich bar—"Bobby-link, bobby-link, bobby-link, bobby-link"; and another that is neatly expressed as "Pretty Dick, pretty Dick." The bird that I heard to best advantage on this rollicking note came down almost to within arm's reach to inspect me; at other times it was impossible to call her down from the tree-tops. I have this note under date 10th May, 1914:—"In the gully I heard a slight note, and presently found another of the remarkable female Whistlers. These birds evidently are all of the one mind, in that they are always alone, always in a gully, talkative only on odd occasions, and alternately curious and shy. In two hours this bird emitted but one rich bar—quite different from others I have heard."

Two weeks later, on the morning of a clear June day, I was intently watching a Shrike-Tit working on the ground, when the shrill "Peeeee" note caused me to look up quickly. There was a male *P. gutturalis*, darting from tree to tree around the female Whistler of the locality. It was as though the fire of spring was already in the air. "Seeeee," he called, in a prolonged ecstatic note, as he flaunted his gay plumage for admiration; then, as no response was forthcoming, "Be-quick, quick, *quick*!" But the female was indifferent; she continued to feed quietly, her whole attitude suggesting the response, "Nobody marks you." For a while this little comedy was kept up, the male dashing all around the object of his affection and uttering the shrill note and the melodious "Be-quick." At times he went too close; then the quiet grey bird dashed at him and administered a sharp peck to cool his ardour. This had its effect after five minutes or so; the male became philosophic, and simply sat preening his feathers. He took no further notice of the disdainful female, and, when she flew off, did not attempt to follow her. Possibly she came back to look for him when the realization of her loss dawned upon her.

I have seen odd birds (females) alone as late as September and October. In the first week of the latter month last year I met one working in a bush orchard. It sang softly—a confidential little lilt, with all the trills of a Canary.

P. gilberti.—This sweet-voiced bird I have met in Victoria and South Australia. It was found to be plentiful, as Capt. S. A.

White points out,* about the Murray River sand-hills when the R.A.O.U. party visited that locality in November–December, 1914. The birds were timid, but a specimen was procured through calling one up. No nests were found there, however, though probably the birds were breeding at the time.

My acquaintance with the Gilbert Whistler "at home" dates back to 2nd October, 1912. On that day I was cycling slowly along an old bush road in the Maryborough district when I saw the large, bright eye of a bird peering over the rim of a nest placed on a bush-covered tree-stump about 3 feet in height. It suggested the Grey Thrush (*Colluricincla harmonica*), but a closer inspection showed that the bird's bill was smaller than that of the Thrush. When it was flushed from the nest the identity of the stranger became apparent. The nest was finely built, chiefly of grass, most compactly and neatly matted into a round wall. The eggs suggested those of the Yellow-breasted Whistler, but were slightly larger. While I was examining the nest the male bird appeared, uttering a low, plaintive whistle somewhat resembling the alarm note of *Cinclosoma*. For a little while the pair kept flitting anxiously about, each emitting an exceedingly sweet call, sounding as "Wee-e-e-woo"—the last note lower. A number of other notes resembled some used by *P. rufiventris*, the whip-like crack being even stronger. It was preceded and followed, too, by a soft, sweet note that sounded like an echo of the crack coming from far away. On my next visit (7th October) the male bird was in charge of the eggs. (Is this division of duty a trait of the genus?) Two days later the female sat on the nest, and was much bolder, the reason being that one young bird had just emerged from its shell. During the next three days the solitary chick—the second egg proved infertile—thrived; but on 15th October there was an empty nest and wailing parents. Ten days later the nest was wholly removed, presumably by the birds.

After that I saw little of the Whistlers till September, 1913. On the 14th of that month I heard a pair calling about the same locality, and, on the 26th, found the nest. It was built neatly on the top of an old Babblers' nest, placed about 7 feet up in a bushy sapling. The female fluttered off as I approached, and hopped about the ground "fluffing" (not dragging) her feathers, in exactly the manner that *Eopsaltria* often adopts to draw away an intruder. (This pretty performance is distinct from the broken-wing ruse used by *Ptilotis auricomis*, *Ephthianura albifrons*, and one or two other species.) There were two eggs in the nest; on 28th September these had disappeared, presumably having been stolen by boys, and the site was deserted. Evidently the Whistlers do not take long to build a nest, for on 6th October I found the same birds at a nest on a bushy stump less than 100 yards from the position of the Babblers' nest. The new nursery contained two beautiful eggs. I was able to photograph

* *Emu*, vol. xiii., p. 126.



Yellow-breasted Whistler at Nest.



Nest and Eggs of Rufous-breasted Whistler.



the nest and eggs, but the owners could not be persuaded to return while the camera was in position. They had evidently received a fright at the old nest. It was worth while, however, to spend many hours in the vicinity, if only to hear the melody of the birds. The call most frequently used was a ventriloquial "Chup, chup," which seems to roll softly off the chest and swell powerfully as it leaves the beak. It is not unlike the vesper hymn of *Eopsaltria*. On 7th October a third egg was laid in the latest nest. Still the birds were doomed to disappointment; for on 12th October *one* of the trio was gone, the other two eggs were cold, and some of the horse-hair lining of the nest was ruffled. It is difficult to suggest what was the cause of this curious condition of things. The birds were whistling some distance away. They came no more to that nest, but still clung loyally to their chosen locality. But it was all of no avail. On the last day of that month I found an empty nest, without any signs of young having been in it. There seemed an additional touch of plaintiveness in the Whistlers' melody then; they had been thwarted for the third time.

I saw but little of *P. gilberti* subsequently until 22nd July, 1914, when, to my astonishment, the sweet, prolonged "Wee-e-woo" sounded in the same locality. I had never before heard the birds anywhere in the district during the winter months. On almost every day of the week following I visited the locality in search of the birds, but did not note them again till early in August. Then I saw the female, which was fairly tame, feeding among the leaves of trees, while her consort, which displayed much wariness, kept about the litter of dead leaves and bark on the ground. During the whole of that Spring they remained constant to the same tract of timber, but were more often heard than seen. The "wandering voice" departed with the spring, but again echoed about the same spot at the end of the winter of 1915.

Notes from Western Australia.

BY W. B. ALEXANDER, M.A., R.A.O.U., KEEPER OF BIOLOGY,
MUSEUM, PERTH.

DURING the past summer (1915-16) several birds seem to have extended their range further south than usual. Mr. J. Higham brought me a pair of Warbling Grass-Parrakeets (*Melopsittacus undulatus*) obtained at the Williams, 100 miles south-east of Perth, and informed me that Little Doves (*Geopelia cuneata*) had been seen in the same locality. I learn from Mr. M. W. Elliott that at Dumbleyung, 50 miles further to the south-east, Warbling Grass-Parrakeets also appeared. Mr. Elliott also sent me specimens of the Black Honey-eater (*Myzomela nigra*) and the White-fronted Honey-eater (*Gliciphila albifrons*), stating that he had not met with either species in his locality until this summer. He

informs me further that the Purple-crowned Lorikeets (*Glossopsitta porphyrocephala*) remained about Dumbleyung all the summer instead of travelling further north, as is their usual custom, recorded by him in his recent notes in *The Emu*.

A very curious specimen of the Black Moor-Hen (*Gallinula leucobronchialis*) was brought to me on 27th March. Its plumage is white, but it is marked all over with black streaks, resembling an immature Silver Gull. The eye was black, and the bill and legs normal in coloration, though decidedly pale, both green and red parts being very light. While I was examining the specimen Mr. Tom Carter came in, and, a few minutes later, Mr. L. G. Chandler, of Melbourne, also called, so that I had the pleasure of showing this remarkable bird to both these ornithologists. I will have a photograph of the specimen taken as soon as it is mounted, for publication in *The Emu*. It was shot at a swamp near Wanneroo, about seven miles north of Perth.

A few days ago, when at the Victoria Reservoir, one of the sources of Perth's water supply, situated a few miles from the city, in the Darling Range, I observed a Great Crested Grebe (*Podiceps cristatus*). In "The Birds of Australia," vol. i., p. 269, Mathews writes:—"A peculiar feature to me was, that I found *no* specimens from Australia or New Zealand in any other than full breeding plumage, although I examined specimens killed from November to August. Buller never noted any 'winter' plumage for the New Zealand form, yet Gould wrote:—"The beautiful frill which adorns the neck of the *P. australis* is acquired in the spring, worn during the breeding season, and then cast off, when the face becomes of a greyish-white, or similar in colour to the other part of the neck." I suggest this was written from Gould's knowledge of the European bird, and not from the actual facts and would ask Australian ornithologists for further information." The specimen seen by me was absolutely without the ruff on the neck, but possessed the two ear-tufts; its throat, neck, and breast were almost white. Of course, I cannot be sure that it was not a young bird that had not acquired the ruff, but I record the observation for what it is worth. With a stop-watch I timed the period during which it stayed under water, and found that it varied from 20 seconds to 27 seconds, though on one occasion it reappeared in 8 seconds with what appeared to be a small fish in its beak.

Early in March I came upon a flock of Red-kneed Dottrels (*Erythronyx cinctus*) on a swamp close to Perth. They were feeding on a mud-flat close to the water's edge or in the shallow water in company with Black-fronted Dottrels (*Elseya melanops*), Common Sandpipers (*Actites hypoleucis*), Sharp-tailed Stints (*Heteropygia acuminata*), and Little Stints (*Pisobia minuta*). In contrast to these other birds, which were feeding quietly, the Red-kneed Dottrels seemed much excited; every few minutes one would rush at another with his head held low, and the bird attacked would run away rapidly, with the second bird in pursuit



Crested Grebe.



in his somewhat curious attitude. Occasionally the bird attacked stood his ground, also with head lowered, and a short fight then ensued, the two sparring at one another like game-cocks. Sometimes a bird would appear to get into an even more frenzied state, start rushing about in a distracted way in every direction, and then fly round swiftly just over the surface of the water, in which he would finally alight and splash about with his wings, making a great commotion. These antics led me to suppose that the birds were thinking about breeding, though the time of year seemed wrong; but on returning home and consulting Mathews's "Birds of Australia," I found that the only nest of the Western form of this bird recorded was discovered by Mr. Tom Carter in the month of May. About 10 days later, I again visited the spot and found that the birds were still there, but seemed to have separated into pairs, each having its own little area of the mud-flat. No fights were seen, but the curious display, ending in a great splashing in the water, was again observed. A fortnight later the birds were still in the same spot, still in pairs, each moving around some particular clump of reeds on the mud-flat; but a search failed to discover any nests. The birds were extremely tame, coming within a few feet of my companion and myself as we waded about in the mud.

Herdsmen's Lake, near Perth, is probably known by name to most members of the Union, as many interesting swamp-birds were collected there years ago, and a number of these specimens have been made the types of the Western sub-species. A good many years ago an attempt was made to drain it, and a channel was cut towards the sea. This has resulted in carrying off so much water that most of the lake is now a dry reed-bed in the summer, though in winter it becomes a considerable sheet of water. The drainage water is carried into an adjacent valley among the sand-hills, where in winter it forms a considerable lake, full of gilgies (the small fresh-water crayfishes of Western Australia, *Cheraps preissii*), which are much sought after by Cormorants of several species. On a visit to this spot in March last I found that the water had nearly disappeared, leaving only a few small pools, about which a great number of Night-Herons (*Nycticorax caledonicus*) were congregated. I presume that the gilgies must have retreated into these pools, and that the Night-Herons were obtaining them, as there were at least 200 of these beautiful birds feeding there in the day-time. They would not, however, allow of a near enough approach to see what they were doing, but flew up into the trees. About two-thirds appeared to be young birds with brown-spotted plumage, the remainder fully adult. Among them were a few White-fronted Herons (*Notophoxyx novæ-hollandiæ*), Darters (*Anhinga novæ-hollandiæ*), Black Cormorants (*Phalacrocorax carbo*), Little Black Cormorants (*Mesocarbo ater*), and Little Cormorants (*Microcarbo melanoleucus*). On the same branch of one tree were sitting together a Night-Heron, a Darter, and a Crow—a curious "natural family," of which I should much like to have had a photograph.—3rd April, 1916.

The Haunt of the Lyre-Bird.

By A. C. STONE, R.A.O.U., MELBOURNE.

ON a fine day we traversed dense fern gullies in the Dandenong Ranges (Vic.) in quest of the Lyre-Bird (*Menura victoriae*). A rough track took us a good distance up a hill-side, where we diverged into the forest. The view changed at almost every step—now through the trees, where a glimpse was obtained of the waters of Western Port Bay, many miles distant, then we were again so completely shut in by giant tree-ferns that the light became dim. Here was a sight to delight the nature-lover. Tree-ferns, from a foot to 30 feet high, spreading out their feathery tops in all their soft and glorious greenery, no two angles of growth being the same. Some ferns were almost upright, while the crowns of others were two feet or less from the ground. Lying on the ground were thousands of fern-tree trunks, covered in lesser plants.

Interspersed with the fern-trees were myrtle, musk, and sassafras trees, and huge eucalypts towering over all, to a height of 200 feet at least, and with a circumference of 40 feet at six feet from the ground. Some of these trunks bore the marks of stone axes, where aborigines had cut toe-holes to enable them to climb the tree in pursuit of possums (phalangers). This spot is the home of the Lyre-Bird, the Pilot-Bird (*Pycnoptilus floccosus*), the Rose-breasted Robin (*Petroica rosea*), and other species.

Up the tiny creeks the "going" is particularly strenuous owing to the denser and darker growth, and the scrambles over or under slippery fallen trees and ferns. But we cheerfully overcome these difficulties, for here is the place where the nest of the Lyre-Bird may be found, and here our real search begins. The nest is sometimes placed many feet from the ground, on a leaning tree-trunk, but more often on the bank of a creek. After a prolonged search we were rewarded by finding a nest of the previous season, and one much older. Suddenly from the hillside in some thick timber and bracken came the call, "Blick, blick," instantly recognized as the natural notes of the Lyre-Bird.

Proceeding very quietly, we were able to approach to within 30 feet of the bird, which proved to be a fine male, standing on a branch several feet from the ground. Keeping perfectly quiet, we were delighted to hear him mimic the beautiful notes of the Grey Shrike-Thrush (*Colluricincla harmonica*), the laugh of the Great Brown Kingfisher (*Dacelo gigas*), the plaintive cry of the White-browed Scrub-Wren (*Sericornis frontalis*), the "Guinea-a-week" of the male Pilot-Bird, and the reply of the female, the crack of the male and female Coachwhip-Bird (*Psophodes crepitans*), the raucous note of the Gang-Gang Cockatoo (*Callocephalon galeatum*), the flute-like carol of the White-backed Magpie (*Gymnorhina leuconota*), the song of the Collared Butcher-Bird (*Cracticus destructor*), the screech of the Crimson Parrot (*Platyercus pennanti*), the song of the Yellow-breasted Whistler (*Pachy-*



Lyre-Bird's Nest in Tree-Fern.

cephala gutturalis), and the "Wee chup" of the White-eared Honey-eater (*Ptilotis leucotis*). We listened for more than 15 minutes, and the mimicking continued during that time, but was interspersed with the bird's own notes and others that we could not identify. This was a very good performance for one bird, and we were sorry when it ended, and the bird disappeared amid the undergrowth.

Feeling sure that there was a new nest somewhere in the locality, we again turned to the creek, passing one of the Lyre-Bird's dancing mounds four or five feet in diameter. Reaching



Nest of Lyre-Bird.

FROM A PHOTO. BY A. C. STONE, R.A.O.U

the creek, a prolonged search was made, and at last the nest was found. It was over two feet in diameter, made of sticks and twigs, and lined with the fibrous matter from fern-tree trunks and finished with the breast feathers of the bird. It contained an egg. The opening at the side faced the creek. The bird had broken off some staghorn fern fronds and placed them on top of the nest.

One season a nest containing a young Lyre-Bird about four days old was found. The female bird remained within a foot or two during the time the observers were near the nest. The light was dull, and it was not possible to obtain a good photograph, as the bird was in motion the whole time.

Further Notes on the Spotless Crake (*Porzana immaculata*).

By (Miss) J. A. FLETCHER, R.A.O.U., BOAT HARBOUR (TASMANIA).

To a previous issue of *The Emu* * I contributed some notes on the Spotless Crake (*Porzana immaculata*), and now have the pleasure of adding a little more to the knowledge of the life-history of these interesting birds. I have been able to study them through three seasons, one of which was normal, another very dry, and the third (that of 1915) exceptionally wet.

In the 1915 season continuous floods delayed nesting, so far as these birds were concerned, fully six weeks in comparison with previous years. On the other hand, some of the clutches were above the average. The question then arises—When a season is thus likely to be shortened, will one clutch only be reared by each pair of birds, and that clutch be larger in numbers? My experience tends to show that such is the case.

As with all birds, the more the Crakes are studied the more fascinating does the observer find them, the difficulties of their habitat only adding to the zest one feels in the study. More than once I have had the great pleasure of watching one of these little birds busy at its toilet, standing on the edge of a tiny open space of water preening its feathers. One has to remain very quiet to see this, and the best position is on a log overlooking a glimpse of water in a mass of reeds. These Crakes are fond of sunning themselves, and have their favourite spots for this. Sometimes a stick partly out of the water is the chosen perch; at other times a clod of earth, or a bare point at the base of the reeds, and always near to cover.

Early morning and evening are the best times for studying the Crakes, and these are also the hours when nest-building takes place. Several trial nests are made before the main one is built, and these, though discarded for eggs, are nevertheless used as resting places, and bear traces of constant occupation. It is also worth noting that, should the main nest be inspected too much, the owners will leave it, and probably choose one of the "dummy" nests. I have found the nests placed at heights varying from $3\frac{1}{2}$ feet down to ground-level. It has always been a puzzle to me how the owners of the high nests can climb up, as all of the structures do not have a staging. I remember one nest which had three stagings attached to it, and two "ladders" are not uncommon. I have noticed that when a Crake begins to weave the rushes down as a cover to the nest the eggs will shortly be laid. It is very difficult to determine whether a newly-found home is old or not. The material used in their construction is nearly always dead reeds, and when the eggs are hatched the female throws out every particle of shell. Even the tiny chippings seem to disappear.

* *Emu*, vol. xiii., part 4, pp. 197-202.

Unless disturbed, the chicks remain on the nest for a day, and the parents feed them there. A fellow ornithologist spent a delightful quarter of an hour watching a pair of Crakes carrying food to their young. He was standing above the swamp level by the railing of a culvert, waiting for signs of life in the reeds below. Out from the rushes walked a Spotless Crake; it crossed a strip of sand and disappeared under a clump of blackberries. It reappeared with a worm, which it carried into the rushes it had recently quitted. Presently its mate came out, and the two kept journeying backwards and forwards, carrying the worms for their family. The call used to gather the chicks together,



Nest and Eggs of Spotless Crake.

FROM A PHOTO, BY 'MISS' J. A. FLETCHER, P.A.O.U.

especially when they have been separated through fright, is an exact imitation of water gurgling over stones into a rocky basin.

Generally speaking, these birds avoid travelling in the swift flow of the water, and have runaways just on the edge of the stream. Yet they do not hesitate to plunge boldly into deep water should occasion arise. Even chicks two days old will brave the crossing of a fairly swift channel. Spotless Crakes sometimes wander away from their swamps, and I have several times seen them cross the road. This they do in a crouching, hesitant run, in much the same way as a Quail which has hidden its brood and runs to have attention taken from their where-

abouts. A fact worth recording is that Crakes are partial to ripe blackberries, and I have flushed them from the tops of low, tangled masses of the brambles when the plants were covered with fruit, in early autumn.

Two seasons' experiences among the Spotless Crakes seemed to indicate that three eggs form the normal clutch; four is an exceptional number, and frequently only two are laid. The heavy, continuous spring rains of last season (1915), as already stated, delayed the nesting, but larger clutches were observed. Among those noted were several nests containing five eggs, and in three cases six formed the clutch. Of these latter, one clutch contained a double-yolked egg. Would the clutch otherwise have been seven? There is much variation in the eggs, and to a certain extent the colours harmonize with the surroundings of the nest. I have seen one clutch of a uniform pale green colour, and the nest was hidden under a luxuriant growth of summer grass growing in a hollow of the creek's bank, and was made of the same material. When rushes and reeds form a decaying, matted mass, the eggs laid in nests thereon are a darker brown, and not attractive in appearance. Again, where the surrounding herbage and grasses are more open, with shafts of sunlight filtering through, the markings on the eggs laid in these sites resemble those of our Large-billed Ground-Thrush (*Oreocincla macrorhyncha*). Some of the specimens have a brown cap on the larger end. Variations exist in the shape also. Many of the eggs are round and chubby; others elongated and swollen.

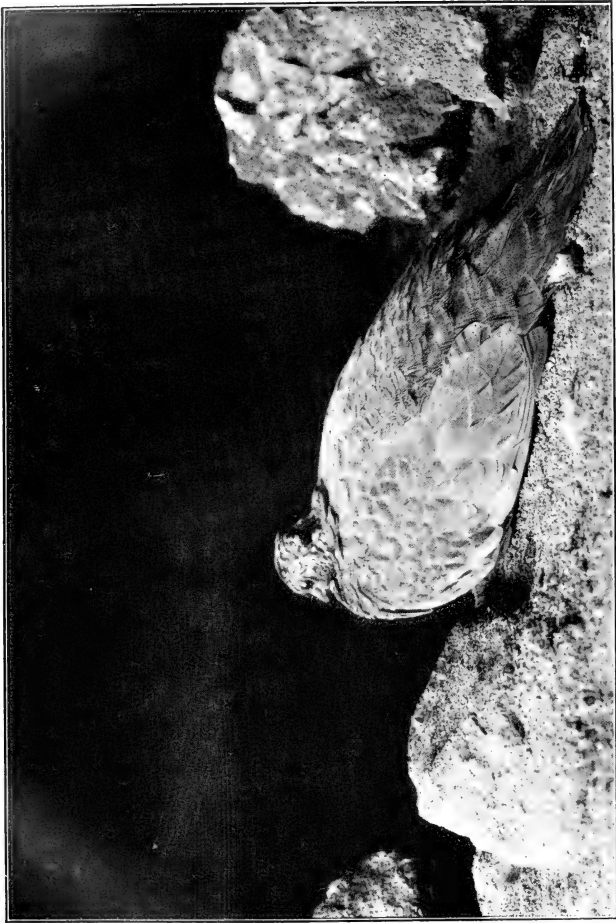
Studying Spotless Crakes, one suffers discomfort and disappointment. But how quickly one forgets the long hours of wading, or standing knee-deep in mud, the sharpness of the frosts in the early morning, and the frights with snakes, when a nest is found or the birds are seen!

Birds in Melbourne Zoological Gardens.

BY D. LE SOUËF, C.M.Z.S., THE DIRECTOR.

AUSTRALIAN Honey-eaters are comparatively easy to keep in captivity provided that they have suitable food, and we find them quite hardy in our large flight aviary (50 feet x 25 feet x 30 feet high). Despite the number of birds in it (about 100), both the White-naped Honey-eater (*Melithreptus lunulatus*) and White-plumed Honey-eater (*Ptilotis penicillata*) bred last year and reared their young. As is well known, many birds, especially Finches, have, when in aviaries, a habit of pulling other birds' nests to pieces and building their own with the material stolen, but with Honey-eaters this does not seem to occur often. In the same aviary the Pied Grallina (*Grallina picata*) also builds its mud nest, and successfully rears its young.

In the young White-naped Honey-eater the top of the head



Chestnut-quilled Rock-Pigeon.

FROM A PHOTO BY D. LE SOUEF, C.M.Z.S., R.A.O.U.

is green, and it is some months before it gradually becomes black, but the young White-plumed Honey-eaters are practically like their parents when fully feathered. It is interesting to note how much longer some birds take than others to assume the fully adult plumage. We know little about this matter, mostly on account of not making the best of our opportunities when we have them, and lack of observation. The beautiful dark blue plumage of the male Satin Bower-Bird (*Ptilonorhynchus holosericeus*) is a case in point; the facts were first ascertained from observation of birds in the Melbourne Zoological Gardens. Then, again, there is the Pacific Gull (*Gabianus pacificus*), which takes about four years (at present I am not certain as to the exact time—it may be a little longer) to attain the fully adult plumage. It is curious to note that in the young birds the feet and eyes are brown, like the plumage, and the beak whitish, and dark at the end; but the adults have the beak and eyes bright yellow and the legs whitish-yellow. These birds are not content with changing the colour of their feathers only. Again, in many of the Albatrosses the beak is almost black in the young birds, but changes to whitish later. The Straw-necked Ibis (*Carphibis spinicollis*), when young, has the top of its head covered with small blackish feathers, but in about three or four years these are all moulted, and the bare black skin shows instead; light-coloured lines appear later across the top of the head, and give the appearance of cracks in the skin.

In the flight aviary a pair of Yellow-breasted Shrike-Robins (*Eopsaltria australis*) live in company with the Honey-eaters, but woe betide any other bird of the former species that may be put in; the male Robin dashes at it at once, and the newcomer is usually soon killed. The Yellow-breasted Shrike-Robin is far more pugnacious than the Honey-eaters, frequently driving them away from their feeding dishes. The Honey-eaters do not seem to treat newcomers so harshly, but they are bad enough. Wood-Swallows (*Artamus sordidus*), Blue Wren-Warblers (*Malurus*), and White-browed Scrub-Wrens (*Sericornis frontalis*) live peaceably, possibly because they have plenty of room and cover. Most of these birds object to strong wind, and are usually to be found on the sheltered side of the aviary. In hot weather they are all very fond of bathing, and fly to and fro through the fine spray of the fountain, or else sit on a branch where the water can fall on them, and become nearly drenched.

When the Gardens were first formed, more than fifty years ago, Nankeen Night-Herons (*Nycticorax caledonicus*) used to camp during the day in the large eucalyptus trees (*E. rubra*), and they and their descendants have continued to do so ever since. The birds probably breed in the tall trees on the Murray swamps in New South Wales, therefore during the nesting season only the young birds of the last season are here, and the young males have not got their adult plumage. Directly the Garden bell rings, and the visitors depart, these birds fly down to the Gull and

water-fowl enclosures, and hunt round for scraps of meat that may be left; they are very tame. In the Cairo Zoological Gardens I noticed the same thing; there the Nankeen Herons (*N. griseus*) roost all day on the trees in the Gardens, and at night go to the Nile swamps to feed. Our birds usually go to the low-lying grounds and shallow water near West Melbourne; they leave the Zoo just at dusk.

The graceful Pied Grallinas, which assemble in flocks during the winter, come from the districts around Melbourne into the Zoological Gardens in the evening to roost, about an hour before the Herons leave. Two pairs of wild Grallinas have for years nested in the Zoo, but each pair has its own restricted area. The same applies to two pairs of White-backed Magpies (*Gymnorhina leuconota*), except that these birds have a battle royal should one pair seek to poach on the other's ground. On several occasions pinioned Magpies were liberated in the Gardens, but they were all attacked by wild birds sooner or later, as they unwittingly trespassed on their area. They seemed to be frequently getting on the prohibited ground of one pair or the other, and found it a difficult matter when they were attacked by the wild birds. As they could not fly away, they simply lay on their backs and fought with beak and claws, often effectively.

Three pairs of Black-and-White Fantails (*Rhipidura motacilloides*) nest in the Gardens, also many pairs of White-plumed Honey-eaters, and these, also, each have their separate parts. All these birds drive away their young as soon as they are able to look after themselves; therefore our wild breeding stock never increases.

In the Gardens there is a Queensland Cassowary (*Casuaris australis*), which, when about seven years old, laid two eggs. Before that it had always been regarded as a male bird, but the male and female are practically identical in appearance. The same applies to the Emu, but the male Emu drums and the female makes a grunting noise, whereas Cassowaries are very silent birds, and one cannot, therefore, easily identify the sexes by the sounds uttered.

Camera Craft Notes.

Pardalotes Before the Camera.—We have obtained a large number of photographs of the Red-tipped Pardalote (*Pardalotus striatus*). There must be very few families of these birds from Greensborough to Eltham and back to Preston, Victoria, which do not remember some annoying experiences of bird-photography. We have often found a pair nesting in the same place year after year, and some of them must now associate cameras with nest-building.

Usually, when we have met with scant success elsewhere, we use the latter part of the day at one of the Pardalotes' nests we



Cuvier's Frogmouth.

FROM A PHOTO. BY D. LE SOUEF, C.M.Z.S., R.A.O.U.



have located. Here, at any rate, we are always fairly sure of a satisfactory reception, and are able to continue our homeward journey with the comfortable feeling that we are not carrying a batch of blank plates. One pair of Pardalotes has been a favourite for several seasons. The nesting hole is in a very favourable position, both as regards sunlight and convenience. Usually, the time chosen for camera work is when the young are in the nest, for we are confident of being able to focus on the parent birds.



Red-tipped Pardalote.

FROM A PHOTO. BY S. A. LAWRENCE, R.A.O.U.

Our first step on arriving at the nest is to make sure that the adults are not inside, and then to close up the entrance to the burrow with a piece of stone. The tripod is then placed in position, and generally, before the camera is fairly trained on some point near by, one of the birds (often both do so) is hopping on to it, and from it to the nest entrance. A long thread to release the shutter is unnecessary; the operator sits by, and waits for a favourable position. Our faith in this particular family was almost shattered on one occasion, when, after we had proudly described the birds to another nature photographer, and

asked him to accompany us to the nesting haunt, they refused, for the whole of one scorching afternoon, to have anything to do with the enterprise. Their reputation, however, was fully redeemed at the following week-end, by which time the eggs had hatched.

The Spotted Pardalote (*Pardalotus punctatus*) is also much harassed by us in our desire for pictures, but in this case the result



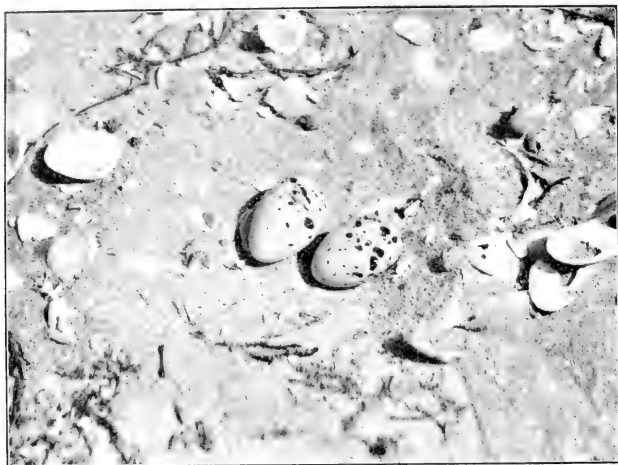
Spotted Pardalote.

FROM A PHOTO, BY R. T. LITTLEJOHNS, R.A.O.U.

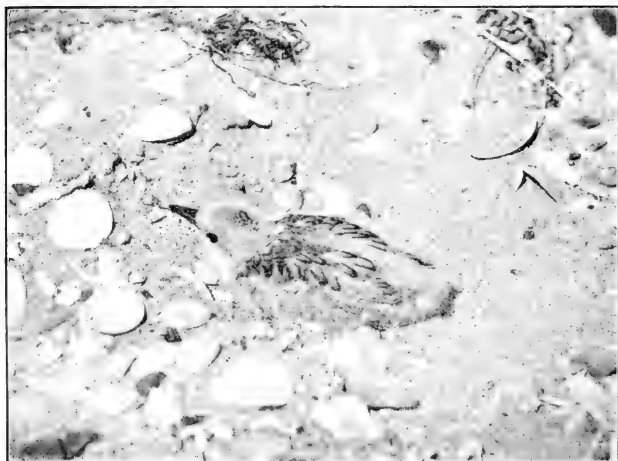
is not such a foregone conclusion. Some attempts have proved as unsatisfactory as if the subjects were very shy birds. A favourite pair nests annually in the same burrow at Eltham. Our methods of obtaining photographs are similar to those adopted in the case of the Red-tipped species, except that we frequently find it necessary to use a few feet of thread to release the shutter. —S. A. LAWRENCE and R. T. LITTLEJOHNS. Melbourne, 3/6/16.

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The White-faced Ternlet. — Mud Island, Port Phillip Bay, Victoria, is noted chiefly for its rookeries of the White-faced Storm-Petrel (*Pelagodroma marina*); but of equal interest, I



Nest and Eggs of White-faced Ternlet.



Young White-faced Ternlet.

think, are the White-faced Ternlets (*Sternula nereis*), which nest on the sun-warmed beach. Among soft sand, and a mosaic of shells, mostly broken, and pebbles, the Ternlets rear their broods. Two eggs form the clutch, but rarely a set of three is found. The ground colour of the eggs is stone-grey, with blotches of umber and dark grey, and they harmonize with their environment so well that it is difficult to find them. The nest is a slight hollow in the sand, such as one might form by a few scoops with a teaspoon.

The young Ternlets, like the eggs of the species, are protectively coloured, the down being yellowish-white. When only a few days old they are easily captured, often enough crouching quietly in the nest, and making no attempt to escape. When the feathers are sprouting, however, the little Ternlets are more active, and my patience was tried in obtaining the accompanying photograph. Time after time the chick darted away, and ran swiftly over the beach, generally towards the sea.

In November, 1914, with other members of the Bird Observers' Club, I visited Mud Island, and obtained some glimpses of the home life of *Sternula nereis*. Walking round the islet in the early afternoon, we rounded a little headland, to see scores of the Ternlets flying excitedly above a long strip of beach, between high tide mark and the scrub. There lay the rookery, right before us, without a doubt. But six pairs of keen eyes searched the beach in vain for some minutes. Then a nest was found, with the footprint of a blundering boot within a few inches of the two eggs. Somebody had walked over the nest without seeing it. However, the rookery was fairly compact, and nearly a score of nests, containing either eggs or chicks, was discovered in less than half an hour. Most of the eggs were heavily incubated, and one nest held a day-old chick and an addled egg. In another was a dead nestling and a living one; the former had evidently been crushed—I fear, by a man's foot.

The rookery itself was sufficiently interesting, but, after exposing a number of plates, I packed up the camera and devoted my eyes to the birds in the air. There was no hope of obtaining a photograph of an adult Ternlet, for none of the birds alighted on the beach for even a second. Over our heads they hovered and flew, like a flock of big white butterflies. Sunlight gleamed on their plumage, and the lucent blue of the sky seemed to flow around their forms. It was a marvellous picture of wild beauty; one could not soon tire of watching the evolutions of that flock of agitated birds. Their cries came faintly to our ears—little quivering shafts of sound, in which were blended the tones of anger and solicitude. Some of the Ternlets carried food—minute fishes, whose silvery bodies also gleamed in the sun. At times a bird would dive down, with the same motion as if it were entering the sea, but curve upward again within a yard of the beach, and rejoin the company in the sky.

It is a pleasure to reflect that Mud Island is sanctuary for the

Storm-Petrels, and is so rarely visited that the Ternlets, too, are fairly safe in their lonely nesting haunt.—CHARLES BARRETT, C.M.Z.S., R.A.O.U. Melbourne, 31/5/16.

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Satin Bower-Bird at Play.—On a day toward the end of last year, a friend and I walked quietly along a scrub-hemmed coach-road near the summit of Tambourine Mountain, about 30 miles from Brisbane. Suddenly we heard, amid the medley of bird-calls, a curious rasping note, suggestive of nothing so much as a circular saw at work in the distance. I knew the note well.



Satin Bower-Bird Working at Bower.

FROM A PHOTO. BY A. H. CHISHOLM, R.A.O.U.

It was the ecstatic, half-crazy "wheeze" of the full-plumaged male Satin Bower-Bird (*Ptilonorhynchus holosericeus*) as he pirouetted about the bower.

Creeping stealthily through the tangle, we approached the spot whence the sounds seemed to come. So engrossed was the bird in the dancing that it was continued till we were within 12 yards of the performer. Then one of us trod on a stick. Instantly there was a startled "Chuck, chuck," a flutter of wings, and a flash of blue-black feathers; there would be no more dancing for

that day. The bower was a neat, dainty little structure, much akin to those that I have photographed in Victoria. It was built between two tussocks of grass, and, as usual, was set off with a liberal sprinkling of blue feathers, small bones, and leaves. The dense nature of the surrounding scrub rendered photography practically an impossibility, nor did I get much opportunity of adding to my knowledge of the Bower-Bird's habits "at home."

It was in Victoria that the accompanying photograph was taken. Some idea as to how the bird works is conveyed by it. Bower-Birds are not "jerry builders." The foundation of the bower is strongly laid, the walls are matted closely and with infinite care, and the bird never seems happy if one piece of "timber" is out of alignment. In fact, the work seems a case of "more is it worth to have striven than in the end to attain." for the walls are frequently pulled down and rebuilt as though for the pleasure of the labour. Often, too, the builder will pull a few sticks from near the "front" entrance and hop round to the "back" with them. After suspiciously eyeing the camera for a time, the bird shown in the photograph half-iciously pulled a strand from one end of the bower, hopped around to the opposite end, and ramméd it in with three quick little wriggles of the head. This is typical. The bird seems to discover more pushing power when its strong feet are planted well apart.

The curious effect created by the eyes protruding is also customary. The male Satin Bower-Bird's eyes are the most remarkable I have seen in any bird. Seen from different angles, they glint and gleam with myriads of bright colours. At times they are of the same hue as the owner's lustrous feathers; and, again, they present the same brilliant red as do the eyes of the Crested Bell-Bird (*Oreoica cristata*).

But there is nothing more fascinating, when the Bower-Bird is at play, than its crazy dancing. A spirit seems to take possession of the bird at irregular intervals. Then, without any preparatory exercise, its wings go up almost straight above its back, the primaries sometimes touching. Holding them thus, it bows gracefully, emits the saw-like "wheeze," and hops about in a most fantastic fashion, occasionally in the bower, but more often round and about it. Better still is the performance in which the bird minces about the bower *on the tips of its toes*. Sometimes this is done while the wings are raised, but the bird does not appear to be capable of sustaining itself in such position for more than half a minute or so.

A fact of passing interest is that the female appears uninterested. This, of course, is not unusual; most female birds, I believe, are adepts at the art of disdain; but in this case the male seems to be equally haughty. So far as I have seen, he takes very little notice (except of a hostile character) of his mate. Seemingly, life for him is worth while chiefly for the interest and satisfaction he gets out of dancing and bower-dressing.—A. H. CHISHOLM, R.A.O.U. Brisbane, 15/5/16.

Stray Feathers.

Scarlet-breasted Robins.—A pair of Scarlet-breasted Robins (*Petroica leggii*) nested near our house last season (1915), and successfully reared their young. The male was still in immature plumage, which indicates that the adult plumage is not fully developed for two years or more.—C. C. CURRIE. Lardner (Vic.)

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Pelicans and Cormorants.—Captain S. A. White states that he is endeavouring to have Pelicans protected for part of the year—from 1st July to 20th December. The South Australian Ornithological Association has taken a lease of the islands in the Coorong where the Pelicans breed, and will have a warden there during the nesting season. Captain White is also studying Cormorants, and, with the great amount of data he has gathered, will soon be able to prove that these are useful birds. He will not rest until the species is protected during the nesting season. He has been instrumental in getting the royalty of 1d. a head for Cormorants removed. He has gathered much information regarding crabs in relation to Pelicans, Cormorants, fishing-nets, and fish.

* * *

Wary Cockatoos.—That the White Cockatoo (*Cacatua galerita*) is aware of the approach of man at a considerable distance, without seeing him, is very evident. I had the opportunity of observing the habits of a pair of the birds that nested here last season, the nest being five feet down in the hollow of a limb 30 feet from the ground. When I approached the nest the bird always flew quietly away when I was about 300 yards distant. Although I walked as silently as possible, against the wind, it made no difference; the bird always flew away. This is only one instance of many of the kind that I have observed. The question arises, Has the Cockatoo some means of detecting danger? I do not know of any other bird that has a similar habit; perhaps some of our Waders have.—J. A. HILL. Golton South, *viâ* Lubeck (Vic.)

* * *

Highest Nest in Victoria.—On 28th December, 1915, a party, consisting of members of the Melbourne Amateur Walking Club, found a nest of the Australian Pipit (*Anthus australis*), containing three eggs, on the top of Mount Bogong (6,508 feet), the highest mountain in Victoria. The bird was flushed from the nest. The ascent of the mount was made from the Little Snowy Creek, and on that (the north) side the timber ceased at 5,320 feet, as recorded by an aneroid. In the final belt of snow gums was a flock of seven Gang-Gang Cockatoos (*Callocephalon galeatum*), which, I thought, were unusually light in colour, and several Robins (*Petroica phœnicea*?). Near one of Homan's cattle huts,

at 2,220 feet, a large Emu (*Dromaius novæ-hollandiæ*) walked sedately past the party, at a distance of 30 to 40 yards. It showed no alarm, and vanished into the timber at the same steady pace—*ohne hast, ohne rast*. Here Whistlers (*Pachycephala*), Thrushes (*Colluricincla harmonica*), and Wonga-Wonga Pigeons (*Leucosarcia picata*) dominated the bird chorus. Lyre-Birds (*Menura victoriæ*) were common in all the gullies.—R. H. COLL. Camberwell, 25/5/16.

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Moulting of the Crested Penguin.—It is interesting to notice how quickly Crested Penguins (*Catarrhactes chrysocome*) shed their feathers when moulting. A large number was shed on one night by a bird in the Melbourne Zoological Gardens, in November, 1915 (see illustration). During the process the Penguin will not



Moulting Penguin.

FROM A PHOTO. BY D. LE SOUËF, C.M.Z.S., R.A.O.U.

on any account enter the water, and, should it be forced in, scrambles out again as rapidly as possible.

The feathers come off in patches, starting usually at the back of the head and near the tail. The bird naturally is busy preening itself meantime, and when its old feathers are all off it is probably fairly hungry by the time it goes to sea. One can imagine what an enormous quantity of feathers must be shed in

a big rookery, like those on the Macquarie Islands, where sometimes over 1,000,000 birds are congregated in one locality for the purpose of moulting.—W. H. D. LE SOUËF. Zoological Gardens, Melbourne, 2/6/16.



Crested Penguin's Moulting Place.

FROM A PHOTO. BY D. LE SOUËF, C.M.Z.S., R.A.O.U.

Late Stay of Migrants.—Although the majority of the Pipits (*Anthus australis*) left us, as usual, in April, there is still a small number about the grassy patches by the wayside. As one approaches they rise and fly over the fence into the paddocks, uttering their peculiar sibilant note while on the wing. They are, I believe, young birds of early summer, and appear to be in excellent condition. The few that winter with us seem to pick up a good living. The last Summer-Bird (*Graucalus parvirostris*) which came within my ken was sitting on an electric wire in the town on 11th May, but two or three were reported from the Don (in this district) on 23rd inst. Small parties of this species passed here several times during April, resting for a little while in the gum-trees about my place; all were heading to the westward, and evidently on migration. A Fan-tailed Cuckoo (*Cacomantis flabelliformis*) was whistling melodiously from a wooded piece of ground on 29th inst., and this morning I caught sight of it. It used the soft whistling call, not the trill, although two seasons

ago one sat on the wire which runs past the garden and trilled like springtime on the shortest day of the year. For some unexplained reason it is almost invariably this species of which an individual or two elects to winter with us; the more robust-looking Pallid Cuckoo hardly ever stays, and the Bronze never, in my experience.—H. STUART DOVE. West Devonport (Tas.), 31/5/16.

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Bird Notes from Gallipoli.—24/9/15.—Yesterday I witnessed a sight that gladdened the eyes. High in the air, over the top-most hill as seen from our camp, the Swallows were gathering in hundreds for their great migratory flight. It was most interesting to watch them wheeling and circling in such numbers. I was on my way to a trench near the summit of the hill, and as I mounted the slopes I obtained a grand view of the great army of birds gathering their forces together for the long southern flight. At times, when massed together, they formed a dense, dark cloud for a few minutes; then they would gradually thin out in wide, sweeping circles, and swoop towards the earth, cleaving the air with a swishing sound quite foreign to their usual graceful motion. The idea they gave me was that they were angry and excited. They moved off eventually in a south-eastern direction as far as the eye could follow them. To-day I notice a few of the birds still about. Very little bird-life here. I have seen, so far, three forms—a bird like a Honey-eater, a shy little Robin, and a little bird, observed one day on a flat near the beach, which closely resembles our Field-Wren. From the nature of the country, I should not think it attractive to bird-life.

6/10/15. — One morning I heard a commotion on the hill opposite our camp. Such a clucking and challenging of notes! I could see across the gully to open patches of clayey cliffs, and there were the creatures having a high time, and chasing each other like rabbits. Then I saw they were Partridges. Visions of juicy roasts rose before my eyes, but, alas! friend Turk can sweep the area with his guns.

6/10/15.—I found such a pretty little bird one day—something like our White-eye (*Zosterops*), with a quiet green plumage and soft, dove-coloured under-parts. The throat, when pulsating, shows a beautiful flush of yellow. The song is very sweet. The boys call it the Canary.

5/12/15.—A few migrants have reached us here. Near the beach I noticed a dozen birds of the Stint family. They remained but a few hours; probably the noises of war hastened their departure. In Tasmania, at Lake Sorell, I have shot these birds in November. If these are going Australia way they are late on their journey. More birds are now observed here. Some are very beautiful, but to what family they belong I do not know.—Extracts from letters written by Mr. A. W. Swindells, R.A.O.U., when stationed near Suvla Bay.

Bird Life in the North.—Mr. A. J. Dyer, who is a missionary at the Church of England mission on the Roper River, Northern Territory, in a letter to Mr. G. A. Dyer, R.A.O.U., of North Fitzroy (Vic.), gives interesting notes on bird-life. He writes:—

“Once, I think, I said not many birds were here. But that was in the dry season; in the wet, one sees so many birds which are new to one that one quite loses count of them, and some of them are beautiful birds, too. We have a great variety of the Finch family not described in Dr. Leach’s book. You ask *re* Summer-Birds. On 14th December last (1915) I saw a flock of them—I am pretty sure of about 100 birds. They camped on a billabong at the back of the mission station, and since then I have not seen any. Grass-Parrots returned here in hundreds on the 25th March. Grass-seeds are just falling here now. No Rosellas are here, only King Parrots and Rose-breasted Cockatoos. Hawks are returning now, and most of the birds are nesting. They go away into the bush, and we do not see much of them. All the game birds are away now, mostly at the salt water, the natives tell me. We had a visit from a naturalist in a cutter. He called for food, as the natives had stolen his on the King River, on the north coast; he was right out of flour. He had some lovely birds, mostly from the mangroves by the river. He has been in places where no whites have been before. The country there was mostly poor. He started from Thursday Island, sent out by Mr. White, of New South Wales, to get eggs and so forth. M’Lennan is his name. He is a gifted nature student, and has a wonderful collection of bird skins. At present he is at a rookery of Egrets, where there are thousands of birds of various kinds, such as White-fronted Herons, White-necked Herons, and the Great Plumed and Lesser Egrets. To get to them you have to wade out of the boat in about four feet of water, with a revolver in one hand and with a man behind with a rifle, as crocodiles are there in galore, and poke their noses up quite near them. You then let them have one; then your foot goes down on a big catfish, for they are there for the young ones. The nests are so thick that one parent throws out the young ones from other nests. If old enough, they climb up the trees again with legs and beak. The noise is deafening. Fancy three native boys eating 100 eggs for tea, and not at all particular about the young ones! I am afraid that they are not members of the Gould League of Bird Lovers.”

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Birds at Cape Otway Lighthouse, 1849 to 1879.—The Cape Otway lighthouse opened about the end of 1848, and my father took charge shortly afterwards. The first birds recorded as striking the light were Black Swans (*Chenopsis atrata*), early in 1849: they came from the south-east, apparently from King Island. The leading bird struck the lantern, breaking the half-inch plate-glass window, and was killed by the concussion. The next bird came

into the lantern room, and was caught. Ever after that a dummy wooden pane was kept to block broken windows, if such accidents occurred. For 30 years, to 1879, Swans were never known to strike the light, although we often saw them in the evenings coming across from the direction of King Island, and going towards Aire River, 7 miles north-west, and returning towards the island. Swans were often heard going over at night, and Cape Otway appeared to be the first land that these birds and Ducks made when coming from the south-east; they always left the land at the same point when going away. They followed the coast-line to and from Aire River.

Other birds that struck and were killed were Black Duck (*Anas superciliosa*), Australian Teal (*Nettion castaneum*), Grey Teal (*N. gibberifrons*), and White-eyed Duck (*Nyroca australis*). Once nine of the latter species were killed or wounded; they had evidently come across the sea from the south-east, as they were on the balcony and ground on that side. Only one Duck flew away from the balcony at daylight, and went towards King Island, about 50 miles away and not visible. Quail, both Stubble (*Coturnix pectoralis*) and Brown (*Synoicus australis*), as well as Pipits (*Anthus australis*) and Crimson Parrots (*Platycercus pennanti*) and Grass-Parrots (*Euphema elegans*), were often seen, and frequently struck the lantern. We occasionally saw birds of prey, such as the Grey Falcon (*Falco hypoleucos*), Black Falcon (*F. subniger*), Little Falcon (*F. lunulatus*), Brown Hawk (*Hieracidea berigora*), and Sparrow-Hawk (*Accipiter torquatus*); but it was a rare thing for these birds to come to grief. Many other small land-birds used to strike, but very few sea-birds; probably the light being nearly 300 feet above sea-level saved them. Often, when looking out on a summer's night from the balcony rails, numbers of birds could be seen resting on them—frequently small birds and Hawks near each other. At times the Boobook Owl (*Ninox boobook*) and Delicate Owl (*Strix delicatula*) were seen, but these probably came after the bats and small birds near the light. In later years very few birds struck the light, and of those that did most were able to fly away.—H. W. FORD. 9 Freeman-street, North Fitzroy.

* * *

Swifts and Weather.—Having for several years recorded observations on Swifts and the weather, I give herewith the result of this year's watching, so far. The first considerable flight of Spine-tailed Swifts (*Chaetura caudacuta*, Lath.) on the North-West Coast of Tasmania this season was noted on the evening of 24th February, from 6.30 o'clock until 7 o'clock, during which time the birds were passing almost continuously—not, of course, in a compact mass, but in a straggling sort of way, a few at the time, as is their wont. I could detect them in the distance, rising from the horizon, as it were, to the westward, and coming gradually overhead, then passing away to east and south-east against a

light breeze, taking insects as they went, as their movements showed. They flew at various heights, from 30 feet up to 300 feet or 400 feet, and must have accounted for a great quantity of insects during their passage. Their appearance was coincident, as usual, with atmospheric disturbance, a thunderstorm, with heavy rain, having occurred on the previous day; and on the afternoon of the day on which they were seen there was a tremendous downpour to the west (the direction from which they came), the papers next morning recording that some of the creeks were up over the bridges in a very short period. On the evening of 5th March, shortly before 6 o'clock, some 30 or 40 Spine-tailed Swifts came from about E.S.E., and proceeded directly and rapidly to N.W., as if migrating; the wind was from N.W., somewhat squally, and snow was lying on the Tiers, having fallen on the previous evening. The birds flew low, just over the tree-tops, the swish of their long wings being plainly audible. Early next morning the wind blew fresh from S.E., bringing a heavy shower.—H. STUART DOVE. West Devonport (Tas.), 8/3/16.

On 20th April about a dozen Spine-tailed Swifts were seen in the forenoon, heading from west to east, near the beach, at heights of perhaps 50 to 100 feet; they were feeding as they went. There had been a heavy shower in the early morning, the weather for the remainder of the day being fine, but very humid. There was a bank of cloud on W. and N.W. horizon when the birds were seen, and the breeze was N.W., light. That same night a thunderstorm came up, with heavy rain, which continued during the remainder of the morning (Good Friday). On the 22nd it was fair until evening, although the wind was bleak; rain set in about 6 p.m. On the 23rd there was a N.W. gale with showers, and very heavy sea running. Many visitors went out to Massey Bluff to see the great sprays against the headland. On the 24th there was a boisterous wind all day from the same quarter, with showers at night. On the 25th heavy rain fell all day, from the south-east, the greatest soaking we have had for some time. So the Swifts once more proved their ability to prognosticate disturbances. This was their last appearance for the season.—H. STUART DOVE, R.A.O.U. West Devonport (Tas.), May, 1916.

Correspondence.

To the Editors of "The Emu."

SIRS,—Will you kindly allow me to correct an item in the review of my last work which appeared in the last issue of *The Emu*. It is in reference to the new birds discovered, which number five, not two, as stated—one new species and four new sub-species. They are as follows:—

Acanthiza marianæ, S. A. White (*S.A. Ornithologist*, vol. ii., No. 2, 1915). Everard Range Tit.



Albatross—Rising from the Sea, outside Port Jackson Heads, N.S.W.

FROM A PHOTO, BY J. DEGOTARDI.

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- Lewinornis rufiventris maudeæ*, S. A. White. Central Australian Rufous-breasted Thickhead.
Ethelornis culicivorus musgravi, Mathews (*A. A. Record*, vol. ii., No. 7, p. 130). Musgrave Fly-eater.
Smicrornis brevirostris mathewsi, S. A. White. Central Australian Tree-Tit.
Barnardius zonarius myrtæ, S. A. White. Central Australian Yellow-banded Parrot.

Thanking you for the review of my work, yours truly,

S. A. WHITE.

"Wetunga," Fulham, S.A., 12/6/16.

AVIFAUNA OF NEW SOUTH WALES ISLANDS.

To the Editors of "*The Emu*."

SIRS,—Your sense of the "eternal fitness of things" was no doubt responsible for the transference of the plate depicting an Albatross rising from the calm waters of Port Jackson from my article in the last issue of *The Emu* to a place of honour facing Dr. Ferguson's very valuable contribution, and the substitution of a less appropriate title. Visits of these splendid birds to our harbour are not of such frequency that they fail to excite comment and admiration, whereas an Albatross "rising from the sea" is an almost everyday spectacle to the sea-voyager. Such a picture I now present. It was taken by Mr. J. Degotardi just outside Port Jackson Heads. One can identify the species as the Black-browed Albatross, so clear is the negative. A comparison of the "footprints" in this picture with those in the previous one is interesting, as showing the greater distance the bird has to "walk" on the surface before he gets sufficient impetus to enable him to rise. "The Albatross in a calm may run a quarter of a mile before getting headway enough to launch himself into the air" (Frederic A. Lucas, "The Beginnings of Flight," *The American Museum Journal*, vol. xvi., p. 8, 1916).—Yours faithfully,

A. F. BASSET HULL.

Sydney, June, 1916.

To the Editors of "*The Emu*."

Sirs,—At page 264 of vol. xv. of *The Emu* you published a letter from me, by which I endeavoured to make a correction in regard to some note on *Hylacola cauta* which had appeared earlier in the same volume. I now know that instead of correcting one error I added another. This I regret very much. I have since been in communication with Mr. W. B. Alexander, of the Perth Museum, and Mr. M. W. Elliott, of Dumbleyung, and have ascertained that the interpretation which I had put on a previous

letter from Mr. Elliott was quite erroneous. There was no error in the West Australian Museum, and there is no doubt that the bird referred to was *H. cauta*. It would, therefore, seem quite clear that the eggs found did not belong to the bird which was shot. Unfortunately, the eggs have been accidentally destroyed, and there is now no possibility of identifying them.—Yours truly,

J. A. ROSS.

54 Claremont-avenue, Malvern, 7/6/16.

Bird Observers' Club.

THE annual meeting of the Bird Observers' Club was held in Melbourne on 25th May, 1916; Mr. Charles Barrett, C.M.Z.S., the president, in the chair. There was a fairly large attendance. Mr. F. E. Howe, the hon. secretary, in his report, referred to the interesting papers that had been read, and the specimens exhibited at the monthly meetings. In his address, the president suggested that members should endeavour, by combined effort, to obtain complete records of the home-life of at least a few native birds. In Europe and America excellent work was being done in this direction.

After a long discussion, a proposal that nesting boxes, drinking basins, and food tables should be provided for native birds in school play-grounds and public parks and gardens, if possible, was approved. Several members expressed doubt whether nesting boxes would be a success, and Starlings and Sparrows were mentioned as the most likely tenants. It was stated that the executive of the Gould League of Bird Lovers had approved of the scheme, and it was hoped the League members would help to carry it out.

Mr. A. H. E. Mattingley, C.M.Z.S., was elected president for the ensuing year, and Mr. F. E. Wilson hon. secretary. Mr. G. A. Dyer was re-elected hon. treasurer.

Publications Received.

The Zoologist, January, February, March, 1916.

January issue contains a short article by A. V. Aplin, "Notes on an August Nightingale" at Bloxham, Oxon, also "Some Bird Notes from the Somerset Coast," by Stanley Lewis. We are glad to see that the Royal Society for the Protection of Birds keeps a watcher at Bream Down, the part of the coast mentioned. The February and March numbers contain many interesting articles.

Avicultural Magazine, February, March, 1916.

As usual, this magazine is full of interesting matter. Among other articles in the February number are "My Piping Crow," by Mrs. Staveley-Hill; "Sun-Birds in Their Native Haunts," by F. E. Blaauw; and "Wonders of Birds' Nests," by F. J. Koch. March issue contains, among other articles, "Birds in

Flanders During the War," by Col. W. Tweedie; "My Swainson's Lorikeets," by Guy Falkner; and "The Best System of Feeding Insectivorous Birds," by P. F. M. Galloway.

British Birds, February, March, 1916.

These parts contain lists of large numbers of British birds that have been recovered marked, and states the progress for 1915 of the marking scheme and some results, by H. F. Witherby. The number of birds ringed from 1909 to 1915 was 67,614, which shows how thoroughly the British ornithologists have worked at this interesting subject; the results will be most valuable.

Revue Francaise d'Ornithologie, January, February, March, 1916.

January issue contains some notes by L. Brasil on a collection of birds from New Caledonia, which includes some Australian forms, especially among the Waders, some observations on the birds of Kerguelen Island, and other articles. In the February number the notes on the birds from New Caledonia are continued. An interesting account of the Crested Auk, by Dr. R. Didier, is given as a supplement to this number. In the March issue M. André Godard has an article on "Bird Destruction," showing the immense number that are killed for the purpose of the feather trade. There are also further notes on the birds of Kerguelen Island.

The Condor, vol. xvii., Nos. 5, 6, 1915; and vol. xviii., No. 1.

These contain interesting papers on American ornithology.

Bird Lore, vol. xvii., No. 5.

This number is profusely illustrated. The account of the young Condor, with photographs, is exceptionally interesting.

The Wilson Bulletin, March, 1916.

This number contains a well-illustrated article on the Terns of Weepeket Islands, by A. R. Cahn, and other articles.

University of California Publications in Zoology, January, 1916.

A report on mammals and birds found in portions of Trinity, Siskiyou, and Shasta Counties, California, by L. Kellogg, is included in this issue.

Bulletin of the American Museum of Natural History, vol. xxxv., art. 7.

R. C. Murphy and F. Harper describe two new Diving Petrels—namely, *Pelecanoides urinatrix chathamensis*, sub-sp., from the Chatham Islands, and *P. georgica*, sp., from South Georgia.

The South Australian Ornithologist, vol. ii., part 6.

This issue contains an article by T. P. Bellchambers on the nesting of the Mallee-Fowl (*Leipoa ocellata*), with illustrations; notes on the birds noticed by Dr. A. M. Morgan on a trip to St. Vincent and Spencer Gulfs; and a continuation of a sketch of the life of Samuel White, by Capt. S. A. White.

The Australian Naturalist, vol. iii., part 10.

There are no bird notes in this number.

The Australian Zoologist, vol. i., part 3.

No bird notes. An interesting article on colour-variation of Australian phalangers of the genus *Trichosurus*, and describing one new sub-species, by A. S. Le Souëf.

The Victorian Naturalist, vol. xxxii., parts 11 and 12; vol. xxxiii., part 1.

No. 12 has an account of the wild bird life in the Melbourne Zoological Gardens, by D. Le Souëf.

The Royal Australasian Ornithologists' Union.

THE Council of the Royal Australasian Ornithologists' Union has received with gratitude the first half-year's interest on the £1,000 donated by a member, who wishes to remain anonymous. Messrs. Z. Gray (hon. treasurer), A. H. E. Mattingley (ex-president), and Dr. J. A. Leach (vice-president) have been appointed trustees. They have secured a room in Temple Court (Room 2, second floor), 424 Collins-street west, Melbourne. It is large enough for the Council and ornithological meetings other than public lectures.

Committees have been appointed to supervise fittings and furnishings, to build up working collections of skins, nests, and eggs, to care for the scientific collections which it is hoped will in course of time be possessed by the Union, and to provide for the library. It is hoped to secure, as far as possible, a complete set of the literature concerned with the Australian avifauna. A prominent supporter of the Union has already announced his intention of presenting John Gould's great work, "The Birds of Australia," in eight volumes. A Melbourne member has donated a table of polished Australian timber; others have provided chairs, hat rails, and bookshelves. Enlargements of famous bird photographs have already been presented, and a large photograph of John Gould has been promised. An electric lantern for showing lantern slides has also been presented. Members wishing to assist in furnishing or fitting up the room are requested to communicate with the hon. secretary.

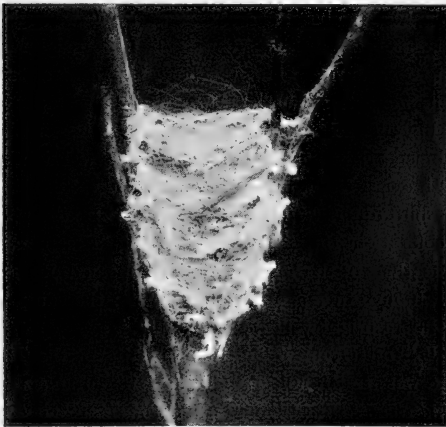
The next meeting of the Council will be held in the new room. Visiting members are requested to communicate with the hon. secretary, and members of the Council will be pleased to meet them at the Union's room, thus realizing the wishes of the donor.

New Members.—So many members have volunteered for the front that there is a danger that our membership roll will be reduced in these times of increased costs and reduced incomes. Will each member try to send to the hon. secretary the name of *one* bird-loving friend who may become a member of the Union?

About Members.

Mr. Charles Barrett, C.M.Z.S., co-editor of *The Emu* for several years, is at present in the Royal Park Camp, training for the Army Medical Corps, Australian Expeditionary Force. While co-editor he succeeded in greatly improving *The Emu* from the point of view of pictorial illustration. A keen bird-lover, it is hoped that he will return safely to continue for many years his valuable work.

Mr. Gregory M. Mathews, F.R.S.E., R.A.O.U., has been elected a member of the International Commission of Zoological Nomenclature. Australasian members of the Union, without exception, express pleasure at the appointment, and feel gratified that Australian ornithology is to be represented at headquarters. Fortunately, Mr. Mathews is a member of the Check-list Committee, and is now in a position to get authoritative decisions. It is hoped that the second edition of the Official Check-list will be up-to-date, scientific, and acceptable to all ornithologists, and the Council expects much assistance from Mr. Mathews in securing, if possible, that most desirable result. The editors heartily congratulate Mr. Mathews, and wish him success.



Nest of Pearly Flycatcher (*Monarcha canescens*).

Central Australian Yellow-banded Parrot (*Barnardius zonarius myrtae*).

(S. A. White, *Transactions of Royal Society of South Australia*, vol. xxxix., 1915).

(See *frontispiece*.)

BY S. A. WHITE, M.B.O.U., PRESIDENT R.A.O.U.

THE Central Australian Yellow-banded Parrot was first met with during our trip into the centre of Australia, 1913 (see *Transactions of the Royal Society of South Australia*, vol. xxxviii., 1914, p. 427). It was plentiful on all the gum creeks met with upon our route, and it was just as plentiful west of Oodnadatta to the Musgrave and Everard Ranges.

The *type* is a male, collected by S. A. and E. R. White at Horse-shoe Bend, Finke River, Central Australia, on 8th August, 1913, now in the Wetunga collection. Female differs in being of a much paler coloration.

Description.—Head and upper part of the neck black; feathers on the cheeks tipped with bright blue; a broad crescent of bright yellow crosses the back of the neck; chest and back bright green; rump and upper tail coverts bright yellowish-green; primaries brownish-black, the basal half external margin bright blue, secondaries, internal half brownish-black, external bright bluish-green; wing coverts rich greenish-yellow; two central tail feathers bluish-green, next two bluish-green tipped with light blue, the remainder having their basal half dark blue; the remainder light blue; abdomen bright yellow; under tail coverts bright yellowish-green; iris brown; feet ashy-grey; bill bluish-white.

This new bird differs from *Barnardius zonarius* in having a much brighter coloration throughout, and being a somewhat larger bird; the feathers of the chest and back, instead of being a dark green with an olive tinge, are of bright green; the rump and upper tail coverts are a bright yellowish-green.

Range.—Extends from Oodnadatta north to the MacDonnell Ranges, and west to the Musgrave and Everard Ranges.

Habits and Note.—Differ little from *B. zonarius*. They were often found feeding under the acacias upon the fallen seeds of the shrub. They were breeding at Wantapella Swamp in July, 1914, one nest having large young in a deep hollow in a red gum tree.

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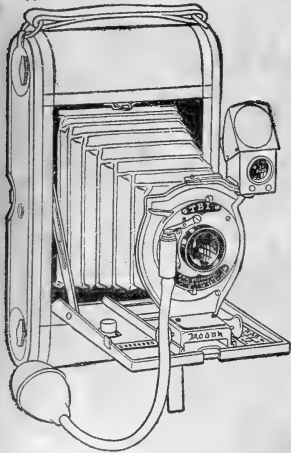
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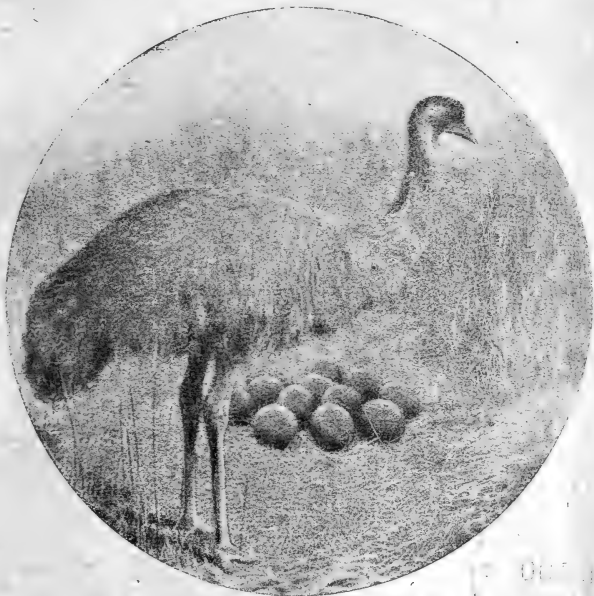
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A Quarterly Magazine to popularize the Study and Protection of Native Birds and to record Results of Scientific Research in Ornithology.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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BARNARD'S WREN—WARBLER

Malurus lamberti dawsonianus.

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XVI.]

2ND OCTOBER, 1916.

[PART 2.]

A New Wren-Warbler, *Malurus lamberti dawsonianus* (Barnard's Wren).

BY H. L. WHITE, ESQ., M.B.O.U., BELLTREES, SCONE, N.S.W.
MR. G. M. Mathews, under the generic name of *Leggeornis*, divides the species *lamberti* into six sub-species. I propose adding another, as above.

The splitting-up of genera, after the style adopted by Mr. Mathews, appears to most of us quite unnecessary and cumbersome. What is wrong about *Malurus* that we cannot retain it? Why puzzle us by adding *Hallornis*, *Leggeornis*, *Rosina*, *Ryania*, and *Nesomalurus*? The average man has enough trouble as it is in remembering generic names; it is hardly fair to add to his difficulties. The advantages conferred by the trinomial system of nomenclature are very considerably discounted by the plan adopted by Mr. Mathews of naming such a number of so-called new genera after ornithologists and his numerous relations, friends, and acquaintances.

Some two years ago Mr. H. G. Barnard sent me a *Malurus* from the Dawson River, Queensland, which appeared to differ considerably from *Malurus lamberti lamberti*. I asked him to procure more skins, which are now to hand. Our most conservative authorities have admitted *Malurus lamberti assimilis*; my new form differs from it quite as much as it (*Malurus lamberti assimilis*) in turn differs from *Malurus lamberti lamberti*. My collection contains specimens of all but one of Mr. Mathews's sub-species, so I am in a position to make comparisons. Assuming *Malurus lamberti assimilis* to be a recognized sub-species of *Malurus lamberti lamberti*, my new form differs from it in having a more robust bill, the black band at the back of the neck wider, while the blue of the head and back is of a much more purple shade, and the chestnut shoulders are considerably darker—in fact, it is as much darker than *Malurus lamberti assimilis* as that form is darker than *Malurus lamberti lamberti*. In size it is slightly smaller than either of the others mentioned.

Of the other sub-species mentioned by Mr. Mathews, my bird most nearly approaches *Malurus lamberti mastersi*, from the Northern Territory, but is easily separable from that form by the fact that its ear coverts are of a quite distinct shade, being more like those of *Malurus lamberti bernicri*, from Western Australia.

An Ornithological Cruise Among the Islands of St. Vincent and Spencer Gulfs, S.A.

BY (CAPT.) S. A. WHITE, M.B.O.U., PRESIDENT R.A.O.U.

PART II.

ON 20th April, 1916, the *Avocet* again put to sea in the interests of scientific ornithological research. The party consisted of Messrs. A. G. and E. S. Rymill, Mr. Robertson, Dr. Morgan, Mr. E. R. Waite (Director of the South Australian Museum), and the writer. The Messrs. Rymill had most kindly invited us to finish our work amongst the remaining islands; but, unfortunately, owing to the severe weather conditions, this could not be carried out.

Owing to unavoidable delays, it was nearly dark before the moorings were cast off and we made down the Port Adelaide River, bringing up in an arm after dark in four fathoms of water. The glass had been going down all day, and thundery conditions showed very plainly that there was trouble ahead. Not long after dropping anchor the wind rose. Later on, rain squalls broke over us and continued all night. Next morning the vessel was under weigh at an early hour, steaming down the river in the face of heavy rain squalls, and we brought up at the Outer Harbour for breakfast. We stood across the Gulf in the teeth of a strong westerly blow, reached Yorke Peninsula at 3.30 p.m., and anchored under the lee of the land for dinner; later, we stood down the coast, and when the wind moderated some sea-dredging was done. Mr. Edgar R. Waite, the well-known authority upon marine life, secured many specimens, and all the party was much interested in the wonderful objects brought up from the sea-bed; they were far too numerous to mention in detail. Just at dark we made the port of Stansbury, which is really a small bay sheltered from the west, and on its shores a small settlement has been formed. We passed a quiet night, and by daylight next morning were on the move again. A stiff breeze from the west soon set in, and in the afternoon anchor was dropped under the shelter of Cape Yorke in four fathoms of water over sand and weed. Dr. Morgan, Mr. Waite, and the writer were landed. Leaving my two companions to search for insects, I walked back from the coast for about two miles, and found the country had not recovered from a severe bush-fire. Very few birds were seen; those identified were the White-backed Magpie, Ground-Lark, White-fronted Chat, Silver-eye, and the Shepherd's Companion (Black-and-White Fantail). A few botanical specimens were collected. Returning to the coast, both the White-breasted and Pied Cormorants were seen. Two Hooded Dottrels were taken, and Dr. Morgan found their temperatures to be 100° F. Silver Gulls and Crested Terns were seen. Upon returning to the yacht it was found that the fishermen of the party had paid the rocky headland a visit in one of the ship's boats



A Flight of Cormorants, Beatrice Spit, South Australia.



The Dark and Light Phases of the Arctic (Richardson) Skua (*Stercorarius parasiticus*), South Australia, 1916.

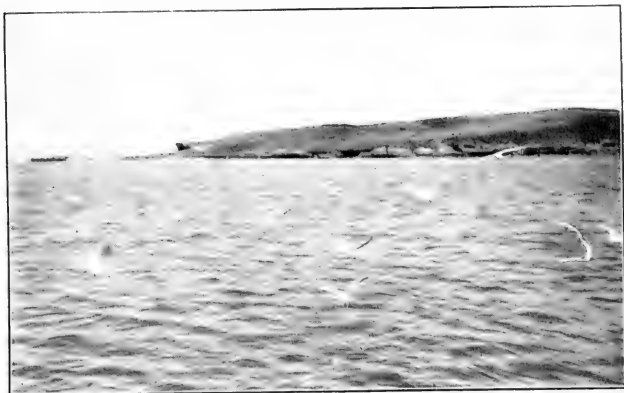


and had hooked a great variety of cod and weed-fish, some of them of the most brilliant colorations. Mr. Waite had a busy time examining them and preserving those he required for specimens. The wind fell considerably towards dark, but the officers of the yacht thought it advisable to lay further off shore in case the wind went round. A big swell came round Cape Yorke, which made the yacht roll during the night. At daylight next morning an attempt was made to get round Cape Spencer, but it was soon found that we were running into a strong north-westerly gale. A course was steered across Investigator Strait, and after a bad time in a big sea we reached Althorpe Island and took shelter behind the island and reef. The fishing cutter *Irene* was also sheltering there. Later, Dr. Morgan, Mr. Waite, and the writer went on shore and climbed to the top of the island, where we were for some time engaged taking temperatures of Mutton-Birds. We found that many of the young birds had already departed, yet a good sprinkling which we examined were still in the down. Dr. Morgan found the temperatures ranged from 99.4° F. to 101° F. Descending to the base of the cliffs, we captured many Penguins, and their temperatures, showing a range from 100° F. to 104° F., were taken. We went off to the yacht for the night. A strong roll was setting in round the reef, and rain squalls broke over us all night. Next morning there was no chance of leaving shelter. I went on shore, skinned some birds, and came off again late in the afternoon. The weather was still stormy, with a big sea running. Yacht rolled a lot in the night; terrific rain and hail squalls broke over us all night, accompanied by lightning. After breakfast next morning, Dr. Morgan, Mr. Waite, and the writer went on shore and climbed to the top of the island. On the south side of the island the wind was so strong that we could hardly stand up against it. Descending to the foot of the cliffs, we visited a burial-place just above high-water mark, in a recess of the cliff, where a rough board is marked at the head of a heap of stones—"In memory of G. Petersen, aged 48 years, 8th October, 1838." Going on board the yacht to lunch, we found it more pleasant on shore, for the big seas breaking round the end of the island caused a big roll.

On the morning of 26th April the sea and wind had moderated, and we left the anchorage at 9.30 a.m., standing round the reef and well out to sea; then the course was altered to north, and with a big sea running, accompanied with passing squalls, made the entrance to Pondalowie Bay, and dropped anchor in calm water in four fathoms over sand and weed. Dr. Morgan, Mr. Waite, and the writer landed. On the nearest island at the entrance some broken shells of *Turbo stamineus*, which are supposed to be dropped on the rocks by the Pacific Gull, were collected, as well as live shells from the reef below. Some botanical specimens were taken, also some insects, and we returned to the yacht to dinner. Later, I was landed on the beach of the main-

land, and went back into the scrub, but did not see many birds. This was owing to a very strong wind, with driving showers. Secured a male *Maturus assimilis* in non-breeding plumage. Several *Sericornis* were seen, but they were very shy. The weather was much calmer next day, and the sun showed out. I landed again on the mainland, and found birds much more numerous. I secured Scrub-Wrens, Silver-eyes, Spiny-cheeked Honey-eaters, and a Red-capped Robin. While I was skinning birds, some of the party were fishing over a sunken rock at the entrance to the bay, over which the water at times surged and boiled. A wonderful variety of fish was caught; some were of most exquisite colours. One, quite new to all on board except Mr. Waite, is known to the fishermen as a "Blue Devil." The weather set in cold and wet in the evening, and all hopes of getting to the other islands further out was abandoned. Next morning, at daylight, we heaved anchor and stood out into a big sea; but, after rounding Cape Spencer and clearing Investigator Strait, the sea went down. The engines were stopped off Cape Yorke, and while drifting some fishing was done, but we had no luck, as Port Jackson sharks seemed to be the only fish about. Mr. Waite captured some marine life, the water being so clear that the sandy bottom was clearly seen. The beautifully-tinted jelly-fish floating by were much admired. Cormorants of both species were seen on the cape, and a specimen of *Hypoleucus varius hypoleucus* was secured. Getting under weigh again, we picked up one of the boats with a party which had gone closer in shore to fish; then we stood up the Gulf. During the afternoon two Arctic Skuas were seen chasing Gulls, but they did not come within range. The Adelaide Steamship Co.'s s.s. *Willyama* was passed hard and fast on a rock in Marion Bay; the rock pierced her hull some years ago, but she appears as if she were resting at anchor. We reached Edithburg late in the afternoon, and went on shore to send telegrams and get some stores. Then we stood over to Troubridge Light, and dropped anchor off the north-western sand-spit. Numbers of Cormorants (both species), Crested Terns, Pelicans, and small waders were clustered on the sand. Mr. A. G. Rymill, Dr. Morgan, Mr. Waite, and the writer landed. We divided, and went round the island from different directions. A Double-banded Dottrel was secured, and, strange to say, although fully fledged, was an immature bird. Quite a number of Rock-Parrots were amongst the low bushes, and two or three were taken. Going off to the yacht at dark, three Cormorants were secured; they were all of the Yellow-faced variety. Next morning we were under weigh at an early hour, and stood up the Gulf with a north to north-westerly breeze, which strengthened as the day went on, and brought up a lumpy sea. We made the Port River after lunch, and reached the yacht's moorings in the afternoon, so ending the third cruise.

There is much work yet to be done amongst the islands of Spencer Gulf, and I hope in the near future to be able to continue



Silver Gulls Flying, Pondalowie Bay, South Australia.



The Anchorage, North Coast, Wedge Island.



the work. Had the weather been fine during the last trip, the work would have been almost completed.

The following is a list of the birds observed during the last trip, with notes upon same:—

Dromiceius n. novæhollandiæ (*Dromaius novæ-hollandiæ*). Emu.—Only old tracks were seen this time at Pondalowie Bay.

Eudyptula minor undina (*E. minor*). Little Penguin.—Numbers were found upon Althorpe Island; they were all in good plumage, but none was nesting. The wailing dirge sung by these birds every evening is very mournful. They start at dark and keep up for an hour or more, then cease. Evidently they then start their fishing and hunting for food. A skin was secured, and Dr. Morgan took many temperatures, the result being:—No. 1, temperature 104.2° F; bill bluish-grey; feet flesh-grey, underneath foot dark, dark margins to feet. No. 2, temperature 100.2° F.; No. 3, temperature 100.2° F.; No. 4, temperature 100° F.; No. 5, temperature 100° F.; No. 6, temperature 103° F.

Neonectris tenuirostris brevicaudus (*Puffinus brevicaudus*). Short-tailed Petrel.—No adult birds were taken from the burrows. A great many of the young had departed, but there were still many remaining, which varied from birds in full plumage to those still in down. Two skins were preserved. The immature bird has the bill dark horn colour, tip light horn; iris dark brown; back of tarsus black, front greyish-pink; top of toes same colour; nails dark horn colour; edge of web black; outer edge of outer toe, broad margin of toes narrowly margined with black. Dr. Morgan took the following temperatures of these birds:—No. 1, 99.8° F.; No. 2, 99.4° F.; No. 3, 100.2° F.; No. 4, 100° F.; No. 5 (in down), 100.4° F.; No. 6, 100° F.; No. 7, 101° F.; No. 8, 100.8° F. (All these birds, with the exception of the two taken for specimens, were placed back in their burrows after their temperatures were taken.)

Hydroprogne tschegrava strenua (*Sylochelidon caspia*). Australian Caspian Tern.—Seen at Pondalowie Bay.

Thalasseus bergi poliocercus (*Sterna cristata*). Crested Tern.—Numbers were seen all along the coast-line; many birds in immature plumage were seen at Troubridge Light.

Bruchigavia ethelæ (*Larus novæ-hollandiæ*). Southern Silver Gull;—These birds were not any more numerous than they were on our last visit.

Gabianus p. pacificus (*G. pacificus*). Pacific Gull.—A small party of these fine birds was always on the rocks or searching the sea close by for food. While we were at Althorpe Island one or two were in their dark immature plumage.

Stercorarius parasiticus (*S. crepidatus*). Arctic Skua.—Two birds were seen when on our homeward trip. They were chasing a Gull and a Tern, but did not come near the yacht.

Hæmatopus ostralegus longirostris (*H. longirostris*). Pied Oyster-catcher.—Seen at Troubridge Light.

Leucopoliis r. ruficapillus (*Ægialitis ruficapilla*). Red-capped Dottrel.—Seen at Pondalowie Bay and at Troubridge Light.

Charadrius c. cucullatus (*Ægialitis monacha*). Hooded Dottrel.—A pair was taken at Cape Yorke, Yorke Peninsula. Iris light brown;

skin around eye scarlet; bill flesh colour, tip black; feet yellowish-pink, nails black. No. 1, ♂—length, $9\frac{1}{4}$ " ; wing, $7\frac{5}{8}$ " ; stretch, tip to tip, $16\frac{3}{4}$ ". No. 2, ♀—length, $6\frac{3}{4}$ " ; wing, $7\frac{1}{2}$ " ; stretch, tip to tip, 17". Stomach contents—grit, thousands of small mollusca, part of a beetle. Temperature, 107° F.

Limnocinclus acuminatus (*Pisobia acuminata*). Sharp-tailed Stint.—Seen at Troubridge Light.

Hypoleucus fuscescens (*Phalacrocorax gouldi*). White-breasted Cormorant.*—Not many birds were seen this trip; no doubt they were nesting.

Hypoleucus varius hypoleucus (*Phalacrocorax hypoleucus*). Eastern Pied Cormorant.—Seen all through the trip; more plentiful in the upper part of the Gulf. Observations made on specimens taken were:—No. 1, ♂—stomach contents, large leatherjacket. No. 2, ♀—stomach contents, fish bones and molluscs, identified by Dr. J. C. Verco as follows, ten in number, and are:—(1) *Thalotia conica*, Gray, whole and fresh; (2) *Thalotia conica*, a fragment, bleached; (3) *Phasianella pervix*, Wood, broken and much worn; (4) *Modiolaria impacta*, Herman, one valve, brittle, and not fresh; (5) *Mesoderma glabrella*, Lamarck, one valve, fresh; (6) *Chione corrugata*, Lamarck, one valve, worn through and soft; (7, 8, 9, 10) *Paphia galactites*, Lamarck, four valves, separate, and none corresponding—three fresh and one not fresh. That none of the bivalve species have the two valves of any individual suggests that none of these was swallowed alive. Two of the valves are plainly partly disintegrated, and have long been dead. The *Phasianella* is an old shell, and so is the fragment of *Thalotia conica*. The only specimen which may have been swallowed alive is the *Thalotia conica*. This proves the birds do not swallow these shell-fish as food. It has been suggested by some that these shells may have been swallowed by fish as food, and the fish having been digested in the Cormorant's stomach, the shells remained. In my opinion this is not at all likely, for the whole, unbroken condition of the large bivalves, and the condition of the rest as regards freshness, plainly points to the fact that they were not swallowed by any fish as food. It may be that the shells are swallowed as an aid to digestion. I pointed this out at a meeting of the Royal Society of South Australia, but the president, Dr. J. C. Verco, said—"The shells seem rather large and unsuitable to be purposely swallowed as an aid to digestion, like the small pebbles swallowed by fowls." Then, against that, in another part of this paper it is shown that a Cormorant's stomach contained granite stones to the weight of $2\frac{1}{4}$ ozs., which, I feel sure, must have been deliberately swallowed to help to triturate its food. No. 3, ♂—stomach contents, two flathead and fish-bones.

Morus serrata dyotti (*Sula australis*). Australian Gannet.—Birds were seen nearly every day. They were nearly always hunting over the water in a solitary manner.

Catoptropelicanus c. conspicillatus (*Pelecanus conspicillatus*). Eastern Pelican.—A dozen or more birds were seen on Pelican Point, in the Port River, when we were returning.

Pandion haliaetus oristatus (*P. leucocephalus*). White-headed Osprey.

* This bird should be called the "Black-faced Cormorant," for three species have white breasts.—S. A. W.



Nest and Eggs of Caspian Tern (*Hydroprogne ischegrava strenua*).



Mangrove Flats north of Port Adelaide (tide in). The Home of the Yellow-faced Cormorant.



—Seen once or twice flying round the small cove at Althorpe Island. Not once did it show any signs of capturing fish; it seemed more in search of flotsam.

Neonanodes petrophilus zietzi (*Euphema petrophila*). Eastern Rock-Parrot.—These birds were seen on Althorpe Island, and there were quite a number on the low sandy island at Troubridge Light. Several specimens were taken here; they were moving in small parties of from five or six to twenty birds. When alarmed they flew from the ground very swiftly, uttering a sharp, whistling note, circled round, and perched on the low bushes, remaining stationary for a few minutes, calling and answering each other. Then they alighted on the ground and began searching for a very minute grass-seed. Many birds had not obtained their adult plumage, being much duller in feather than the older birds.

No. 1, ♂.—Iris brown; bill dark horn colour; feet ashy-grey. Total length, 9"; wing, axilla to tip, $5\frac{7}{8}$ "; ulna to tip, $4\frac{1}{4}$ "; spread, tip to tip, $12\frac{1}{2}$ ".

No. 2, ♂.—Iris brown; bill dark horn colour; feet ashy-grey. Total length, $9\frac{3}{4}$ "; wings, axilla to tip, 6"; ulna to tip, $4\frac{5}{8}$ "; total spread, $13\frac{1}{2}$ ".

No. 3, ♀.—Iris brown; bill dark horn; feet ashy-grey. Total length, $8\frac{3}{8}$ "; wing, axilla to tip, $5\frac{7}{8}$ "; ulna to tip, $4\frac{1}{2}$ "; total spread, $13\frac{1}{2}$ ".

No. 4, ♀.—Iris brown; bill dark horn; feet ashy-grey. Length, 9"; wing, axilla to tip, $5\frac{7}{8}$ "; ulna to tip, $4\frac{3}{8}$ "; spread, 13".

No. 5, ♂ (immature).—Iris dark; bill horn colour; feet grey. Length, $9\frac{3}{8}$ "; wing, axilla to tip, $6\frac{7}{8}$ "; ulna to tip, $4\frac{1}{2}$ "; spread, $13\frac{1}{2}$ ".

All stomachs were distended with small grass or rush seeds.

Hirundo n. neoxena (*H. neoxena*). Welcome Swallow.—Seen along the cliffs both on the islands and mainland.

Whiteornis g. goodenovii (*Petroica goodenovii*). Southern Red-capped Robin.—Several were seen at Pondalowie Bay.

Geobasilus chrysorrhous perksi (*Acanthiza chrysorrhoea*). Southern Yellow-rumped Tit.—Numerous at Pondalowie Bay. A ♂ taken measured—total length, $4\frac{1}{4}$ "; wing, from axilla to tip, 3"; spread of wings, 7".

Epthianura a. albifrons (*E. albifrons*). White-fronted Chat.—Seen at Cape Yorke, Althorpe Island, Pondalowie Bay, and Troubridge Light.

Sericornis maculatus osculans (*S. osculans*). Allied Scrub-Wren.—These birds were numerous in the thick scrub growing on the sand-dunes at Pondalowie Bay. They were very shy, and some patience had to be exerted to secure specimens. Upon comparison I find that the birds from this locality are identical with those from the type locality (Port Adelaide). These birds, being the nearest mainland form to Wedge Island, have given me an opportunity of describing the insular form as new. Three specimens were taken—

No. 1, ♂.—Iris dull white; bill and feet brown. Total length, 5"; wing, from axilla to tip, 3"; spread of wings, $6\frac{3}{4}$ ".

No. 2, ♂.—Iris dull white; bill and feet brown. Length, 5"; wing, axilla to tip, $2\frac{7}{8}$ "; spread of wings, $6\frac{7}{8}$ ".

No. 3, ♂.—Iris dull white; bill and feet brown; Total length, $5\frac{1}{8}$ "; wing, axilla to tip, $2\frac{3}{4}$ "; spread, $6\frac{7}{8}$ ";

Leggeornis lamberti assimilis (*Malurus assimilis*). Purple-backed Wren.—These birds were again seen in the scrub crowning the sand-dunes at Pondalowie Bay. A specimen was secured in non-breeding plumage, the red feathers just showing.

Zosterops lateralis westermensis (*Z. dorsalis*). Southern White-eye.—Numerous on Althorpe Island, Cape Yorke, and at Pondalowie Bay. A specimen procured at the latter place measured—total length, 4 $\frac{7}{8}$ " ; wing, from axilla to tip, 3 $\frac{1}{4}$ " ; spread, 7 $\frac{1}{4}$ ".

Meliphaga s. sonora (*Ptilotis sonora*). Southern Singing Honey-eater.—Numerous at Pondalowie Bay.

Acanthagenys rufogularis cygnus (*A. rufogularis*). Southern Spiny-cheeked Honey-eater.—Numbers were calling loudly at Pondalowie Bay. One specimen was taken—iris light blue ; base of bill and gape bright pink ; sere bluish ; feet slaty-blue. Total length, 9 $\frac{1}{4}$ " ; wing, from axilla to tip, 5 $\frac{1}{8}$ " ; spread of wings, 12".

Anthus australis adalaidensis (*A. australis*). Southern Pipit.—Found at Cape Yorke, Pondalowie Bay, and Troubridge Light.

Stagonopleura guttata philordi (*S. guttata*). Southern Spotted-sided Finch.—Several were seen at Pondalowie Bay.

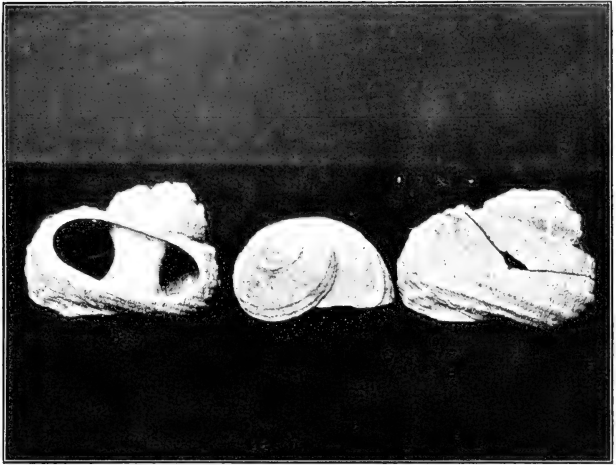
Corvus coronoides perplexus (*C. coronoides*). Southern Raven.—Every evening, while we were at Althorpe Island, a bird of this species flew along about the same time as if on its way to roost, perched for a while on the wire-rope of the flying fox, gave a few mournful calls, and went on its way.

Gymnorhina hypoleuca leuconota (*G. leuconota*). White-backed Magpie.—Several birds were seen at Cape Yorke.

When comparing the list of birds with that of the first trip, it will be seen that some species of birds met with the first time were not seen during the second visit, while other species were not nearly so numerous.

Some discussion has taken place over the possibility of the Pacific Gull (*Gabianus p. pacificus*) carrying the large shells *Turbo stamineus*, and dropping them on the rocks as a means to abstract the contents for food. These birds have always been credited for doing this work, and the Messrs. Golley, of Wedge Island, state that they have seen these Gulls dropping the shells. My old friend, Dr. Morgan, is of the opinion that the shells mentioned are far too heavy for the Pacific Gulls to carry up, and thinks it must be the White-headed Osprey, this bird being able to grasp the large shells in its claws. I am of the opinion that it must be the Gull, for Nature must have provided that powerful bill for some such purpose. Three shells (*Turbo stamineus*, Martyn), weighed while alive, resulted as follows :—No. 1, 8 ozs. ; No. 2, 10 ozs. ; No. 3, 9 $\frac{1}{2}$ ozs.

Since writing the above I have had the pleasure of a long talk with Capt. W. G. Randall, Senior Inspector of Oyster Fisheries of Port Lincoln. This gentleman has had much experience of the ways of the sea-birds along our coast-line. He states that he



Broken "Warrener" Shells (*Turbo stramineus*). The subject of much discussion recently in connection with Pacific Gulls.



The party, with the lighthouse-keepers, on Althorpe Island. The cliffs are the homes of numerous Penguins.



knows for a fact that the Pacific Gulls carry up the large shells *Turbo stamineus*, and drop them upon the bare rocks. Capt. Randall also states that these Gulls can lift a far greater weight than the shells mentioned, for he has seen one lift an octopus from the water over double the weight of the largest *Turbo stamineus*. Again, I have had a visit from Mr. Ellison Rowe, the second in command of the Althorpe lighthouse, and he states that he has frequently seen the Pacific Gulls carrying up the shells in question and letting them drop upon the rocks, and if they did not break the first time the shell was picked up and dropped again. Mr. Ellison Rowe tells me he spends much of his time when off duty at the base of the cliffs fishing, and that he has often watched these birds procuring food from the shell-fish in the very clever way already mentioned. I am hoping to see the Gulls some day at the work myself, but there is no doubt in my mind about this matter.

An Investigation Concerning the Food of Cormorants.

BY (CAPT.) S. A. WHITE, M.B.O.U., PRESIDENT R.A.O.U.

ON 24th March, 1916, Messrs. A. G. and E. S. Rymill put to sea in their yacht, the *Avocet*, this time to assist ornithological research by investigating the Cormorant rookeries in the mangrove creeks to the north of Port Adelaide. Towards sunset on Friday, the 24th March, we slipped our moorings at Port Adelaide and steamed down the river to the Outer Harbour, where the anchor was let go in 3 fathoms of water. The party consisted of our sailing master, Messrs. A. G. and E. S. Rymill (who looked after the engines), Mrs. A. G. Rymill and son, the writer and his wife, in addition to the steward, the latter a very important member of the party.

After breakfast next morning three of us put off in the dinghy and collected some cockles on the sand-spit; these were for bait, in case fish were plentiful. Heaving the anchor, we steamed along the coast for about 18 or 20 miles till we reached a shallow area called "The Flats." The tide was out, so we anchored over weed in $1\frac{1}{2}$ fathoms. While waiting for the tide to come in (as it was impossible to get up the creeks at low tide), the time was spent trying to catch fish; toad-fish and trumpeter seemed the only members of the finny tribe about. We lay about a mile off the mangroves. Outside these some mud-banks were showing up, and here a number of Black Swans were seen. A few Cormorants, all *Hypoleucus varius hypoleucus*, flew by on their way to the mangroves, but they were only stragglers, and the main party was still fishing in the shallow waters. When the tide turned and had covered the mud-banks, we all left in the dinghy, driven by a motor engine. The tide was racing up the creeks as we entered, and after we had explored several creeks, with high mangroves on each side, without locating the Cormorant rookery,

I landed for a while to search for the Southern Blue Wren (*Malurus cyaneus leggei*), this being the type locality. A party of brown birds was met with amongst the mangroves, but, there not being any full-plumaged males, it was impossible to identify the species. A little later in the evening the Cormorants began to come in from seawards, and we were able to mark down where they were settling. Going on board again, we retraced our way out of the creeks, and on a flood-tide made our way into another large creek, where we found the rookery. Specimens having been secured, we made our way back to the yacht at dark. Before going on board I took a note of the soft parts of each bird, attached a number to each, and placed all on the bottom of the dinghy, so that I could make a start at examination in the morning. The day had been very oppressive and thundery, with a falling glass, and before morning a series of squalls struck the little craft. By daylight the wind had gone round into the west, and we knew it would soon blow hard from the south-west. The boat, with the Cormorant specimens, was pulled up on to the davits; the engine soon had the anchor up, and we made a run for the Port River. It was not long before we were steaming into a strong gale from the south-west, with a heavy sea. It was afternoon before we dropped anchor inside the river in calm water. After lunch, in spite of driving showers, my friends accompanied me on shore with my specimens, and gave me every assistance with my investigations, the results of which are as follows:—

All specimens were of one species—*Hypoleucus varius hypoleucus* (Pied Cormorant).

No nests were seen. Most of the birds were in a non-breeding condition, while some were very near it.

No. 1, ♂.—Iris sea green, spot in front of eye orange, space round eye blue; bill—upper mandible yellowish-white, the ridge along the top horn colour, becoming almost black at the base, curved tip brownish-yellow, lower mandible light yellow; gular pouch yellowish-white; feet black. Stomach contents, numbers of large fish-bones and seaweed. Measurements—total length, $32\frac{1}{2}$ " ; spread of wings, tip to tip, 48" ; axilla to tip, 22". This bird showed signs of the approaching breeding season.

No. 2, ♂.—Iris sea green, spot in front of eye orange, space round eye pale yellow; upper mandible dark brown, lower yellowish; gular pouch very pale yellow; feet black. Stomach contents, weed-fish. Measurements—total length, 30" ; wing, 22" ; total stretch of wings, 49".

No. 3, ♀.—Soft parts same as No. 2. Stomach contents, 6 weed-fish. Measurements—length, $30\frac{1}{2}$ " ; wing, 21" ; spread of wings, 48".

No. 4 (sex ?)—Soft parts same as No. 2. Stomach contents, two flathead.

No. 5, ♂.—Soft parts same as No. 2. Stomach contents, three flathead.

- No. 6, ♂.—Soft parts same as No. 2. Stomach contents, one weed-fish.
- No. 7 (sex ?)—Iris sea green, bare space in front of eye orange, bare space round eye blue, lower part of eyelid green; gular pouch pink; bill bluish-black, tip horn colour; feet black. Stomach contents, weed-fish.
- No. 8, ♂.—Soft parts same as No. 7. Stomach contained one flathead.
- No. 9, ♂.—Soft parts same as No. 7. Stomach contained one squid.
- No. 10 (sex ?)—Soft parts same as No. 2. Stomach contained one squid.
- No. 11, ♂.—Soft parts same as No. 2. One flathead in stomach.
- No. 12, ♂.—Soft parts same as No. 2. Stomach contained four weed-fish, one leatherjacket.
- No. 13, ♂.—Soft parts same as No. 2. Stomach contained one toad-fish and other fish remains.
- No. 14, ♂.—Soft parts same as No. 2. Length, 33"; wing, 21"; wing span, 48". Stomach contained three weed-fish.
- No. 15, ♂.—Soft parts same as No. 2. Stomach contained one flathead and one weed-fish.
- No. 16, ♂.—Soft parts same as No. 7. Stomach contained weed-fish.
- No. 17, ♂.—Soft parts same as No. 7. Stomach contained one tommy-rough and one weed-fish. Length, 29"; wing, 21½"; wing span, 46".
- No. 18, ♂.—Soft parts same as No. 7. Stomach contained one large weed-fish.
- No. 19, ♀.—Iris sea green; bill dark bluish-black; bare space in front of eye, and extended round to the back of the eye, orange; bare space below eye very bright and iridescent shades of blue and green, being very beautiful; gular pouch purplish-red; feet black. Length, 30½"; wing, 22"; wing span, 48". One flathead in stomach. This bird would have laid within a fortnight.
- No. 20, ♂.—Soft parts same as No. 7. Stomach contents, two tommy-roughs, one weed-fish. Length, 32"; wing, 23½"; wing span, 49".
- No. 21, ♂.—Soft parts same as No. 2. Stomach contained one flathead, one weed-fish. Length, 32½"; wing, 22"; wing span, 48".
- No. 22, ♂.—Soft parts same as No. 2. Stomach contained two squids. Length, 34"; wing, 22"; wing span, 48".
- No. 24, ♀.—Soft parts same as No. 7. Stomach contained one flathead and a weed-fish. Length, 30"; wing, 21"; stretch, 45".
- No. 25, ♂.—Soft parts same as No. 2. Stomach contained one flathead. Length, 32½"; wing, 22"; stretch of wings, 48".
- No. 27, ♀.—Soft parts same as No. 7. Stomach contents, weed-fish, the remains of what appeared to be a flathead. Length, 31½"; wing, 20½"; stretch of wings, 47".

No. 28, ♀.—Soft parts same as No. 7. Stomach contents, one weed-fish and one flathead. Length, 31"; wing, 20"; stretch of wings, 44½".

The following seven birds were not measured or numbered—

- a, ♂.—Stomach contents, two flathead, four weed-fish.
- b, ♂.—Stomach contents, fish-bones, cockle shells, and spiral shell.
- c, ♀.—Stomach contents, 27 young toad-fish and a number of fish resembling whitebait. Soft parts same as No. 2.
- d, ♂.—Stomach contents, small leatherjacket.
- e, ♂.—Stomach contents, one flathead and bones.
- f, ♀.—Stomach contents, one flathead.
- g, ♂.—Stomach contents, weed-fish.

There are one or two remarkable things arising out of these investigations—firstly, the preponderance of the male sex over the female birds; secondly, the great difference in coloration of the soft parts at breeding and non-breeding times; thirdly, the number of weed-fish found in the birds' stomachs, which supports my contention that these birds fish only over weed; fourthly, the remarkable fact that 27 toad-fish were found in one stomach, and it is believed on good authority that such fish are poisonous; if such be the case, Nature has provided that these birds are immune to it.

My investigations of the life-history of Cormorants is not yet completed. There is a good deal more yet to be done, and I have already shown that these birds do much more good than harm. With others, I have always known this to be a fact; but unless we show proofs in black and white it is impossible to overcome the prejudices of the public.

Fossil Birds' Eggs.

BY DR. R. W. SHUFELDT, C.M.Z.S., WASHINGTON, D.C., U.S.A.

FOSSIL remains of a great many species of birds have been discovered and described within the last century or more; still, fossils of this class of the Vertebrata are comparatively rare—that is, when we come to compare the number found with like discoveries of fossil remains of fish and mammals and some of the Invertebrata. In this matter of rarity, however, they cannot be compared with the fossil eggs of birds; for, where we discover several score or more of fossil remains of birds, we do not find a single fossil bird's egg. Indeed, I do not remember having seen more than six or eight of such fossils in my lifetime, and I have had abundant opportunity to meet with them in collections, museums, and elsewhere.

— In this country we have practically no literature on this

subject, and, apart from the descriptions of fossil and sub-fossil eggs of certain large struthious birds of the East Indies, Madagascar, and elsewhere in that part of the Old World, I have come across but one prominent paper from the pen of an American scientist describing the fossil egg of a bird found within the limits of the United States. It is the only paper cited by Professor Hay in his bulletin on fossil vertebrates, where a special section is made for its reception.* This paper is by Dr. Farrington, published some twenty years ago,† and is now a well-known contribution to palæornithologists. As stated in the title of that paper, the egg described in it is from South Dakota, and Dr. Farrington believed it to be "a petrified egg of an Anatine bird of Early Miocene age." One of the plates to the article gives the egg, natural size, in three different views, while in the other we have the specimen compared with the eggs of the following species:—*Anas f. fulvigula*, *Sterna fuscata*, *Tympanuchus a. americanus*, *Charadrius d. dominicus*, *Florida cerulea*, *Podilymbus podiceps*, and *Phalacrocorax p. robustus*. Of all these, it certainly more closely resembles that of the Duck, especially in *form* and *size*; of course, there is no telling what the *colour* of this fossil egg may have been. And, as it has the typical broad ovate form, it may have been laid, not only by some Duck, but by a great many other species of birds belonging to widely-separated families. Then, too, we must remember that a very large number of birds may have become utterly extinct since the parent of this egg laid it in the "Early Miocene age."

With respect to *form* and *size* of the eggs of *all species* of birds now in existence, they vary in these particulars, often in the case of eggs belonging to the *same clutch*. Where we have not colour to assist us, it would sometimes be difficult to identify eggs laid by the same species of bird, and frequently it is quite impossible. Domestic chickens of the present day lay eggs agreeing exactly, with respect to *size* and *form*, with the fossil one described by Dr. Farrington, and this is also the case with the Sage Cock (*Centrocercus urophasianus*) of the western plains. For instance, the egg of the Sage Cock, figured by Bendire and numbered 12 on plate iii. of his "Life-Histories of North American Birds" (Spec. Bull. No. 1), measures exactly the same size as the fossil egg here being considered. In other words, apart from the matter of *colour*, that egg of *Centrocercus* has exactly the same *form* and *size* as the fossil egg in the Field Columbian Museum. This being

* Hay, O. P., "Bibliography and Catalogue of the Fossil Vertebrata of North America." Dept. Int. Bull. U.S. Geol. Surv., No. 179. Washington: Government Printing Office, 1902, p. 537.

† Farrington, Oliver Cummings, Ph.D. (Curator Dept. of Geology), "A Fossil Egg from South Dakota." Field Columbian Museum, Publication 35, Geological Series, vol. i., No. 5. Chicago, U.S., April, 1899, pp. 193-200, plates xx., xxi., two text cuts. This article was reviewed in *The Osprey* (vol. iv., Oct., 1899, pp. 29, 30), and in closing his remarks the reviewer said:—"Indeed, it is not evident why the egg is supposed to have been a Duck's, Dr. Farrington and Mr. Bryan to the contrary notwithstanding."

the case, and taken in connection with what I have stated above in the last paragraph or two, there does not seem to be the slightest reason for believing that the bird which laid that egg (the fossil one) was a Duck, or in any way related to the *Anatida*. However, it *may* have been; but there is just as much ground for believing that its parent was some big Pheasant, a Sage Cock, or even some extinct, small-sized ratite or struthious bird, the remains of which have, as yet, not been discovered.

Again, this fossil egg may have been a manufactured one, made with the intent to deceive some unwary paleontologist—a trick frequently resorted to by a certain class of fakers to obtain money for such specimens. Dr. Farrington had this in mind when he said in his above-cited article:—"If the specimen be not a petrified egg, therefore, it is as perfect an imitation of one in external appearance as can be conceived of" (p. 193).

Now, I am of the opinion that the normal contents of a bird's egg have never been fossilized, Dr. Farrington's interesting discussion on this subject to the contrary. He seems to believe that such a process has taken place, and possibly did take place, in the specimen described by him. "At first thought," he says, "an egg of the sort here described may seem too perishable for preservation by a process of true petrification. It is difficult to understand how, in such a mass as an egg, petrifying liquids could pass to and fro, removing particles of organic matter and replacing them by particles of silica, in the way that it is generally understood that petrifications usually take place. On further consideration, however, the natural petrification of an egg need not seem to be an impossible phenomenon. If covered as soon as deposited, by mud or earth, as it is likely to have been in this region, its substance might endure for months or years. Or the process of petrification might have begun at once, since the present chalcedony veins of the region show that circulating siliceous waters are abundant there.

"Given conditions of this sort, I believe that petrification could have gone on by a process of endosmose and exosmose, similar to that believed by M. Forster Hedde,* to produce the formation of agates."

Personally, I do not believe that any such phenomenon ever took place in the case of an egg, as is here referred to and offered as an explanation of the petrification of birds' eggs by Dr. Farrington. In the first place, the entire question of the addling of the egg has been overlooked—a process that takes place in a comparatively short time, accompanied with very marked changes in the egg. These changes would militate not only against the probability of an egg's "settling" down in the mud, under which conditions only could endosmosis and exosmosis go on, but they would increase very much the chances of the egg being broken. We have also to consider the matter of differences in specific

* *Nature*, vol. xxix., p. 419.

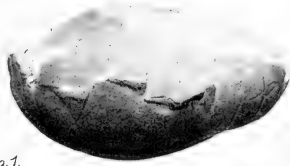


fig. 1.

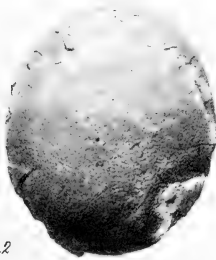


fig. 2.

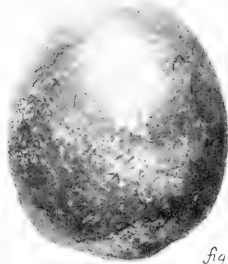


fig. 4.



fig. 3.



gravity of the various kinds of mud, and whether it might or might not contain substances in the way of vegetation, stones, &c., which would prevent absolutely an addled egg settling down into it. Addled eggs often *float*, and the sun and the elements produce marked changes in them if left to their fate, to be tossed about in the water where wind and waves during storms would be almost certain to fracture them sooner or later. Then, the shell of egg and its lining membrane do not form especially favourable septa for the process of osmosis to proceed, and the success of the process would be considerably diminished in the case of a floating, addled egg—a fact that may be readily appreciated.

When one comes to take all these factors into consideration—with a few others which I have not touched upon—it will be clear that some other view must be advanced as to how the eggs of birds may fossilize. I am of the opinion that the only way in which this can happen is when a more or less recently-laid bird's egg, of medium size, received, in one way or another, a restricted fracture or puncture of the shell that so far rends the internal lining membrane of the latter as to allow the yolk and albumen of the egg to escape gradually, while their place is taken by other matter, having the nature of a soil, a sand, or mud, which can ultimately undergo the usual process of fossilization. Should the fracture be so extensive as to allow of too easy an ingress and egress of the mud, sand, or earthy matter in which the egg became lodged after its injury, then it would be more than likely that it would be, in its weakened condition, and from one cause or another, more extensively broken up and its egg-shape destroyed. Should this happen—the broken pieces subsequently fossilizing—no one would be able to recognize them in any matrix as being pieces of the shell of an egg of a bird.

To best insure the future fossilization of the *shell* of a bird's egg—admitting that the yolk and albumen never fossilize—is to have the aforesaid puncture or fracture received at the butt; for in that locality the air-chamber of the egg is present, situated between the internal and the external membranes. With the latter ruptured, and an internal, open space at hand, it is evident that the way would be cleared for the easy escape of the contents of the egg, and for the ingress of any soft, earthy constituents, in which the specimen may have become gradually embedded after the reception of the aforesaid fracture or puncture. The next most favourable point for the latter to be received would be the opposite end of the egg, or at the apex of such eggs as may happen to be more or less pointed. Lateral fractures, of a greater or less extent, though by no means militating against the ultimate fossilization of the shell, are usually more extensive in character, thus rendering the egg liable to be still further broken up, or so much crushed that it finally loses entirely the form it originally possessed, and one might or might not recognize it in its matrix as a fossil.

For very evident reasons, the most likely specimens of "fossil

eggs" of this class of vertebrates to be discovered are those which were laid by such water-birds as breed on the ground, or in swamps, or along the shores of all manner of streams and rivers, or in burrows or holes in the banks of the latter, and so on. Less likely specimens would be those eggs of birds of all kinds that breed in nests in trees, shrubs, and hollows of all kinds in the former, or those of small birds which lay correspondingly small, and consequently very fragile eggs. Finally, as we know, there are thousands of birds which breed on the precipitous rocks of certain coast-lines in northern and southern sub-polar regions, or upon lofty, rocky islands in those regions, or in similar situations. There would be no chance whatever of such eggs, or rather their shells, being preserved through the process of fossilization, as there would be no constituents present to fill their interiors, even were any of them so favourably fractured that their interiors could become filled with fossilizable material. Such eggs could only be so preserved through their being transported, in some way, to places where they would be placed under circumstances where the fossilization of their shells might ultimately be brought about.

It is a well-known fact that birds frequently drop their eggs during flight, or lay them, for some reason or other, in unusual places* The eggs of such birds as Hawks, Owls (that breed in hollow trees, &c.), and other forms, may occasionally, or rather rarely, be deposited in this way, in situations where the subsequent fossilization of their shells be rendered possible.

It will be as well to note, in passing, that manufactured "fossil birds' eggs" are usually made by making a puncture of greater or less extent in the egg of some domestic fowl (chicken, Duck, Turkey, Guinea-Fowl, &c.), evacuating the contents, and then filling the specimen with a mixture of plain gypsum and water, or a so prepared cement which, when thoroughly hardened, has the appearance and weight of a fossil of the same proportions. After this the external surface of the shell is stained or otherwise treated to imitate a smooth, fossilized surface—and the trick is complete. These eggs have even deceived good palæontologists, especially when some plain, white egg of some wild bird-form has been selected to perpetrate the fraud. Several such "fossil eggs" have been examined by me; but the nature of the specimen can

* During the early part of the spring of 1915, I was walking with my wife through a field at Sunnyside, Maryland, when she found, among the thick grass at her feet, the perfect and entirely fresh egg of a Blue-Bird (*Sialia s. sialis*), which is still in her possession, having been carefully blown for her by Mr. Edward J. Court, of Washington, D.C., who was with us at the time. Now, had this bird dropped its egg in some soft mud or other, capable of fossilization in time, and the egg had thus received such a fracture of its shell as to admit of the escape of its contents; and the ingress of the aforesaid fossilizable material having in time taken place, the specimen ultimately settling down into the mud where it fell or was otherwise deposited by the bird, the shell of that specimen might, in due time, become thoroughly fossilized, as would the material of its subsequent matrix be similarly transformed.

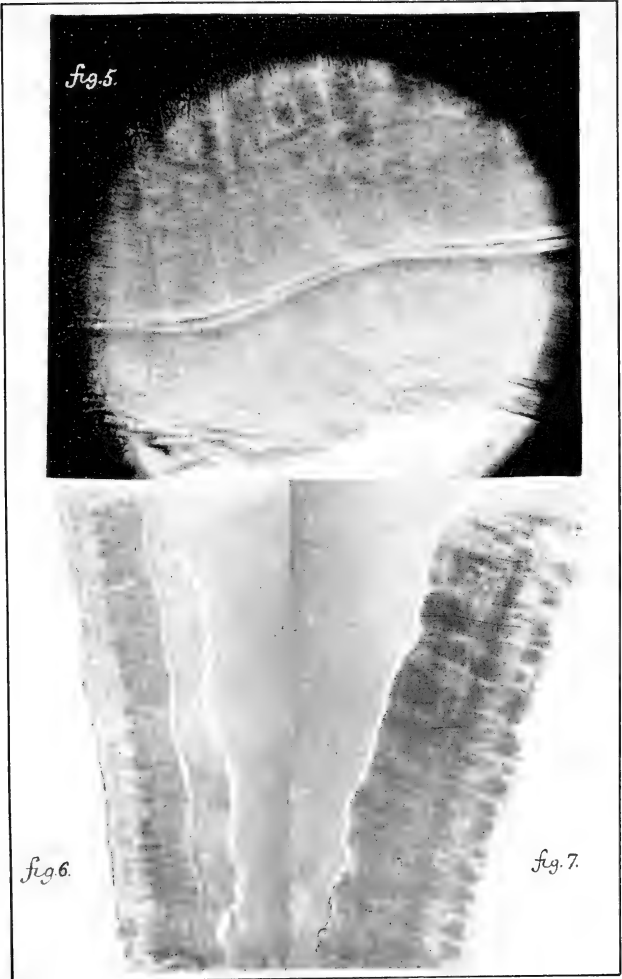


fig. 5.

fig. 6.

fig. 7.



usually be demonstrated by the careful use of a high-power, compound microscope, seconded by an exhaustive chemical analysis of the shell and its contents. Further on in the present article this matter will be touched upon again, when the examination of some actual specimens is taken up.

There are not a few geologists and palæontologists who contend that all the "so-called *fossil eggs* of birds and reptiles" are nothing more nor less than "concretions." These formations are now well known, and have been frequently described in text-books on geology, rendering it quite unnecessary to discuss them here.* These nodular concretions are often found where they have assumed the perfect ovate form of an egg, as the egg of a domestic fowl (*Gallus*), for example. Where such concretionary formation subsequently comes to be, in some way, overlaid with a *thin* coating of calcareous deposit, and by some action or other this wears down to a more or less smooth surface, the entire specimen, when finally discovered by man, most assuredly has all the characters of what we would imagine the fossil egg of a bird possessed. Such ovate, thin, finely-granulated, lime-coated, nodular concretions have been mistaken by many observers and discoverers of them for what they certainly are not—fossilized birds' eggs. Wherein they differ from the latter I shall proceed to demonstrate.

First, however, as to the source of the material at hand. This, as a whole, has been turned over to me for description by Mr. Charles W. Gilmore, Curator of the Department of Fossil Birds and Reptiles, of the U.S. National Museum, to which institution the specimens belong. Mr. Gilmore was especially kind in placing at my disposal all the information he had in his possession with respect to these alleged examples of fossil birds' eggs, as well as all there were of them in the collection. They may be listed as follows:—

LIST OF SPECIMENS.

- 1.—"Fossil Egg." Cat. No. 8,262, Quinn Draw, Washington Co., South Dakota. Oligocene. (Upper Titanotherium Beds.) 1888. Collected and presented by J. W. Gidley (see Plate I., figs. 1-3).
- 2.—"Fossil Egg." Cat. No. 4,891, Galistes, Santa Fé Co., New Mexico. Received from F. H. Wiley, Nov., 1900. (Horizon not known.) (See Plate I., fig. 4, and Plate V., fig. 16.)
- 3.—"Fossil Egg." Cat. No. 6,496. St. Gérard de Puy, France. Oligocene. Gift of Dr. R. W. Shufeldt, 1896. (See Plate V., fig. 12.)
- 4.—"Fossil Egg." Cat. No. 6,498. St. Gérard de Puy, France. Oligocene. Gift of Dr. R. W. Shufeldt, 1896. (See Plate V., figs. 14 and 15.)

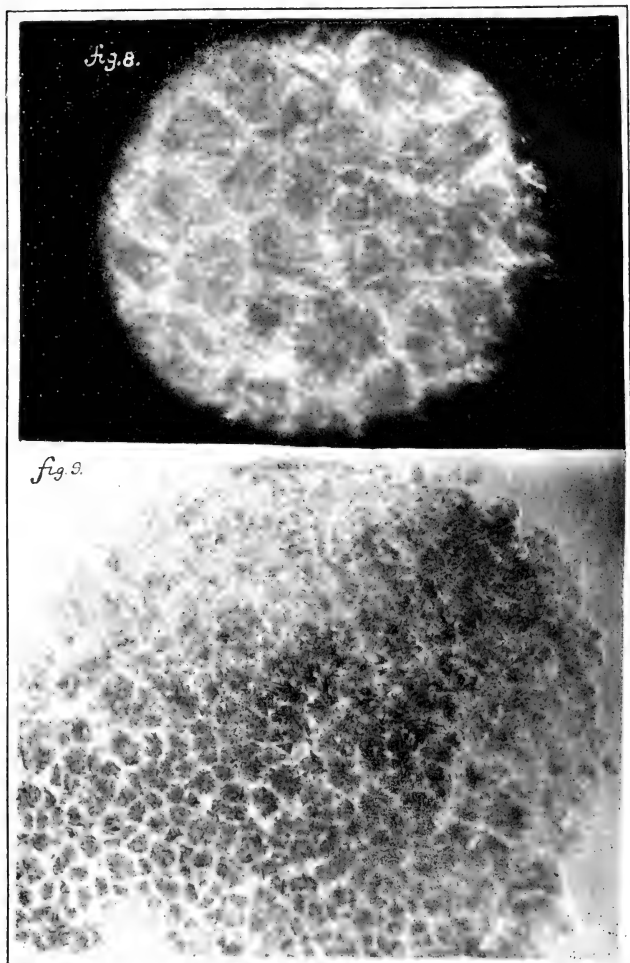
* Le Conte, Joseph, "Elements of Geology," New York, 1883 (rev. ed.), pp. 188-190, fig. 173.

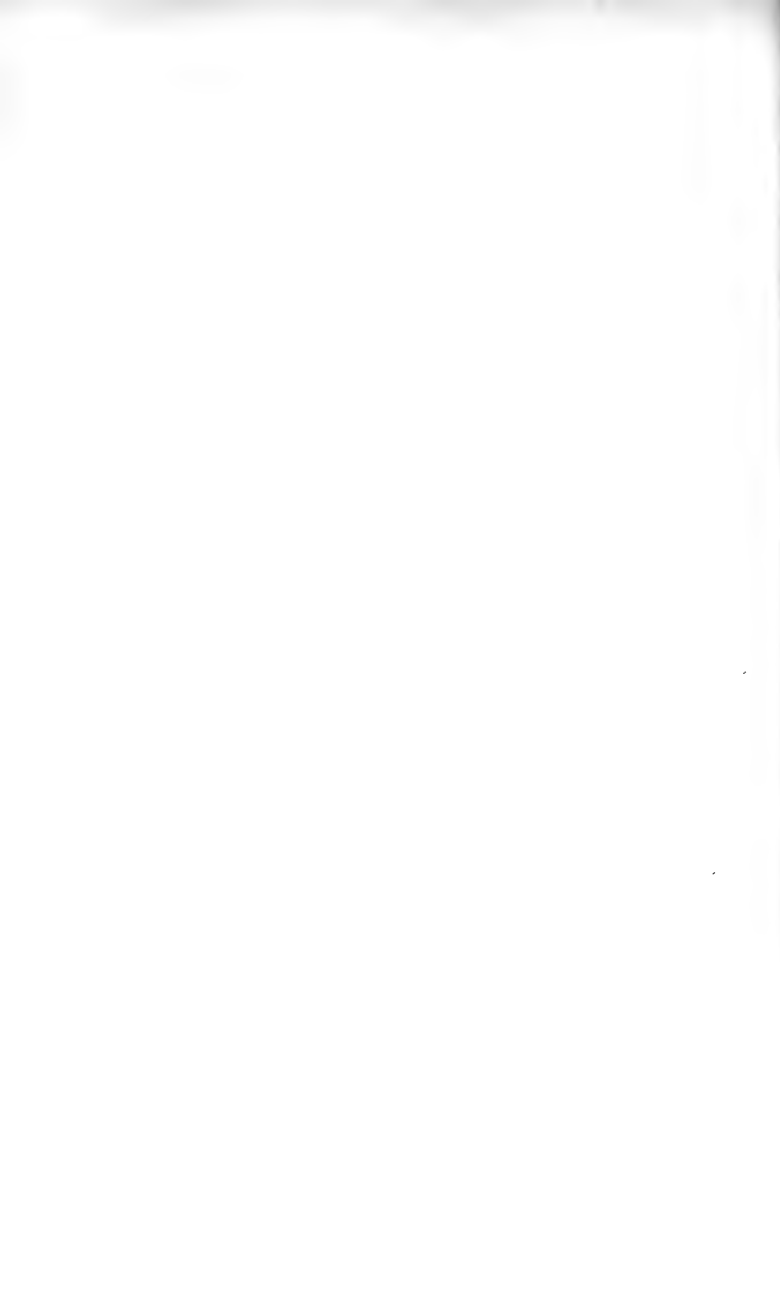
5.—“Fossil Egg.” Cat. No. 6,497. St. Gérand de Puy, France. Oligocene. Gift of Dr. R. W. Shufeldt, 1896. (See Plate V., fig. 13.)

Mr. James W. Gidley, Curator of the Department of Fossil Mammals and Fish, of the U.S. National Museum, assisted by the late Mr. Wirt Tassin, Curator of Mineralogy of the Museum, had, on a former occasion, made a careful examination of Nos. 1 and 2 of the above list. Mr. Gidley had made various sections of No. 1, compared them with similar sections made of the shell of an egg of a specimen of *Crex globicera* (from San José, Costa Rica), and these sections were mounted on slides for microscopical examination. He had also made a series of micro-photographic enlargements from these, obtaining some valuable prints. So far as I am aware, no chemical examinations were made of any part of the specimens. Mr. Gidley very kindly turned all this important material over to me, to be worked up and used in the present article. He was, however, unable to find the aforesaid prints; but I soon made a complete series of others from his excellent negatives, and these—or rather their reproductions—are here shown on Plates II.–IV., figs. 5–11.

On the afternoon of the 18th of May, 1915, at my home (3,356 Eighteenth-street, Washington, D.C.), Mr. Gidley and I carefully re-examined the aforesaid material with my high-power microscope and other means. He came to the conclusion, in which I concurred, that the specimen here shown in Plate I., fig. 4, and Plate V., fig. 16 (No. 2 of the above list), was nothing more than a quite clever imitation of a fossil bird's egg, though this by no means implies that the fraud was the work of the donor of the specimen. While its external surface is very smooth and of a rather light, earth-brown shade, it does not appear to be composed of a fossil avian egg-shell. As far as I can judge, the interior appears to be of a homogeneous material, of a stone-grey colour, and heavy. Possibly it may be a concretion with its external surface stained. It has the *form* of an ordinary hen's egg, and there would be but little difficulty in finding one of the latter with exactly the same form, size, and proportions. It may be a clever cast of such an egg, ground smooth and subsequently stained. In any event, I am of the opinion that it is not a fossil egg of a bird, and its further examination (aside from a chemical one) would bring nothing to light beyond what has been set forth above.

When we come to examine the specimen tabulated in the above list as No. 1, and shown upon three different views (figs. 1–3) on Plate I., we have before us a very different kind of specimen, as compared with the one last examined. In the first place, it is a thoroughly fossilized specimen, and it has all the appearance of the empty shell of a bird's egg, of about the size of the egg of a Cock-of-the-Plains, or Sage Cock (*Centrocerus urophasianus*), that had been crushed from side to side, filled with some fossilizable material—the whole, as I say, having fossilized. Evidently the





form of this egg, when whole, was typically ovate, and the external surface of the shell roughish and granular. Apparently, it was originally crushed in the manner above stated—that is, from side to side. This allowed its contents to escape completely and rapidly, their place being taken by the mud or whatever it was of that nature which subsequently fossilized. It would further appear that when this egg was crushed, the fracture admitted of one large piece coming away, sooner or later. This was on one side, and extended up to and included a part of the apical end of the egg. Nearly all this area is very rough, presenting many irregular, confluent elevations and depressions that render it so.

When this specimen is held with the shell-side towards one, the apex pointing upward, there will be noted, on the right-hand side, well above the butt or big end of the egg, a place where the internal fossilized material bulges outwards, presenting a limited, flat, superior surface, evidently cut off by the sharp edge of the shell above it. This is well seen in fig. 2 of Plate I., where, by the high light upon it, it has reproduced white. Now, that must have happened *after* the egg was filled with the mud or other substance which subsequently fossilized, and *before* the process of fossilization had rendered it so hard, firm, and implastic that it would have been impossible. Still holding the egg in the above position, it will be noted, on the side away from the observer and continuous with the place above described, that there is a longish, longitudinal, and somewhat extensive area where the *fossilized* shell subsequently came away. Beyond any manner of doubt, then, this egg was subjected to some considerable pressure both *before* and *after* the process of fossilization was complete, though *after* its interior had been completely filled with the mud that found its way in there. Further, it would appear that this crushed egg rested on the muddy area where it settled down, and where its interior was filled. As fossilization proceeded, and its matrix being continuous with the same material that filled its interior—that is, the mud—the process was simultaneous within and without the shell. Later on pressure was exerted, the specimen *flattened*, and eventually was broken loose from the general semi-fossilized matrix. This will account for the very rough surface on the side where the shell is gone and where the mud entered. That this is now somewhat *worn* is evidence that the wearing took place *after* the specimen was detached from its matrix and became a free agent. No thin, rough, calcareous coating or envelope was ever deposited on the shell of this fossil bird's egg, such as is often seen in the case of other specimens.

From this point on it is difficult to trace the career of this fossil egg. When Mr. Gidley discovered it, it formed the apex of a small pinnacle of the Oligocene clays, which are so much a feature of the *terres mauvais* ("Bad Lands") of Southern Dakota. At some time or other these clays were horizontally disposed; but

later, through tilting, their planes formed, over various areas, an inclined watershed, and erosion set in. During the enormous lapses of time following upon this, the rains carved out the immense hills and divides of that region as we now find them. No vegetation to speak of appeared; and, as the sculpturing went on, fossils, among other things, were exposed. The rains frequently carved around these, as I stated above, leaving them surmounting cones of the hard clay in numerous places. This fossil egg, as pointed out above, occupied the apex of such a cone at the time of its discovery. Mr. Gidley was descending into one of these divides, following a companion. In the course of his descent he slipped; and, throwing back his hand to steady himself, he seized the peak of one of these small cones, the apex of which, breaking off in his hand, proving to be, much to his delight, the fossil bird's egg here being described.

It is said that Prof. E. D. Cope, on one of his expeditions into these *terres mauvais*, once discovered the fossil skull of some large animal surmounting one of these conical peaks. The latter was so high that it had to be pulled over by means of a rope before he could obtain the coveted specimen.

By the aid of a powerful microscope I have, with great care, examined all the microscopical slides of the cross and surface sections of the shell of the fossil bird's egg shown in figs. 1-3 of Plate I., as well as the corresponding ones of the shell of an egg of *Crex globicera* made by Gidley and Tassin, and I find that the intimate, minute structure of these egg-shells differs but very slightly for the fossil and the existing bird. Indeed, such an examination leaves no doubt in the mind of the microscopist but that the fossil specimen is the fractured shell of an egg of some bird of the period mentioned—Oligocene. There is a chance, of course, of its having been the egg of some reptile, and not a bird at all; though I think the *ovate* form of the egg indicates avian rather than reptilian parentage.

It is quite impossible to say whether the bird that laid that egg is still represented as a species in the existing avifauna or not, although the chances are that it is an extinct form.

There will be no necessity for my going any further into the results of the microscopic examination of the shells of eggs of extinct and existing birds, in so far as a consideration of the material before me is concerned. From all that has been set forth, from the study of the figures in the plates, and from what is given about them under "Explanation of Plates," the similarity of the two structures or their histological resemblance will have been amply demonstrated.

Finally, as there is no saying what kind of bird laid this egg, it will be of no advantage to science to bestow a name upon it. Moreover, we now know that not a few of the birds of the Oligocene belonged to genera still in existence, and in no way differed from their present-day descendants beyond their specific differences. Among the former we have, up to date, such birds as Grebes, Gulls,



fig. 10.



fig. 11.

Cormorants, Pheasants, and others, as may be seen by consulting some of my former papers on the subject.*

Nearly twenty years ago, Mr. Jno. Eyreman, of Easton, Pennsylvania, presented me with a collection of fossil bones of birds and birds' eggs, which I subsequently described and presented to the United States National Museum.† Among these specimens I find three that are said to be fossil birds' eggs, and which, apparently, from the records, were subsequent accessions. Mr. Gilmore has very kindly loaned me all this material for a second examination, though the eggs alone are of interest here. These I have already passed upon, in part, in a list given on a former page of this paper, and I need only add a few words in regard to them in this place. One of these specimens, No. 6,496 of the U.S. National Museum collection (fig. 12, Plate V.), is a very important one, as it not only presents about half of the fossilized internal matrix of a medium-sized egg (the divisional plane passing roughly from apex to butt), but in addition it exhibits small areas of egg-shell, adhering to the convex external surface of this matrix in several places. What is even more interesting, it has, overlying these shell-areas in some places, remaining pieces of what was originally a coating of pretty thick concretionary deposit. This last was some ten or fifteen times thicker than the egg-shell itself. I am of the opinion that a bird, and not a reptile, laid this egg; that originally it possessed an almost perfect ellipsoidal form, and a true, thin shell. Its major and minor axes measured about 50 x 38 millimeters respectively.

As it is from the Oligocene of France, its history and fate may have been practically similar to that of the fossil bird's egg found in South Dakota by Mr. Gidley and described above. Its chief importance lies in the fact that it presents both the shell of the original egg—or, rather, its remains—and some of the overlying fossilized calcareous deposits that encrusted the shell later on.

In fig. 13 of the same plate is shown the remains of another fossilized bird's egg from the same horizon in France (No. 6,497, Coll. U.S. Nat. Mus.) Here we have an egg that was somewhat smaller than the last; and, while a very much larger part of the shell has been preserved, no concretion or limy coating has formed and fossilized upon it. This shell is sustained by the usual internal, fossilized, coarse, pale grey matrix, upon which its much-cracked-up pieces are closely adpressed. As this specimen has been subjected to considerable pressure, and as less than half of it was found, the exact form of the original egg cannot, with

* Shufeldt, R. W., "Fossil Birds in the Marsh Collection of Yale University," *Trans. Com. Acad. of Arts and Sciences*, vol. xix., pp. 54-60, 1915. There are those who are of the opinion that all birds of the Oligocene must have been ratite forms. This is not true by any means, as anyone may be satisfied through an examination of the work here cited.

† Shufeldt, R. W., "Fossil Bones of Birds and Mammals from Grotto Pietro Tampoin and Grive-St. Alban," *Proc. Acad. Nat. Sci. Phila.*, 1896, pp. 507-516, plate xxiv., one figure in text.

certainly, be determined. Its colour is of a medium buffy shade, such as we see in the case of some eggs of the existing domestic fowls (*Gallus*), and it is perfectly plain and unspotted.

Finally, there is shown in figs. 14 and 15 on Plate V. a moderately thin, fossilized, calcareous coat (in two pieces), that evidently, at one time, overlaid either a somewhat pointed, ovate egg of a medium-sized bird, or a concretion possessing a similar form. This is also from the same locality in France (Oligocene, St. Gérard de Puy). How such a coating became detached without breaking up or having any of the fossilized egg-shell adhere to its internal surface, it is difficult to say, though I am quite confident that this is what this specimen represents. The interior of the concave aspect is shown in fig. 15 of the plate, with the apex resting on the plane (grass) upon which I photographed it.

Whether there are any other fossil birds' eggs in the museums or in private collections anywhere in the United States I am unable to say at this writing. Dr. Charles Schuchert, Curator of the Geological Division of the Peabody Museum of Yale University, wrote me, on the 2nd of June, 1915, that there were no such specimens in the palæontological collection of that institution, and this may be the case with other museums. It is rather remarkable that the few I have before me at this time are all from the Oligocene—those discovered in France, as well as the one from this country. No fossil eggs of birds, I believe, were found in the great Pleistocene lakes of Oregon, where Cope and others collected so many fossil bones of the water-birds of those times, and which were described by me many years ago in the *Journal of the Academy of Natural Sciences of Philadelphia* and elsewhere.

EXPLANATION OF PLATES.

(Figures natural size unless otherwise stated, from photographs by the author.)

PLATE I.

- Fig. 1.—Fossil Bird's Egg. (Cat. No. 8,262, Coll. U.S. Nat. Mus.) Nat. size. Photo. by the author of a specimen collected by Mr. J. W. Gidley.
- Fig. 2.—Same as fig. 1 above. Photo. by the author; nat. size. View of the shell side.
- Fig. 3.—Same as figs. 1 and 2 above; nat. size. Photo. by the author. View of the side where the fossilized internal contents may best be seen.
- Fig. 4.—What appears to be an imitation of a fossil egg of a bird. (No. 4,891, Coll. U.S. Nat. Mus.) Nat. size. Photo. by the author. (See also Plate V., fig. 16.)

PLATE II.

- Fig. 5.—Cross section of the shell of an existing bird, *Crex globicera*; magnified about 200 diameters. Preparation by Mr. J. W. Gidley. (See fig. 6.)

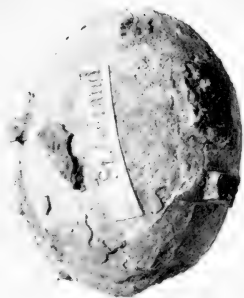


fig. 12.

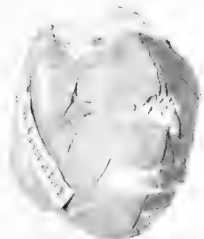


fig. 13.

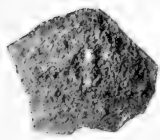


fig. 14



fig. 15.

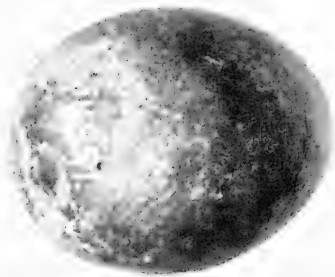


fig. 16.



Fig. 6.—Cross section of the shell of an egg of an existing bird, *Crex globicera*. The straight edge is the external surface of the shell. Fig. 5 is from near the middle of this piece. Magnified 50 diameters. Preparation by Mr. J. W. Gidley.

Fig. 7.—Cross section of the shell of a fossil egg of a bird (specimen shown in figs. 1-3, Plate I.) (See fig. 11.) Magnified about 50 diameters. Negative by Mr. J. W. Gidley.

PLATE III.

Fig. 8.—Ground-down superficial surface of the shell of an egg of an existing bird, *Crex globicera*. Magnified about 200 diameters. Taken from some part of fig. 9, where the magnification is but 50 diameters. Preparation by Mr. J. W. Gidley.

Fig. 9.—Same as fig. 8 (*Crex globicera*). Magnification 50 diameters. Ground-down superficial surface. Prepared by Mr. J. W. Gidley.

PLATE IV.

Fig. 10.—Cross section of the shell of the fossil egg shown in figs. 1-3 of Plate I., being an enlargement to 200 diameters of the section shown in fig. 7 of Plate II., which is enlarged but 50 diameters. Preparation by Mr. J. W. Gidley.

Fig. 11.—Superficial ground surface of the shell of the fossil bird's egg shown in figs. 1-3 of Plate I. Magnified 50 diameters. Prepared by Mr. J. W. Gidley.

PLATE V.

Fig. 12.—Fossil egg of bird; nat. size. Photographed by the author. St. Gérard de Puy, France. Oligocene. No. 6,496, Coll. U.S. Nat. Mus. Gift of Dr. R. W. Shufeldt. Lateral aspect, and exhibiting in places both shell and concretion.

Fig. 13.—Fossil bird's egg; imperfect and considerably cracked up. Nat. size. Lateral view. No. 6,497, Coll. U.S. Nat. Mus. St. Gérard de Puy, France. Oligocene. Gift of Dr. R. W. Shufeldt.

Figs. 14 and 15.—Two somewhat extensive flakes of what appear to be of the nature of a concretion. Possibly they may have been all one piece at some time or other, and may or may not have coated the shell of a fossil bird's egg. No. 6,498, Coll. U.S. Nat. Mus. St. Gérard de Puy, France. Photographed and presented by Dr. R. W. Shufeldt. Nat. size.

Fig. 16.—Different aspect of the same specimen shown in fig. 4 of Plate I.

Robins at a Sawmill.—At the sawmill, when the engine whistles blow for the saw to stop, both at mid-day and in the evening, the little Robins come at once to the saw-bench for the insects that have dropped out of the logs.—T. CURRIE, Lardner.

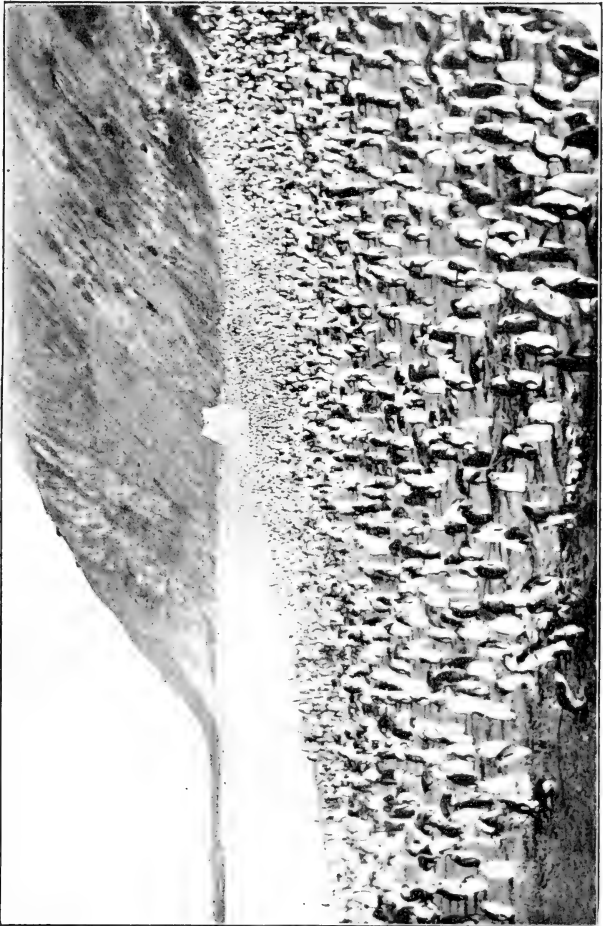
Macquarie Island Penguins.

BY A. TULLOCH, OFFICER IN CHARGE OF THE MAWSON WIRELESS STATION, MACQUARIE ISLAND.

MACQUARIE Island, situated in lat. $54^{\circ} 30' S.$ and $158^{\circ} 57' E.$ long., is one of the stormiest regions in the world. It is 22 miles long, and averages 3 miles in width. The main island is a long plateau, ranging from 500 to 800 feet in height, with peaks running up to 1,080 feet. The island was first discovered in 1810, and most of the Antarctic expeditions have called there on their way to the south, but very little scientific work was carried out there until Sir Douglas Mawson's party was landed in December, 1911. On the return of his expedition the meteorological work was carried on for a further period of two years by the Commonwealth Government, in conjunction with the New Zealand Government, and a synopsis of the weather conditions was sent daily by wireless to the meteorologists for New Zealand and the Commonwealth respectively.

Macquarie Island may be considered the home of the Penguins. On walking round the island one is astounded at the number of vast rookeries to be met with. These stately birds are to be found in millions along the beaches, on the slopes, and on the south we even came across one rookery on the top of the cliffs, at least 600 feet above sea-level. Why these birds wend their way up the cliffs year after year is a mystery to me. It has been suggested that the island was at one time much smaller, and the birds then formed their rookery near the water's edge, and, as the land has risen above sea-level, these conservative birds have still kept their original place of habitation. Again, if we take the theory that Macquarie Island is part of a vast continent, supposed at one time to be connected with Australasia, it upsets the previous theory. We do know that the rookery is still there, high above the sea, and the way up is so rugged that we found it impossible to walk up; so that how this rookery originated is still a matter of conjecture.

There are four different species of Penguins to be found on the island—the King (*Aptenodytes patagonica*), Rock-hopper (*Pygoscelis papua*), Royal (*Catarrhactes schlegeli*), and Victoria Penguins (*Catarrhactes pachyrhynchus*). Taking them in order of size, and, I think, importance, the Kings come first. They are magnificent birds, standing about 3 feet 6 inches high, and weighing about 30 lbs. The plumage is of a bluish-grey on the back, with white fronts, black heads, and a brilliant yellow or gold-coloured band on each side of the neck. With their white fronts they resemble men in evening dress, and their stately carriage aptly earns for them their name. About 20 years ago these birds were ruthlessly slaughtered by the sealing parties. It is quite apparent that they have not yet recovered from the effects, and now there is only one rookery left on the island. It is situated at Lusitania Bay, on the south-east of the island, where there are from 6,000 to



Penguins on Beach, Macquarie Island.

7,000 birds.) A few strays are also found amongst the various rookeries round the island. There are always 15 to 20 to be found in the Royal rookery at The Nuggets, but they do not breed there.

The King Penguins make no attempt at nesting. Only one egg is laid, and it is held on top of the feet, between the legs, where it is covered by a kind of skin pouch, and incubated there. The egg is completely concealed from view, and when disturbed the birds shuffle along, carrying the egg with them. The egg is about twice the size of that of a Goose, pear-shaped, and of a greenish colour. They are laid during the latter part of December and the beginning of January. The period of incubation is six weeks. The young are covered with a woolly-looking down of dark



King Penguins at Lusitania Bay, Macquarie Island.

PHOTO. BY A. TULLOCH.

greyish-brown colour, which is retained until the second year. The King Penguins are the least plentiful on the island, and appear to be the hardest to rear.

Next in size come the Rock-hopper Penguins, although there is very little difference between the size of these birds and the Royals. The Rock-hoppers do not migrate like the other species, and may be seen at the island all the year round. They have no crest, and are more timid than the other species. Their clean head gives them a fine, neat appearance. We found their eggs more palatable than those of the other kinds, and, being the first to lay, they were a welcome addition to our menu. The first eggs were found on 12th September. They are globular in shape—some of them look almost round—and they have a bluish tinge. Like the Victorias and Royals, they usually lay two eggs—the

first a small, infertile egg, and the second a fertile one. A peculiar thing I noticed with the Rock-hoppers was that, where we robbed them of their first egg, two more were laid, with a result that about 75 per cent. of them hatched two chicks instead of one.

The Royal Penguins are the species killed for oil. They are chosen because they exist in such large numbers, huddled together in great rookeries. One rookery at the south end has an area of over 16½ acres, while another at The Nuggets covers over 10 acres. They are much the same as the others in habits, but they have a yellow crest something like a Cockatoo. They lay a very large egg in proportion to their size. The eggs are pear-shaped, and, as with the Victorias and Rock-hoppers, a fertile and an infertile egg are laid. They usually form their rookery near a running stream, and use it as a means of getting to and from the rookery. At The Nuggets they march up and down with almost military precision, but, once in the rookery, quite different conditions obtain. Here there are squabbles all day long. The males get away from their mates, and fights (where beaks and flappers are freely used) are continually taking place. They migrate from April to the end of September, and commence laying in October.

The Victorias are the smallest Penguins on the island, but they are the most ferocious, and come second as regards numbers. They are marked like the Royals, with black back, white front, and a yellow crest, but the crest spreads out laterally. When first disturbed, they always show fight, but soon get reconciled, and will allow one to stroke them in the rookeries. They migrate in May, return in October, and commence laying in the middle of November. The period of incubation for all the species, except the King, is about five weeks. The Victoria Penguins are not particular about being near running streams, but seem to prefer to get shelter under the cliffs, where they make a rough nest of tussock or anything which happens to be in the immediate surroundings.

The same rookeries are used year after year by the different species. They usually rear one chicken, and it is fed by placing its beak inside that of its parent, where the food is regurgitated from the stomach of the latter. The male assists both in the hatching and bringing up of the young.

The way the Penguins are slaughtered for oil should be interesting to all bird observers. At present—or, at least, when I left the island in December, 1915—the oil industry was only being carried on at one place—The Nuggets rookery. For two seasons prior to December, 1915, the works were abandoned, but a new company was formed in 1915 to exploit the oil industry in the southern seas, and whether it will restrict its operations to the one place or not I cannot say; but in all probability it will extend the works to the south end.

It is almost impossible to estimate the number of birds on the island; but in the one rookery in the south end there are at least

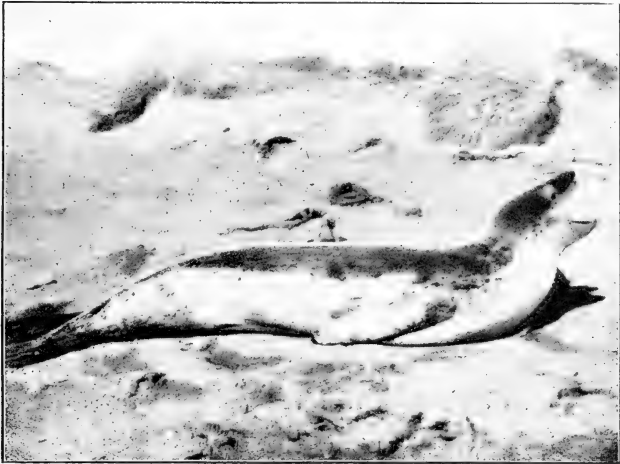


The King Penguin, Macquarie Island.



three-quarters of a million birds. At The Nuggets, where the Royals are slaughtered, the area is at least 10 acres, containing over half a million birds. They are so thick in the rookeries that you have to kick your way through them. At the foot of The Nuggets Gully, where these birds go to and fro from the sea, I counted them passing a point at the rate of 150 each way per minute. This continues in the season for about ten to fifteen hours a day.

There are about 150,000 birds killed every season at The Nuggets, but the annual increase would be about 40 per cent. to 50 per cent. in spite of this, and, as I stated, this is the only part



The Sea-Leopard, an Enemy of the Penguins, Macquarie Island.

PHOTO. BY A. TULLOCH.

at present where they are molested. The first oil season commences about the beginning of January and lasts for three weeks, until the old go to sea. In February both the old and the previous year's young (which are very fat) return in great numbers to moult. This time they are detained on the beach as far as possible by the sealers, who put wire-netting across the creek. Flocks of birds are driven into a wire-netting enclosure, and the young, fat birds are drafted off and clubbed and put into a digester. This is about the most humane and only practical way of killing the birds, and I found the headman very particular about killing the birds. I think the oil industry at the present scale has very

little effect on the Royals, and as long as it is restricted to that species not much harm will result, or, at least, there is very little likelihood of the species becoming extinct. As regards the King and the Rock-hopper, I think both should be protected, especially the King, which is a magnificent bird; and the whole species could easily be killed right out in one season should the sealers decide to operate on them.

Cuckoo Notes from Tasmania.

BY H. STUART DOVE, F.Z.S., R.A.O.U.

MY friends, Messrs. Thompson and Claridge, of Launceston, have kindly sent along a few jottings concerning the hosts of Cuckoos, which I have written up, thinking they may be interesting for comparison with mainland hosts.

The egg of the Pallid Cuckoo (*Cuculus pallidus*) has been found in the nests of the Shrike-Thrush (*Colluricincla selbii*), the Dusky Robin (*Amaurodryas vittata*), the Grey-tailed Thickhead (*Pachycephala glaucura*), the White-bearded Honey-eater (*Meliornis novæ-hollandiæ*), the Spinebill (*Acanthorhynchus dubius*), the Black-headed Honey-eater (*Melithreptus melanocephalus*), the Yellow-throated Honey-eater (*Ptilotis flavigula*), and the White-eye (*Zosterops dorsalis*). It will be noticed that these are all open nests.

The egg of the Fan-tailed Cuckoo (*Cacomantis flabelliformis*) was deposited most frequently in the domed nest of the Brown-tail (*Acanthiza diemenensis*), also found in that of the Brown Scrub-Wren (*Sericornis humilis*), Ewing's Tit (*Acanthiza ewingi*), and the Grass-Bird (*Megalurus gramineus*). These are all covered nests, that of the last-named being usually semi-arched.

The Bronze-Cuckoo (*Chalcococcyx plagosus*) favours the two Tits which are found in our scrubs—viz., the Yellowtail (*Acanthiza chrysorrhoa*) and the Browntail (*Acanthiza diemenensis*).

Mr. Thompson has found the egg of the Narrow-billed Bronze-Cuckoo (*Chalcococcyx basalis*) on only one occasion, which was in the nest of the Blue Wren (*Malurus longicaudus*); but a clutch from Clarke Island, Bass Strait, was given to him of the Brown Scrub-Wren (*Sericornis humilis*), with an egg of the Narrow-billed species. It will be noticed that both the Bronze-Cuckoos, like the Fan-tailed, favour the domed nests. Mr. Green, of Kelso, found the egg of the Narrow-billed on two occasions only, and Mr. Claridge a like number.

My friend then goes on to remark that it will be seen that the Pallid Cuckoo has a far greater variety of foster-parents than any of the others. At Kelso he saw a pair of Strong-billed Honey-eaters (*Melithreptus validirostris*) feeding a young Pallid Cuckoo. This species and the Fan-tailed frequently remove an egg of the host before depositing their own, if there are more than two

already in the nest—that is, we often found a nest with three eggs, and on visiting it afterwards we would find one egg on the ground and that of a Cuckoo in its place. It often happens that the contents are cleaned out of the rejected egg and one half the shell



Young Pallid Cuckoo (*Cuculus pallidus*) waiting to be fed, Kelso, Tasmania.

PHOTO. BY H. C. THOMPSON, R.A.O.U.

is placed in the other half. On one occasion, in the Gorge Creek, Launceston, he found the nest of a Browntail (*Acanthiza diemenensis*) containing both the Bronze and the Fan-tailed Cuckoos' eggs.

In December, 1913, a letter from Mr. Thompson contained the following items:—"Cuckoos are very numerous this season. Mr. Claridge took the nest of a Fire-tailed Finch (*Zonæginthus bellus*), with five eggs of the host and one of the Fan-tailed Cuckoo. The long, funnel-like entrance to the nest was not injured in any way, so we are inclined to think that the Cuckoo laid her egg before the funnel was finished. On the same day I found a nest of the Blue Wren ready for eggs; on putting my fingers in I felt something hard under the lining, and on working this out it proved to be the egg of a Fan-tailed Cuckoo, which the Wrens had built in."

In a letter recently received from the same observer, some Kelso

experiences' are given :—" We found the nest of a Flame-breasted Robin (*Petroica phænicea*) in a very unusual place as far as our experience goes ; it was in a large gum tree, green excepting the top of the main stem, which had been broken off and was partly dry. We saw the birds about the tree for several days, but could not find the nest, never thinking it would be so high, until one day I noticed the male fly up to the splintered top. We got ropes and pulled the lightest member of our party up 40 feet from the ground, and he saw that the nest was built in the split top. It contained a young Pallid Cuckoo, and two of the Robins' eggs were lying in the splintered wood. We got a snapshot of another Pallid Cuckoo that had left the nest and was being fed by a pair of Strong-billed Honey-eaters and by a male Blue Wren. It often happens that a fully-fledged Cuckoo will sit on a limb and call to every bird that comes near, and, strange as it may seem, they frequently come to feed it. At Russell's Plains we saw a Garrulous Honey-eater fly down to feed a Fan-tailed Cuckoo when its own brood were in a tree close by. The eggs of these Cuckoos are often found in *Sericornis* nests close to the ground ; we have never found them very high."

I may say that the observation as to an egg of the host being removed and one of the parasite put in its stead coincides with



Nest of Yellow-faced Honey-eater that previously contained two eggs of the Honey-eater. It now contains one of the Honey-eater and one of the Pallid Cuckoo. Eastern Gippsland.

PHOTO. BY J. H. M. COMMUNICATED BY H. STUART DOVE, F.Z.S., R.A.O.U.

something which came under my notice during a sojourn in East Gippsland, Victoria. A nest of the Yellow-faced Honey-eater (*Ptilotis chrysops*) was built in a hedge of Kangaroo Island Acacia, and contained one egg when found ; next day two eggs ; the third morning one of the Honey-eaters' eggs had disappeared, and an



Unusual Nesting Site for a Flame-breasted Robin (*Petroica phanicea*).
The nest, above the climber's left hand, contained a young Pallid Cuckoo.
Kelso, Tasmania.



egg of the Pallid Cuckoo was in its place. The ground was fairly clear under and around the bush, but not a trace could I find of the missing egg, so I came to the conclusion that the Cuckoo had carried it away in her bill. The egg deposited was a good match for that of the Honey-eater in shape and tint, but was somewhat larger; the fraud was detected, however, and the Honey-eater deserted her nest.

The Golden Merops (*Merops ornatus*).*

BY JAMES SLOANE, MULWALA STATION, MULWALA, N.S.W.

THE sand-ridges near the Murray on Mulwala are a regular nesting-place of this beautiful migrant. It comes only during the breeding season, and as soon as the young are strong enough for the journey it goes back to its tropical forests. It had specialized in nesting in a way that resisted its habitual enemies, and its burrow used to fulfil its purpose in giving ample protection against ground foes. Twice only have I seen nests disturbed by them. But the fox came, specialized as a ground-hunter, with a cunning that the underground nest of the *Merops* gave no protection against; and the birds that came for countless ages to the Murray have in a few years nearly lost their place in the plan of Nature. Already they are almost gone, and in a few years will be unknown. The nest is at the end of a narrow tunnel about 3 feet long and a foot below the surface. The fox digs down on top of the nest. For some years the foxes did not interfere with the nests, but when they did every one was destroyed. The foxes seem to farm the birds, for the attack is not made till the young are about to leave. Several that I had under observation appeared likely to escape, but they were always taken. Sometimes the fox lives near the *Merops*' burrow, and must see it nightly. It is hard to understand why the nests are left till the young are well grown, for one would expect competition for them amongst the foxes.

Perhaps some of the birds are now breeding elsewhere, though, with their fixed habits, this is not likely. Wherever they go in Southern Australia they will not, while they nest on flat ground, escape the fox, even though the instinct of self-preservation does, as I have seen, occasionally help some pairs for a while. It is unusual for the nest to be near a human habitation, but one was made at the corner of our garden near the back of the house, on an open space where an untied dog slept at night. This saved the nest. The following year there were two nests, and last year four. This year two were made, but unfortunately a new enemy appeared; a brown snake came, and was killed in one of the burrows. It is clear that the birds realized that there was a protective influence at the spot, even though the first nest may have been put there by chance, and possibly they knew the protection came from the dog. The dog certainly took no interest in them.

*The Australian Bee-eater.

The *Merops* is a bee-eater. I think (though I have not given the subject attention) that it catches blow-flies. This bird uses bright objects as illuminants in its dark burrow. Small pieces of white bone, mussel-shell, and, in fact, anything bright. I have found a pearl shirt-button. Every nest has these natural lamps. In one I examined carefully they were placed at the end of the burrow. The nests are made in light forest country, on an open space, where the sun can shine upon them all day and where the drainage is perfect.

Foxes have made great inroads into our native fauna, and they have certainly come to stay and be an everlasting curse. Some settlers from the Old Land are never happy till they surround themselves with the pests they were used to. Some want still more. Some time ago I was asked to join a society whose one object was to introduce more beasts and birds from oversea that might be acclimatized here. I have not again heard of this society, but if it exists—and it may—it should be hunted up by the proper authorities and brought to reason.

Description of Eggs New to Science—*Notophox flavirostris* (Sharpe).

BY H. L. WHITE, M.B.O.U., BELLTREES, SCONE, N.S.W.

As far as I can learn, no complete description of Australian-laid eggs of this species of Heron has yet appeared. I claim my clutch, therefore, to be the type.

Gould does not mention the eggs; A. J. Campbell, in "Nests and Eggs," states the eggs are undescribed; A. J. North omits all mention of the bird; while G. M. Mathews gives no description of the nest, and queries the clutch of eggs.

Mr. William M'Lennan, who lately returned from a nine months' trip, on my account, to the coasts of the Northern Territory, has sent me several clutches of the eggs of the Pied Egret (*Notophox flavirostris*), together with skins of the bird. They were taken at an immense heronry on the Gulf of Carpentaria.

A detailed description of the nest will be given later. For various reasons it is inadvisable to define the exact locality of the heronry until Government action has been taken to protect it.

Clutch, three to four; long oval, some of the specimens approaching Cormorant shape; texture of shell smooth, glossy, and finely pitted. Colour bluish-green, much darker than is usual with Herons' eggs generally. Of two clutches, which may be accepted as fairly typical, the measurements, in inches, are as follows:—(1) *a*, 1.64 x 1.17; *b*, 1.67 x 1.18; *c*, 1.54 x 1.18; *d*, 1.6 x 1.2. (2) *a*, 1.64 x 1.21; *b*, 1.54 x 1.18; *c*, 1.58 x 1.18; *d*, 1.54 x 1.18.

Notes on the Lyre-Bird at Poowong, South Gippsland.

By L. C. COOK, R.A.O.U.

IN the early days in Poowong, when most of the land was covered with virgin scrub, the majority of Lyre-Birds' nests that came under my notice were built on the ground, presumably because they were as safe there as anywhere else, for the native cat was then their only enemy, and building in trees would not safeguard them from these climbing marauders. At a later stage these pests were exterminated, and for some years the birds enjoyed security; then came the fox, and gradually the practice of building up in the air increased, till at the present time the majority of nests now found in this district are built where the fox cannot get at them. This apparently points to the fact that through the agency of the fox, what was once an unusual occurrence has now become an established habit in this district.

The birds display extraordinary ingenuity in constructing their nests on leaning trees. One came under my notice built on the clean stem of a large musk that had only the slightest lean and no limbs; yet somehow they laid a secure foundation, and finished a very pretty nest. As an engineering proposition this was the cleverest I ever found.

The following instance will show how efficacious the high-building habit is in saving their lives:—My neighbour had a nice reserve containing two males and six hens, while the one at the back of our property at that time held only two males and four hens. When my hens nested on the ground their eggs were promptly removed as soon as laid, but my neighbour would on no account allow his to be interfered with. After six years the result was that I had eleven birds and five eggs, while my neighbour had only one male and two hens left.

Whether the male and female construct the nest together I am unable of my own observation to say, but I know that the female can manage it quite well by herself. A pair lived in a small and isolated patch of scrub, and in course of time the male disappeared; I fear he was shot. At all events, his beautiful tones were no longer heard, and for six years the hen lived in celibacy; yet three different seasons after losing her consort she built her nest, laid in it, and sat on the egg, finally deserting it. A young lady, knowing of the sitting hen, took her mother to see it. Creeping quietly to the nest, she threw her veil over the aperture, captured the bird, examined and released it; yet the hen returned and resumed her sitting. My experience has been that the hen will never desert her nest after the egg has been laid, but will readily do so before the egg is laid should the nest be touched.

Once, when some scrub was being felled near the homestead, the cutters found a nest with a chick in it. They bodily removed both nest and inmate to a safe position some distance away; the mother followed and resumed her maternal offices.

Concerning the mimicry of the Lyre-Bird, I find it necessary to modify some things I have said and written. Until about two years ago it had always appeared to me that they did not promiscuously imitate the extraneous sounds around them, but, instead, learned their repertoire from their parents. The ground for this belief was based on the fact that the present-day birds still reproduce the calls of those that have for fifteen years left the district, and fail to favour us with the calls of the new arrivals, such as the Starling and Whistling Eagle. Then, again, though I have been always within hearing of the call of these birds for over thirty years, only twice have they reproduced the sounds of any other than the calls of certain birds when I have been listening to them. On the well-remembered occasion when the male bird first demonstrated to me his power to improvise, Messrs. C. L. Barrett and G. Findlay were also present, and that day his whole performance was entirely different from anything I had previously heard from any Lyre-Bird. He commenced by reproducing the bark of a cattle-dog and its owner whistling him up; this was repeated again and again, sometimes quite distinctly, then dying away as though faint with distance. His power of modulation was superb. Then he gave us the squealing that half-grown foxes indulge in when playing together, and many other unusual sounds.

I find that when the chick is a few weeks old the hen does not stay in the nest at night, but, instead, roosts in the tree-tops close by.

Although the male always has several hens attached to him, it is quite open to doubt if they all lay, and my opinion is that they do not, and much evidence has come my way in support of this theory.

It is not uncommon in this part of the country to hear the Starling imitate the Lyre-Bird and his selections. This fact has been often remarked by my friends.

I would like to show the members a bit of the work of Mr. Chandler, who had considerable success in photographing the birds in my company in Poowong. There was one hen that had been photographed dozens of times, and was very tame, and when her chick was in her nest would always follow me through the scrub. I chanced to notice that whenever she lost sight of me she would spring up on to the nearest stump or bough to enable her to watch my movements better. It occurred to me to turn this habit to account; so when Mr. Chandler arrived I induced him to focus his lens on a pretty bush pedestal covered with drooping staghorns and lichens at the best distance to secure a perfect photograph, if the bird should sit on it. To Mr. Chandler the chance seemed very remote, as I had told him nothing of my observations. When all was ready, and Mr. Chandler well concealed, with the pressure bulb in his hand, I proceeded to the nest and caused the chick to squawk. The mother instantly appeared then, and followed me at a little distance. When she



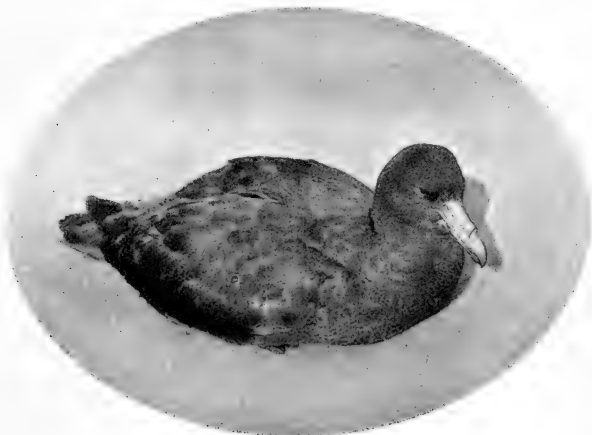
Female Lyre-Bird, Poowong, Gippsland.



was just opposite the camera I stopped; she did likewise, and began scratching about. As soon as her eyes were taken off me I lay down, while she, looking up a second later, and not seeing me, sprang quickly on to the bush pedestal to reconnoitre, and was immortalized by Mr. Chandler. The sun was shining right on her, and everything was favourable for a good photograph, for Mr. Chandler took an exposure, not a snap. Members will agree that he well deserved his success.

Camera Craft Notes.

Giant Petrel (*Ossifraga gigantea*).—The bird photographed was caught in Port Phillip Bay, near Williamstown, and about 40 miles from the Heads. Mr. F. Lane and another were fishing near the lightship, and saw the bird swimming not far off. They threw it pieces of bread, which it promptly swallowed. They then baited a hook with some bread and threw it towards



The Giant Petrel (*Ossifraga gigantea*).

PHOTO. BY D. LE SOUEF, C.M.Z.S., R.A.O.U.

the bird, which readily took it, and so was captured. The hook, having caught on the bird's bill, was easily removed. It is interesting to note that this ocean bird should have come up the harbour so far from the ocean and close to the shipping. The photograph was taken in the Melbourne Zoo.—D. LE SOUEF, Melbourne.

Abnormal Clutches.—The accompanying photographs serve to illustrate the unusual clutch of four eggs of the Pied Oyster-catcher, *Hæmatopus ostralegus longirostris* (*Hæmatopus longirostris*), found by me on 13th December, 1914, at Mud Island, near the entrance to Port Phillip Bay, Victoria. The nest, which was just above high water mark, was a depression in the sand lined and surrounded by a few pieces of broken shell, and partly surrounded by a curved piece of decaying mangrove. Each egg was uniform both in shape, size, and coloration, practically



Abnormal Clutch of Pied Oyster-catcher (*Hæmatopus ostralegus longirostris*), Mud Island, Port Phillip Bay, Victoria.

PHOTO, BY H. A. PURNELL, R.A.O.U., GEELONG

proving that all the eggs were laid by the one bird. They were all slightly addled, and would not, therefore, have been hatched. The problem presented is as to whether the unusual number was too large for the bird to incubate successfully, or simply that the bird had neglected the eggs too long either in storms or in the search for food. After the eggs had been photographed and removed the bird returned and sat on the nest, so that the nest had not been actually forsaken. This problem often presents itself to the oologist. On 15th December, 1915, at Beaconsfield, on the Cardinia Creek, I found the nest of the Helmeted Honey-

eater (*Ptilotis cassidix*), containing a clutch of three eggs, which were slightly addled and cold, and the nest was sodden, proving that the bird had already forsaken it. These eggs are quite uniform in shape and colour, but one is slightly smaller than the others. This, I understand, is the first clutch of three eggs of this bird that has been found so far.—A. CHAS. STONE.

* * *



Straw-necked Ibises (*Carphibis spinicollis*) at the Zoo. The adult has a bare head, the young has the head covered with down.

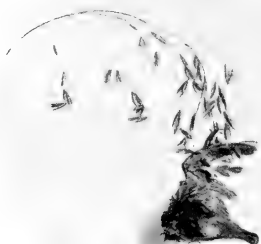
PHOTO. BY D. LE SOUËF, C.M.Z.S., R.A.O.U.

Straw-necked Ibis.—Mr. Dudley Le Souëf, who is now recovering from an attack of influenza, utilizes his opportunities at the Zoological Gardens, Melbourne, to secure interesting and instructive pictures of birds. The accompanying photograph of Straw-necked Ibises shows the bare head of the adult, and the down-covered head of the young. The difference in the length of the bill is also interesting to students of bird phylogeny.

Black Swan.—Mr. Harry Burrell, R.A.O.U., continues to achieve success with his fine photographs of Australian wild life. We have pleasure in publishing a picture of the *rara avis*, the Black Swan, obtained by Mr. Burrell at Hacking River, Sydney.

* * *

A Bird Tragedy.—The accompanying photograph, by Mr. H. J. Bennett, head teacher Elementary School, Nanneella Estate, an irrigation settlement in northern Victoria, will interest bird-lovers. The victim, an Orange-fronted Bush-Chat (*Ephthianura aurifrons*)



A Bird Tragedy.—An Orange-fronted Chat tangled in a wild oat plant.

PHOTO. BY H. J. BENNETT, ELEMENTARY SCHOOL, NANNEELLA ESTATE, VICTORIA.

had become entangled in the long head of a wild oat plant, and could not free itself. An observant child discovered it too late, and brought the plant and bird to school as a nature study exhibit.

* * *

Mr. Chandler's Bird Portraits.—Though Mr. L. G. Chandler has departed for the front as a private, he has left behind many beautiful photographic studies of living birds. We gladly seized the opportunity of presenting four of these to the readers of *The Emu*.



Black Swans and Nest, Hacking River. N.S.W.





Nest of the Great Crested Grebe (*Podiceps australis*), Thule Lake, N.S.W.

PHOTO, BY D. LE SOUEF, C.M.Z.S., R.A.O.U.

Stray Feathers.

Bird Sanctuary.—We have great pleasure in stating that, through the instrumentality of Captain S. A. White, the President of the R.A.O.U., helped by other bird-lovers in South Australia, the Government of that State has proclaimed Carlot Lagoon a sanctuary for birds—an ideal place for that purpose, very many water-fowl nesting there.

* * *

An Albino Eagle.—During June I secured a splendid live specimen of a white Wedge-tailed Eagle (*Uroaëtus audax*, Lath.), and presented it to the Sydney Zoological Gardens, where it arrived safely, and is now on view. The bird appears to be full grown; it was captured (being too gorged to fly, probably) at Ridglands, near Scone, New South Wales, and, I believe, is unique. With the exception of a brown-shaded feather in the wing, the bird is pure white, even to its beak, legs, and feet; eyes colourless, with dark-coloured pupils.—H. L. WHITE. Belltrees, Scone, N.S.W., 14/8/16.

An Unusual Crimson Parrot.—Another curiosity received during June is a female specimen of *Platycercus elegans*, the common Lowry or Crimson Parrot, showing a wonderful variation from the normal. It presents the most beautiful instance of xanthochroism that I have seen, the whole of the usual black and dark blue being absent, and replaced by very pale yellow and blue. The head, neck, rump, and breast are bright crimson; cheeks and shoulders pale blue; back pale yellow, with each feather narrowly margined with crimson; wings and tail cream colour, with just a tinge of blue in some of the outer feathers. The bird was shot near here while in company with a small flock of normally-coloured "Lowries." A good skin has been made of it.—H. L. WHITE. Belltrees, N.S.W., 14/8/16.

* * *

Swifts Resting on Trees.—I would like to know if any of your members have seen Swifts resting on trees. On 1st February, 1898, my mother and I were watching the progress of a bush-fire before a strong east wind (we were very anxious, as all the men were away working at it), when we noticed a very large flock of Swifts, and their movements were peculiar, we thought, and as we watched they settled on the trees—not as ordinary birds do, on the horizontal limbs, but on the trunks of the trees and the perpendicular branches, clinging on sideways, as Wood-Swallows (*Artamus*) sometimes do. I have never met anyone yet who has seen them resting. My mother thought the air being so very smoky had something to do with it. That summer was very hot and dry in this district, and the Swifts came in great numbers. They used to fly low over the grass—to catch grasshoppers, we thought. Also I would like to ask if anyone has noticed how they come in a large flock in front of a thunderstorm.—K. CURRIE. Lardner.

* * *

Early Combination Cuckoo Clutch.—My nephew, Mr. C. C. Hook, on 26th August, 1916, found at Ringwood a nest of the Victorian Brown Tit, *Acanthiza pusilla macularia* (*Acanthiza pusilla*), ready for eggs, and on visiting it again on 3rd September, 1916, he found in it two eggs of the *Acanthiza*, one egg of the Fan-tailed Cuckoo, *Cacomantis rubricatus rubricatus* (*Cacomantis flabelliformis*), and one egg of the Narrow-billed Bronze-Cuckoo, *Neochalcites basalis mellori* (*Chalcococcyx basalis*). The nest and contents had evidently been forsaken, as the Tits had built another nest right on top, the opening of which was to the right of the bottom nest. Both nests were built of similar materials—viz., dry grasses, a few shreds of bark and moss, and lined with feathers. This peculiar structure was placed one foot from the ground, in a bunch of dead prickly tea-tree, on the bank of a creek at the foot of the hill. Both the Cuckoos and the Brown Tit were heard calling in the vicinity.—A. CHAS. STONE. 71 Tivoli-road, South Yarra.



Above—Yellow-breasted Shrike-Rolin (*Eopsaltria australis*).
Below—White-eared Honey-eater (*Ptilinopus leucotis*). White-bearded Honey-eater (*Meliphaga roseo-fulva*).



Porosity of the Lyre-Bird's Egg.—On 12th July, 1916, a nest of the Victoria Lyre-Bird, *Menura novahollandiæ victoriæ* (*Menura victoriæ*), was found in South Gippsland. The nest was domed, and made of small sticks, lined with fine rootlets twisted together, and finished off with breast feathers of the bird; it was placed 6 feet from the ground on a stump of blue gum (*Eucalyptus globulus*), the entrance facing north-east and away from the creek, which was about three chains away. The nest contained the usual single egg, which was quite typical of the bird in size and shape, the surface somewhat smooth and slightly glossy, ground colour purplish-grey, and blotched and spotted with umber and darkish-purple; incubation, $\frac{1}{10}$. The nest was not further interfered with, and on 9th August following it contained another egg laid by the same bird, identical in shape and colour with the first egg, but covered over nearly the whole surface with small limy excrescences; incubation, $\frac{1}{10}$. The shells of both these eggs were so very porous that during the process of blowing beads of water exuded over the whole surface, as though the egg had been left out on a very dewy night.—A. CHAS. STONE.

* * *

Resident Swallows and Cuckoos.—In a recent letter from Launceston, Mr. Thompson remarks that each season the number of Swallows and Fan-tailed Cuckoos which remain in his district seems to increase. Six years ago there appeared to be only one pair of Swallows which stayed; now there are a good many. My correspondent's idea is that the latest-hatched brood stays with the parents, and, as the latter remain, so do the young. If this be so, there should be a very rapid increase in the resident party, as the following season the young themselves will be parents, and will remain with their latest brood, in addition to the old birds of the previous season. The Swallows do not remain on the coast here, but the number of Cuckoos is certainly on the increase; this winter I could have put my hand on half a dozen within a short radius of the cottage, and, as there is no reason to suppose that this particular portion of the coast is more favoured than others, the number wintering with us must be very considerable. A somewhat singular thing is that they appear to be in pairs this season instead of isolated individuals, as usual. It will be very interesting if we develop a non-migratory race of Cuckoos as well as of Swallows. The species referred to are, of course, the Welcome Swallow (*Hirundo neoxena*), and the Fan-tailed Cuckoo *Cacomantis flabelliformis*.—H. STUART DOVE. West Devonport (Tas.), 24/8/16.

* * *

Bird Notes from Camp.—Opportunities for bird-observing in a military camp are rather rare, but during my two months' sojourn at Royal Park, Vic., I have been able to glean a few notes regarding some familiar species. The Starling and the Sparrow

are most numerous, and, with the Indian Mynah, come around the tents to pick up crumbs from the soldiers' "tables." I have seen a big flock of Starlings, high in air, above a platoon, and the manœuvres of the birds were so clever as to suggest that they, too, were moving to the commands of a sergeant-major. During the 15 minutes allowed us for "smoke-o" in the morning and afternoon, reclining on the grass, I watch the Starlings and other birds feeding, and the time passes swiftly.

Of native birds, the Magpie-Lark (*Grallina picata*) has been most abundant in the past two months. Day long their shrill cries have resounded all over the camp, and we have seen them patrolling marshy spots or perched on posts or in trees around the park fence. Next to the Grallina, in point of numbers, comes the Ground-Lark, or Australian Pipit (*Anthus australis*). Every day I see these restless little birds running through the short grass and onion-weed (now in blossom) searching for insects. Some, I fancy, have already begun nesting. Early in August a Scarlet-breasted Robin (*Petroica leggia*) was observed, flying above the tents in our (A.M.C.) lines, but it was only a casual visitor. Occasionally, just after the bugles have sounded reveille, one hears a Great Brown Kingfisher (*Dacelo gigas*) welcoming the dawn. Recently two Rosellas (*Platycercus eximius*) flew over from the direction of the Zoological Gardens, and on a clear, frosty night I heard the honking of a flock of Black Swans that was flying westward above the sleeping camp. Other birds were winging "across the moon"; I heard their calls, faintly, but could not identify the species.

The gum trees on the outskirts of the Park are frequented by Honey-eaters, Acanthizas, and other small birds, and if one had leisure in the day-time a fairly good list of species could be made. Several of my camp-mates are interested in birds, and one is a member of the Gould League, having joined it when at school.—(PRIVATE) CHARLES BARRETT. C.M.Z.S., R.A.O.U. Royal Park Camp, Vic., 5/9/16.

Bird Observers' Club.

THE Acanthizæ were the subject for special attention at the June meeting of the B.O.C. Mr. F. E. Howe read a paper on the genus. He showed the close relationship of some of the species and subspecies, and compared the methods of Australian ornithologists in classifying them. A chart showed at a glance how each worker had split up the species. Mr. Howe traced several dominating species through their geographical variations. Mr. A. Chas. Stone exhibited a series of eggs of the genus, and drew attention to *Acanthiza ewingii rufifrons*, from King Island, which had the characteristic of laying one white and two spotted eggs to a clutch.

The secretary, Mr. F. E. Wilson, showed a series of skins of the genus, including Victorian and Western Australian forms of *Acanthiza chrysorrhoa*.

Mr. A. E. V. Richardson, M.A., B.Sc., Superintendent of Agriculture, was elected a provisional member of the club.

The July meeting received some interesting information about the Lyre-Bird.

Mr. L. C. Cook, of Poowong, read a paper on the birds and their habits. He showed that the human element in the nesting habits of birds was sometimes beneficial. He destroyed nests of the Lyre-Birds that were placed near the ground on his reserve, for the purpose of inducing them to build higher, and so escape the ravages of the fox. The fact that in place of four birds there are now eleven shows what measure of success he has met. A neighbouring place where the birds were left unmolested showed practically no increase.

Mr. D. Le Souëf, C.M.Z.S., exhibited some unique lantern slides of the birds and their haunts, while the president, Mr. A. H. E. Mattingley, C.M.Z.S., showed slides illustrating other bird life in the same haunts.

The eggs of *Menura victoriae* and *M. superba* were exhibited by Mr. A. Chas. Stone, who remarked upon the variation in colouring of the eggs of this family.

Lieut.-Col. Bryant entertained the members at his rooms at the August meeting. He gave a most interesting and instructive paper on "Birds Met With While on Foreign Service with the A.I.F." He illustrated his remarks with lantern slides, which included some remarkable views of the war zone. The swamps bordering the Nile held vast numbers of aquatic birds, the rarest of which was the Fan-tailed Sandpiper. Numerous species of birds were seen around Cairo, and hundreds of Kites frequented the city. These birds acted as excellent scavengers, and did incalculable good for the health of the community. White Egrets were seen breeding in the Zoological Gardens at Cairo. Lemnos Island was not rich in bird life. About a dozen different species were noted, including the Mediterranean Gull, which followed the old-fashioned ploughs of the peasants in search of food.

Mr. Le Souëf read an extract from the *Bulletin* of the Zoological Society of New York dealing with the plume trade in India. It showed that £44,000 worth of Egret plumes had been seized by the Customs, and fines to the amount of 55,000 rupees had been paid.

Mr. Harold Pottenger was elected a member of the club.

The quarterly dinner and usual meeting was held on 21st September, 1916.

The chairman, Mr. A. H. E. Mattingley, suggested to the members the desirability of using the bird movement to augment the patriotic funds. Discussion ensued, and it was decided to go further into the matter. Members were asked to offer suggestions for a motto for the club at the next meeting.

Several members gave some interesting field notes for this season (1916), which went to prove that the birds had started breeding early. Some remarkable observations on game-birds were related by Dr. Norman M'Arthur. The method adopted by the Little Falcon (*Falco lunulatus*) in killing its prey was to seek the upper position and strike obliquely. The Black Duck, its favourite quarry, often rose forward quickly, and the Falcon swept past its tail; but the rapidity of its flight soon brought it to the upper position again. When the Falcon was successful it accomplished the feat of completely scalping its quarry with its claw.

Publications Received during July, August, September, 1916.

D. LE SOUËF, C.M.Z.S., HON. LIBRARIAN, R.A.O.U.

Australian Naturalist, vol. iii., part 2.

My System with Pigeons, by Leslie Gaze.

The principal idea of this helpful publication is to foster the squab industry, and details as to breeding and rearing Pigeons are given, as well as how to treat their various ailments. It has some clear illustrations, and will be a help to those who keep these interesting birds.

Royal Society of Queensland, vol. xxvii., parts 1 and 2.

Royal Society of Tasmania, 1915.

South Australian Ornithologist, vol. ii., part 7.

Contains, among other notes, the description of a new sub-species of Scrub-Wren (*Sericornis longirostris wyldii*) by Capt. S. A. White. Also a list of birds, with descriptions, from North and North-Western Australia, by G. M. Mathews, and some further observations on the Cormorant and bird temperatures by Dr. A. M. Morgan.

The Victorian Naturalist, vol. xxxiii., parts 2, 3, 4.

Part 3 contains a short article on "The Birds of Fraser Island, Gippsland Lakes," by G. A. Keartland.

The Hawkesbury Agricultural College Journal, vol. xiii., parts 2, 3, 4, 5.

Victorian Education Gazette and Teachers' Aid, vol. xvi., Nos. 6, 7, 8.

We are glad to see the stand the Education Department is taking against the wilful destruction of bird-life, and how it is seeking to instruct the scholars in the value of birds to the community, especially farmers and fruit-growers.

In the Far North-West, by Capt. S. A. White.

An interesting and well-illustrated account of an expedition to the Musgrave and Edward Ranges, in which many notes are given of birds met with. The author is to be congratulated on the careful way in which he has described the various natural history facts that came under his notice.

Memoirs of the Queensland Museum, vol. v.

This volume is, as usual, full of interesting articles, and well illustrated.

The Austral Avian Record, vol. iii., No. 3, by G. M. Mathews.

Contains 76 new sub-species, as well as many changes in his "List of the Birds of Australia." If the author continues making new sub-species at the present rate, and with so little difference, it is difficult to realize the number he will run into before he has finished. As usual, no dimensions are given to guide the perplexed ornithologist.

Avicultural Magazine, vol. vii., Nos. 6, 7, 8, 9.

As usual, this magazine is full of interesting matter regarding aviculture and bird notes generally, as well as good illustrations. A capital picture is shown of the rare New Zealand Owl-Parrot (*Stringops habroptilus*) in No. 7.

Proceedings of the Linnean Society of N.S.W., vol. xl., parts 1, 2, 3, 4; vol. xli., part 1.

Bird-Lore, vol. xviii., No. 3.

Has two coloured illustrations and many photographs; full of interesting notes regarding American birds.

The Wilson Bulletin, vol. xxviii., Nos. 1, 2.

Contain several interesting papers, especially one entitled "The May Bird Census," at Oberlin, Ohio; also "The Terns of Weepacket Island, Massachusetts."

The Condor, vol. xviii., Nos. 3, 4.

No. 3 has an illustrated article showing the wonderful sea-bird life on Hat and Egg Islands, Great Salt Lake.

Annual Report of the United States National Museum for 1915.

Smithsonian Miscellaneous Collections, vol. lxi., No. 2.

A list of birds seen in Alaska and North-Eastern Siberia during the summer of 1914, by F. S. Hersey.

Smithsonian Miscellaneous Collections, vol. lxx., No. 13.

Descriptions of seven new sub-species and one new species of African Plantain-eater, Courser, and Rail, by E. A. Mearns.

University of California Publications in Zoology, vol. xii., Nos. 15, 16.

Proceedings of the California Academy of Sciences (fourth series), vol. v., No. 6.

Proceedings of the Academy of Natural Sciences of Philadelphia, vol. lxxvii., part 3.

Revue Francaise d'Ornithologie, Nos. 81-87.

Professor Brasil has continued his interesting notes on the birds of New Caledonia and of Lifou; some Australian forms, especially sea-birds, are included in them. In No. 83 there is a good article by André Godard on the destruction of bird-life in many parts of the world, and their need of protection; also some observations on the birds of Kerguelen Island, by J. Loranchet, in No. 84. In Nos. 84 and 86 is an illustrated article on the ornithological park at the Villiers-Bretonneux, with a list of the splendid number of birds it contains, including Ostriches, Cranes, water-fowl, sea-birds, and land-birds; over 300 species must be represented, including Humming and other rare birds. The article is by J. Delacour. In No. 86 is also an interesting article on artificial replacement and measures of protecting birds. In No. 87 the notes are continued on the birds of Kerguelen. "The Tufted Puffin of Kamschatka (*Lunda civihata*)," by Dr. Robert

Didier. This pamphlet is a supplement to No. 82, and contains much information about this bird.

Bulletin of the National Acclimatization Society of France, 1914, 1915.

The Ibis (tenth series), vol. iv., Nos. 2, 3.

No. 2 contains a valuable article by our member, Launcelot Harrison, on bird parasites and bird phylogeny. Also, among other articles, notes "On Some New Guinea Bird Names," by G. M. Mathews, and a reply thereto by W. R. Ogilvie-Grant. In No. 3 C. P. Conigrave gives an account of the bird-life on Houtman's Abrolhos Islands, Western Australia.

The Zoologist (fourth series), vol. xx., Nos. 231-234.

Many interesting notes on European birds are in these numbers.

British Birds, vol. x., Nos. 1, 2.

An especially interesting and well-illustrated article on "The Habits of the Sparrow-Hawk" is in both these numbers.

The Journal of the South African Ornithologists' Union, vol. xi., No. 1.

A most interesting article by C. and M. Swynnerton, entitled "Birds in Relation to Their Prey," appears in this number.

Correspondence.

To the Editor of "The Emu."

SIR,—For some years I have been corresponding with a station-owner on the Lachlan River. Upon this station I knew there was a lake which in a good season was a wonderful place for water-fowl, many kinds breeding there in hundreds. In one of my letters I asked for any information of the breeding of the Blue-billed Duck (*Erismatura australis*), but received no notes upon it till March last, when the owner wrote informing me that, owing to a flood in the Lachlan last year, the lake became full, and that all sorts of water-birds bred there in hundreds. He found twenty nests of the Blue-billed Duck, some of which were placed in lignum bushes, and were composed of sticks and grass; others were placed in long grass upon islands. The nests contained from eight to fifteen eggs—mostly twelve. I thought he must have made some mistake in the identification of the bird, in spite of his having stated that he watched one nest for three hours until the owner returned and sat on the eggs. When the eggs reached me there was no further room for any doubt about their being authentic. This is another case in which that wonderful early-days ornithologist, John Gould, made a statement which many years after proved to be correct.

THOS. P. AUSTIN.

Cobbora (N.S.W.), 8th July, 1916.

Obituary Notice.

It is with regret that we have to announce the passing away of the Misses M. and E. Brumby, members of the Union since its inception. Leading a retired, peaceful life at their pretty cottage on the outskirts of Devonport, they did all in their power to encourage the native birds about their home, and with marked success. The two acres surrounding the cottage were largely planted with trees and shrubs from Australia, Tasmania, and New Zealand, and these, blooming at different seasons, ensured a succession of sweets for the various Honey-eaters which frequented their domain. The flower garden, which was attended to entirely by the ladies themselves, was always a picture of neatness and beauty. Besides *The Emu*, the Misses Brumby subscribed to a North American bird periodical, and had a good library of ornithological and general literature. Mathews's "Birds of Australia" was presented by them to the Launceston Museum (a handsome gift), and a complete "Britannica" in leather, with bookcase, to the Devonport Public Library.

Descended from an old Lincolnshire family, their grandfather's estate adjoined the ancient, square-towered church at Scotton in that county, and a fine view of that building hung in the drawingroom at their Devonport residence.

Only a few months separated the passing away of these Tasmanian bird-lovers. "They were lovely and pleasant in their lives, and in their death they were not divided."

Resignation of Chas. L. Barrett, C.M.Z.S., Co-Editor of "The Emu."

PLACING the call of his country above all else, Mr. C. L. Barrett, now Private Barrett, has joined the Australian Imperial Forces. After some time spent in training with the Army Medical Corps at the Royal Park Camp, Mr. Barrett has been transferred to the Caulfield Military Hospital, and hopes soon to leave for the front.

Mr. Barrett has made a wide and enduring name as a nature lover and a nature writer in the daily and weekly papers, as well as in magazines. He is also the author of several novels, based largely on natural history. An expert photographer, and a keen enthusiast, who has used his annual leave for years past to get away into the haunts of wild animals, especially birds, Mr. Barrett has been able to illustrate his work freely from his own original photographs. *The Emu*, in common with other illustrated journals, has benefited much from Mr. Barrett's keenness and success as a nature photographer. *The Emu* has also benefited by his experience as a professional journalist on the staff of the *Herald*.

From the date of his election to the post of co-editor, at the

Adelaide Session, 1909, Mr. Barrett has done much to improve the official journal of the Union, especially on the pictorial side. He is responsible for the introduction of the "Camera Craft" section, which promises to do much towards realizing the aims of the Union.

An enthusiastic bird lover and protector, he has received several honorary memberships as a recognition from overseas nature-lovers. The latest of these is the election to the honour of Corresponding Member of the Zoological Society of London (C.M.Z.S.) Mr. Barrett recently relinquished office as president of the Bird Observers' Club, of which he was one of the founders.

The Council of the Royal Australasian Ornithologists' Union wishes Mr. Barrett a safe return and a long life to continue his successful work in adding to our knowledge of the Australian fauna and developing the appreciation of this amongst young Australians.



Nest and Eggs of Red-throated Whistler (*Pachycephala rufogularis*).

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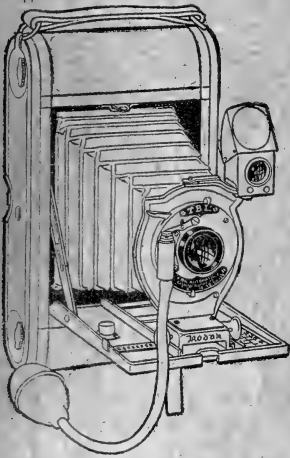
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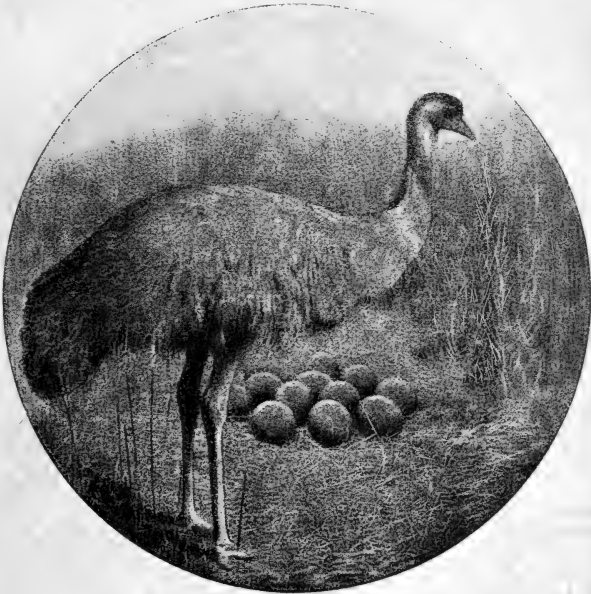
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The Emu

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Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XVI.]

15TH JANUARY, 1917.

[PART 3.

North Australian Birds.*

BY H. L. WHITE, R.A.O.U., BELLTREES, N.S.W.

ORIGINALLY it was intended that Mr. Wm. M'Lennan, who collected for me, should personally supply an account of his recent northern trip, but the unfortunate loss of his full field-notes and a very severe attack of beri beri and malarial fever prevented him from so doing. Therefore, I have compiled the following narrative from a personal report to me by Mr. M'Lennan, and from his carefully-kept diary, which contains many most interesting facts, including a full description of the great Roper River Heronry.

The present is my third attempt to explore (ornithologically) the Northern Territory. In 1910 a collector was sent from Thursday Island to the Roper River, but, owing to an adverse season, results were poor. In 1913 Mr. G. H. Barnard went overland from Camooweal *viâ* Brunette Downs, on the Barclay table-land, to Borroloola, on the Macarthur River. Much useful information was obtained, and many rare birds and eggs collected. Mr. Barnard returned per steamer *viâ* the Roper River and Darwin. The vast Heronry near the mouth of the Roper was observed at a distance only, a landing not being effected.

NARRATIVE.

On the 29th June, 1915, under a permit kindly furnished by the Federal Government, Mr. M'Lennan sailed from Thursday Island in his cutter *Avis* with two companions (named New and Mohr), fitted out for a ten months' cruise. His intention was to sail round the Gulf of Carpentaria and establish a camp on one of the rivers flowing north and emptying itself to the east of Port Essington. We had an idea that possibly a good collecting ground, covered with tropical vegetation, might be found on some of the more northern streams. Such an opinion, however, was not

*The nomenclature Mr. M'Lennan has used is according to "Catalogue of Birds," British Museum, as furnished by Lucas and Le Souëf ("Animals of Australia"). A more systematic list of all birds collected or identified by Mr. M'Lennan will appear in next issue—nomenclature according to the R.A.O.U. "Check-list," with equivalent trinomials as given by Gregory M. Mathews' 1913 list.

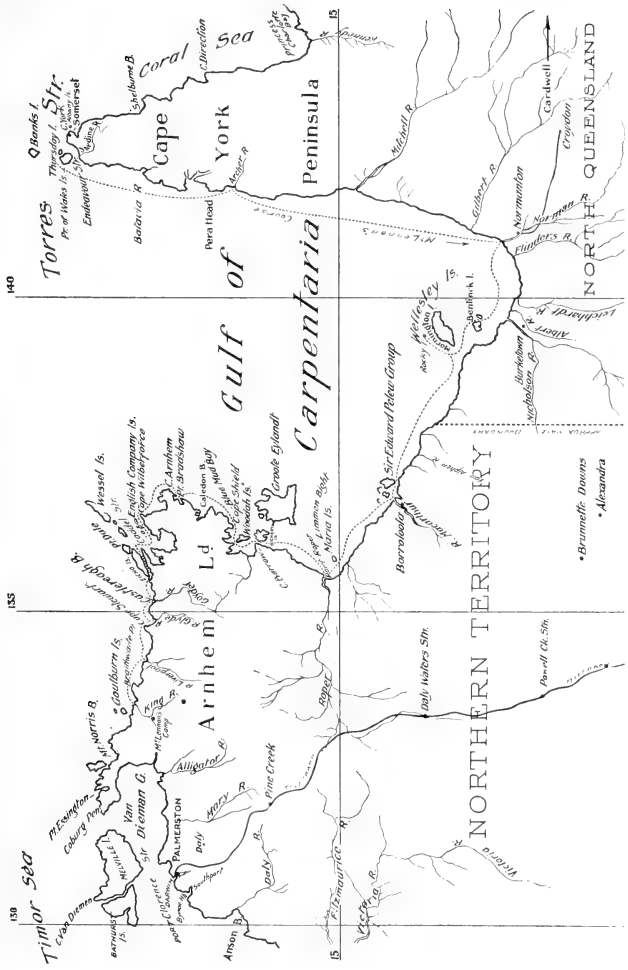
justified by practical experience. The country examined was poor in the extreme, fresh water extremely scarce, timber scanty, and natives few but generally hostile. The distance sailed over was about 2,500 miles—*i.e.*, out from and back to Thursday Island.

After passing Batavia River, on the 2nd July, where *Sula leucogaster*, *Sterna media*, *Sterna bergii*, and *Fregata ariel* were noted, a landing was effected on the 4th July at Pera Head, where a nest of *Haliæctus leucogaster*, 70 feet up in a paper-bark (*Melaleuca*) tree, was climbed to and found ready for eggs; the nest, an immense structure of sticks measuring 7 feet across by 6 feet in depth, was lined with fresh green leaves. Bird-life was plentiful.

The little Archer River was reached on the 6th, and a landing made. Another nest of *Pandion leucocephalus*, at a height of 40 feet in a casuarina, was examined, but, although the bird was flushed, no eggs were found. The river was ascended to a distance of about three miles to large mangrove-covered islands, where it was anticipated that breeding Egrets would be found. The site, however, was occupied by a vast colony of flying foxes (*Pteropus*), and the mangrove branches, by the weight of animals, broken off in all directions. Not a single Heron was seen, notwithstanding earlier in the year Mr. M'Lennan saw their nests and birds approaching the breeding stage of plumage. On the 7th a trip was made up another channel of the river to a second known Heronry; it also was deserted. A nest of *Ardea sumatrana* noted contained a full-fledged young one. The nest was situated 8 feet above high water mark, and composed of sticks; dimensions, 2½ feet across by 9 inches in depth. *Piezorhynchus wardelli* and *Pæcilodryas pulverulentus* were noted, while several crocodiles (usually erroneously called "alligators") were seen on the river-banks.

On the 10th the Kendall River (not shown on the chart) was passed, the Mitchell reached on the 12th, and the Nassau on the 14th. No fresh water was obtained from the 4th to the 18th, when a windmill was sighted with joy near the shore, where the Delta Station hands were erecting it at a shallow well. Karumba, at the mouth of the Norman River, was reached on the 19th, and mails obtained. Up to the present the voyage had been in an almost due south direction down the west coast of the Cape York Peninsula, the distance from Thursday Island to Karumba being about 500 miles, birds identified on the trip being *Sula leucogaster*, *Sterna media*, *Sterna bergii*, *Fregata ariel*, *Antigone australasiana*, *Anas superciliosa*, *Xenorhynchus asiaticus*, *Haliæctus leucogaster*, *Pandion leucocephalus*, *Haliastur sphenurus*, *Dacelo leachii*, *Halcyon macleayi*, *Grallina picata*, *Rhipidura tricolor*, *Pachycephala falcata*, *Ptilotis flava*, *Stigmatops ocularis*, *Glyciphila fasciata*, *Myzomela obscura*, *M. erythrocephala*, *Melithreptus albigularis*, *Hydroprogne caspia*, *Tadorna rufitergum*, *Pelecanus conspicillatus*, *Ægialitis ruficapilla*, *Hæmatopus longirostris*, *Alcyone pulchra*, *A. pusilla*, *Halcyon sanctus*, *Ardea sumatrana*, *Platalea*

MAP.



Gulf of Carpentaria Region, showing W. McLehman's course. Scale—160 miles to an inch.



regia, *Plotus novæ-hollandiæ*, *Numenius cyanopus*, *N. variegatus*, *Herodias timoriensis*, *Garzetta nigripes*, *Sterna melanauchen*, *Piezorhynchus wardelli*, and *Pæcilodryas pulverulentus*.

From Karumba the course was a little north of west to the passage between Sweers and Bentinck Islands. Here very bad weather was encountered, and the dinghy got adrift. In swimming from the anchored cutter to the shore with a mate, M'Lennan was nearly drowned; the revolver which he had strapped to his head slipped round and interfered with his movements. However, a landing was effected, a fire lighted, and after a warming no bad result followed. The dinghy was recovered in a clump of mangroves about two miles from the boat. A few natives were seen, but they could not speak or understand English. The country on the islands was poor, covered with stunted timber, and bird-life scarce.

On the 24th the shallow passage between Mornington and Forsyth Islands was reached. Here some natives who had come from the Mission Station were interviewed, and inquiries made about fresh water, none being in the locality except at the station, which was unknowingly passed. A nest of a *Pandion* was examined in a tree on shore; the nest contained three extremely handsome eggs. Ellis Island, north of Mornington, was next visited (on the 26th), where thousands of Gannets (*Sula leucogaster*) were seen circling round. The southern end of the island is bare guano rock rising about 30 feet above the water, the northern end being a few feet only above water; surface composed of sand and pieces of coral, covered with coarse grass and low herbage. The Gannets were nesting in hundreds, the majority just beginning to lay. A large number of nests contained one egg, a few two eggs, and an odd one a half-grown young. Six old Pelican rookeries were noted, one covering about three-quarters of an acre. Hundreds of addled eggs (in a highly explosive condition) and dozens of skeletons of young birds were scattered about. A few of the old birds were seen out on the edge of the reef. The island was searched for Petrel burrows, but none was observed. A few nests containing broken eggshells of the Reef-Heron (*Demiegretta sacra*) were found in caves and holes at the southern end of the island. The island swarmed with rats, probably introduced when it was worked for guano some years ago. Large numbers of *Fregata ariel* were noted flying round Rocky Island, a few miles distant. It was visited next day. Some difficulty was experienced in landing, as there was no beach, the island being a bare mass of ironstone rising sheer 50 feet on the north side and sloping to the water on the south. Three colonies, containing approximately 800, 120, and 100 nests of the Frigate-Bird, were examined. Eggs and young were in all stages—the latter from newly-hatched to those just able to fly. About 100 nests contained one egg each. Several sets were collected. Both male and female birds were sitting, and had to be lifted off their nest to take the egg. They resented

being disturbed by ruffling up their feathers and snapping viciously at hand or foot of the intruder. The young were just as savage. If one happened to jostle another a fight occurred forthwith, each bird getting a good bill-hold, pulling and shaking until a piece of skin, sometimes flesh, parted. A few adults and fully-fledged young were secured for museum purposes, but unfortunately were subsequently abandoned owing to a severe accident to one of Mr. M'Lennan's hands. The rest of the island was occupied by Gannets, which had just commenced laying, a few nests only containing each a fresh egg. Early next morning, while weighing anchor, M'Lennan had the misfortune of having one of his hands badly crushed, which put him out of action for some time. Thus it was that the bird specimens procured on Rocky Island were not preserved.

A return (south) to Mornington Island Mission Station was now made to obtain fresh water. This was obligingly supplied by Mr. Hall (head of the station) from his well. Birds observed about the station were *Haliaetus leucogaster*, *Pandion leucocephalus*, *Astur approximans*, *Falco lunulatus*, *Dacelo leachii*, *Calyptorhynchus macrorhynchus*, *Cacatua sanguinea*, *Grallina picata*, *Rhipidura tricolor*, *Lalage tricolor*, *Geopelia placida*, *Coracina melanops*, *Melithreptus albigularis*, *Pachycephala falcata*, *Zosterops lutea*, *Chlamydera nuchalis*, and *Ninox connivens*.

Leaving Mornington Island on the 31st July, a north-westerly direction was taken, the next call being at the Macarthur River, which was reached on the 7th August. Beyond meeting a canoe-load of natives, and trading with them for fish, nothing of interest occurred since quitting Mornington.

The channel of the Macarthur is not easily navigated, and some time was occupied in reaching the police station, where Constable Kelly, in charge, gave the party much useful information respecting the country to be visited to the north. He also showed M'Lennan a copy of a report of a prospecting party which had traversed the extreme north coast country. The report was not very encouraging. Further facts were obtained from Capt. Lawson (in charge of a party improving the river channel), and a decision was arrived at to visit the Glyde and Goyder Rivers and look for a suitable site for the season's camp. Birds observed at the Macarthur River were:—*Ptistes coccineopterus*, *Lobivanellus miles*, *Chlamydera nuchalis*, *Nycticorax caledonicus*, *Falco lunulatus*, *Butorides stagnatilis*, *Synæcus cervinus*, *Ninox connivens*, *Pelecanus conspicillatus*, *Anas superciliosus*, *Numenius cyanopus*, *N. variegatus*, *Notophox novæ-hollandiæ*, *Herodias timoriensis*, *Garzetta nigripes*, *Himantopus leucocephalus*, *Glottis nebularius*, *Pisobia ruficollis*, *Xenorhynchus asiaticus*, *Piezorhynchus nitidus*, *Cacatua sanguinea*, *Pandion leucocephalus*, *Circus gouldi*, *Haliaetus leucogaster*, *Haliastur girrenera*, *H. sphenurus*, *Cerchneis cenchroides*, *Hieracidea orientalis*, *Astur approximans*, *Phalacrocorax sulcirostris*, *Phaps chalcoptera*, *Eupodotis australis*, *Ibis molucca*, *Notophox pacifica*, *Tadorna rufitergum*, *Corvus coronoides*, *Cacatua*

galerita, *Cacatua roseicapilla*, *Micræca flaviventris*, *Seisura nana*, *Rhipidura tricolor*, *R. setosa*, *Neition gibberifrons*, *Geopelia humeralis*, *G. placida*, *Pachycephala falcata*, *Zosterops lutea*, *Ptilotis unicolor*, *Stigmatops ocellaris*, *Coracina robusta*, *Philemon sordidus*, *Erythrogonys cinctus*, *Malurus coronatus*, *Artamus venustus*, *Merops ornatus*, and *Dendrocygna cytoni*. Near the river's mouth a Bronzewing was secured showing a marked variation, in size and colour, from the normal *Phaps chalcoptera*.

Contrary winds and mud-banks prevented a departure from the Macarthur until the 15th August, when a start was made for the Roper River, Maria Island being reached on the 17th. As is often the case here, heavy weather was experienced; an anchor was lost, and the entrance to the river delayed. On exploration the island proved poor, low, and scantily covered with scrub and stunted eucalypts, bird-life scarce, and nothing much to note. Instead of entering the Roper the voyage was continued a little east of north along the western shore of the Gulf (Carpentaria), Bickerton Island being reached on the 23rd August; and the water supply being low, a spot marked "well" on the chart was searched for. Although smoke signals were seen, no natives were observed, though their tracks were plentiful enough. The well was located, but was dry, and required deepening. When this was done the water proved too brackish for use. Next morning a single native passed in a canoe, and, upon following him for about three miles, a lately deserted camp was found near a pool of greenish, slimy, brackish water, unfit for consumption. A trip along the coast in an opposite direction gave no better results. Country poor, bird-life scarce.

Cape Barrow, on the mainland, was next visited, and a natives' old camp on the beach indicated water—a track of about 500 yards in length leading to an almost dry swamp. A hole was dug, and the muddy water allowed to drain into it, and a couple of canvas bagfuls were eventually obtained. A *Ninox connivens* was flushed from a dry spout about 20 feet from the ground, from which nesting-place two eggs were secured. The locality yielded one hitherto unnoted bird—namely, *Platycercus browni*. A large bundle of natives' spears wrapped in paper-bark was found near the old camp and taken, a good supply of tobacco, fish-hooks, &c., being left in exchange.

On the 26th a landing was made on Woodah Island, where natives were interviewed. They could not speak English, but showed a well on the beach, evidently covered at spring tides, where good water was obtained at 6 feet. Cape Shield was visited on the 28th, and a trip three miles inland made. Country very poor, and birds scarce; *Entomyza albipennis* seen.

Although contrary winds made progress slow, Caledon Bay was passed on the 29th and Port Bradshaw on the 31st. A party of natives was met, one of them speaking English. An exchange of tobacco for fish and turtle eggs was made, and a landing effected on the northern side of the port. The country here was very

poor, being covered with low, tangled, thorny scrub. An outcrop of limestone carried a few wattles and other trees, *Sphecotheres flaviventris*, *Chibia bracteata*, and *Dacelo cervina* being the only fresh birds noted. A small flock of *Sterna melanauchen* was seen about the rocks in the bay.

Some trouble was experienced in rounding Cape Arnhem, the most north-eastern point of the Northern Territory, and it was not until the afternoon of the 4th September that Inglis Island, on the north coast (the Gulf of Carpentaria had now been quitted), was reached. Here a number of natives was seen on the beach, but they cleared off as soon as they sighted the exploring party.

At sunset on the 5th anchor was cast some 16 miles down Caddell Strait. Smokes of several fires were visible on Elcho Island, but no natives appeared. The following day hundreds of migratory birds (Waders) were observed on the mud-banks along the shores of the strait; they were chiefly Curlews, Whimbrels, Little Whimbrels, Greenshanks, and Little Stints. A few *Tadorna rifitergum*, *Ibis molucca*, *Herodias timoriensis*, and *Garzetta nigripes* were also seen, besides a large flock of *Sterna melanauchen*. In the evening the Goyder River was entered. Coming to an anchorage about 6 miles up the river, an *Ardea sumatrana* was flushed from the mouth of a small creek, and Rails were heard calling after dusk in the mangroves. During exploration next morning four natives came up the river in a canoe. None spoke English, and it could not be ascertained where fresh water existed. However, a start was made up stream. At about three miles the mangroves on both sides of the river were covered with flying foxes, which rose as the party passed, formed a dense cloud, and flew ahead of the boat. A number of Sea-Eagles and Whistling-Eagles flew among the animals, but the birds did not attempt to catch any. Black Butcher-Birds were calling, and a few Waders were noted. The river was ascended for about 17 miles from its mouth. Here a low ridge of cypress pine came in on the right bank.

On the 8th the right bank and inland for a couple of miles was examined. Country consisted of very poor, shaly sandstone ridges covered with cypress and other trees and low brush, while narrow, sandy flats supported stunted paper-barks, wattle, and brush. The opposite side of the stream appeared to be a vast mangrove swamp. Very few birds were observed. A return was made to the first night's anchorage when entering the river. Just prior to sunset several flocks of Nutmeg-Pigeons were seen flying across the river, evidently heading for the mangroves at the mouth. At the mouth of the river a natives' camp was visited, but no good water found.

On the 9th sail was set for Glyde River, about 6 miles further west, which was reached by sunset. By direction of two natives good water was found in a small pool covered with a dense growth of cane, vines, and other vegetation in an open space in the mangroves, a few yards from the river. The following day the cutter's

water-tank was replenished and the mangroves investigated for Rails (*Eulabeornis castaneiventer*), which were heard calling at daybreak. Birds noted were:—A *Strix*, *Piezorhynchus nitidus*, *Pæcilodryas pulverulentus*, *Cracticus quoyi*, *Calyptorhynchus macrorhynchus*, *Haliastur sphenurus*, *H. girrenera*, *Numenius cyanopus*, *N. variegatus*, *Pisobia ruficollis*, *Herodias timoriensis*, *Garzetta nigripes*, *Tadorna rufitergum*, and a flock of ten Pied Oyster-catchers. The left bank of the river was explored, and across a plain to ridges which appeared about 3 miles distant. The plain was covered with swamp-grass and short rushes, all probably under water during the wet season. The ridges were sandstone, covered with a thin, stunted growth of eucalypts, with patches of low, thorny scrub in the gullies, the usual birds being noted. After exploring about 30 miles of this river, and there being no change for the better in the appearance of the country, a start was made for the Liverpool River, further west.

When anchored off Cape Stewart, on the 17th, at the flush of dawn, fifteen natives came alongside in a big canoe. They all started to climb on board. Signs were made to the blacks to remain in their own canoe, without avail. M'Lennan reached for his shot-gun, intending to fire overhead, but one old fellow seized the barrel and commenced yelling, whereat M'Lennan's two companions stood with revolver and rifles ready for any emergency. It certainly appeared as if the natives were about to make a rush on the cutter, and a shot was fired over the natives' heads, which immediately caused half the black company to dive overboard, while the rest were persuaded to leave without further trouble. By the way, Sandy Island, with its quota of sea-fowl, was explored, and in due course the Liverpool River was reached on the evening of 18th September.

Mr. M'Lennan now having reached the region of the Liverpool and King Rivers (N.T.), not far distant, geographically speaking, from the locality (Port Essington and the Coburg Peninsula) where Gilbert procured many of Gould's northern types (which, unfortunately, were lost to the nation by being taken to America), I make no apology for quoting at length the interesting details of M'Lennan's diary. No doubt, good Gilbert's daily experiences were similar to M'Lennan's; both men were keen and accurate observers. Indeed, from the excellent material and carefully recorded observations which Mr. M'Lennan has returned with, he might truly be termed the modern Gilbert. One thing is evident: M'Lennan has brought back most, if not all, specimens of the species that formed the celebrated Gilbert-Gouldian types (as figured in Gould's great folio work, "The Birds of Australia"), an invaluable acquisition to ornithological material and indispensable to anyone working at the avifauna of the Commonwealth.

LIVERPOOL RIVER.

19/9/15.—Three natives came in a canoe a little after daybreak. One could speak a few words of English; I asked him about fresh

water, and he pointed to a spot a couple of miles further up the river (Liverpool). New and I proceeded in the dinghy to look at the spot. The well was in the middle of a dry paper-back swamp at the edge of the mangroves, but the water was very foul and not fit to drink. Made a start with the tide and a light but favourable breeze. Anchored at 4 p.m. The banks of the river are very low, and clothed with a dense growth of mangroves; an open salt-pan runs right back to a low ridge $1\frac{1}{2}$ miles away. The following birds were seen along the river:—*Ardea sumatrana*, *Herodias timoriensis*, *Garzetta nigripes*, *Butorides stagnatilis*, *Tadorna rufitergum*, *Dendrocygna eytoni*, *Eupodotis australis*, *Haliastur sphenurus*, *Haliaetus leucogaster*, *Cacatua sanguinea*, *Grallina picata*, *Geopelia humeralis*, *Myristicivora spilorrhoea*, *Piezorhynchus nitidus*, *Pœcilotryas pulverulentus*, *Stigmatops ocellaris*, and *Myzomela erythrocephala*. Went on shore along the edge of the mangroves for half a mile. A flock of *Burhinus grallarius* was flushed; *Rhipidura tricolor* and *Stigmatops ocellaris* were the only other birds seen here. Returned along the foot of the ridge to the boat. A single *Anthus australis* was seen on the salt-pan, and a couple of *Cacatua galerita* noted in some paper-barks at the foot of the ridge.

20/9/15.—Made a start with the sweeps about an hour after sunrise, against the tide till 10 a.m.; then we got a light breeze, hoisted the sail, and got along easier. Higher country comes in on the left bank, but there was no sign of fresh water. Anchored again an hour before sunset. New and I went a little further in the dinghy. A flock of *Anseranus semipalmata* flew across the river. About a dozen natives came running out of the mangroves, evidently scared by the report of the gun. They caught sight of me in the dinghy and changed their direction. I held up my hand and called, and they stopped. After a while a couple came up. I made signs that I wanted fresh water, and they led me to a shallow lagoon about a quarter of a mile from the river, but the water was very brackish and weedy.

21/9/15.—Went ashore to explore. A native that could speak a little English was with the others this morning. He told me that there was good fresh water further up the river, but I could not ascertain how far. Went inland for a couple of miles. Country low-lying, mostly dry swamps and billabongs surrounded with paper-barks; appears to be all under water during the wet season. *Haliastur sphenurus*, *Corvus coronoides*, *Grallina picata*, *Coracina robusta*, *Rhipidura tricolor*, *Micræca flaviventris*, *Stigmatops ocellaris*, *Melithreptus albigularis*, *Glyciphila fasciata*, *Merops ornatus*, *Cacatua galerita*, *C. sanguinea*, *C. roseicapilla*, *Geopelia humeralis*, and *G. placida* were noted. On a brackish lagoon near the river a few *Nettopus pulchellus*, a couple each of *Anseranus semipalmata* and *Dendrocygna eytoni*, a few *Parra gallinacea*, *Herodias timoriensis*, and *Nolophox novaehollandiæ* were seen. Struck the natives' camp on returning to boat; got spears in exchange for tobacco, wire, and nails. Our boat proceeded further up the river. Progress very slow, as innumerable snags and sand-banks are met with. Anchor at dark about 6 miles further on. No suitable camping-place to be found; banks of the river only a few inches above high water mark. Mangroves are here replaced by paper-barks and other trees, mostly covered with vines and other creeping plants. A few fresh birds were seen—*Oriolus flavicinctus*, *Chibia bracteata*, *Lalage leucomelæna*,

Chlamydera nuchalis, *Dacelo cervina*, *Alcyone pulchra*, *Halcyon macleayi*, *H. sanctus*, *Centropus phasianus*, *Entomyza albipennis*, *Ptilotis unicolor*, *Trichoglossus rubritorques*, *Ptilosclera versicolor*, *Ptistes coccineopterus*, and *Platycercus browni*.

22/9/15.—*Caprimulgus macrurus* and *Burhinus grallarius* heard calling through the night. The boat was high and dry at daybreak. The river is just a mere trickle here, the water being very brackish and weedy. It is not possible to go further, as big trees lie across the river. Natives came along shortly after daybreak; they told me that the fresh water was a long way. The country about here is similar to our last anchorage; no suitable place to form a camp. Made a start back when enough water to float boat. We had only gone a couple of miles when the boat became fast on a log, and, as the tide was falling, we could not get her off. Went ashore on the right bank and inland for a couple of miles; no change in the country. Returned to the boat; the tide had fallen about 7 feet, and the boat slid off the log; fortunately, no damage was done.

23/9/15.—Made a start at 9.30 a.m. Got fast on a bank about 4 p.m., but, as the tide was coming in, we got off a little later. I went ashore on the left bank and inland for a couple of miles, through mangroves and open salt-pans. *Eupodotis australis* was seen on one of the salt-pans and a single *Hieracidea orientalis* noted; no other forms of bird life to be seen. Made a start at 9 p.m. and pulled till 1 a.m., then anchored.

24/9/15.—Made an early start, and pulled for a couple of hours, then got sufficient breeze to hoist sail. Got fast on a bank again about 4 p.m., but, with the rising tide, were soon got off. Kept on till the mouth of river was reached about midnight.

25/9/15.—Saw a couple of natives on the beach; went ashore to ask them about fresh water. They pointed to a spot half a mile along the coast. Took one of the natives on board, sailed down opposite the place. Got ashore and examined the spring; it was about 50 yards away from the mangroves. Cleaned it out, waited for it to fill, and then replenished the tank. Got under way and headed for the King River. Anchored at sunset at Cape Braithwaite.

KING RIVER.

26/9/15.—Made an early start with a light north-east breeze. A few small Terns (*Sterna gracilis*) seen about the cape. Natives seen on the beach past Hall's Point. Reached the mouth of King River 2.30 p.m.; proceeded up-stream and anchored at sunset about 10 miles from the mouth. Both banks of river thickly clothed with mangroves. A few birds noted were *Haliaeetus leucogaster*, *Tadorna rufitergum*, *Numenius cyanopus*, *N. variegatus*, *Herodias timoriensis*, *Notophox novæ-hollandiæ*, *Cacatua sanguinea*, *Calyptorhynchus macrorhynchus* (a scattered flock of 24 birds flying westward a little before sunset), and *Myristicivora spilorrhoea* (two large flocks also flying westward a little before sunset), and *Stigmatops ocellaris* and *Eulabeornis castaneiventris*, heard calling in the mangroves.

27/9/15.—An early start, and made a couple of miles further. There is an open space in the mangroves on the left bank, where some high

country comes in; further back a high range of hills can be seen. Anchored here for observation. *Cracticus quoyi*, *Myristicivora spilorrhoea*, *Piezorhynchus nitidus*, *Pachycephala simplex* (?), *Micræca flaviventris*, *Myzomela erythrocephala*, *Pseudogerygone magnirostris*, and *Geopelia humeralis* were seen or heard calling along the river. Got ashore on the left bank and proceeded inland for a couple of miles through good forest country—messmate, blood-wood, and other trees; struck the hills—a high range of sandstone. Climbed a few hundred feet to get view of the surrounding country. All along the river, as far as I could see, are immense belts of mangrove, in some places a couple of miles in width. About a couple of miles below where the boat was anchored was a small outcrop of sandstone at the edge of the mangroves. The country round about appeared to be mostly a succession of low, thickly-timbered ridges. Could not see to the westward, as the range of sandstone is higher in that direction. The ranges are scarred with deep ravines in places, and there are precipitous bluffs hundreds of feet high. In the narrow ravines a few bushy trees are seen, and in the wide ravines and on broad ledges is a stunted growth of wattles, eucalypts, and other trees and shrubs, and great areas of spinifex. A couple of *Collyriocichla woodwardi* was seen; a pair of *Ptilotis*, which I cannot place, was also seen: *Artamus minor*, *Coracina robusta*, and *Geopelia placida* were the only other birds observed in the ranges. Explored the foot of the range for some distance to the northward, and then back through the forest country to the boat, reaching it about 3 p.m. No sign of fresh water met with. Bird-life was fairly plentiful in the forest, some of the eucalypts being in flower. *Tropidorhynchus argenteus*, *Myzantha flavigula*, *Trichoglossus rubritorques*, *Platycercus browni*, *Pomatorhinus rubeculus*, *Merops ornatus*, *Coracina robusta*, *Ptilines coccineopterus*, *Rhipidura tricolor*, *Micræca flaviventris*, *Myiagra concinna*, *Lalage tricolor*, *Melithreptus albigularis*, *Myzomela pectoralis*, *M. obscura*, *Climacteris melanura*, *Collyriocichla brunnea*, *Pachycephala falcata*, *Gerygone albigularis*, *Cacatua galerita*, *Calyptorhynchus macrorhynchus*, and a small *Cracticus*, probably *argenteus*, were noted. Mohr went up the river about 3 miles, and came across one place where water might be obtained by sinking. *Ninox connivens* was heard calling in the mangroves across the river after dark.

28/9/15.—Went up river through the forest country for about 4 miles and struck a small patch of scrub of about a quarter of an acre in extent, where *Cacatua galerita*, *Oriolus flavicinctus*, *Lalage leucomelena*, and a *Pinarolestes* were noted. In the forest country *Corvus coronoides*, *Geopelia humeralis*, *Chibia bracteata*, *Dacelo cervina*, *Halcyon macleayi*, *Entomyza albipennis*, *Chlamydera nuchalis*, *Ptilotis unicolor*, *Malurus cruentatus*, *Cracticus argenteus*, and *Eurystomus pacificus* were also noted, in addition to those mentioned yesterday. Went into the ranges and along to where I struck them yesterday. A party of *Malurus dulcis* seen; procured a male. Returned to boat at 2 p.m., and procured *Cracticus argenteus* on the way. Rest of the afternoon spent in the mangroves after *Eulabeornis castaneiventris*, which were heard calling, but did not see any. Mohr went up the river and sank a hole at the place noted yesterday; he got water at 5 feet;

29/9/15.—New and I went up river in the dinghy. About a mile from the boat a fairly large branch comes in on the left. We got up

this branch for about 7 miles, until further progress was barred by the mangroves, which are overhanging and interlaced across the channel. Bird-life not very plentiful along the river. A pair of *Tadorna rufigerum*, a large flock of *Dendrocygna eytoni*, an occasional *Numenius cyanopus*, *N. variegatus*, *Notophox novaehollandiæ*, *Herodias timoriensis*, *Nycticorax caledonicus*, and *Plotus novaehollandiæ* were the only water-fowl noted. *Cracticus quoyi*, *Piezorhynchus nitidus*, *Stigmatops ocellaris*, *Myzomela obscura*, *M. erythrocephala*, and *Micræca flaviventris* were also seen. A nest of *Micræca flaviventris* containing one egg was found in a dead mangrove near the edge of the river. Got ashore on the left bank and made for the sandstone ranges across a flat stretch of poor country covered with a thin growth of stunted trees. A Falcon (*F. lunulatus*) was observed. Reached the ranges and climbed a bluff to get a view of the country up river. The flats on both sides appeared very poor, covered with a thin growth of stunted trees—paper-barks, wattles, blood-woods, and other eucalypts. No signs of fresh water. A few Bower-Birds were the only birds seen in the ranges. Returned to the dinghy and went back to the boat; reached there about 3 p.m. In the afternoon went down river to the small sandstone range at the edge of the mangroves. There was a little scrub around the base of the bluffs and in the ravines, but very dry. *Pitta iris* was secured. *Pachycephala simplex* and *P. falcata* were the only other birds seen in the scrub. *Uroaëtus audax* seen circling on high. Got round the base of the bluffs; still no sign of any fresh water. Returned to boat, reaching there a little before dark. Mosquitoes and sand-flies were very troublesome.

30/9/15.—New and I went up the other branch of the river in the dinghy. About 2 miles from the boat there was a break in the mangroves on the right bank. The river got very narrow in the next couple of miles, and the mangroves overhung and interlaced across the channels; had to cut our way through in several places. Reached the end of the mangroves. The channel was very shallow and full of snags; it was not safe to go further. Went ashore on the right bank; a small billabong surrounded by paper-barks and pandani was located about 400 yards from the river. Birds were fairly plentiful in the trees surrounding the water, but nothing fresh was seen. In a break in the mangroves traces of an old camp (buffalo-shooters') were noticed. A track runs down the river about 500 yards to a thick patch of paper-barks and other trees, palms, pandani, and ferns, where is a fine spring of good water. A low hematite ridge comes in close to the river at this spot; returned along the foot of it. Several more fine springs were met with. The country is heavily timbered—messmate, blood-wood, paper-barks, and numerous other trees—and bird-life plentiful. It should be a good place to form a camp. Returned to the boat. *Butorides stagnatilis* was the only fresh bird seen. Had some lunch, then proceeded north-west from the boat to the end of the sandstone ranges. Climbed the highest bluff for view of the country. It is similar to country across the river. Hunted round amongst the bluffs and ravines for a couple of hours. A few *Artamus minor* and a couple of Bower-Birds (*nuchalis*) were all that were noticed. Returned to the boat at sunset. Mohr tried for water close to our anchorage; he sank four holes, from 6 to 10 feet in depth, without success. Decided to shift up the river to the old buffalo-shooters' camp.

KING RIVER CAMP.

1/10/15.—Removed to the old camp. Had to use the sweeps, there being no wind. Fixed up a camp near the boat. Cleaned out and deepened the spring. Several small eel-like creatures were caught when cleaning out the hole; bottled them.

2/10/15.—Spent the morning near camp. My right hand is very swollen and painful; appears to be poisoned. Had to keep it strapped up. Some *Neochmia phaeton* (immature) and *Megalurus galactotes* seen in the long grass and pandanus around a spring at foot of the ridge near the camp. In the afternoon went up the river for a couple of miles. A number of Finches' old nests were seen in a small patch of banksia and tea-tree brush. Some *Stictopectera annulosa* and *Neochmia phaeton* seen here. Struck narrow, dry billabongs surrounded with paper-barks about a mile from camp, and followed them along for some distance. A Jabiru flew past. A couple of *Tadorna rufitergum* and a *Notophox* were at a salt-water billabong, and a Bustard and Coucal were seen. Bird-life generally fairly plentiful about fresh water, but no nests were found. Fresh buffalo tracks were observed in a small patch of marshy country along the foot of the ridge.

3/10/15.—Went down the river about 3 miles. A flock of *Geophaps* were flushed from burnt country at foot of the ridge. *Podargus phalænoides* was flushed from its nest, containing two eggs, in a small dead tree. An occasional *Geopelia placida* and *Rhipidura tricolor* were the only other birds noted on the river-flat. In a patch of good forest country *Trichoglossus rubritorques* was flushed from a hollow about 60 feet from the ground in a messmate; could not examine nest, as my hand was still bad. A few old nests of Babblers and Finches were seen. Bird-life very scarce on the ridges. *Pachycephala falcata*, *Rhipidura tricolor*, *Climacteris melanura*, *Geopelia placida*, *Pomatorhinus rubeculus*, were all that were seen. After lunch took to the ridges south from camp and hunted till dark. Two flocks of *Ptilosclera versicolor* seen on the wing. *Grallina picata* and *Artamus venustus* seen in some burnt country. A large flock of *Anseranas semipalmata* passed the camp after dark, heading south-west. Whistling-Ducks also heard flying past. Later, two Owls (a small *Ninox* and a *Strix*) were heard calling.

4/10/15.—Went up and across the river in the dinghy; struck a bad place, having to go through about half a mile of mangroves to reach forest country. Headed up-stream through a mile of sandy country covered with stunted paper-barks and wattles. *Rhipidura isura*, *R. tricolor*, *Myiagra concinna*, *Pachycephala falcata*, and *Geopelia placida* were the only birds noted. A couple of *Halcyon macleayi* were seen in a poor messmate patch on a gravelly flat. Went nearer the river, where there are some big paper-barks and eucalypts. A pair of *Trichoglossus rubritorques* was flushed from a eucalypt with a good hollow about 50 feet from the ground. A mile further on a small lagoon was struck, where three *Antigone australasiana* and an *Ibis molucca* were seen; *Conopophila rufogularis* also noted. Came to a flat covered with a thin, stunted species of *Melaleuca*; searched it for 1½ miles. Birds seen:—*Poephila personata*, *Micræca pallida*, *Cracticus argenteus*, *C. picatus*, and *Rhipidura tricolor*. In some blood-woods a small flock of *Ptilosclera versicolor* were in a flowering tree. *Ptistes coccineopterus* was seen in some big paper-barks along a creek;

In making back to the dinghy, got bushed in the mangroves for a couple of hours. *Myzomela erythrocephala*, *Stigmatops ocularis*, *Micræca flaviventris*, *Piezorhynchus nitidus*, and *Pæcilodryas pulverulentus* noted in the mangroves. Returned to camp about 3 p.m. and skinned birds.

5/10/15.—Proceeded up river. A pair of *Xenorhynchus asiaticus*, a couple of *Herodias timoriensis*, a single *Ibis molucca*, a *Platalea regia*, two *Glottis nebularius*, and two *Tadorna rufitergum* were seen at the billabongs. Went inland, to the east, for about 3 miles, through a good forest country. *Myzomela pectoralis* fairly numerous. *Lalage triolor* noted and *Coracina hypoleucus* shot. Struck towards the river again and across some low hematite ridges. Very poor country. Followed the ridge round to the camp. *Calyptorhynchus macrorhynchus*, *Cacatua galerita*, and *C. sanguinea* seen in some big paper-barks at a fresh-water billabong. A flock of *Neochmia phaeton* was amongst some pandanus. Reached camp pretty late in the afternoon and skinned birds. *Ardea sumatrana* calling on the river after dark.

6/10/15.—A few *Cacatua roseicapilla* seen flying past the camp at sunrise. Spent the morning hunting through the mangroves for $1\frac{1}{2}$ miles down the river. *Myzomela erythrocephala*, *M. obscura*, *Piezorhynchus nitidus*, *Pæcilodryas pulverulentus*, *Stigmatops ocularis*, *Pseudogerygone magnirostris*, *Micræca flaviventris*, *Pachycephala simplex*, and *Cracticus quoyi* were seen, but no nests found. Had a good hunt through the patch of scrub at the spring. *Pinarolestes*, *Chalcochaps*, *Pseudogerygone magnirostris*, *Ptilotis unicolor*, *Cacatua galerita*, *C. sanguinea*, *Chibia bracteata*, *Megalurus galactotes*, *Eurystomus pacificus*, and *Dacelo cervina* were seen. Got back to the camp and skinned birds. Sent New to the spring to secure a specimen of the Black Butcher-Bird which could be heard calling. He returned in about an hour's time with a Drongo. A small *Ninox* was heard calling. I imitated the call, but could not bring the bird up. *Ægotheles* also heard calling.

7/10/15.—Went up other branch of river in dinghy. Found *Micræca flaviventris* building in the fork of a dead mangrove; nest 8 feet above high-water mark. Another bird found building in a similar position further on. Went up a small creek about 400 yards. Flushed *Pseudogerygone magnirostris* from its nest, which was 4 feet above the water in an overhanging mangrove. Clutch, three eggs. A mile further up the river another *Micræca flaviventris* flushed from its nest, 6 feet above the water, in fork of dead mangrove; secured the egg with egg-scoop. Further along the river yet another *Micræca* was flushed from its nest 4 feet above the water in a dead mangrove; the nest contained one egg. The parent bird made a great fuss, fluttering round within a couple of feet of my head. Both *Alcyon pusilla* and *A. pulchra* were seen and shot. Returned on the other side of the river and found several more *Micræca* nests. In trying to get the egg from one with the scoop the bird returned, and sat on the nest, and would not budge. If I pushed her off with the scoop she returned again. She eventually flew off and dragged the nest and egg clear of the scoop. The egg fell in the dinghy, and was broken. Got back to camp about 3 p.m. *Stictoptera annulosa* observed building near camp; nest 6 feet from the ground in a small bush. After dark Geese heard flying past to the westward and *Strix* heard calling. The weather has been very hot lately.

8/10/15.—Went up the river in dinghy, landing in three places where *Eulabeornis castaneiventris* were heard calling, but could not catch sight of the Rails—mangroves too thick. Shot a *Pinarolestes* and a *Pachycephala simplex*. Got back to camp about 11 a.m.; skinned birds and blew eggs taken yesterday.

9/10/15.—Went down the river to nest of *Trichoglossus rubritorques* noted 3/10/15. Both birds flushed from the tree. Climbed to the nest, which contained two small young about a week old. A Little Eagle was seen and secured. Worked back across the ridges to camp. A covey of *Turnix castanonota* was flushed from the long grass at the foot of a ridge. Had a long chase after some *Cracticus picata*. Got back to camp 2.30 p.m. and skinned birds.

10/10/15.—Went up river about $4\frac{1}{2}$ miles. A pair of *Trichoglossus rubritorques* was flushed from a hollow 30 feet up in a eucalypt; it contained two small young, not long hatched. Covey of *Synæcus cervinus* was flushed from some long grass near a dry billabong; shot one of them. A small flock of *Geophaps smithi* was next flushed; bagged three, but only one was fit to skin. *Dacelo cervina* flushed from a hollow 20 feet from the ground in a eucalypt; nest contained two eggs. Another pair of *Trichoglossus rubritorques* was flushed from a hollow 35 feet from ground in a eucalypt; it contained two young about a fortnight old. Headed back to camp along a sandy rise through thin forest country. *Ægotheles nova-hollandiæ* flushed from a hollow 20 feet from the ground in a eucalypt; no nest. Secured a specimen of *Pomatorhinus*. Got back to camp about 3.30 p.m. and skinned the birds.

11/10/15.—Spent the morning working the river flat and the ridges near camp. *Micræca flaviventris* found building 30 feet from the ground on a thin, horizontal branch of a dead paper-bark. Shot a Bronze-wing Pigeon at spring near the camp. A Rufous Flycatcher (*Rhipidura*) was seen and shot in the scrub at another spring; saw *Tropidorhynchus argenteiceps*. In the afternoon secured specimens of *Gerygone albigularis*, *Rhipidura isura*, and *Turnix castanonota*, and returned to camp to skin them.

12/10/15.—A pair of *Poephila personata* is starting to build in a pandanus near camp. Went up the other branch of the river in the dinghy for about $1\frac{1}{2}$ miles. Had a look at two nests of *Micræca flaviventris* noted building 7/10/15; one contained one egg, the other appeared to be deserted. Found four more nests of this bird, almost completed, in the forks of dead mangroves. Got ashore on the right bank for about 3 miles, working the river flat. Country very poor; timber mostly stunted paper-barks, with a few large trees along the edges of the salt-pans and around the small billabongs. A pair of *Trichoglossus* was flushed from a dry spout 40 feet from the ground in a paper-bark; it contained two small young a few days old. A Brown Hawk was flushed from its nest in a thin, dry fork of a paper-bark; branch too rotten to climb to. Another pair of Lorikeets flushed from a hollow 20 feet from the ground in a dead spout of a eucalypt; again young. Returning along the edge of the forest country, *Rhipidura tricolor*, *Pachycephala falcata*, and a few *Geopelia placida* were the only birds noted. Some Stints (*Pisobia acuminata*) were seen on a salt-pan; shot a pair. Shot a Sandpiper (*Heteractitis brevipes*) along the river.

13/10/15.—Went up the river in the dinghy for $1\frac{1}{2}$ miles, and got ashore on the left bank and worked the river flat for about $3\frac{1}{2}$ miles. From tree where I flushed a pair of Lorikeets 4/10/15, both birds again flew from the hollow; it contained two eggs. Nest of *Falco lunulatus* was found 70 feet from the ground, in the topmost branch of a eucalypt. I had some trouble in securing the eggs. Both the birds were flying round whilst I was at work. A Black-breasted Buzzard was seen flying high. A couple of *Cisticola* seen in some long, dry grass. Shot a specimen of *Dacelo cervina*. Got back to camp about 3 p.m. and skinned the birds.

14/10/15.—Went up other branch of the river in dinghy for about 3 miles. Got ashore and went to sandstone ranges about 3 miles distant. Followed up a wide ravine, well timbered with messmate, blood-wood, wattle, and other trees. *Spinifex* was very high and thick. Saw some of the *Ptilotis* that I had previously secured; shot one.* When looking for a wounded bird I slipped and fell on a glazed surface of rock and damaged the right barrel of my gun, putting it completely out of action. Explored through narrow ravines and across some of the smaller bluffs. Shot a pair of *Artamus minor*. The ravines for a hundred feet up were full of low scrub. *Pitta iris*, a *Chalcophaps*, and *Geopelia humeralis* were seen; also sighted *Collyriocichla woodwardi*. Had lunch and skinned birds. The *Ptilotis*, owing to the heat, was nearly putrid. A thick smoke which I had previously seen came down the ravine, and I had to leave. Worked through the forest country at the foot of the ranges. *Megapodius tumulus* was seen in a small patch of scrub. A few *Oriolus flavicinctus* and a pair of *Pinarolestes* also noted. *Dacelo cervina* was flushed from a hollow 20 feet from the ground in a eucalypt. The nesting-place contained two eggs. A pair of *Climacteris melanura* was examining a hollow 12 feet from the ground in a dry stump. I climbed to it, but there was no sign of a nest; coming down, I got a splinter $1\frac{1}{2}$ inches long in my leg, which took me some time to extract. Returned to the dinghy and headed campward. *Eulabeornis castaneiventer* seen at the water's edge. Reached camp 7.30 p.m.

15/10/15.—After lunch I went to the patch of scrub at the spring. spent some time watching *Pachycephala simplex*, which are always to be seen here; do not think they are breeding yet. Went into the mangroves further down the river. Flushed a big Owl, probably *Ninox rufa*. It flew off across the river. Continued through the mangroves again for about a mile after *Cracticus quoyi*. Shot a Shrike-Thrush (*C. brunnea*) at the edge of the mangroves. A small flock of *Myristicivora spilorrhoea* was in the scrub at the spring.

16/10/15.—Went down and across the river. Three nests of *Micraea flaviventris* previously noted building were examined, but contained nothing; think they have been deserted. Two more pairs of these birds were observed building. Went ashore and up through forest country to the range. A pair of *Pseudogerygone chloronota* was seen. Shot *Oriolus flavicinctus* and *Cracticus argenteus*, and returned to the dinghy. Afternoon, went into the mangroves to where I had seen the large Owl; saw the bird again, but it escaped. Thunder and lightning to the southward after sunset.

17/10/15.—Crossed the river into the mangroves to see if I could

* This distinctly new *Ptilotis* is described by me on p. 167.—H. L. W.

procure any Black Butcher-Birds or Chestnut Rails. Saw the former birds building in the fork of a mangrove, 20 feet from the ground; nest about half built. Spent much time after the Rails, but could not catch even sight of them, although at times they were only a few feet away. They usually frequent the densest part of the mangroves, along the small channels. Another pair of Butcher-Birds was noted. A nest of *Pseudogerygone magnirostris*, containing two eggs, was found, a couple of feet above the water in a mangrove. The tide was rising, and, as the mangroves were flooded, I returned; reached camp about 2 p.m. Went in quest of Rufous Owls again; two birds were seen. After stalking them for about two hours brought one down. They are very wary birds, and fly off at the slightest sound or movement. Got back to camp and made skin of the bird before dark. Heavy thunder and lightning away to the southward again. Heard a *Strix* call about 10 p.m., and went out after it, without success.

18/10/15.—Went out east by south from camp for about 4 miles, then around to the south and west, striking the river about $3\frac{1}{2}$ miles above camp. Very little bird-life seen. Nest of *Pomatorhinus rubeculus*, 8 feet from the ground, in a wattle, was examined; it contained three small young. Shot a pair of *Myzantha flavigula* and a *Poephila acuticauda*. A Tree-creeper (*C. melanura*) was found building in a hollow 20 feet from the ground in a eucalypt. Falcon (*F. lunulatus*) was seen attacking a Whistling-Eagle, stooping at it repeatedly and uttering its sharp, querulous call, but never actually striking the big bird. A Jabiru and Spoonbill were the only water-birds seen at the billabongs. Procured a specimen of *Entomyza albipennis*. Got back to camp about 2.30 p.m. My legs were very bad—all out in a burning rash, and puffed up. After I had skinned the birds I went down to the mangroves to see if I could get the other Owl; no sign of it. I must have strained my left ankle to-day; it was very painful when I turned in.

19/10/15.—Started up the river. My ankle is very stiff and painful, but it may improve with walking. A number of migratory birds seen about the salt-pans which have been filled by the big tides. *Glottis nebularius*, *Totanus stagnatilis*, *Mesoscolopax minutus*, *Heteropygia acuminata*, *Pisobia ruficollis*, *Ægialitis melanops*, *Lobivanellus miles*, *Antigone australasiana*, *Nettion gibberifrons*, and *Dendrocygna eytoni* noted. My foot had not improved, so I shot a few birds and returned to camp. On the way saw pair of *Eurystomus pacificus* and the Rufous Owls.

20/10/15.—My ankle too painful for walking, so I took to the river in the dinghy to examine the nests previously noted building. Some were deserted, others contained eggs. *Pseudogerygone magnirostris* was flushed from a nest containing three eggs. *Halcyon sordidus* were heard calling. A fine pair of *Ardea sumatrana* preceded the dinghy all the way up the river. On return noted *Alcyon pulchra* and *Numenius variegatus*. *Eulabeornis castaneiventer* was heard calling in several places. Got back to camp about 3 p.m. Sent New up the river. *Cacomantis flabelliformis* and a *Chalcococcyx* heard calling in the mangroves near camp.

21/10/15.—Went down river in dinghy for about 5 miles. Examined several small creeks and channels. A pair of *Micræca flaviventris* found building in fork of dead mangrove, about 5 feet above the water. A number of *Ægialitis ruficapilla* and *O. geoffroyi*

seen on a mud-bank. A Tern (*Gelochelidon anglica*) seen and shot. Saw a Mangrove-Bittern and a Darter. Shot a Whimbrel on the wing. A few *Numenius cyanopus* and *N. variegatus* were seen along the river.

22/10/15.—Spent the morning near camp. Noted *Myristicivora spilorrhoea*, *Myzomela erythrocephala*, *Melithreptus albigularis*, *Stigmatops ocellaris*, two *Poephila acuticauda*. Mosquitoes were exceptionally bad in the scrub and in the mangroves. In the afternoon I went along the salt-pans and billabongs, then through forest country on the ridges. Procured *Dupetor gouldi* at the fresh-water billabong. Nothing of note in the forest country. Mosquitoes bad about the salt-pans and billabongs.

23/10/15.—Went down river a couple of miles and landed on the left bank. Worked through the forest country to the sandstone range. A pair of *Climacteris melanura* seen feeding full-fledged young. Very few birds here now; trees past blooming. Worked through the low bluffs for about 2 miles and got into the main range for about 2 miles. A *Ptilotis*, a *Collyriocichla woodwardi*, *Stigmatops ocellaris*, *Pachycephala falcata*, *Rhipidura tricolor*, and *R. isura* were seen. A pair of *Podargus phalaenoides* was flushed from a blood-wood where was a nest containing two small young. Returned to camp about 3 p.m. and skinned birds.

24/10/15.—Went up river and landed in several places in the mangroves, where the Rails and Butcher-Birds were calling. Found five nests of *Pseudogerygone magnirostris*—one with one egg, two with two eggs each, and two building. Procured two males of *Piezorhynchus nitidus*. Nothing else of importance to-day except mosquitoes, which are in clouds about the camp; have to keep a circle of fire-smokes going from about an hour before sunset till we turn in. The cure is, however, almost as bad as the cause.

25/10/15.—Heard the *Strix* calling about an hour before daylight; went out after it—no luck. Did not feel well, so shot some birds near the camp. In the afternoon I went out along the foot of the ridge north-east from camp. Saw *Smicromnis flavescens* and *Oriolus flavicinctus*; nothing else of note seen. Heard a possum screeching near the camp about 9 p.m. Went out with the electric torch; located the animal in some small paper-barks at the edge of the mangroves. It made a good specimen.

26/10/15.—Went south of camp, through the timbered ridges, for about 3 miles. Obtained *Pardalotus uropygialis* (three) and a male *Malurus cruentatus*. Returned to camp about mid-day. One of the Pardalotes was already putrid. Spent the afternoon in camp, feeling unwell. The weather was oppressively hot, and nights very sultry.

27/10/15.—Went up the river to examine some nests in course of construction, and got a Little Kingfisher. After lunch went out east from camp a couple of miles; not much bird-life about. Nearing camp, *Glyciophila fasciata* was seen. Heard a strange Owl calling again some time after I turned in; went in quest. There were two birds, which led me a nice dance for about a mile. Got nearly eaten with mosquitoes, and never sighted the birds.

28/10/15.—Up river to get the nest of *Climacteris melanura* that was building. The bird flushed from the hollow, so I climbed up

and secured two eggs. Noted *Philemon sordidus* and *Myzomela pectoralis*, the latter being fairly numerous in a patch of burnt forest. My legs had swelled and were painful, so I remained in camp during the afternoon. The sores on my hands are beginning to heal; have been careful lately—have not got any fresh scratches.

29/10/15.—Went up the river in the dinghy to have a look at the nest of *Cracticus quoyi* noted 17/10/15; it was completed, but there were no eggs. Heard the birds close by. The other nest noted same date had not been added to. Had a search for the nest of another pair of these birds, but only found two old nests. Found a nest of *Zosterops lutea* in a small-leaved mangrove overhanging the river; it contained two fresh eggs. The bird sat on the nest till touched. Two nests of *P. magnirostris*, containing two eggs each, were taken. Another nest contained two hard-set eggs. A nest of *M. flaviventris*, 8 feet above the water, in fork of dead mangrove, contained one egg. The nest of *P. magnirostris* noted 27/10/15 still contained but two eggs; took them. A Pied Goose was flushed from the mangroves, and a Megapode was seen, also *Piezorhynchus nitidus* and *Zosterops lutea*. Afternoon, I went down the river through the mangroves. Heard the Chestnut Rails calling in a fairly clear patch of mangroves. Crept quietly up to within sight of them. There were eight birds; two pairs were fighting, while the others looked on, uttering their queer calls occasionally. Although I shot one of the outsiders, the others kept on fighting. I was preparing for another shot when a bird caught sight of me, uttered a loud warning grunt, and all disappeared instantly. Saw a Cuckoo (*Cacomantis flabelliformis*) and a Black Butcher-Bird. Mosquitoes plentiful. Arrived at camp about 5 p.m. and skinned birds.

30/10/15.—Went up the other branch of river. Took nest of *Micræca flaviventris* and several nests of *Pseudogerygone magnirostris*. One had two eggs, including one of a Bronze-Cuckoo. A nest of *Zosterops lutea* contained two slightly incubated eggs. Hunted near camp in the afternoon. Koel heard calling after dark, as it had by day.

31/10/15.—Went up river in dinghy for a couple of miles. Nest of Yellow *Zosterops* noted 29/10/15 contained three eggs. Landed on the left bank and proceeded through the forest country to the west for about 3 miles. Flushed *Rhipidura isura* from its nest, 5 feet from the ground, in a dead wattle, and saw *Myiagra concinna*. *Halcyon macleayi* was flushed from its hollow in a termites' nest 20 feet from the ground in a eucalypt; the mound contained four eggs. A little further on *Trichoglossus rubritorques* flushed from a hollow 25 feet from the ground in a eucalypt; result, two eggs. Secured *Conopophila rufogularis*. Reached camp 1.30 p.m. and skinned birds. After I had finished I went to the patch of scrub at the spring near camp. Shot a female of *Lalage leucomelæna* and a couple of *Myzomela obscura*. Mosquitoes very troublesome.

1/11/15.—Excessively hot, and an uneventful day.

2/11/15.—Went down river a couple of miles along the edge of the salt-pans. Noted *Ochthodromus geoffroyi*, *Himantopus leucocephalus*, *Glottis nebularius*, and *Heteropygia acuminata*. Saw a *Cisticola* and several *Stictoptera annulosa* at the spring near camp. After lunch, at the spring again; noted *Dicæum hirundinaceum*, *Glyciphila fasciata*,

Neochmia phaeton, and *Centropus phasianus*. A Little Eagle was seen overhead.

3/11/15.—Went out east across the ridges for about 3 miles, and back to camp along the foot of the ridges. Birds identified:—*Myzomela erythrocephala*, *Lalage tricolor*, and *Ptilotis unicolor*; and in the afternoon, *Synæcus cervinus*.

4/11/15.—Went up river to the billabongs. A score of *Tadorna rufitergum* were seen. After lunch visited the spring. Saw a White Goshawk; spent about two hours trying to get it, without success. Saw *Megalurus galactotes* and *Melithreptus albigularis*. *Strix* heard calling after dark.

5/11/15.—Went up the river in the dinghy; visited the two old nests of *Ardea sumatrana*, as I thought these birds might have started to build. The nest of *Cracticus quoyi* noted 17/10/15 appeared to be deserted. Worked round through the mangroves in several places, but did not find any nests. Of two nests of *P. magnirostris* noted 24/10/15, one was deserted, the other contained two eggs. A nest noted 27/10/15 also contained two eggs. Shot a couple of *Glottis nebularius* on the way back to camp. After lunch I went down to the spring to see if I could see *Astur novaehollandiæ*, but there was no sign of the bird about. Worked round through the forest. Procured *Coracina robusta*, *Halcyon sanctus*, and *Neochmia phaeton*. Rest of day uneventful.

6/11/15.—Went down river a couple of miles. The nest of *Micræca flaviventris* noted 21/10/15 contained one hard-set egg. Landed on the left bank and went to small sandstone range. A couple of *Pitta iris* was heard, a pair of *Caprimulgus macrurus* flushed, and *Collyriocichla woodwardi*, *Rhipidura isura*, and *Pachycephala falcata* seen. Shot a *Ptistes coccineopterus* in some paper-barks. Got back to camp at 2.30 p.m., shooting a Curlew on the way which had the claw of a small crab fastened on its bill. Excessively hot to-day. Distant thunder and lightning after sunset.

7/11/15.—Went up river a couple of miles through the forest. Found a nest of *Rhipidura isura*, ready for eggs, 5 feet from ground on dead twig of a *Banksia*. *Dacelo cervina* flushed from a hollow 15 feet from the ground in a eucalypt; nest contained two eggs. Felt unwell, so I returned to camp. Called at billabongs on the way; saw a flock of ten Whistling-Ducks. Shot a couple of *Tadorna rufitergum* for the pot, and noted *Entomyza albigennis*, *Merops ornatus*, *Pachycephala falcata*, and *Malurus cruentatus*.

8/11/15.—Feeling too unwell to go far afield, went to spring at foot of ridge about 7.30 a.m. to see what birds came to water. In an hour and a half identified *Geopelia humeralis*, *G. placida*, *Poephila personata*, *P. gouldiæ*, *Neochmia phaeton*, *Tropidorhynchus argenticeps*, *Philemon sordidus*, *Entomyza albigennis*, *Stigmatops ocularis*, *Glyciphila fasciata*, *Myzomela obscura*, *Melithreptus albigularis*, and *Rhipidura tricolor*. Five *Lobivanellus miles* were seen at an open pool at the edge of the scrub. Went again to the springs about 2 p.m. *Geophaps smithi* was the only additional bird seen. Distant thunderstorms to east, south, and west during the afternoon and evening.

9/11/15.—Still unwell; must have a touch of fever. Went to the spring at foot of ridge for a couple of hours; saw *Myzomela pectoralis*,

Conopophila albigularis, *Poephila gouldiæ*, one *Philemon sordidus*, and one *Tropidorhynchus argenteiceps*. Just as I was about to return a fine Red Buzzard flew into the trees near the spring. I secured it.

10/11/15.—Better to-day. Went up the river for about 3 miles. Found nest of *Climacteris melanura* 30 feet from the ground in hollow spout of a messmate; it contained young almost ready to fly. A pair of *Rhipidura isura* seen feeding small young in a nest 30 feet from the ground on dead twig of a paper-bark. Nest of *Podargus phalænoides* 15 feet from the ground in upright three-pronged fork of an iron-wood also contained young. Shot a specimen of *Calyptorhynchus macrorhynchus*, and returned to camp with a bad headache.

11/11/15.—Went up other branch of river by boat for about 4 miles, landing on the left bank and walking for another 3 miles. *Oriolus affinis* was seen, which I tried to get. Few other birds were seen. On return I took eggs of *Pseudogerygone magnirostris* and *Micræca flaviventris*. Shot a Sandpiper (*H. brevipes*)—the only one seen. In the afternoon I went out on the ridge near the camp. *Smicrorhis flavescens*, *Stigmatops ocellaris*, and *Glyciophila fasciata* noted.

12/11/15.—Spent the morning in the ridges east of camp. *Neositta leucoptera*, the first noted, was shot. Watched four pairs of *Climacteris melanura* in different places. Shot *Turnix castanonota* and a couple of *Collyriocichla brunnea*. In the afternoon got a fine *Myristicivora spilorrhoea* in the scrub at the spring, and made a good skin of it.

13/11/15.—Went out through the forest country to south-east and south of camp. Shot *Platycecus browni* and found nest of *Rhipidura isura*, 6 feet from ground on dead twig of a eucalypt, containing a single egg. Nothing else exceptional noted to-day except a pair of *Turnix melanotus*, which flushed from some grass; did not get a shot, too much timber in the way.

14/11/15.—Uneventful day, except for great heat. Incessant lightning to the south after dark.

15/11/15.—Another uneventful day. More thunder and lightning around after dark.

16/11/15.—Went to a spring at foot of ridge about 1¼ miles away. Remained about three hours. *Tropidorhynchus argenteiceps*, *Philemon sordidus*, *Ptilotis unicolor*, *Melithreptus albigularis*, *Myzomela obscura*, *M. erythrocephala*, *Stigmatops ocellaris*, and *Glyciophila fasciata* were seen in fair numbers. Three *Conopophila rufogularis* also seen, likewise *Entomyza albipennis*, *Lalage tricolor*, *Rhipidura tricolor*, *R. isura*, *Synæcus cervinus*, *Geopelia placida*, *Neochmia phaeton*, *Poephila personata* and *P. acuticauda*, and *Munia castaneithorax* (a number of these birds came in—the first I have seen of the genus). *Falco lunulatus*, *Cisticola exilis*, *Megalurus galactotes*, *Malurus cruentatus*, *Chibia bracteata*, and *Merops ornatus* also noted. In the afternoon visited the patch of scrub at the spring. *Edolisoma tenuirostre* was seen. Procured *Ptilotis unicolor* and *Trichoglossus rubritorques*. Thunderstorms to east, south, and west during the afternoon. A few points of rain fell, and made a most welcome change.

17/11/15.—Went to the spring up the river again. There were

noted *Poephila gouldiæ*, *Dicaeum hirundinaceum*, *Megalurus galactotes*, and five *Antigone australasiana*. A great number of Waders were also seen about the salt-pans, including *Ægialitis melanops* and a single *Erythrogonys cinctus*. The water in the salt-pans and billabongs was a moving mass of mosquito larvæ. Track of a large crocodile was seen crossing from the channel that fills the salt-pans to a billabong at the foot of the ridge. Returned to camp, shooting *Malurus cruentatus* and *Rhipidura tricolor* on the way. In the afternoon noticed all the birds were busy catching flying termites. At the other spring down the river a number of Finches (*Neochmia phaeton*) were also catching flying termites on the wing.

18/11/15.—Went to the spring up river again. Some *Munia* arrived about 10 a.m.; shot two, but lost one in the long grass. A pair of *Poephila gouldi* was seen. Another flock of *Munia* (apparently *castaneithorax*) flew into the bushes near. Brought down one, which proved to be *M. xanthopyrmyna*. Got a shot at more *castaneithorax* (?); brought down seven birds, one of which was *M. xanthopyrmyna*. Had brought the skinning outfit with me, so I set to work at once. Finished six specimens and returned to camp. A few *Poephila personata*, *P. acuticauda*, and *Neochmia phaeton* kept coming in to water whilst I was at work. Did not see any more of *M. xanthopyrmyna*. Returned to camp about 3.30 p.m. and finished the rest of birds. Heavy thunderstorm to southward, but it did not reach the camp. Mosquitoes very troublesome again.

19/11/15.—Went up river for a couple of miles through forest. Put in two hours nesting. A Red Buzzard was near the spring. Some Finches (*Neochmia phaeton* and *Munia castaneithorax*) were feeding amongst the grass. A small *Turnix* was flushed. Went down round the salt-pans and billabongs, but did not see anything of note. Returned to camp; reached there about mid-day. Shot a specimen of *Poephila personata* on the way. Had some lunch and skinned the birds. In the afternoon worked the forest country down river. Birds scarce, but secured *Gerygone albigularis*, *Malurus cruentatus*, and *Rhipidura isura*. Mosquitoes very bad.

20/11/15.—Went down river about 1½ miles in dinghy. Landed on the left bank and got into the sandstone range. A party of *Malurus dulcis* (male and three females) was watched for some time. Plenty of water now in rock-holes since the rain, but bird-life as scarce as ever. *Collyriocichla woodwardi* seen on a high pinnacle of rock, uttering its rich and varied song. Another bird flew from under a ledge below; it appeared to come from a nest. There was a deep ravine intervening, and I could not get across. Deposited lunch and water-bag under a shady ledge and hunted round till mid-day. A pair of *Ptilotis* was watched for some time without result. Crossed the range and worked along the other side for some distance. A Koel noted. Hunted through the scrubby ravines where I had previously shot a *Chalcophaps*, but no birds of any kind were seen, so headed for camp. Examined the place where *Collyriocichla woodwardi* was seen earlier in the day. Two fresh nests were found in holes in the rock under high, overhanging ledges, and the birds heard calling a short distance away. Reached camp a little after sunset. Exceedingly hot to-day. Mosquitoes very bad on the river.

21/11/15.—Explored the sandstone range again. Worked through about a mile before any *Collyriocichla woodwardi* were heard. Found

many old nests and one fresh of the Thrushes, all placed in holes in the backs and roofs of overhanging ledges of rock. *Malurus dulcis* observed for some time; could not locate the females. A *Ptilotis* also seen. After lunch I worked another part of the range. A Thrush flew from under a ledge 20 feet from the bottom of a ravine—rather a stiff climb. A fresh-looking nest was found in a hole under the ledge. Further on a nest of *Artamus minor* was found on a narrow ledge 20 feet up the face of an abrupt pinnacle of rock; after a stiff climb I managed to get above the nest, which contained two small young. Some Koels, a Bower-Bird, a Megapode, and a *Chalcophaps* were noted in a small patch of scrub at the head of a ravine. Worked about $2\frac{1}{2}$ miles of the range to the northward. There had not been any rain in this part yet. Caught a few water-beetles and some tiny shell-fish that were swimming rapidly in a pool; bottled them. Reached camp at dusk.

22/11/15.—Felt stiff and sore; too much rock work yesterday. Took a skinning outfit and went to spring up river. *Neochmia phaeton* were the only birds seen up till 10 a.m. Then a few *Munia* and *Stictoptera* came. Four *Poephila* were located in a bushy tree about 20 yards away from where I sat. I fired, and quite a large flock flew from the tree. I picked up 13 birds; four of them were badly damaged; the others were good specimens. Sent New back to the camp to bring along some lunch, and set to work on the birds again; finished 13 skins by 3 p.m. Later, two large flocks of *P. gouldi* were noted, and numerous small flocks of *M. castaneithorax* kept arriving. Did not see any of *M. xanthoprymna*. Rest of the afternoon hunted through the forest.

23/11/15.—Went to the sandstone range and into it about a mile further north than last visit. A party of *Malurus dulcis* (male and four females) was watched for some time without result. A single *Ptilotis* was procured. Several Thrushes heard calling, but only one nesting-place discovered—two nests side by side on a sheltered ledge; one appeared to be fresh. An Eagle's nest was observed jambed between a fig-tree and the face of the cliff, about 100 feet from the bottom of a ravine. Worked round and up above the nest, which appeared being built, as a green branchlet could be seen in it. Some large bats were disturbed in a narrow ravine; bagged two of them. A fine rock-hole of clear, cool water was found, from which a lot of small, shrimp-like creatures were secured. After lunch worked through another part of the range. A pair of small Owls was flushed from a bushy tree; one bird was dropped, the other disappeared. A number of human thigh and shin bones, mostly coloured red, was found hidden under a shelf of rock. Nothing else of note seen. Returned to camp about sunset, shooting a *Platyercus browni* on the way.

24/11/15.—Shot a Little Cuckoo (*Chalcococcyx minutillus*) near the camp before breakfast. A Swift (*Cypselus pacificus*) flew south. Worked through the forest south of the camp. A small Owl flushed from bushy eucalypt; shot it. Two pairs of *Cracticus argenteus* were observed for some time; do not think they have started to breed yet. *Artamus venustus* noted. Called in at the billabongs on the way back. Tracks of Emus seen in the mud. All the Finches again in evidence at the spring, and fairly numerous. Got back to camp about 2 p.m. and skinned birds.

25/11/15.—Went to the northern end of the sandstone range; passed through about 3 miles of forest on the way. Little bird-life observed. Nest of *Artamus minor* noticed in a hole of rock; could not reach it. Another nest of this bird seen on the face of a precipitous cliff; it contained young. The strange *Ptilotis* was seen and watched for some time. On imitating its call the bird became very excited, and in a few minutes another bird appeared, presumably the female. Both birds then flew off into a scrubby ravine. Followed them, but could only locate the male; it was then too late to search the ravine. I must have strained my foot in the ranges, as I could hardly walk when I reached camp at sunset.

26/11/15.—Foot very stiff and painful this morning, so spent day near camp, procuring some useful material and observing. Thunderstorms to the south.

27/11/15.—Went to the sandstone range where I was watching the pair of *Ptilotis* mentioned 25/11/15. On imitating their call, one of the birds flew from the entrance of the ravine; a little later the other bird appeared. Watched them for about an hour. Searched the ravine thoroughly, but could not find any nest. After lunch worked another part of the range. Eight more nests of *Collyriocichla woodwardi* were found; two appeared to be fresh. All were in similar positions to those previously noted. The bush was melodious with the birds' varied and beautiful song. Two nests of *Artamus minor* noted in inaccessible positions in cliffs. Two pairs of the *Ptilotis* were watched for some time, without result. Saw parties of *Malurus dulcis*. A slight thunderstorm passed up the river about mid-day, and another passed over the camp at night.

28/11/15.—Went down the river for about a mile in the dinghy, and up a small creek for $1\frac{1}{2}$ miles. Nests of *Pseudogerygone magnirostris*, containing eggs, were taken. Nests of *Piezorhynchus nitidus* and *Cracticus quoyi*, containing young, were noted. Saw *Pacilodryas pulverulentus*; also a number of *Edoliisoma tenuirostre* were heard calling in different places among mangroves. Went up the river a short distance to where I had previously heard *Halcyon sordidus*. Mosquitoes very bad in the mangroves. In the afternoon two pairs of *Climacteris melanura* were watched for an hour; no result. *Cacomantis flabelliformis* seen near camp. The nest of *Rhipidura isura* examined two days ago contained two eggs.

29/11/15.—Went up the river and examined three of the small creeks. On the butt of a fallen mangrove, near the creek, I found a nest in course of construction that perhaps belonged to the Chestnut Rail; at present it is a shapeless, flat-topped heap of dead twigs and mangrove leaves. The birds were heard calling close by. A pair of *Pachycephala simplex* was watched for some time. After lunch worked the mangroves down the river for about $1\frac{1}{2}$ miles. A last season's nest of the Rail was found on the butt of a fallen mangrove. Mosquitoes and sand-flies made the mangroves unbearable. Spent the rest of the afternoon working the forest. Pair of *Rhipidura isura* had started a nest in a small paper-bark at the landing.

30/11/15.—Went down the river a couple of miles and into the mangroves on the right bank after *Eulabeornis*, which were calling in the vicinity. *Pacilodryas pulverulentus* seen feeding a full-fledged young. Several old nests of Bitterns and Doves noted. Saw, at the

spring, *Myzomela obscura* and *M. erythrocephala*. After lunch went across the river opposite camp to where a pair of *Eulabeornis* was calling nearly every day. After hunting for a couple of hours found a freshly-built nest on a fallen mangrove. Mosquitoes and sand-flies terrible.

1/12/15.—Proceeded down river beyond where I went yesterday. Searched through the mangroves. Nest of *E. castaneiventris* at last found, containing three eggs; left it to see if more would be laid. *Pacilodryas pulverulentus* were about and watched. Left the mangroves for a small sandstone range near. A pair of *Pitta iris* and a pair of *Pseudogerygone* were noted, also *Lalage leucomelana*, *Edoliisoma tenuirostre*, and *Collyriocichla woodwardi*. Returned to river. A *Butorides stagnatilis* flushed from its nest 4 feet above the water in dead mangroves; it contained two eggs. Found beginnings of another Rail's nest at the base of a mangrove on a mound of earth. Back to camp at sunset.

2/12/15.—Uneventful day, save for mosquitoes.

3/12/15.—Went up river and ashore searching for *Eulabeornis*. Found a nest that had just been started, and observed some old nests. Missed a Bronze-Cuckoo. Nothing else of note, except mosquitoes. On return to camp shot a pair of *Trichoglossus rubritorques*. After lunch I went up river through the forest. Found *Rhipidura isura* just starting a nest 8 feet from the ground in a dead wattle. Very few birds to be seen.

4/12/15.—Nothing eventful to-day, which was oppressively hot.

5/12/15.—Uneventful.

6/12/15.—Went down river to nest of *Eulabeornis* noted 1/12/15; it contained four eggs. Took them and waited for the bird, which returned in about half an hour, walked up the sloping root of the mangrove, and hopped on to the nest. Crossed the river and examined several other nesting-places of the Rails, including a nest, apparently building, 3 feet above the ground on the butt of a fallen mangrove. Tracks of the birds in mud could be seen leading to the nest. Another nest, almost finished, was 10 feet from the ground on a large horizontal limb of a mangrove.

7/12/15.—Went over to the range. Visited 15 nesting-places (previously noted) of the Sandstone Thrush; no eggs in the four fresh nests and no sign of building in the other places. In one place three birds were trying to outsize one another—a great treat to hear their music. A pair of the strange *Ptilotis* was seen and watched for some time; no result. A pair of *Falco melanogenys* was seen. Got back to camp just at dusk, and heavy thunder and much lightning to the south occurred afterward.

8/12/15.—Went through the forest south-easterly about 3 miles. A Tree-creeper (*C. melanura*) flew into a hollow with something in its bill. Climbed up, but could not see in; will investigate again in a few days. Returned to river and worked it down, calling at the billabongs on the way. Procured *Edoliisoma tenuirostre*. Tracks of natives seen in the mud along the edge of the mangroves; they have evidently been spying the camp. Returned to camp about 2 p.m. Did not go out again. Mohr shot a pair of *Tadorna rufitergum* on a salt-pan. Crop and stomach of both Ducks were full of beetles; bottled some.

9/12/15.—Went out east of camp a couple of miles; nothing of note. Returned to camp about 11 a.m. Great numbers of Finches were watering at the spring near camp. Rails (*Amaurornis moluccana*) heard calling in the long grass; could not flush any of them. After lunch crossed river. Found a nest of *Eulabeornis* containing four eggs; they appeared to be slightly incubated, so I took them. Nests of *Piezorhynchus nitidus* containing young, and *Pseudogerygone magnirostris* containing three heavily-incubated eggs, noted. *Amaurornis moluccana* heard calling after dark as they passed over the camp.

10/12/15.—Shot specimens of *Alcyone pusilla* and Little Bronze-Cuckoo. Rest of day uneventful.

11/12/15.—Heavy thunderstorm to-day; over an inch of rain fell. Swifts passed over the camp just after the rain.

12/12/15.—Went down river through the forest for 2 miles. *Rhipidura isura* noted building. Shot *Geophaps smithi* and *Halcyon macleayi*. Little bird-life anywhere now. Storm came up about mid-day, when it rained heavily, succeeded by a drizzle which continued for the rest of the afternoon. A large flock of Swifts passed up the river just after the heavy rain. Rainfall at 6 p.m., $1\frac{7}{8}$ inches. Three natives came to the camp at sunset; they could understand little English, and only spoke a few words. I gave them a little "bacca" and tucker, and let them camp near.

13/12/15.—Nest of *Rhipidura isura*, noted building near landing 29/11/15, contained two eggs. Went up branch of the river and worked through the mangroves, where Rails were calling. Heavy rain fell about 10.30 a.m. Returned to camp. After lunch I took the three natives and worked the mangroves for $2\frac{1}{2}$ miles up the river, but did not find anything except a $4\frac{1}{2}$ -feet brown snake, which I nearly put my hand on. The reptile was coiled on a fallen mangrove.

14/12/15.—To-day's efforts were damped with heavy showers. In the sandstone range Thrushes and *Maluri* were noted, and eggs of the former taken. Had a very narrow escape from snake-bite in the forest. I almost stood on a brown snake which was coiled up near a rat-hole. The instant I saw it I sprang sideways as its head flashed past my leg. The reptile disappeared into the hole before I could shoot.

15/12/15.—Uneventful day.

16/12/15.—Light rain, with occasional sharp showers, all day. Went over to the sandstone bluffs to get the nest of Thrush noted with two eggs 14/12/15; no more eggs laid. The birds sat until I got within three yards of the nest, which was 4 feet from the ground on a shelf of rock under a broad ledge. Crossed a broad ravine, and up into the south-west end of the range, and hunted the ravines for a couple of hours, without success.

17/12/15.—Light rain started to fall a little after daybreak, with occasional heavy showers, and continued till about 2 p.m. Too wet to go out anywhere.

18/12/15.—Worked through the forest country up river. Two Cormorants (*P. sulcirostris*) seen, and one shot. Two pairs of *Lobivanellus miles* were watched for some time. After lunch worked the forest down river for a couple of miles. On return, a Finch

(*Poephila personata*) was observed catching insects on the wing, and Moor-Hens (*Amauornis*) were calling in the long grass at the spring near camp.

19/12/15.—Rain fell from daylight till mid-day, with occasional heavy showers. Too wet to go out. Rest of day, nothing unusual noted, except *Alcyone pulchra* seen drilling a hole in the bank of washaway near the landing. Rainfall nearly 2 inches.

20/12/15.—Went up river about 3 miles to examine banks for nests of *Alcyone pulchra*. A pair of *Tadorna rufitergum* seen flying along the edge of the forest country as if looking for nesting hollows. Worked through the forest back to the fresh-water billabong; a pair of *Tadorna* seen perched in a big paper-bark. There is a likely hollow in the next tree; birds may nest there. Moor-Hens calling from the long grass. Another lot of these birds was at a spring nearer camp. A *Pardalotus uropygialis* observed in the forest. A number of birds appear to have left the district since the rain; others have got scarce. *Rhipidura tricolor*, *Lalage tricolor*, *Grallina picata*, *Merops ornatus*, *Eurystomus pacificus*, and *Artamus venustus* have not been seen this last week. *Pachycephala falcata*, *Glyciphila fasciata*, *Stigmatops ocellaris*, *Tropidorhynchus argenteiceps*, *Trichoglossus rubritorques*, *Calyptorhynchus macrorhynchus*, *Ptiloscleya versicolor*, *Turnix castanonota*, *Geophaps smithi* are but rarely observed. A heavy thunderstorm came up before I returned to camp. After lunch crossed the river and worked through the mangroves up stream. *Cracticus quoyi*, *Pachycephala simplex*, and *Pacilodryas pulverulentus* were watched for some time; no result. Nests of *Pseudogerygone* and *Piezorhynchus*, each containing one egg, were noted. Rain fell most of the afternoon.

21/12/15.—Went down river and round to a salt-pan where were several pairs of *Lobivanellus miles*. Found first nest of these birds, containing two eggs; another nest contained three eggs. The next three nests found contained four eggs each. Several pairs of *Tadorna rufitergum* were noted, also *Antigone australasiana*, a few *Garzetta nigripes*, and a number of *Glottis nebularius*. Got back to camp about 4 p.m., wet with rain. The three natives came again to-day.

22/12/15.—Rats raided the camp last night and destroyed two skins secured yesterday. I had left them on a box near a tin of hot coals to dry them a bit. It started to rain again soon after daylight, and continued till 11 a.m. Went up the river to get the nest of *Piezorhynchus nitidus* noted 20/12/15; it contained two eggs. Too wet to get any birds for skinning, so I returned to camp, had an early lunch, then went down and across the river in the dinghy and up along the edge of the mangroves for about 3 miles. It started to rain before I had gone, and rained more or less all day. However, more Plovers' eggs were collected at the salt-pans, including a set of four from a nest on a small sandy islet. Flushed a Dollar-Bird from a hollow 60 feet from the ground in a big paper-bark; too wet to climb tree. Got back to camp 6 p.m. Rainfall, 3 inches, and no sign of clearing.

23/12/15.—Rained heavily throughout the night; 3 inches in tin this morning, and still raining. River level with banks, and rising rapidly. By 10 a.m. the water was 18 inches deep in the tents, and still rising. Packed everything in the dinghy under the

tent, as we would soon have to shift. About 11 a.m. there was 2½ feet water in the tent, so moved to higher ground, about 400 yards away, nearer the ridge. Hundreds of beetles and other insects flooded out, and had taken refuge on grass-stalks, trees, bushes, and ant-hills; spent a couple of hours collecting specimens. Another 3 inches of rain fell during the day, making total for the 24 hours 6¼ inches.

24/12/15.—More rain last night, and river rising again, so I did not leave camp. Spent morning catching beetles and other insects. Two trees, about 200 yards from the camp, had been struck by lightning; pieces of wood several feet long and weighing up to 2 cwt. were hurled in all directions. After lunch I went down the river along the edge of the forest for about 3 miles. Nothing of note.

25/12/15.—Rain had cleared off, and river normal again. Examined nest of Dollar-Bird noted 22/12/15; it contained two small young. Went over to ranges to examine nests of Sandstone Thrushes previously noted. Birds heard, but no new nests. Three pairs of the *Ptilotis* and two parties of *Malurus dulcis* were watched for some time; no result. Some Swifts (*Cypselus pacificus*) were seen circling high overhead. Went through forest country and to the Plovers' nest noted with two eggs 21/12/15; it contained three eggs. The nest had been covered by about a foot of water during the flood, and appeared to have been deserted. On return a pair of *Rhipidura isura* was seen feeding a young Cuckoo (*C. flabelliformis*). Visited the nest of *Eulabeornis* noted with one egg 19/12/15; now contained five eggs. Got back to camp at dark.

26/12/15.—Spent the morning near camp. The nest of Little Kingfisher noted 19/12/15 had been under water a couple of days. Birds were hard at work clearing it out again. Three nests of *Rhipidura isura* previously noted were all deserted. After early lunch, crossed the river to the Plovers' nests noted 22/12/15. One that contained two eggs was covered with flood debris and the eggs washed away. Another, containing three eggs, had been under water, and the eggs washed a couple of feet away. Went to the sandstone range. A Northern Oriole was seen, and a pair of *Cacatua roseicapilla* shot. Nest, containing eggs, of *Chibia bracteata* was found, but I could not reach them without scoop.

27/12/15.—Went down river to nest of *Eulabeornis* noted building 6/12/15; it contained three eggs. The birds had added much more material. Crossed river. A fresh nest of *Oriolus flavicinctus* was found, but the birds had not yet laid. *Eulabeornis* had built on the old nest, which contained four eggs. Went through the forest to the nest of *Chibia* noted yesterday; it contained three eggs. Returned to camp before sunset. Our native friends disappeared. Have been trying to get them to look for nests, but they will not trouble looking for anything they cannot eat.

28/12/15.—Did not see anything of note. Weather very hot, and mosquitoes bad in the mangroves.

29/12/15.—Went east of camp through forest for about 3 miles. Bird-life scarce. Watched a couple of pairs of *Pachycephala simplex* for some time at the edge of the mangroves. These birds should soon be building. The males were calling all day, and they fly up at once when their call is imitated. It is trying work watching them, as the mosquitoes are simply awful. A single Bronze-Cuckoo (*C. minutillus*) seen. Very hot again.

30/12/15.—Went up river in dinghy. *Ardea sumatrana* found building 15 feet above the water in a mangrove overhanging a small creek. A new nest of *Dupetor gouldi*, 8 feet above the water, noted on the same creek. Another nest of *Butorides stagnatilis*, 8 feet above the water, in a mangrove overhanging the river, contained two eggs. After lunch went down the river to nests of *Eulabeornis*, last visited 27/12/15. Both still contained three and four eggs respectively, so took lot. One of the birds remained on the nest until I had approached within 6 feet. Light rain fell during the whole of the afternoon.

31/12/15.—Did not feel well, so spent the day resting in camp: Another lot of natives—three men and a boy—visited the camp; one could speak very good English. Sent them out to look for nests; all they found was a Macleay Kingfisher's nest, containing four small young, which they brought back. I tried to make them understand that I wanted eggs, not young.

1/1/16.—Spent greater part of the day hunting through the mangroves; most of time spent watching *Pachycephala simplex*. An old nesting-place, apparently of *Alcyone pusilla*, was observed in a termites' nest 12 feet from the ground, on a mangrove; a number of these beautiful little birds seen about the river lately. *Ardea sumatrana* calling, and one seen flying up the river with a stick in its bill. Got back to camp about 3 p.m. Rest of afternoon was out, but nothing to report.

2/1/16.—Went to the northern end of the sandstone range. A long and uneventful day, except that a pair of *Neositta leucoptera* was secured.

3/1/16.—Light rain fell after daylight. Some natives brought a set of four Grebe's eggs, taken yesterday on a water-hole east of camp. I induced the darkies to take me to the water-hole so that I could identify the species. After a tedious tramp of about 2½ hours we reached a small, shallow lagoon about 400 yards long, in the midst of forest country on a flat-topped ironstone ridge. A few Black-throated Grebes were the only birds seen. Searched the lagoon thoroughly; two nests were found building, another nest contained four eggs. Returned to camp about 3 p.m. Made a skin of a Grebe—rather a tedious job; it was very fat, and took much cleaning. The specimen was a male, and apparently must do most of the sitting, there being an oval space on the breast and abdomen about 3 inches by 2 inches devoid of feathers, and of the puffy appearance usually seen in sitting females. Another native brought a nest containing two eggs of the Brown Shrike-Thrush, which he had found in the hollow top of a dead stump.

4/1/16.—Took two natives, went across the river, and worked forest country for the greater part of the morning. A nest of *Pomatorhinus rubeculus* only was found. Went into the ranges and hunted for about 3 hours. Save seeing Bower-Birds and the *Ptilotis*, nothing of consequence was noted. One native brought in another nest of the Brown Thrush, containing three eggs, and built in the top of a dead stump. I had eight natives on the job on this side of the river, and that was all they found.

5/1/16.—Spent the day about camp. *Alcyone pulchra* was flushed from its nest every day this last week, so I dug it out; result, four

eggs. Nest of *Rhipidura isura* noted 29/12/15 contained two eggs. Found a nest of *Coracina hypoleucus*, containing two eggs; nest placed in the fork of a paper-bark 15 feet from the ground.

6/1/16.—Went to sandstone range without result. *Pitta iris*, a *Chalcophaps*, *Chibia bracteata*, *Oriolus flavicinctus*, *Edolisoma*, *Stigmatops ocellaris*, and *Myzomela obscura* were, however, observed. Returning to the mangroves, a nest of *Eulabeornis* containing five eggs was found in an exposed position, 2 feet from the ground, in spreading fork of a solitary mangrove, in an open space. After a long search, another nest of these birds was found 6 feet above the water, on the trunk of a mangrove overhanging the creek; it contained one egg. A native brought to camp a nest of *Conopophila albigularis* containing three eggs, found in a small white mangrove at the edge of a salt-pan about a mile down the river.

7/1/16.—Sent natives to get nest of *Podiceps* noted 4/1/16. I went to salt-pan where I had first found Plovers breeding; three more nests were found, each containing four eggs. Went to the northern end of the sandstone range. Some Snipe were flushed from a marshy spot in a gully; shot one of them.* Searched through the ravines, but did not see anything of note. The natives returned with two sets of Grebes' eggs—four and five eggs respectively.

8/1/16.—Rained more or less; day uneventful.

9/1/16.—Usual programme of work and observation. Nest of *Zosterops lutea*, containing one fresh egg, found 6 feet above the water in a narrow-leaved mangrove overhanging the river. *Alcyon pulchra* noted drilling a nesting-hole in the washaway at the landing. After lunch I went up the river to search through the small paper-barks and mangroves round the salt-pans. Another pair was drilling into a termites' mound about 100 yards from the edge of the mangroves.

10/1/16.—Uneventful day.

11/1/16.—Visited nest of *Dupetor gouldi* noted 9/1/16; it contained four eggs. The nest of *Zosterops lutea* noted 9/1/16 contained three eggs. Not feeling well, returned to camp, and did not go out again.

12/1/16.—Proceeded to forest country. A termites' mound near the natives' camp had been dug out. I asked one of the natives what did it. He replied—"Old man look for kai-kai," and he set to work and dug out some large, hairy grubs—larvæ of a beetle. Digging deeper, he got some perfect insects. The natives roast and eat the larvæ. A nest of *Collyriocichla brunnea* was found in a hollow 15 feet from the ground in a eucalypt, containing two eggs. I had only been out a couple of hours when I had to turn back, as I felt too ill to proceed further.

13/1/16.—Day of usual observation.

14/1/16.—When I reached the landing, found that the dinghy was missing. A search revealed that it was dragged into the mangroves, opposite the cutter, and tracks of natives were visible in the mud near. Went on board the cutter and found that it had been broken into and raided. My trade tobacco and a lot of the stores

*This bird proved to be *Gallinago megala*—an interesting find. See Mathews, "Birds of Australia," vol. iii., plate 167.—H. L. W.

were missing. Sent Mohr up river to see if he could find tracks of the raiders, while I went down the river. Called at the natives' camp, but, of course, none was at home. Went down the river about 7 miles and inland about 4 miles, and did not see any sign of the niggers.

15/1/16.—Went across the river and along the edge of the salt-pans. Mohr took tally of the stores, and found that the niggers had got away with a good deal of stuff, there being barely a month's supply left. Shall leave here in a few days, as it will be necessary to go to the Roper River Station for stores.

16/1/16.—Nothing exceptional, save the finding of nest of *Pseudogerygone magnirostris* 5 feet above the water, containing four eggs, two of which were Bronze-Cuckoos'.

17/1/16.—All day in camp.

18/1/16.—Spent the day in the dinghy examining the other branch of the river and five small creeks running into it. Found several nests of *Dupetor gouldi*, some with each four eggs. All were built on horizontal forks of mangroves overhanging creeks, from 12 to 20 feet above the water. A nest of *Butorides stagnatilis* with four eggs also found. A nest of *Eulabeornis*, 3 feet above the water, on the roots of a mangrove, contained three much incubated eggs. While examining the nest, one of the parent birds returned, and on seeing me spread its wings, ruffled its feathers, and with neck outstretched and bill opened ran up the root of a mangrove to within 2 feet of me, then turned and ran away. Many nests of *Pseudogerygone magnirostris* and *Geopelia humeralis* were observed building.

19/1/16.—Spent day cleaning out and fumigating cutter, and placing specimens on board.

20/1/16.—Went up the river and several of the small creeks in dinghy for general observation. Found *Dupetor gouldi*, *Butorides stagnatilis*, *Geopelia humeralis*, *Zosterops lutea*, *Ptilotis unicolor*, *Piezorhynchus nitidus*, *Rhipidura isura*, and *Oriolus flavicinctus*, all nesting.

21 and 22/1/16.—Out for general exploration and finishing observations. Visited nest of *Glyciphila fasciata* previously found: something had torn the side out of it. Wonder what creature destroys so many nests.

23/1/16.—Dismantled camp and stowed everything on board the cutter ready to start with to-morrow morning's tide. Had general examination round. Nest of *Pseudogerygone magnirostris* contained two eggs, together with two of Bronze-Cuckoo. Dug out burrow of *Alcyon pulchra*, which contained maximum set of six eggs.

24/1/16.—Went down the river, in the dinghy, to small creek near the sandstone range, leaving Mohr and New to bring the cutter along as soon as the tide turned. Went ashore for the last time into the scrub amongst the bluffs. *Pitta iris* was watched for a while. The pretty bird hopped about over the ground, turning over the dead leaves, then picked up a leaf and flew to a rock. Its mate appeared the same instant, also carrying a leaf. On examining the spot, found a nest half built on a ledge near the top of the rock. Returned to the dinghy and reached mouth of creek just as the cutter was passing. Got on board and proceeded down the river. Reached the mouth before sunset and anchored for the night.

RETURN VOYAGE.

Mr. McLennan and party, on the 25th January, 1916, made an early start from their anchorage at the mouth of King River on their return to the Roper, and on the following day anchored at sunset in Rolling Bay. The mouth of the Liverpool River was reached about noon next day.

Birds were fairly plentiful in the scrub of an island near. There were noted an Owl (*Strix*), Bronzewing (*Chalcophaps*), and Fruit-Pigeons (*Ptilinopus*). A pair of *Pitta iris* was seen, also *Chibia*, *Myzomela obscura* and *M. erythrocephala*, *Zosterops lutea*, and numerous *Pachycephala melanura*. *Rhipidura dryas* and *Myiagra concinna* were nest-building, while Megapodes and Nutmeg-Pigeons were heard.

On the 28th Cape Stewart was reached about 7.30 p.m. On the 30th, when in the channel between Howard Island and the mainland, two natives approached in a canoe. A few birds, chiefly Waders, were noted, and mosquitoes were exceptionally bad at night. After a vicarious passage, grounding on sand-banks and reefs, Caddel Straits were entered on the evening of 1st February, and the following day anchor was cast under Alger Island. Just before dusk some *Notophoxyx flavirostris* and a single *Garzetta nigripes* were observed coming in from the north-west and heading for the mainland. Cape Wilberforce was rounded on the 3rd, and Cape Arnhem the following day, when anchor was cast in Port Bradshaw at sunset. Some natives came alongside with turtle-eggs in exchange for tobacco.

McLennan and Mohr went on shore. *Centropus phasianus*, *Eudynamis cyanocephala*, *Myristicivora spilorrhoea*, *Chibia bracteata*, *Oriolus flavicinctus*, *Geopelia humeralis* and *G. placida*, *Melithreptus albigularis*, and *Myzomela obscura* were noted, also Megapodes, Bronze-wing and Fruit-Pigeons, while *Pitta iris*, *Chlamydera nuchalis*, and *Pachycephala simplex* were heard in the low, tangled scrub. The Pittas were nest-building.

As the natives had reported "bullockie," an excursion was made inland in quest of fresh meat. Cattle tracks only were seen, but no beasts. Country passed through was open forest, lightly grassed, but patches of low scrub existed on the quartz-porphry outcrops. Birds seen, in addition to those before mentioned, were *Uroaetus audax*, *Dacelo cervina*, *Halcyon macleayi*, *Geophaps smithi*, *Synæcus cervinus*, and *Dicæum hirundinaceum*.

After baffling breezes and calms, the vicinity of the Roper was reached on the evening of the 14th. After much squally weather, described sometimes as a "howler," and blinding rain and risks of stranding on sand-banks, the *Avis* safely entered the big river on the 15th. McLennan went across the plains for game, saw none, but noted three species of Egrets and many migratory Waders, and occasionally flushed from the grass Larks—*Anthus*, *Mirafra*, and *Cinclorhamphus*—and *Megalurus*.

As the party has now arrived in the vicinity of the great

Heronries of the Roper, perhaps I should allow Mr. M'Lennan to give his own plain, unvarnished, but interesting account, as continued in his diary. Moreover, reliable first-hand field-notes are most valuable.

ON THE ROPER RIVER.

17/2/16.—It rained continuously through the night. There was little wind. Tide running out very fast. Went across the river to look at the Egret rookery. Could not get near the mangroves in dinghy because of an intervening mud-bank about a quarter of a mile wide. Waded to the mangroves, thigh-deep in mud. Only had time to work the edge of the mangroves before the tide turned. Nests of *Garzetta nigripes* and *Herodias timoriensis* were in great profusion, but none of those examined contained full sets. Some of the eggs had evidently been blown out by yesterday's wind-squalls, as the mud underneath was covered with eggs. A number of *Notophoxyx flavirostris* could be seen flying to the mangroves farther in, but could not see their nests. An occasional *Mesophoxyx plumifera* could also be seen. Returned to the boat and made a start up the river. Light head wind; progress slow. Anchored at sunset when the tide turned. Egrets could be seen for miles along the river, flying to and from the rookeries. Other birds noted were *Numenius cyanopus*, *N. variegatus*, *Platalea regia*, *Ibis molucca*, and *Anas superciliosa*, all on the wing, and mostly flying down river. *Lobivanellus miles* occasionally seen in the open spaces in mangroves, while on shore were heard *Ardea sumatrana*, *Dupetor gouldi*, *Eulabeornis castaneiventer*, *Pachycephala melanura*, *Piezorhynchus nitidus*, *Pæcilodryas pulverulentus*, *Geopelia placida* and *G. humeralis*, *Pseudogerygone*, *Chalcoococcyx*, *Cacomantis flabelliformis*, and *Myzomela erythrocephala*. No sign of the rain clearing off. Débris of recent flood could be seen in the mangroves on the banks 8 feet above high-water mark.

18/2/16.—Made an early start, and held on till nearly noon. Numbers of Night-Herons were flushed from the mangroves on the left bank; probably breeding, but could not see any nests from the boat. A number of *Ibis molucca* and *Platalea regia*, a few *Corvus coronoides*, *Haliastur sphenurus*, and *H. girrenera* were seen. Made fair progress, and anchored at dark. The following birds were again noted on the way:—*Notophoxyx flavirostris*, *Herodias timoriensis*, *Garzetta nigripes*, *Butorides stagnatilis*, *Ardea sumatrana*, *Antigone australasiana*, *Numenius cyanopus* and *N. variegatus*, *Dupetor gouldi*, *Dendrocygna eytoni*, *Calyptorhynchus macrorhynchus*, *Pachycephala melanura*, *Pæcilodryas pulverulentus*, *Piezorhynchus nitidus*, *Zosterops lutea*, *Myzomela erythrocephala*, *Pseudogerygone*, *Geopelia placida* and *G. humeralis*, and *Centropus phasianus*. *Anseyanas semipalmata* were heard passing up the river after dark. Finished the last of provisions; only a little tea and sugar remain.

19/2/16.—Went ashore for two hours; no game of any kind observed. *Conopophila albogularis*, *Merops ornatus*, *Eurystomus pacificus*, *Coracina robusta*, *Cuculus optatus* (*saturatus*), *Herodias timoriensis*, *Nycticorax caledonicus*, *Pandion leucocephalus*, *Haliastur sphenurus*, and *Astur approximans* noted. Returned to boat and rowed up river to a small rocky islet in mid-stream. Fished, but only caught two 3-foot sharks. With strong south-east breeze made

a start against the tide, and continued a couple of hours. Flock of Pied Geese seen a little before sunset perched in tall paper-bark trees along the river; put off in dinghy and bagged three. Anchored at dark. A number of Cormorants and a few Darters were noticed in a paper-bark; they were just starting to build. Large flock of *Platalea regia* seen. Additional birds noted were:—*Cacatua galerita* and *C. sanguinea*, *Rhipidura tricolor* and *R. isura*, *Seisura nana*, *Stigmatops ocellaris*, *Ptilotis unicolor*, *Lalage tricolor*, *Cacomantis flabelliformis*, and a *Chalcoococyx*.

20/2/16.—No wind, and tide running out strongly. Went ashore on the right bank to a big lily-covered lagoon; followed it for about 3 miles. The only birds seen about it were two Jabirus and an occasional large Egret. Returned along river to boat. Bird-life fairly plentiful. *Haliastur sphenurus*, *Corvus coronoides*, *Cacatua galerita* and *C. sanguinea*, *Rhipidura tricolor* and *R. isura*, *Seisura nana*, *Micreoca pallida*, *Lalage tricolor*, *Merops ornatus*, *Grallina picata*, *Geopelia placida*, *Geophaps smithi*, *Ptilotis unicolor*, *Glyciphila fasciata*, *Stigmatops ocellaris*, *Conopophila albobularis*, *Smicronis flavescens*, and a Pardalote being noted. Started about mid-day. Saw a native on the bank of the river about 3.30 p.m., and ascertained from him that the mission station was near. (It is about 80 miles from the entrance of the river.) Went ashore, and he put me on the track. Mr. Warren, the superintendent, informed me that there was no possibility of getting stores farther up the river, as the police station—the only place where a surplus stock was kept—had twice been under water during the recent flood; moreover, the police had gone to Port Darwin. However, Mr. Warren very kindly offered to let us have whatever stores he could spare, mainly flour and sugar. He had meat, but had lost all his salt in the flood. Spent the evening at the station.

21/2/16.—In the morning Mr. Warren let me have about two months' supply of flour and sugar and a few tins of meat and fish. He informed me that cattle—"clear-skins"—were fairly plentiful near the mouth of the river.

22/2/16.—Made an early start. Took native as pilot, there being many sunken rocks, snags, and banks for 30 miles below the station. We were extremely lucky in getting up the river without striking anything. Anchored at dark.

23/2/16.—Put the native ashore after passing the last dangerous reach, and anchored at sunset a few miles below our anchorage of the 19th.

24 to 26/2/16.—Uneventful progress down stream.

27/2/16.—Heard cattle through the night; made an early start after them. Mohr went up the river and New and I went down along the edge of the forest country. After going about two miles I disturbed an old bull in a swamp on the plain; he made off down river. Further on fresh tracks were seen heading out to the plain. Followed them for a while, and came across another bull, which also made off. Followed his tracks (was in hopes that he would rejoin the mob) for about a mile along the edge of the forest and inland for another mile along a well-defined pad; came across him again, but no signs of the mob. Found fresh tracks of a mob of about a dozen beasts. Followed them for about $1\frac{1}{2}$ miles, and disturbed another bull in

thick brush. He made off at a great pace, and disturbed the mob, which was camped about 150 yards further on. Followed them for about 2 miles, odd beasts breaking off here and there, till only three were left. When I came near them my friend the bull again caught sight of me, and away all went. I tried running shots at a small beast, but there was too much timber and bushes in the way. However, the cattle circled, so I ran across to an open space in the direction of which they were heading. As soon as they caught sight of me they stopped. They were three bulls—one about 18 months old, so I dropped him. Fresh meat at last! Divided it into two loads. But I was about bushed. Climbed a tree to see if I could locate the boat. Caught sight of Gulnare Bluff, some miles to the north, and was able to approximate position of boat. Very bad walking; ground soft, and several swamps to cross. Eventually reached boat. Mohr had just returned, and was waiting at the dinghy; he only saw one bull.

AT THE GREAT ROOKERIES.

28/2/16.—Anchored opposite the Egret rookeries about 5 p.m. Mosquitoes awful. Had to get tea under the nets straight away.

29/2/16.—Mosquitoes terrible all the morning. Two small crocodiles were floating on the surface of the river eyeing the boat; shot one. Spent morning fixing up a camp on shore. Had to go up river about a mile for suitable poles for tent. Saw the crocodile that I shot lying at the edge of the river; got rifle and finished it. Mosquitoes thicker than ever. They clustered on one's hands, face, and clothes like a swarm of bees. Forced to get under nets before sunset.

1/3/16.—Mosquitoes again terrible all the morning. Made big "smokes" round the camp, but could not drive the troublesome insects away. Went across to the rookery after lunch to make a thorough examination. It is situated in a belt of mangroves (trees with a smooth, pale green bark and lanceolate leaves), extending along a reach of the river for about $1\frac{1}{2}$ miles. The rookery covers approximately an area half a mile long by 70 yards in width. The mangroves, for a distance of 40 yards from the river, are from 1 to $2\frac{1}{2}$ inches in diameter at the base, and 15 feet in height; for another 30 yards behind this belt the trees range up to 5 inches in diameter, and are up to 30 feet in height. A strip along the river, 30 yards wide and about 200 yards at either end of the rookery, is occupied wholly by *Garzetta nigripes* (*immaculata*) and *Herodias timoriensis*, the nests of the latter being placed on the topmost branches. In the central portion all species are intermingled—*G. nigripes*, *H. timoriensis*, *Notophox flavirostris*, *Mesophox plumifera*, and occasional nests of *Phalacrocorax melanoleucus* and *P. sulcirostris*. There is scarcely any difference between the nests of *G. nigripes*, *N. flavirostris*, and *M. plumifera*, and the eggs of each in some instances are very much alike. Will have to flush each bird from its nest to make sure of identification. Most of the nests within reach contained small young. I secured some sets of *N. flavirostris*. A great number of birds were still building, and a number of nests examined contained one or two eggs. A fair-sized crocodile came swimming up through the mangroves till it was within 15 feet of me; when it saw me it turned, disappeared beneath the surface, and made off.

The water was about waist-deep, so I made my way back to the dinghy and returned to camp at sunset. Had a bad time at tea, mosquitoes being in full force. Had to grab a pannikin of tea and piece of bread and meat and stand across a fire to get a little brief respite from the wretches.

2/3/16.—Spent the morning blowing the eggs. Had a bad time dodging the mosquitoes; had dense "smokes" going all around the camp, but could not drive the insects away. Went over to the rookery after lunch for fresh sets of eggs of *G. nigripes*, *N. flavirostris*, and *H. timoriensis*. All nests of *M. plumifera* examined contained small young. Mosquitoes bad all day. Two crocodiles seen at pretty close quarters at high tide, water being about waist-deep then. Got back to camp 5 p.m. Had tea and turned in to beat mosquitoes.

3/3/16.—Laid in till pretty late, waiting for the mosquitoes to leave mosquito-net; tent and everything under it was black with them. Got the "smokes" going. Spent the morning blowing eggs. I will have to test the eggs before taking any more. Visited the rookery after lunch; more sets *G. nigripes*, *N. flavirostris*. Tested all in water; those that floated I replaced in the nests. Big crocodile seen pretty close up; it went down before I could get a shot. Large cat-fish numerous. I stood on a couple—jumped, thinking they were crocodiles. Nest of *Piezorhynchus nitidus* noted. Returned to camp before dark. Mosquitoes still terrible.

4/3/16.—Spent the day blowing and packing eggs. New and Mohr went up the river in the cutter to look for water. They got back shortly after sunset with a quantity, but it was not the best. Bit of a breeze kept the mosquitoes away for a while this evening.

5/3/16.—Mosquitoes again in full force. Visited the rookery after lunch, for observations. The big crocodile up again, about 20 yards away, just as we got to the dinghy, and went down again before I could get a shot. It looked as if it were stalking us.

6/3/16.—Mosquitoes bad, and flies also becoming a nuisance. Visited the rookery in the afternoon. Most of the nests of *M. plumifera* contained two heavily-incubated eggs.

7/3/16.—Visited the rookery after lunch. Took several sets—*G. nigripes*, *N. flavirostris*, and *M. plumifera*. Water was waist deep at back of rookery. I was just starting for dinghy when a big crocodile came to the surface about 8 feet from me, and calmly lay watching me. New was carrying the rifle, and handed it to me. I put a bullet into the base of the saurian's skull; it gave a leap out of the water, almost turned a somersault, and disappeared. Got to camp about 5 p.m. Mosquitoes not quite so bad; smoke keeps them under.

8/3/16.—Blowing and packing eggs during the morning. Bird-observing and crocodile-shooting in the afternoon. The ugly reptiles appear fairly plentiful about here. Mosquitoes bad again after dark.

9/3/16.—Uneventful day, save for mosquitoes, which were bad all day.

10/3/16.—Mosquitoes awful during morning. Visited rookery after lunch, and examined Egrets' nests. Found a nest of *Piezorhynchus nitidus* with two eggs. Water was chest-deep at the

dinghy, which was left about 20 feet inside the mangroves. Were watched by crocodiles. Shot one in the head, and it "turned turtle" and sank.

11/3/16.—Visited the rookery directly after breakfast. The carcass of the crocodile was floating in the exact spot where I shot it yesterday; secured it to a mangrove tree. Mohr and New went up the river in cutter for water, and they did not return till 10 p.m. Put in the afternoon blowing and packing eggs.

12/3/16.—Finished off work on hand, and examined the Heronries while dodging crocodiles.

13/3/16.—In the afternoon more bird-cum-crocodile observations. Got back to camp at sunset. Mosquitoes exceedingly bad.

14/3/16.—Visited the rookery after lunch. Took eggs of *Phalacrocorax melanoleucus* and *P. sulcirostris*. Saw a boat coming up from the mouth of the river when we were leaving the rookery; it proved to be the mission station launch. Mr. Warren, who was in charge, came across and gave us a tow to the camp. He had come down to see if he could get any salt in the salt-pans. Mosquitoes not so bad.

15/3/16.—Mr. Warren, of the Mission Station, spent the day at camp. He wished to visit the rookery to secure some photographs. It was a very poor day for photography, but Mr. Warren took half a dozen snapshots. Hope they will be successful.

16/3/16.—Mr. Warren left this morning for a small river about 4 miles north of the Roper. Visited the rookery after lunch. Secured sets of each of the four fine Egrets, and took the *Pseudogerygone's* nest noted 10/3/16; it contained two eggs and one of a Bronze-Cuckoo. Waited till the bird returned. I think it was undoubtedly *lavigaster*. Another nest of a similar bird was found, which contained two eggs. Mosquitoes bad again, interfering with work.

17/3/16.—Spent the day in camp. Mohr and New had to go up the river in the cutter for water. Mr. Warren came up the river about 5 p.m. He had been up the coast and explored three small rivers. Natives fairly numerous there. In one camp they had dozens of Egrets' eggs that the natives had got on an island in the river.

18/3/16.—Did not feel well to-day. Mohr shot an 8-foot crocodile at the landing. After lunch, went down and across the river in the dinghy, up a big creek for about 3 miles. Very few mangroves along the creek, mostly open salt-pans. Bird-life scarce. *Zosterops lutea*, *Pacilodryas pulverulentus*, and *Piezorhynchus nitidus* only were noted. *Alcyon pulchra* was flushed from burrow in a steep bank; the nest contained six eggs. Sand-flies are taking the place of mosquitoes.

19/3/16.—Finished off blowing and packing all the eggs on hand. When out heard a Thickhead close by. On imitating the call, a bird appeared that was new to me. It is probably *Pachycephala fretorum*, or perhaps *P. lanioides*.

20/3/16.—Unwell, so spent the day in camp.

21/3/16.—General exploration. Shot two crocodiles. Nothing else of note seen. Four natives came to camp from the mouth of river

in canoe. They said—"Plenty of dugong outside mouth of river." I induced them to try to get one for us, as our beef was about finished. The niggers departed after dark, promising to bring a dugong in the morning.

22/3/16.—Spent the morning exploring the mangroves on small creeks down the river. After lunch, was just making a start when I saw the natives coming up the river in two canoes lashed together. There were ten natives, and they had two dugongs. "It never rains but it pours" here. Cut up and salted about 2 cwt. of the meat. Boiled some for tea. It was splendid—not unlike pork, but more delicate in flavour.

23/3/16.—Day of usual exploration.

24/3/16.—Went to the rookery after breakfast. Think that all the Egrets have nearly finished laying. Noted *Pachycephala melanura* and *Myiagra latirostris*. Watched a pair of *Pæcilodryas pulverulentus* for some time. The female was gathering building material for a nest about 100 yards away. After lunch went across river to big creek. Took two nests of *Pseudogerygone lævigaster*. Saw two crocodiles, but did not get a shot. There was a "high perfume" in the mangroves near where I shot one of these brutes on my last visit; did not stay to investigate.

25/3/16.—Spent day in camp. Got through all the work on hand. Mohr and New up the river for water.

26/3/16.—Stayed within sight of the camp, as natives were about. They brought some fine fish (Barramundi). New and Mohr got back about 3 p.m. They had to go up the river about 7 miles for fresh water; the former watering-place had dried up.

27/3/16.—Afternoon, went round the salt-pans and across the plain to the south of camp. *Mirafra* fairly plentiful. A couple of *Cinchorhamphus cruralis* and *Anthus australis* seen. Most peculiar haze about all day. Eyes very sore; think I am getting sandy blight.

28/3/16.—Haze much thicker than yesterday. Cross the river. Characteristic bird-life appears to be plentiful. Amongst others were noted *Pachycephala lanioides*, which were watched for some time; no result. *P. lævigaster* fairly numerous. Nest of *Conopophila albogularis*, 6 feet above the ground, contained three small young. Shot a "Shafted" *Rhipidura*. Found a pair of *P. pulverulentus* building 2 feet above high water in dead mangrove. Found a half-built nest of *C. albogularis* 5 feet from the ground in a small mangrove; *Philemon sordidus* and *Artamus leucogaster* seen. All the birds appear to be feeding on a small hairy caterpillar—quite a plague—which feeds on the mangrove leaves. Eyes exceedingly sore, and flies bad.

29/3/16.—Eyes still sore. Went to where I was yesterday. Observed *Pachycephala lanioides*, and examined two nests with young. One nest was 6 feet above the ground, placed in small twigs growing from the trunk of a tall mangrove. The structure was very frail, and composed of fine twigs lightly bound with cobweb. A little further on three more pairs of these fine Thickheads were seen. Spent some time observing them. On imitating the call the males flew up, very excited, to within a couple of feet of

each other. With tail erect, bill pointing upward almost at right angles to the body, and wings drooping, the birds gave a few jerky bows, chased each other around for a few times, and returned to where their respective females were perched. They then uttered their calls, which the females responded to, but in a less vigorous manner.

30/3/16.—Eyes too bad to go afield to-day.

31/3/16.—Eyes little better. Went across the river to the big creek. Varied bird-observing with crocodile-shooting to-day.

1/4/16.—Day of general observation and skinning specimens.

2/4/16.—More general observation.

3/4/16.—Heard Bronze-Cuckoos calling this morning; went after them. It took two hours to locate one and secure it. Otherwise day uneventful.

CONCLUDING OBSERVATIONS.

4/4/16.—Spent morning writing up notes. After lunch went over to the rookery. The majority of the young Egrets have left the nests, and are perched on the topmost branches of the mangroves, which from a distance appear to be covered with snow. Some of them are fairly strong on the wing, but do not think many have been away from the rookery yet.

Herodias timoriensis (syrmatophorus) (Australian Egret).

Nests.—Thin, slightly concave structures, from 18 to 30 inches in diameter, composed of small sticks and placed from 12 to 28 feet from the ground in the topmost branches of mangroves. Clutch, from three to four eggs. Apparently one of the first Egrets to start breeding. The parent birds were occasionally seen displaying their plumes when returning to the nest to feed young. The bird bows gracefully, and the dorsal plume is erected to an angle of about 90 degrees with a fan-like spread for a few seconds after the bird reaches the nest. They are exceedingly shy birds, and leave the nest as soon as they catch sight of an intruder.

Small Young.—Iris greyish, bill dull brownish-yellow, skin dull greyish-green, legs dull brown.

Half-fledged Young.—Iris creamy yellow; skin pale sulphur-yellow tinged with green; bill yellow, tip and cutting edge black; feet very dark greenish-brown, heel and above pale yellow tinged with green and mottled with dark greenish-brown.

Full-fledged Young.—Similar to adult birds. The young, on one's near approach, eject the contents of their stomachs, and, if strong enough, leave the nest and walk out on to the branches. They were invariably seen sitting on the extreme edge of the nests. During the middle of the day the parent birds shelter them from the sun by standing over them with outspread wings.

Mesophoyx plumifera (Plumed Egret).

Nests.—From a frail, slightly concave structure 10 inches in diameter to bulkier structures 20 inches in diameter, composed of small sticks and occasionally branchlets with the leaves attached, and placed from 5 to 15 feet from the ground. Clutch, from two to five eggs.

Small Young.—Iris cream, bill dull dark greenish-yellow, skin dark greyish-green, legs dark greyish-green.

Half-fledged Young.—Iris pale yellow, bill yellow, naked skin yellow tinged with green, legs pale greyish-green.

Full-fledged Young.—Similar to adult birds. The parent birds always displayed their plumes when they returned to the nest to feed young or to sit on their eggs. They bow gracefully, the crest and neck plumes become erected, and the dorsal plumes are erected to an angle of 90 degrees and spread fan-like for a few seconds after reaching the nest. When chastising an intruder, in the form of a youngster that has strayed from its own nest, or when repelling a marauder in the form of *N. flavirostris*, the plumes and all the feathers of the body are erected, and with bill agape and wings extended the bird pecks savagely. Very shy birds. Young birds, on being approached, eject the contents of their stomachs and walk out on to branches or go over the side of the nest and fall to the ground or into the water. If replaced in the nest they walk off on the opposite side, and have to be replaced several times before they settle down again.

Garzetta nigripes (immaculata) (Lesser Egret).

Nests.—From a frail, slightly concave structure 8 inches in diameter to bulkier structures 15 inches in diameter, composed of small sticks and occasionally branchlets with leaves attached, placed from 5 to 15 feet from the ground. Clutch, from three to five eggs.

Small Young.—Iris grey, bill dull slate-green and dull yellow, naked skin dull yellow, legs dark greyish-green, skin of body dull greyish-green.

Half-fledged Young.—Iris greenish-grey, bill yellow, tip blackish, naked skin yellow, legs and skin of body pale slate-green.

Full-fledged Young—Similar to adult birds, except the bill, which is yellow tipped with black.

The parent birds always display their plumes on returning to the nest to feed the young or to sit on their eggs. They bow gracefully, and the dorsal plumes are erected to an angle of about 90 degrees, and spread fan-like for some seconds after reaching the nest. They are savage birds, and attack any young that come near the nest until they have either driven the intruder off or knocked it into the water. Stray young ones covered with blood were often noticed about the rookery. Young, in common with those of the others, on one's approach eject the contents of their stomachs and walk off the nest and fall beneath. They have to be replaced several times before they settle down in the nest again.

Notophox flavirostris (Pied Egret).

Nests.—From a frail, slightly concave structure 8 inches in diameter to bigger structures 12 inches in diameter, composed of small mangrove sticks and occasionally branchlets with leaves attached and placed from 5 to 15 feet from the ground. Clutch, three to four eggs.

Small Young.—Iris grey, bill brown and flesh colour, legs fleshy-brown, skin of body blackish. Down of the head variable—buff, blackish, or whitish; down of the body—upper surface blackish, under surface whitish.

Half-fledged Young.—Iris greyish-brown, bill and naked skin brownish-black, legs pale yellowish-green, skin of body darker.

Full-fledged Young.—Variable. Iris yellow tinged with green, bill streaked brown and fleshy-brown or olive-brown and pale yellowish-green; legs greenish-yellow or yellow faintly tinged with green. Feathers of the head, neck, and under surface white; in some birds the crown of the head is reddish-buff or grey; in others the crown of the head and the abdomen are slate colour.

Young of this Egret are the most fearless of all; on being approached they crowd to the centre of the nest, crouch down, and with their bills pointing directly at you impart the appearance of hiding behind the points of their bills. Occasionally one walks off and falls to the ground or into the water, but on being replaced the youngster crouches down at once. The young were never seen to eject the contents of their stomachs.

The adult birds are most interesting to watch. They are quite fearless, and perch on their nests till you get within a few feet of them, and if you stand still they return within 6 feet of you and calmly feed their young or sit on their eggs, as the case may be. On returning to the nest the crest is erected and spread fan-like, the elongated feathers curving towards the tip of the bill, giving the bird a most graceful appearance. When driving off intruders or when quarrelling amongst themselves—say over a fish that two or more birds have pounced on at the same instant—the crest and body feathers are erected, wings are outspread, and, with bill agape, the appearance of a bird is most formidable. They savagely attack any strange young that wander near their nests, pecking with their bill and buffeting with their wings until the stranger escapes into the branches or falls into the water beneath.

The Pied Egrets are the rogues of the rookery. Numbers may be seen tormenting the young of the other three species until, under compulsion, the latter eject the contents of their stomachs, whereupon there is a scramble for the spoil. Some of the teasing birds alight on the water and swim round after the ejected fish; others take it on the wing off the water, while others, clinging sideways to the stems of the mangrove trees, climb down to secure their share of the half-digested food. Nothing comes amiss to them. I noticed one pick up and swallow a small water snake, about 15 inches long, that was basking in the sun on the trunk of a mangrove. A Pied Egret was seen to fly to a nest that *H. timoriensis* had just quitted, pick up an egg, and drop it overboard. They were repeatedly seen at the nests of other birds, and numbers of the eggs that I examined bore bill-marks. However, I did not see Pied Egrets eating eggs, but I would not be at all surprised if they do. An unguarded nest of the large *H. timoriensis* attracted the attention of a Pied bird, which began to hop up from branch to branch, keeping a good look-out the while, until it reached the nest. After a short examination the bird started to pull the nest to pieces, and when the owner returned it flew off and joined a crowd of its fellow-marauders. These Egrets are repeatedly seen at the unguarded nests of *G. nigripes* and *M. plumifera*, stealing sticks and adding them to their own nests. They pull out as many as a dozen sticks before they get one that suits their taste. I never saw them interfere with the eggs of either of those two species, neither did I observe any eggs with bill-marks.

A female *N. flavirostris* was seen sheltering small young on a frail nest about 10 feet away from where I was observing. Presently the male came along with a stick in his bill; on reaching the nest he

straightened his head and neck, and with bill pointing upwards uttered a couple of soft cooing notes. The female acted in similar manner, then gently took the stick from her lord and added it to the nest, he looking on till she finished the operation; then he went off for another stick, and the same performance was enacted. He brought home nine sticks during an hour. Another bird, whose fragile nest near contained three eggs, returned with a stick, placed it to the nest, and sat on the eggs for a while before seeking more material. It returned with another stick, which appeared difficult to balance. After hopping from branch to branch and juggling with the stick, it fell into the water. Peering after the fallen furniture, the bird started to hop down, clinging sideways to the trunk of the mangrove, till it reached the water. Not finding the stick, the bird went off in search of another, and added four sticks to the nest during the half-hour I was watching.

Great numbers of the young of the other three varieties may be seen dead, hanging by wing, legs, or neck from the narrow forks of the mangroves, but this rarely occurs with the young of *N. flavirostris*. Also, a fair number of the adult birds of the other three species were seen caught in like manner, but I did not see a single instance of *N. flavirostris* having been hung.

The nests of *Phalacrocorax sulcirostris* and *P. melanoleucus* were bulky structures of branchlets with leaves attached, about 15 inches in diameter, and placed here and there about the centre of the Heronry, from 12 to 20 feet from the ground.

Perhaps it should be more particularly stated that the great Heronry is situated on the north side of the Roper, about 3 miles from the entrance to the sea. The rookeries extend along the edge of the river for a distance of half a mile by a depth of about 80 yards. At high tide there is a depth of 4 feet of water at the centre of the Heronry. When the tide is out the water recedes about half a mile. The country inland is intersected by water-channels and salt-pans for a distance of about a mile. At high tide the vicinity of the Heronry is infested by cat-fish and crocodiles, which apparently feed on fallen eggs and young of the Egrets. When a crocodile is startled, and, to escape, it forces its way through the small saplings, its course may be traced by the vibration of the upper twigs of the trees and by the chorus of cries of the brooding birds along the track.

The food of the Herons consisted almost entirely of small fish, from 1 to 5 inches in length.

This great Heronry had been previously mentioned to Mr. H. L. White by Mr. B. L. Jardine, in 1910, and by Mr. H. G. Barnard in 1913. These observers, however, did not land, but the latter supplied date of the nesting time.

CONCLUSION.

Mr. M'Lennan having told the tale of his long and adventurous expedition, which ended in sore sickness—nigh unto death—it only remains for me to state that the party, from the 5th to the 7th April, was buffeted with boisterous weather—a gale at times. The few following days preparations were made for striking camp, and the Roper was finally quitted on the 11th. Shelter was sought at Maria Island the following two days, where a few birds were noted, and Beatrice Island was reached on the

14th. As only a few days' provisions remained on the 18th, it was determined to bear down on Borrooloola, on the Macarthur River. Moreover, M'Lennan felt he was in for an attack of beri beri, and was without medicine. Borrooloola was reached on the 20th. All the inhabitants were at the landing-place, supposing that the *Avis* was the provision boat. The Darwin boat was some time overdue, and the local people were short of supplies. Therefore, M'Lennan could not procure stores, except a little salt beef. Diarrhœa added to M'Lennan's trouble, but Constable Kelly kindly supplied medicine. To make matters worse, Mohr and New had a quarrel, and the latter absconded. With the assistance of the police New was brought back, but obstinately refused to work the boat, so was formally discharged. Thus, short-handed and ill, M'Lennan bravely made a start homeward on the 27th. After sailing several days, owing to incapacity from increasing sickness M'Lennan was compelled to return to Borrooloola, which was reached on the afternoon of the 6th May. The patient was carried on shore and put to bed, with a severe attack of beri beri and ague. Luckily, at this critical juncture I was able to engage a boat (lugger) at Thursday Island, which the owner sailed, and rescued M'Lennan in an exceedingly low state of health. On the return trip from Borrooloola, the party, for some reason or other, made a detour to the north of Port Roper, but ultimately reached Thursday Island safely. After regaining sufficient strength M'Lennan packed and despatched all his specimens, which were received in good order and condition.

Everard Range Tit-Warbler (*Acanthiza marianæ*).

(S. A. WHITE, *South Australian Ornithologist*, vol. ii., No. 2, 1915.)

BY S. A. WHITE, M.B.O.U.

AFTER entering the granite country west of Indulkana Range, this new *Acanthiza* was met with. It was fairly plentiful in the thick mulga scrubs which extend between the Musgrave and Everard Ranges. In some cases this was the only bird found in these dense, waterless solitudes. The *type*, now in the "Wetunga" collection, is a male collected between Moorilyanna Native Well and the Everard Ranges, in the N.W. of South Australia, by S. A. White on 1st August, 1914.

Description.—All upper surface (with exception of tail coverts) bluish-grey; feathers of the forehead tipped with white, those of the crown having a distinct streak of black down the centre; wings dark brown, each feather edged with greyish-white; tail brownish-black, basal half dull reddish-brown, each feather broadly tipped with buffish-white; upper tail coverts reddish-brown; throat and breast greyish-white; flanks buff; abdomen white; eyebrow and ring round the eye white; iris dark red; bill and feet black. Sexes alike.



THE EVERARD RANGE TIT-WARBLER

Acanthisa marianæ.



Measurements of dry skin.—Total length, 98 mm. ; bill, 9 mm. ; wing, 51 mm. ; tarsus, 19 mm. ; tail, 42 mm.

The bird most closely allied to this species is *Acanthiza uropygialis condor*, but this new species differs in having a stouter bill; the iris is of a very dark shade of red, while that of *A. uropygialis condor* is white. The bluish-grey of the upper surface is of quite a different shade from that of any other *Acanthiza* yet described for Australia.

I have to thank Mr. S. Sanders for mounting this bird for reproduction, as well as the Parrots which appeared in the July *Emu*, 1916, vol. xvi., part 1, Plate I.

Descriptions of New or Rare Eggs.

BY H. L. WHITE, R.A.O.U., BELLTREES, N.S.W.

Ninox humeralis, Homb. and Jacq. (*types*) (*Rhabdoglaux queenslandica*). Queensland Rufous Owl.

During a late trip to Rockingham Bay, North Queensland, in company with Mr. A. J. Campbell, Mr. H. G. Barnard was fortunate enough to secure a full clutch (two eggs) of this extremely rare Owl. I can find no previous authentic description of the eggs. Mr. Mathews, in "Birds of Australia," vol. v., p. 351, mentions a clutch of two eggs, but leaves us in doubt whether he intends his reference to apply to *Ninox rufa* or *Ninox humeralis*. No locality is given, nor is there anything said of the taking. Mr. Barnard sends me a most interesting account of the securing of my specimens; I append it, together with a photograph kindly supplied by Mr. A. J. Campbell.

Mr. Barnard forwarded a pair of skins, which, curiously enough, reached me about the same time as a fine series of *Ninox rufa* specimens secured by Mr. M'Lennan at the King River, Northern Territory, close to Gould's type locality. The two species are very easily separable, and Mr. Mathews's description ("Birds of Australia," vol. v., pp. 350, 351) is readily followed, though he omitted to mention the broad band of white feathers which exists round the necks of immature specimens of *N. rufa*.

The specimens composing my clutch, as mentioned above, are of true *Ninox* shape; colour pure white; texture of shell smooth and glossy, showing numerous pittings when examined with the lens.

Dimensions in inches:—(a) 2.09 x 1.74, (b) 2.12 x 1.74.

Nest in a dead spout of a tall paper-bark tree (*Melaleuca*), in forest near scrub on the Meunga Creek, 3 miles from Cardwell, North Queensland. Tree standing amongst ground-ferns, and about 100 feet in height; nesting-spout about 80 feet from ground. The tree at 4 feet from the ground measured 13½ feet in circumference.

The concluding paragraph to Mr. Barnard's note will be read with regret by many; he is such a wonderful tree-climber—probably the best Australia has seen—that his retirement will be a loss to oologists generally. Mr. Barnard has collected for me for years, and on no occasion has he admitted a tree to be too tall or too large for him to climb. His work was mostly amongst the big timber of the coastal districts of Queensland, where nests at a height of 100 feet are no rarity. His bushmanship and knowledge of the habits of birds are of the very highest order, while his tally of new birds, let alone new eggs, secured is a lengthy one. Mr. Barnard has returned to station life, where, I think, I am safe in saying the good wishes of all *Emu* readers will accompany him.

“NOTES ON FINDING NEST OF *Ninox humeralis*.”

“While on a trip to Cardwell, North Queensland, for Mr. H. L. White, of Belltrees, and in company of Mr. A. J. Campbell, I had the good fortune to discover a nest of this fine Owl. On Friday, the 8th of September, I was hunting through a patch of tall *Melaleuca* or paper-bark trees, when I noticed an Owl sitting on a branch high up in one of the trees. The appearance of the solitary bird led me to suspect that the mate was somewhere near in a nesting hollow. On looking round I noticed a large tree about 70 yards away, with a dead hollow. Walking over to it, I hammered the butt of the tree with my tomahawk; there was a scramble inside, and an Owl looked out of the hollow. I hit the tree again, and the bird flew on to the bough of an adjoining tree. The bird I had just seen at once joined its mate, and both birds ruffled their feathers and kept opening their wings, showing signs of being very angry. They were a very fine pair, the female being smaller and much darker than the male. The female was the bird flushed from the hollow. Wishing to get a full clutch of eggs if possible, I did not attempt to climb the tree, but left it till Monday, the 11th, when, in company with Mr. Campbell, I again visited the spot, this time armed with a length of wire rope as well as my tomahawk, Mr. Campbell being provided with his camera. First cutting a long sapling with a fork at the end, I placed it against the tree and climbed to the top; this took me above an awkward bump. I then placed the rope round the tree and myself, thus giving me a support in case I got tired. I then cut my steps, slipping the rope up as I went from step to step till I reached the first limb, about 68 feet from the ground; from there to the hollow, about 12 feet, was soon accomplished, and on looking in the hollow I was rewarded by the sight of a fine pair of eggs, which had been incubated about a week, showing the bird would not have laid any more. Mr. Campbell has placed the taking of this nest on record by taking a couple of photos. of the proceedings. Strange to say, neither of the birds made any protest while I was robbing their nest. The tree was a large one, being 13 feet in girth at the butt. This will probably be my last big climb, as I feel it is getting beyond me.”

***Acanthiza pygmaea*.** Milligan (*Acanthiza nana pygmaea*). Fairy Tit.

For some time past Mr. T. P. Austin, of Cobborah (N.S.W.), has mentioned an *Acanthiza* which puzzled him, and has been good enough to send me a series of skins, together with a nest and eggs; the last-named I now describe as the type clutch.

In spite of my fine series of *Acanthiza* skins, I was very uncertain about the Cobborah bird, thinking it was new, until Mr.



Climbing to Rufous Owl's Nest in Giant
Paper-bark (*Melaleuca*) Tree.

A. J. Campbell, who lately spent a fortnight amongst my specimens, put me right. I have the types of *A. pygmea* (vide *Emu*, vol. xii., p. 167), much shrunken in size, certainly, but agreeing exactly with the Cobborah birds when carefully measured; the coloration is identical. It may not be out of place to mention here that Cobborah estate is 160 miles in a direct line inland from the nearest point (Newcastle) on the New South Wales coast, and to the west of the Dividing Range.

The country generally is open forest and high-class grazing, but in the vicinity is a belt of poor scrubby land, and it is in this latter that Mr. Austin finds some very interesting variations in what are usually looked upon as more coastal forms. So marked is the variation that in two cases (*Eopsaltria australis austini* and *Geobasileus reguloides cobborah*) Mr. Mathews makes subspecies. Other species examined by me—viz., *Collyriocichla harmonica*, *Ptilotis fusca*, and *Hylacola pyrrhopygia*—present much paler coloration than the coastal birds, the *Hylacola* being quite remarkable in its variation.

Adverting to *Acanthiza pygmea* again:

Types.—Three eggs, oval in shape, surface of shell very fine and smooth, being almost devoid of gloss; under the lens minute pittings can be noticed. Ground colour warm pinkish-white, marked all over, particularly at the larger ends, where well-defined zones or caps are formed, with spots and specks of reddish-brown, light chestnut, and dull purple.

The eggs very much resemble some of those laid by the *Gerygone* family.

The clutch gives the following dimensions in inches:—(a) .64 x .46, (b) .62 x .46, (c) .63 x .46.

Collected by Mr. Thos. P. Austin at Cobborah Estate, Cobborah, New South Wales, on 28th October, 1916.

Nest.—Small, neat, oval-shaped structure, with an opening 1 inch across on the side near the top. Total length, $3\frac{1}{2}$ inches, by $2\frac{1}{4}$ inches wide at broadest part. Constructed of dried grasses, cobwebs, bark, Eagle-down, and a little green moss and lichen, all neatly interwoven. Lined inside with feathers and a little sheeps' wool. The nest is smaller and not constructed of such quantities of green moss as is often the case with the nests of *Acanthiza nana* in the coastal districts. This type nest was placed 13 feet from ground, at the extreme end of a long, thin branch of a cypress pine (*Callitris robusta*), and was reached by building a tripod of saplings.

Female shot at nest, and skin received with the eggs.

Another nest taken by Mr. Austin is constructed of dried grasses well matted together with sheeps' wool instead of Eagle-down. Mr. Austin states that during the present season he found three other nests of this bird placed from 50 to 70 feet from ground—one in an *Angophora*, two in cypress pine (*Callitris*). One of the nests similar to type, others more roughly made, with less moss but more grass and sheeps' wool in the construction.

Garzetta nigripes. Temm. (*Egretta garzetta immaculata*). Lesser Egret.

I am of opinion that authentic Australian-laid eggs have not previously been described—in fact, I can find two doubtful references only. A. J. Campbell, in "Nests and Eggs," page 958, gives particulars of a clutch of these eggs said to have been taken on the Nicholson River, Gulf of Carpentaria, North Queensland. The set is now in my possession, and is clearly wrongly identified. G. M. Mathews ("Birds of Australia," vol. iii., p. 424) quotes the same clutch. Mr. A. J. North omits the bird from "Nests and Eggs." I have a list of most of the larger oological collections in Australia. *G. nigripes* is on some of them, but in each case, when I queried the identification, the owner admits a certain amount of doubt.

My doubts receive confirmation from the fact that no description I have read makes any mention of the single long white feather which grows from the back of the head of the adult birds during the nesting season. My specimens show this peculiar feather (after the style of those worn by *Nycticorax caledonicus*), and Mr. M'Lennan states that it was noticed on the bulk of the birds at the Roper River Heronry. If this feather is so prominent during the nesting season, is it not reasonable to suppose that collectors would have made a note of it when taking the eggs? Most probably eggs of *Mesophoyx plumifera* have been mistaken for those of *Garzetta nigripes*, but when seen together they are readily separable.

The average dimensions of twelve clutches of *M. plumifera* is 1.82 x 1.33, while the average of the same number of *G. nigripes* is 1.69 x 1.23 inches. The former is rather darker in colour, and the texture of the shell is different, *M. plumifera* being more deeply pitted.

G. nigripes lays three to four eggs as a rule, five very rarely. They may be described as being of the usual Heron shape. Texture of shell smooth, very slightly limed in some cases, colour very pale bluish-green. Average dimensions, 1.73 x 1.24. ^{1.67 x 1.21}

The clutches I claim to be types measure:—*Types* (typical clutch).—Dimensions in inches—(a) 1.68 x 1.23, (b) 1.67 x 1.25, (c) 1.68 x 1.23, (d) 1.68 x 1.27. *Co-Types* (typical clutch).—(a) 1.70 x 1.27, (b) 1.60 x 1.23, (c) 1.62 x 1.23, (d) 1.62 x 1.27. Another clutch, which are much more elongated and more pointed towards the smaller ends, measures—(a) 1.77 x 1.18, (b) 1.67 x 1.18, (c) 1.68 x 1.18, (d) 1.72 x 1.21.

Nest a rough structure of sticks about 12 inches across, placed chiefly in low mangrove trees growing along the edge of streams or tidal water.

Dacelo minor (*Dacelo gigas minor*). Northern Brown Kingfisher.

Types.—Three eggs, very rounded ovals in shape; surface of shell very fine, rather glossy, and pitted all over (and much confined to the larger ends in this case); colour white.

(a) 1.67 x 1.27, (b) 1.67 x 1.28, (c) 1.62 x 1.27 inches.

PLATE XXXV.



Nest of *Pachycephala inornata*, Ramsay, *in situ*, but denuded of some of surrounding branchlets.

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

Collected by Mr. H. G. Barnard on the Kirrama Table-land, Cardwell, North Queensland, on 24th October, 1916.

Nest consisted of a hollow scooped in a white ants' (*Termites*) nest placed 40 feet up in a tree.

Pachycephala inornata, Ramsay (*Matingleya griseiceps inornata*).
Grey Thickhead.

Types.—Two eggs, swollen or rather rounded oval in shape, surface of shell fine and slightly glossy. Ground colour white, well marked all over, particularly at the larger ends, with spots of dark and light umber and purplish-grey, the latter having the appearance of being beneath the shell.

(a) .83 x .64, (b) .83 x .63 inches.

Found by Mr. A. J. Campbell and collected by Mr. H. G. Barnard at the Murray River, Cardwell, North Queensland, on 10th October, 1916.

Co-Types.—Two eggs, more pointed specimens than those of the type clutch, and more heavily marked all over, and closely resemble very small specimens of those of the Harmonious Thrush, and certainly present no likeness to the eggs of the *Eopsaltria* family.

(a) .83 x .62, (b) .83 x .62 inches.

Collected by Mr. H. G. Barnard at the Murray River, Cardwell, North Queensland, on 13th October, 1916.

Nest is cup-shaped, somewhat loosely made of broad, dead leaves interwoven with rootlets and tendrils, and sparingly lined with dead grass, tendrils, &c. On the outside a little web and droppings of insects. Placed in the upright fork of a small sapling. Dimensions over all, 3½ inches by 3 inches deep; inside, 2½ inches by 1¼ inches deep.

The first nest, which was placed low down near the ground, was neater in structure; dimensions over all, 3 inches, inside 2 x 1½ inches. (See illustration.)

Aprosmictus cyanopygius, Vicill. (*Alisterus cyanopygius minor*).
Little King Parrot.

Type.—One egg, approaching to almost round in shape; surface of shell very fine and rather glossy. Colour white. No pittings can be detected in the shell by the naked eye, but the lens shows them. The egg measures, in inches, 1.27 x 1.08.

Collected by Mr. H. G. Barnard at the Murray River, Cardwell, North Queensland, on 3rd October, 1916, and taken from the hollow of a large gum (*Eucalyptus*) tree about 20 feet down from the entrance hole; it contained three young birds about a week old, also this egg (which was addled).

Lopholæmus antarcticus, Shaw (*Lopholaimus antarcticus minor*).
Little Topknot-Pigeon.

Type.—One egg, swollen oval in shape and rather pointed at both ends; surface of shell smooth, rather glossy, and finely pitted all over. Colour white.

Dimensions in inches, 1.67 x 1.20.

Collected by Mr. H. G. Barnard at Cardwell, North Queensland, on 12th August, 1916.

Nest a frail structure of dried twigs placed on a bunch of mistletoe (*Loranthus*) growing on a stringybark tree about 50 feet from the ground.

Climacteris minor, Ramsay (*Climacteris leucophaea minor*). Lesser White-throated Tree-creeper.

Types.—Two eggs, swollen oval in shape, surface of shell very fine and almost devoid of gloss. Ground colour very pale creamy-white, sparingly marked (especially specimen *a*) all over with minute spots and specks of reddish-brown and pale lilac.

(*a*) .82 x .62, (*b*) .84 x .62 inches.

Collected by Mr. H. G. Barnard on the Kirrama Range, Cardwell, North Queensland, on 28th October, 1916.

Nest consisted of green moss and soft bark to a depth of 6 inches, placed in a hollow of a small tree in scrub; eggs in small depression on top of the moss.

Eulabeornis castaneiventris, Gould (*Eulabeornis castaneiventris castaneiventris*). Chestnut-bellied Rail.

Eggs of this bird are so exceedingly rare that, although Mr. Mathews describes a clutch of four ("Birds of Australia," vol. i., p. 200), it may not be out of place if I give some further particulars.

For many years I had to be content with odd eggs—one taken near Normanton, North Queensland, and another at the Aru Islands; then Mr. Mathews very kindly presented me with a pair taken at Melville Island, Northern Territory. Now Mr. McLennan has secured several clutches, all taken at the King River, about 90 miles east of Port Essington, N.T., where the birds are plentiful but extremely shy and difficult to observe, as they live entirely in the mangrove scrubs along the tidal waters of the river. Several skins of this really splendid Rail accompanied the eggs; I had not previously seen a specimen, and am naturally delighted at obtaining such novelties.

Stomach contents consisted of small crabs.

The nest is a large, loose structure of sticks, grass, and leaves; a typical example measures 14 x 12 x 8 inches, while the egg-chamber measures 8 x 2½ inches. The nests are placed at heights varying from 2 feet to 10 feet, in leaning trees, upturned roots, &c., among the densest mangrove scrub.

The eggs, five appearing to be the maximum clutch, are of typical Rail shape, and coloured much like those of *Hypotaenidia philippensis*, Linn., though in many cases the coloured spots can scarcely be seen for dirt.

Two typical clutches of five eggs each give an average measurement of 2.0 x 1.44 and 2.11 x 1.41 inches respectively.

Description of New Honey-eater of the Genus *Ptilotis*, from North Australia.

BY H. L. WHITE, R.A.O.U., BELLTREES, N.S.W.

Ptilotis albillineata, sp. nov. White-stripe Honey-eater. Collected by William McLennan.

Adult.—Whole of upper surface fuscous, darkest on the head; primaries and tail feathers edged with olive-yellow. Conspicuous white stripe extending below the eye from the gape to behind the ear coverts; under surface dull white, whitest on the throat, and mottled with fuscous about the breast; under wing coverts yellowish-buff, and the inner edges of the wing feathers also buffy.

Bill brownish-black; gape yellow; feet brownish-grey; eyes light or bluish-grey. Sexes are alike in coloration.

Dimensions in millimetres:—

♂, (1) Length 192, wing 90, tarsus 22, culmen 20; (2) length 185, wing 89, tarsus 21, culmen 21.

♀, (1) Length 183, wing 83, tarsus 19, culmen 19; (2) length 171, wing 82, tarsus 20, culmen 20; (3) length 170, wing 79, tarsus 19, culmen 19.

Stomach contents, seeds and skins of fruit.

Type Locality.—King River,* Northern Territory.

Observations.—The bird appears to be confined exclusively to the rocky gorges of the sandstone hills, and was seen only in the deepest and narrowest ravines. Its call is a loud, clear whistle—"Tu-u-u-heer, tu-u-u-in," uttered occasionally. When the call is imitated the birds will come within a few feet of the observer, peer all round, and try to locate the sound. On one occasion a pair of birds was called up and became very excited, flitting through the bushes, and even examining the crevices in the sandstone.

Description of Nest and Eggs of the Desert Chat (*Ashbyia lovensis*, Ashby).

(*Ephthianura lovensis*, Ashby, *Emu*, vol. x., 1911, p. 251;
Ashbyia lovei, North, *Agric. Gaz. N.S.W.*, vol. xxii., p. 211.)

BY S. A. WHITE, M.B.O.U.

THE Board of Governors of the South Australian Museum organized a collecting expedition to the north-eastern limits of this State in September and October, 1916, under the leadership of Mr. Edgar R. Waite, F.L.S., Director of the Museum, the writer being attached to the party as ornithologist. Upon the return journey by way of Cooper's Creek, and when traversing a wide belt of table-land, the eggs of the Desert Chat (*Ashbyia*

* About 90 miles east of Port Essington.

lovensis) were taken. Through the courtesy of the Board and of the Director I am able to describe these eggs.

Although the Desert Chat was described by Mr. E. Ashby as long ago as 1911 (*Emu*, vol. x., p. 251) as *Ephthianura lovensis*, and subsequently placed in a new genus by Mr. A. J. North, no knowledge of the eggs or nest of this bird could be gleaned. Upon two occasions supposed eggs were taken of this bird, but I deprecated describing them as such. Now I can positively say they were not the eggs of the bird in question, and that the following is a description of the first authenticated eggs of *Ashbyia lovensis* ever taken.

I met with these birds west of Oodnadatta during June, 1914 (see *Transactions of the Royal Society of South Australia*, vol. xxxix., p. 752), and, although in my opinion they had then paired off for breeding, nests were not met with. The type clutch now in the South Australian Museum comprises three eggs, of which the following is a description:—

Ground colour before blowing pale pink or light flesh colour; after blowing, yellowish-white; reddish-brown spots are clustered round the larger ends, and in two eggs (*a* and *b*) very small spots are scattered over them; the third (*c*) has the spots at the larger end much more strongly pronounced in comparison to the other two. Eggs pointed, measuring as follows:—(*a*) 10.93 x 10.45, (*b*) 10.97 x 10.47, (*c*) 10.94 x 10.45 mm. respectively.

Nest.—A deep, neat structure built in a comparatively deep hole, the rim extending or overlapping all round, and slightly higher than the level of the ground. Constructed with small twigs (mostly parts of *Bassia*, sp.) and dry grass, neatly lined with rootlets, the rim being exceedingly well and solidly formed with rootlets intertwined with the pale yellow flower-heads of *Gnephosis eriocarpha*, Benth.

NOTE.—On 14th October, 1916, when the expedition was some 12 miles east of Mungeranie, I had taken my turn to ride a camel for a rest, and Mr. Waite had assumed duty to search for water. From my elevated position I had a good view of Mr. Waite tramping over the gibbers or table-land. I saw him partly raise his gun, and I could also plainly see a bird fluttering away. Soon afterwards the gun was fired. I then saw Mr. Waite move forward and pick up the bird. Mr. Waite signalled for me, and when I reached him he was holding an adult Desert Chat in his hand, and at his feet, within a foot or 18 inches of a small salt-bush on the edge of a shallow crab-hole, he indicated a beautifully constructed nest containing three eggs. I said, "Then this is the nest of *Ashbyia lovensis*?" and my friend, holding out the bird, replied, "Shot from the nest." He told me that when he flushed the bird it did the "broken wing" trick very well indeed, and he had to wait until it was sufficiently distant before he shot it. He also said that when he found the nest it contained but two eggs; the third was lying a few inches away, having evidently been ejected by the bird in its hurried departure. The first thing

that struck me upon seeing the eggs was their resemblance to those of Honey-eaters, and since comparing them with the eggs of *Melithreptus* it is found that they could be easily assigned to members of that genus. The photograph of the nest and eggs, taken *in situ* by Mr. Waite, and reproduced in illustration of this paper (Plate XXXVII.), does not convey a correct idea of the position of the nest, owing to the salt-bush being between it and the camera. The nest was just beyond the bush, on the bare ground. When the nest was removed the hollow in the ground looked as if a rounded stone had been taken out. As the eggs were fresh, and as fully fledged young birds were taken a few days previously, it is evident that the breeding season was very much extended this year, most likely owing to the good season, with early and late rains. The photograph of the eggs was taken by Mr. Waite upon our return to Adelaide, the material of the nest forming the background. The photograph of the gibber country (Plate XXXVI.) was taken by myself at Innamincka, close to where we secured specimens of the Desert Chat, the foreground giving a good idea of the stony habitat of this bird.

Note on the Finding of the Nest and Eggs of the Desert Chat (*Ashbyia lovensis*, Ashby).

BY EDGAR R. WAITE, F.L.S., DIRECTOR OF THE SOUTH AUSTRALIAN MUSEUM.

MUCH of the country traversed by the expedition is in the nature of what Sturt called the "Stony Desert," locally known as "gibber country," and further differentiated as large gibber and small gibber. The latter, with which we are at present only concerned, consists of reddish-brown stones, nowhere larger than a walnut; they lie close together, and in places are so even that one might almost imagine they had been levelled by a road roller. The interstices are filled with fine sand, the constant movement of which under action of the wind has smoothed all asperities from the stones, and a mosaic appearance is produced. In other places walking is less comfortable, and in crossing the big gibber riding a camel is preferable to walking. Such a desert may extend for 20 miles or more, and it supports very little herbage indeed, low and scattered salt-bushes being the only indication of vegetation.

The Desert Chat was found only in the gibber country, and was nowhere very common. Though the breast of the bird is bright yellow, the colour is not specially noticeable, while its brown back harmonizes so well with the colour of the stones, tempered with that of the sand, that a sitting bird must be quite inconspicuous. That the bird relies on such similarity to its surroundings when sitting is evidenced by its actions, as hereafter described.

The following incident happened on 14th October, on which date we had been two days without water; in consequence thereof we sent out scouts to a mile on each side of the camel train in the hope of finding some soakage or wet clay-pan. During one of my "watches," and when about 12 miles east of Mungeranie, I flushed a Desert Chat. The little bird did the "broken wing" trick very well indeed, and fluttered away, while I remained stationary. As soon as the bird was sufficiently distant I shot it with the .410, feeling that if I could find the nest it would be well to place the identity of the species (*Ashbyia lovensis*, Ashby) beyond dispute.

I found the nest within a yard and a half of my feet, concealed in a clump of salt-bush; it contained two eggs, and a third was lying a few inches away, having evidently been ejected by the bird in its hurried departure. This was the more remarkable as the nest was particularly deep. It was built in a hole in the small gibber, and when removed the hollow looked as if it had been artificially excavated, though it is not conceivable that the bird had removed the stones and sand. The hole would contain an average teacup, and the nest was built with a rim which extended beyond the hole for some distance all round. The groundwork of the nest consists of small twigs overlaid with fine roots interspersed with flower-heads to form a lining, and the fine roots were used to form the rim above mentioned.

The eggs are pale yellow in colour, with chestnut-brown blotches disposed around the larger end. In two of the specimens minute brown dots occur on other portions also. Before blowing the ground colour was pale pink, as with most small white or nearly white eggs. The eggs are larger and more pointed than in any species of *Ephthianura*, with which genus the bird was first associated, and measure 10.93 x 10.46, 10.97 x 10.47, and 10.94 x 10.45 mm. respectively.

The accompanying photograph was taken of the nest and eggs *in situ*, but, owing to the searching fine sand having interfered with the working of the shutter, the result is not so sharp as I could have wished.

It will be realized that under the circumstances above mentioned we could not afford much time on the ground for making observations, but I signalled to Capt. White, who was about a quarter of a mile distant, so that he, as ornithologist to the expedition, might have the opportunity of seeing the nest and eggs (previously unknown) in an undisturbed state.

Record of a New Tree-creeper for South Australia.

By S. A. WHITE, M.B.O.U.

Climacteris waitei, sp. nov. Cooper's Creek Tree-creeper.

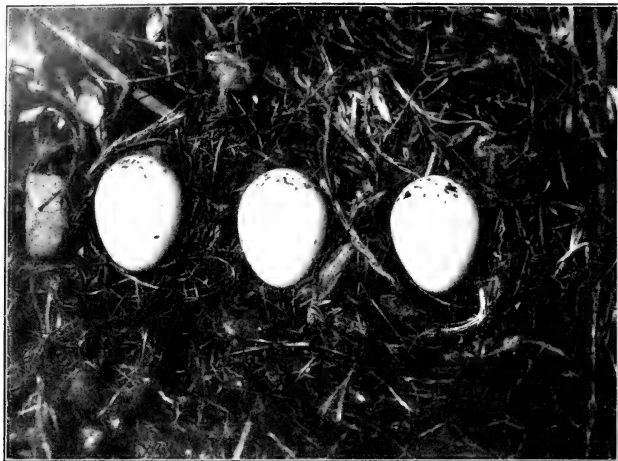
Head and forehead dark grey, feathers of the latter showing narrow dark lines down the centres; back of the neck grey; back



Innamincka, Central Australia, where the Desert Chat was obtained.



"Burke's Tree," under which the explorer died.



Eggs of the Desert Chat (*Ashbyia lovensis*), natural size.



Nest and Eggs of Desert Chat (*Ashbyia lovensis*).

and rump ruddy brown; wing—all primaries excepting the first, and all secondaries, blackish-brown at the base, crossed by a band of buff, in secondaries followed by a deep band of blackish-brown; tips of primaries and secondaries brown; throat whitish, and some of the feathers marked with black; chest grey; breast and abdomen pale rufous, with a dull white stripe down the centre of each feather, lined on each side by a narrow brown line; flanks rufous; tail greyish-brown, all the feathers excepting the first two crossed by a deep black band; under tail coverts rufous, shaft of each feather and tip white, a series of small double spots of a dark brown colour situated close to the centre shaft of the feathers and at even distances along it. The coloration of the sexes is alike, with the exception of the female showing a faint rufous marking on the feathers of the lower throat. Iris brown; feet slaty-grey; bill brown.

Measurements, taken in the flesh, in inches:—Total length, $6\frac{1}{2}$; total stretch of wings, tip to tip, $11\frac{1}{4}$; tarsus, $\frac{7}{8}$; bill, $\frac{1}{2}$.

Type.—A male collected at Innamincka on 2nd October, 1916, by S. A. White, and now in the South Australian Museum.

Range.—As far as yet known, the bird is confined to Cooper's Creek district, from above Innamincka in the east to Cuttapiirie Corner in the west.

The markings on the lower side of *Climacteris waitci* partake somewhat of those of *C. scandens*, while the coloration of the back approaches that of *C. superciliosa*, but differs noticeably from both. Although of about the same size as *C. superciliosa*, this new bird has a shorter and stouter bill, its feet and legs much more powerful, and the claws longer and stronger.

Habits much like those of other members of the genus. The call resembles that of *C. scandens*, but is not so loud. I secured the first specimen in the vicinity of "Burke's Tree," a few miles above Innamincka, on the south side of Cooper's Creek.

Fully fledged young ones were accompanying the parent birds as they flew from tree to tree, their advanced plumage suggesting that these birds had nested in June or July.

Description of the Winiam Tit-Warbler, *Acanthiza winiamida*, sp. nov.

BY F. ERASMUS WILSON, R.A.O.U., MELBOURNE.

THE whole of the upper surface, with the exception of the lower forehead and rump, uniformly grey, slightly tinged with olive-green. Feathers of the lower forehead black, widely barred with white near the extremity; rump creamy-white. Primaries and secondaries ashy-brown, the primaries being faintly margined with white in their external webs. Tail feathers black, partially tipped with white. Feathers of ear coverts and throat whitish, faintly

margined with black. The dark throat feathers terminate abruptly in a pale pectoral band, thus giving the appearance of a distinct gular patch. Breast, abdomen, and flanks greenish-white. Legs and bill black. Irides creamy-coloured.

This description refers to an adult female.

Measurements.—Total length, 3.75 inches; tail, 1.5 inches; tarsi, 0.63 inch; culmen, 0.25 inch.

The above bird was collected by me on the 12th October, 1916, in a desert south of Winiam East, a district lying about 12 miles south-east of Nhill, Victoria. Its nearest relation is the Small-billed Tit-Warbler (*Acanthiza morgani*), Mathews, but from which, apart from other minor differences, it may be easily distinguished by the dark gular patch above mentioned. The birds are extremely shy, and when disturbed usually fly fully two hundred yards before alighting; I thus found it very difficult to secure specimens.

The type specimen was obtained when in company with its mate and two immature birds, one of which was also secured. I saw many of them on the desert, and, with the one exception mentioned, there were always three birds in company. A partially constructed nest was found, situated about 4 inches from the ground in a dwarfed *Banksia*. The materials utilized in building the outer portion of the nest were dried desert grass, an occasional spider cocoon, and quantities of the epidermis from the back of *Banksia* leaves. Whether this epidermis separates from the leaf when dead, or is raised by the attacks of insects, I am unable to say. The quantity used, however, is remarkable, and it would be interesting to know whether *Acanthiza morgani* likewise uses such material.

According to Mr. Mathews's system of nomenclature, this bird would be known as *Acanthiza iredalei winiamida*. I propose the vernacular name of Winiam Tit-Warbler for the new bird.

Type in collection of F. Erasmus Wilson, Melbourne.

The *Acanthizæ* or Tit-Warblers.

By F. E. HOWE, C.M.Z.S., R.A.O.U., CANTERBURY (VIC.)

(Read before the Bird Observers' Club, 21st June, 1916.)

THE genera *Acanthiza* and *Geobasileus* form one of the most interesting groups of the family *Sylviidæ*. The following notes regarding the distribution of these birds in Australia refer more particularly to the species inhabiting Victoria and Tasmania.

This group of birds has puzzled ornithologists since they were listed by Gould. Most authors have used the genera *Acanthiza* and *Geobasileus*. Gould admitted *Acanthiza* (Vig. and Hors., *Trans. Linn. Soc. London*, vol. xv., page 224, 1827) and *Geobasileus* (Quoy and Gaimard, "Voy. de l'*Astrolabe*, 1830). North ("Nests



Acanthiza—Tit-Warblers.

1. Yellow-tailed.
3. Striated.

2. Brown.
4. Buff-rumped.

and Eggs") uses the same, while Campbell, Hall, and the R.A.O.U. "Check-list" use *Acanthiza* only. In a more recent list (Mathews's "A List of the Birds of Australia," 1913) there is added the genus *Milligania*, founded by the author in honour of Mr. Alex. Milligan, who did good work in Western Australia and other places in describing new birds, particularly in regard to the Tit-Warblers.

The problem now facing Australian ornithologists, however, is the number of species that should be admitted and how best to deal with the geographical races or sub-species. To my mind Mathews has best dealt with this vexed question by trinomial nomenclature; but how many or which of his sub-species can stand can only be determined by time and a large series of skins. Gould, Campbell, Hall, North, and the R.A.O.U. "Check-list" Committee have all named sub-species at different times. Binomial nomenclature for sub-species is scientifically wrong, and conveys nothing to the student. John Gould, in his magnificent work, "Birds of Australia" (1848), figured *Acanthiza pusilla*, *A. diemenensis*, *A. ewingii*, *A. uropygialis*, *A. apicalis*, *A. pyrrhopygia*, *A. inornata*, *A. nana*, *A. lineata*, *A. reguloides*, and *A. chrysorrhœa*. In his "Handbook of the Birds of Australia," vol. i., p. 365 (1865), he makes *A. ewingii* a synonym of *A. diemenensis*, and places *chrysorrhœus* and *reguloides* under the genus *Geobasileus*.

Gould included *Acanthiza magna*, of Tasmania; but, as North points out that, "although allied to both *Acanthiza* and *Sericornis*, the distinctly curved bill alone would have been sufficient to justify Colonel Legge in separating it from either and instituting for its reception the genus *Acanthornis*, in which he places it (*Ibis*, 1888, p. 93). In addition to other characters, it differs from either in having long downy plumes on the lower back, which are even more pronounced than in *Pycnoptilus*."

Campbell ("Nests and Eggs," 1899) and Hall ("Key to the Birds of Australia," 1906) gave the genus *Acanthiza* only, with eleven species; both these authorities listed *Acanthiza squamata* as being closely allied to *A. reguloides*.

In the R.A.O.U. "Check-list," 1912, the genus *Acanthiza* only is used, and there appear fifteen species, *A. mathewsi*, *A. flaviventris*, *A. morgani*, *A. robustirostris*, and *A. archibaldi* being added as species, and *A. mastersi*, *A. pallida*, *A. modesta*, *A. diemenensis*, *A. macularia*, *A. whitlocki*, *A. zietzi*, *A. albiventris*, and *A. squamatus* as sub-species. Again, *A. squamatus* is placed as allied to *A. reguloides*.

Mathews's "A List of the Birds of Australia," 1913, has 3 genera, 13 species, and 37 sub-species. He adds *A. tanami* and *Geobasileus hedleyi* as new species, but differs from other authorities in regard to *A. squamatus*, placing it as a sub-species of *Geobasileus chrysorrhœus*. Mr. S. W. Jackson, in *The Emu*, vol. viii., pp. 261 and 284, described the nest and eggs of *A. squamata*, and adds that they (the nest and eggs) "closely resemble those of *Acanthiza reguloides*." In a recent letter to me, Mr. H. L. White, of Bell-

trees, Scone, N.S.W., says:—"The description of the nest omits the fact of its being fastened into the drooping twigs of the oak tree. The marking of the eggs would point to the bird being rather distinct from *A. chrysorrhous*, but the nest is constructed more after the style of that bird than *A. reguloides*."

In *Acanthiza pusilla* alone there has been great confusion regarding forms that should rank as sub-species. Mathews, in dealing with this bird, gives the habitat as South Queensland and New South Wales for the dominant sub-species and the type as *Motacilla pusilla*, White, 1790. He adds twelve sub-species. Three of them—*A. apicalis*, *A. archibaldi*, and *A. pyrrhopygia*—are given the rank of species, while *A. diemenensis*, *A. macularia*, *A. whitlocki*, *A. zietzi*, and *A. albiventris* are listed as sub-species in the R.A.O.U. "Check-list," leaving *A. venus*, *A. arno*, *A. consobrina*, and *A. katherina* as Mathews's contribution. North was very careful regarding sub-species, and deprecated the describing of them as species; but when perusing his work one is convinced that these geographical races confused him, for he says, when dealing with *A. pusilla*:—"A close ally of this species, *A. apicalis*, inhabits the western portion of the continent; specimens examined from some parts of South Australia combine the characters of both *A. pusilla* and *A. apicalis*, while yet another hardly distinguishable species is found in Tasmania" (italics mine). Again, after describing *A. pyrrhopygia*, North says:—"Dr. Sharpe, who had apparently never seen an example of *A. pyrrhopygia*, for he transcribes Gould's description of it in his 'Catalogue of Birds in the British Museum,' regards it as 'very doubtfully distinct from *A. apicalis*,' and erroneously gives its habitat as Western Australia. I feel sure, however, if Dr. Sharpe had seen a specimen he would never for a moment question the validity of *A. pyrrhopygia*. Its very pronounced rufous upper tail coverts and more conspicuously white-tipped tail feathers, which have also a broader blackish-brown subterminal band, will readily serve to distinguish it from *A. apicalis*." North, in drawing attention to the so-called *A. pyrrhopygia* from New South Wales, says:—"They may readily be distinguished from specimens obtained in South Australia by their larger size, rufous-chestnut upper tail coverts, lighter under surface, which have only a slight tinge of fulvous on the flanks, and by their white under tail coverts." He named this form *A. albiventris*.

Between the years 1907-13 I have spent a few weeks in September or October of every year in the Mallee, and have collected the eggs of *A. pusilla hamiltoni*, Mathews. During September, 1911, Mr. F. E. Wilson and I collected skins of this race south of Kow Plains, now known as Cowangie. These birds are very close indeed to *A. p. apicalis*, and one of them, an adult male, is much lighter on the under surface. If Mathews's sub-species *venus* and *arno* are intermediate, the differences must indeed be small. I have often found nests of *A. p. hamiltoni* in the Mallee of north-west Victoria. The nest is identical with that of *A. p. macularia*

of southern Victoria, and is always placed in a turpentine bush, usually about 18 inches or 2 feet from the ground. This bush usually grows in the more open parts of the scrub or on small grassy plains. The eggs, too, are hardly distinguishable from those of the southern bird, but are a trifle larger. The call notes of the birds are, however, very different. A nest I found of this bird on 15th September, 1913, contained one egg, and on the 18th I flushed the bird from the nest and took a set of three fresh eggs. The rufous rump and white-tipped tail feathers were very conspicuous as the bird flew.

Mathews, in dealing with *Acanthiza nana*, gives the type locality as New South Wales, and adds *A. n. mathewsi* for Victoria and South Australia and *A. n. pygmea* of Mallee districts of Victoria. *A. n. mathewsi* is the smallest and brightest of the Tit-Warblers in southern Victoria, and is very plentiful at the You Yangs, near Geelong. During last September I found this species breeding, one nest being built in a pine tree, and another, containing young, built in the top of a small flowering Golden Wattle (*A. pycnantha*). Mr. H. A. Purnell, of Geelong, finds it breeding very freely in the Geelong Botanical Gardens. The nest is very beautifully made, not quite so neat as, but much smaller than, that of *A. lineata*. The eggs of this bird are usually three in number, and, unlike those of any of its congeners. At Tailem Bend, in South Australia, I saw a bird in some Murray pines that was probably referable to *A. pygmea* of Milligan.

Under the species *A. lineata* (Gould, 1837), North says:—"Specimens from Mount Lofty Ranges, near Adelaide, where this species is very common, are richer and darker in colour, especially on the under surface, than examples from New South Wales, where the type was obtained." Mathews gives the type locality as Mount Lofty, South Australia (Gould, "Synopsis of the Birds of Australia," 1838). He named five sub-species, one of which, *A. lineata chandleri*, is the Victorian representative. In southern Victoria this bird is probably as common as *Geobasileus chrysorrhous sandlandi*, if not more so. Its notes are unlike those of any other Victorian Tit-Warbler, and, when seen in company with *A. pusilla macularia*, the striped crown is sufficient to distinguish it. The nest of this bird is one of the most beautiful of Tit-Warblers' nests, and is very neatly made. It is usually placed fairly low down in a sapling, but I have taken eggs from one that was built in some suckers within a foot of the earth: others I have seen were placed at an altitude of about 50 feet. The breeding season commences early in August and lasts until December, and two broods are reared. At Ringwood, September, 1914, I found a nest in a sapling on which the bird was sitting. On examination the nest was found to contain six eggs, probably two sets laid by the same bird, as three eggs were partly incubated and dried up and three were perfectly fresh.

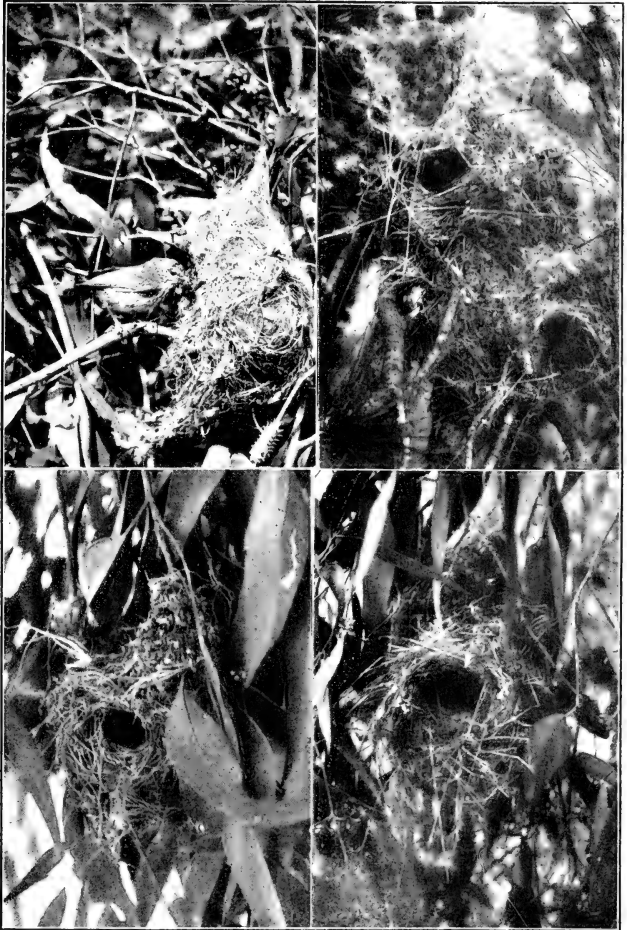
Acanthiza uropygialis uropygialis (Gould, 1837), occurs in New South Wales, and the Victorian representative, *A. u. ruthergheni*

is one of the most common forms of bird-life in the Mallee scrubs. It associates in small flocks of six or eight. It nests in dead spouts and hollows of the mallee, making the typical dome-shaped nest, and laying three, and sometimes four, eggs for a sitting. One set of four fresh eggs I took from a hollow in a small dead mallee were of the usual colour seen in typical eggs of *A. pusilla*, but were smaller and more dumpy in shape. In September, 1913, I found a nest, by seeing the birds fly to the spot, amongst some folds of a chaff bag hanging over a rafter in the stables of Mr. W. Ribbons, at Mulcra, in the far north-western corner of the State. Apart from all other distinctions, this form is easily separated from the Red-rumped Tit-Warbler by its white irides, which in *A. p. hamiltoni* are of a beautiful ruby. Five other sub-species of this bird occur across Southern Australia and Central Australia, extending to the coasts of Western Australia. Mr. Sandland secured me a set of eggs taken at Moora, on the Moore River. Regarding *Acanthiza inornata inornata*, Mr. A. J. North, when comparing skins collected by Mr. George Masters at King George's Sound and the Swan River, noticed the differences occurring from those collected in the neighbourhood of Perth, where Gould's type was collected. He named them *A. mastersi*. North adds:—"The darker upper and under surface will always serve to distinguish it from its near ally, *A. inornata*. The rump and upper tail coverts of this species are olive-brown."

In the *Transactions of the Royal Society of South Australia*, vol. xiv., p. 112 (1900), Mr. A. Zietz describes a Tit-Warbler under the name of *Acanthiza tenuirostris*. The types were obtained at Leigh's Creek, between Lakes Torrens and Frome, about 374 miles north of Adelaide, South Australia. Mr. Zietz, writing to Mr. North, says:—"My *Acanthiza tenuirostris* may possibly be, after all, a diminutive form of *A. reguloides*, from which it is distinguished by its smaller size, the absence of the buff colouring on the rump, and it also lacks the pale buff bases to all the tail feathers, as described by Gould in his 'Handbook to the Birds of Australia.'" Mr. North (page 282), says:—"It is unquestionably a good and distinct species, not a small form of *G. reguloides*, nor has it any other near ally. It may be distinguished from all other species of *Acanthiza* by its almost uniform coloured tail, pronouncedly light upper tail coverts, and its small, slender bill, which is comparatively narrow at the base, with a tendency to recurvature." Dr. Morgan, writing to Mr. North, says:—"This is a salt-bush bird, and is exceedingly shy." The nest is built in positions similar to those of the *Acanthizæ*, and not like that of *G. reguloides*. I have reason to believe that this form will ultimately be found inhabiting the big salt-bush plains of north-west Victoria. Mr. M'Lennan described a bird to me, and was certain that a new Tit was in company with a *Calamanthus*. Mathews lists this species as follows:—

Acanthiza iredalei iredalei, Lake Way, Western Australia.

.. .. *morgani*, Leigh's Creek, interior of South Australia.



Nests of *Acanthiza*—Tit-Warblers.

1. Striated Tit-Warbler at Nest. 2. Double nest of Yellow-tailed, showing two egg nests and one upper nest. 3. Nest of Yellow-tailed. 4. Nest of Brown.

Since Mr. Mathews believes in "bed-rock priority," why are these forms not listed as *Acanthiza tenuirostris tenuirostris* (Zietz), from South Australia, and *A. t. iredalei*, from Lake Way?

Acanthiza ewingii ewingii (Gould, "Birds of Australia," 1848).—This species is found in Tasmania, and, although closely allied to *A. pusilla diemenensis*, it can at once be distinguished by its darker upper surface and by having the flanks and abdomen greenish-olive, the colour of these parts in its ally being pale fulvous. The forehead, too, is light rufous, and has not the scaled appearance of *A. diemenensis*. A beautiful set of four fresh eggs was sent to me by Mr. F. A. Claridge, of Launceston. These eggs are very like those of *A. p. diemenensis*. Mr. A. J. Campbell described a form of *Acanthiza ewingii* in *The Emu*, vol. ii., p. 203 (1903), inhabiting King Island. Mr. Campbell says:—"It differs from the three species of Tits beforementioned—viz., *pusilla*, *diemenensis*, and *magnirostris*—by its more slender tarsi and wings, but conspicuously by the absence of the light crescent-shaped marks on the brownish (rufous-brown) feathers of the forehead, and by the white feathers on the cheeks, chest, &c., having the centre only black and not also edged with that colour, as in the other species." After giving dimensions, Mr. Campbell adds:—"By this diagnosis I strongly suspect the stranger to be a re-discovery of Gould's long-lost *Acanthiza ewingii*. If not, and pending the receipt of more material, I venture to name the bird provisionally *Acanthiza rufifrons*, or King Island Tit."

Milligania robustirostris of Mathews (*A. robustirostris*, Milligan, *The Emu*, vol. iii., p. 71, 1903), was one of Mr. Alex. W. Milligan's discoveries, and is easily distinguished by the "head, neck, and upper mantle being of clear bluish-grey, the feathers having longitudinal black centres" (in *A. lineata* they are buff), "bold on the forehead and crown, but faint and rare on the upper mantle; a conspicuous patch of white silky feathers on the rump and its sides; upper tail coverts of a uniform rust or snuff colour; ear coverts and cheeks bluish-grey, with whitish margins, producing a 'rippled' appearance." The types were secured at Day Dawn, Murchison district, W.A.*

Geobasilus chrysorrhous chrysorrhous.—Regarding this species North says:—"The present species was one of the novelties discovered by the French naturalists Quoy and Gaimard during the

* In *The South Australian Ornithologist*, vol. ii., No. 2, 1915, Captain S. A. White, M.B.O.U., described a "Tit," and named it *Acanthiza marianæ* (see *Emu*, vol. xiv., page 188). I have not seen a detailed description of this species, but recently Captain White presented me with a copy of his work, "Scientific Notes on an Expedition into the North-Western Regions of South Australia," and in it he refers to the new *Acanthiza*. From his notes and the short description given it seemed possible that he had come across Milligan's *A. robustirostris*, but Captain White would hardly describe it as new without comparing the birds. I should add that there is not a decent collection of skins to be seen in Melbourne, and I have not been able to examine either of these forms.

'Voyage de l'*Astrolabe*' in Australian waters, 1826-29, under the command of Capt. M. J. Dumont d'Urville. The precise locality where the type was obtained is not recorded in the original description, but, with the exception of the extreme northern and north-western portions of the continent, it is distributed in favourable situations throughout most parts of Australia and Tasmania. Specimens obtained by Mr. George Masters at King George's Sound, and by Mr. Edwin Ashby near Perth, Western Australia, have the crown of the head darker and the upper surface paler than Eastern examples. Specimens from Tasmania are larger and richer in colour, while those from Central Australia have that



Nest of *Acanthiza chrysorrhoa* in a fence.

PHOTO, BY H. J. BENNETT, NANNEELLA ESTATE.

faded and washed-out appearance common to many species inhabiting hot and arid districts. The type locality, according to Mathews, is New South Wales and South Queensland. He adds seven sub-species, and names the Victorian bird *G. c. sandlandi*. I have found this bird from Gippsland to the far north-western Mallee districts. At Parwan, near Bacchus Marsh, it is exceedingly plentiful, and in August and September its large, bulky nest (made mostly of wool in grazing country) is to be seen in almost every other sheoak tree (*Casuarina*). During one season Mr. J. A. Ross found several sets of five eggs and one clutch of seven. In Gippsland the eggs are usually pure white, but on the open northern plain country they are invariably speckled with faint

red markings. Twice I have found this species breeding in company. At Stawell I found three nests joined together; two contained eggs and the other young. At Parwan Mr. Fred. Godfrey and I found two nests in one, but both were empty. This last-mentioned specimen was exhibited before the Bird Observers' Club.

Geobasileus reguloides reguloides occurs in South Queensland and New South Wales. The Victorian form, *G. r. connectens*, is very common near Melbourne. At Ringwood this species prefers the sapling country, where good tussock grass abounds, and it is in these tussocks that the nests are placed. This bird will also choose a cleft in the bark of messmate trees, &c., and is then easily found, but when placed in the tussocks it is generally only found by flushing the sitting bird. The song of this species is totally different from that of its congener, *G. chrysorrhous*, and is more sustained. The buff rump readily distinguishes it from the yellow-rumped bird. North, after describing birds from New South Wales, remarks that "there is a variation in the depth of colour in examples of *G. reguloides* obtained from different parts of the continent. Specimens collected by Mr. George Masters at Gayndah, on the Burnett River, Queensland, have only a slight ochraceous tinge to the yellow rump and upper tail coverts, and the breast, flanks, and abdomen are pale yellow. Examples collected by Mr. Edwin Ashby at Upper Sturt, Woodside, and Callington, in the hills south-east of Adelaide, are much darker than the New South Wales specimens, and may be distinguished from typical examples of *G. reguloides* by the richer and deeper ochraceous-buff rump, upper tail coverts, basal portion and tips of tail feathers, and, in two specimens, the more distinct rufous forehead and deeper ochraceous-buff under surface"; and adds—"Should it be necessary to distinguish the latter darker race, I would suggest the name *G. australis*." Farther on Mr. North remarks:—"I particularly wish to point out that I regard this darker-coloured race from South Australia only as a geographical variation of the typical form of *G. reguloides*. Likewise also all the races described in this catalogue, for which I have proposed names, and which appear in the text of the letter-press only, and not as head-lines to a species. They are, in my opinion, however, far more entitled to full specific recognition than many others that are recognized as such—say, for instance, *A. apicalis* and *A. diemenensis*, which are only really geographical variations of *A. pusilla*, and not distinct species. . . . Trinomial nomenclature has not been adopted by Australian ornithologists, although that does not protect Australian ornithological literature from the hair-splitting of the most ardent sub-species-maker resident elsewhere. Comparatively few British and Continental ornithologists make use of the sub-specific distinction. It is useful, however, and has this advantage: one knows at a glance that the added trinomial refers only to a geographical variation of a typical form; whereas in binomial nomenclature one may

MATHEWS, "A List of the Birds of Australia," 1913.	ROBERT HALL, "Key Birds Aus.," "Nests & Eggs."	A. J. NORTH, "Nests & Eggs."	"R.A.O.U. Checklist," 1913.
<i>Acanthiza pusilla</i>	<i>A. pusilla</i>	<i>A. pusilla</i> , sp. ..	<i>A. pusilla</i> , sp. ..
" "	<i>A. albiventris</i>	<i>A. albiventris</i> , sub-sp. ..	<i>A. albiventris</i> , sub-sp. ..
" "	<i>A. macularia</i>	<i>A. macularia</i> , sub-sp. ..	<i>A. macularia</i> , sub-sp. ..
" "	<i>A. archibaldi</i>	<i>A. archibaldi</i> , sp. ..	<i>A. archibaldi</i> , sp. ..
" "	<i>A. diemenensis</i>	<i>A. diemenensis</i> , sp. ..	<i>A. diemenensis</i> , sub-sp. ..
" "	<i>A. zietzi</i>	<i>A. zietzi</i> , sub-sp. ..	<i>A. zietzi</i> , sub-sp. ..
" "	<i>A. pyrrhopygia</i>	<i>A. pyrrhopygia</i> , sp. ..	<i>A. pyrrhopygia</i> , sp. ..
" "	<i>A. hamiltoni</i>	<i>A. hamiltoni</i> , sp. ..	<i>A. hamiltoni</i> , sp. ..
" "	<i>A. arno</i>	<i>A. arno</i> , sp. ..	<i>A. arno</i> , sp. ..
" "	<i>A. consobrina</i>	<i>A. consobrina</i> , sp. ..	<i>A. consobrina</i> , sp. ..
" "	<i>A. apicalis</i>	<i>A. apicalis</i> , sp. ..	<i>A. apicalis</i> , sp. ..
" "	<i>A. whitlocki</i>	<i>A. whitlocki</i> , sub-sp. ..	<i>A. whitlocki</i> , sub-sp. ..
" "	<i>A. katherina</i>	<i>A. katherina</i> , sp. ..	<i>A. katherina</i> , sp. ..
<i>Acanthiza nana</i>	<i>A. nana</i>	<i>A. nana</i> , sp. ..	<i>A. nana</i> , sp. ..
" "	<i>A. mathewsi</i>	<i>A. mathewsi</i> , sp. ..	<i>A. mathewsi</i> , sp. ..
" "	<i>A. pygmaea</i>	<i>A. pygmaea</i> , sp. ..	<i>A. pygmaea</i> , sp. ..
<i>Acanthiza inornata</i>	<i>A. inornata</i>	<i>A. inornata</i> , sp. ..	<i>A. inornata</i> , sp. ..
" "	<i>A. mastersi</i>	<i>A. mastersi</i> , sub-sp. ..	<i>A. mastersi</i> , sub-sp. ..
" "	<i>A. submastersi</i>	<i>A. submastersi</i> , sub-sp. ..	<i>A. submastersi</i> , sub-sp. ..
<i>Acanthiza lanami</i>	<i>A. lanami</i>	<i>A. lanami</i> , sp. ..	<i>A. lanami</i> , sp. ..
<i>Acanthiza lineata</i>	<i>A. lineata</i>	<i>A. lineata</i> , sp. ..	<i>A. lineata</i> , sp. ..
" "	<i>A. whitii</i>	<i>A. whitii</i> , sp. ..	<i>A. whitii</i> , sp. ..
" "	<i>A. chandleri</i>	<i>A. chandleri</i> , sp. ..	<i>A. chandleri</i> , sp. ..
" "	<i>A. goulburni</i>	<i>A. goulburni</i> , sp. ..	<i>A. goulburni</i> , sp. ..
" "	<i>A. modesta</i>	<i>A. modesta</i> , sub-sp. ..	<i>A. modesta</i> , sub-sp. ..
<i>Acanthiza uropygialis</i>	<i>A. uropygialis</i>	<i>A. uropygialis</i> , sp. ..	<i>A. uropygialis</i> , sp. ..
" "	<i>A. ruthergleni</i>	<i>A. ruthergleni</i> , sp. ..	<i>A. ruthergleni</i> , sp. ..
" "	<i>A. mellori</i>	<i>A. mellori</i> , sp. ..	<i>A. mellori</i> , sp. ..
" "	<i>A. augusta</i>	<i>A. augusta</i> , sp. ..	<i>A. augusta</i> , sp. ..
" "	<i>A. condora</i>	<i>A. condora</i> , sp. ..	<i>A. condora</i> , sp. ..
" "	<i>A. nea</i>	<i>A. nea</i> , sp. ..	<i>A. nea</i> , sp. ..
" "	<i>A. murchisoni</i>	<i>A. murchisoni</i> , sp. ..	<i>A. murchisoni</i> , sp. ..

<i>Acanthiza iredalei</i>	Mathews, West Australia	..	..	..	..	<i>A. tenuirostris</i> , sp.	<i>A. morgani</i> , sp.
" "	<i>morgani</i> , Mathews, interior of South Australia	..	..	..	..	..	..
<i>Acanthiza ewingii</i>	Gould, Tasmania	..	..	..	..	Campbell refers to <i>A. ewingii</i>	<i>A. ewingii</i> , sp.
" "	<i>rufifrons</i> , Campbell, King Island, Bass Strait	..	..	..	..	..	..
<i>Milligania robustirostris</i>	Milligan, West Australia	..	..	..	..	..	<i>A. robustirostris</i> , sp.
<i>Geobasilens chrysoorrhous</i>	chrysoorrhous, Quoy et Gaimard, New South Wales, South Queensland	<i>A. chrysoorrhous</i>	<i>A. chrysoorrhous</i>	..	..	<i>G. chrysoorrhous</i> , sp.	<i>A. chrysoorrhous</i> , sp.
" "	<i>sandlandi</i> , Mathews, Victoria	..	..	..	..	..	..
" "	<i>leachi</i> , Mathews, Tasmania	..	..	..	..	..	..
" "	<i>perksii</i> , Mathews, South Aust. (Mt. Lofty dist.)	..	..	..	..	..	..
" "	<i>addendus</i> , Mathews, S. Aust. (Port Augusta)	..	..	..	..	..	..
" "	<i>multi</i> , Mathews, South-West Australia	..	..	..	..	..	..
" "	<i>pallidus</i> , Milligan, Mid-West Australia	..	..	..	..	..	<i>A. pallida</i> , sub-sp.
" "	<i>squamatus</i> , De Vis, North Queensland	..	..	..	..	..	<i>A. squamatus</i> , sub-sp. of <i>A. reguloides</i>
<i>Geobasilens reguloides</i>	<i>reguloides</i> , Vig. & Hors., New South Wales	..	..	..	..	<i>A. reguloides</i>	<i>A. reguloides</i> , sp.
" "	<i>concoloris</i> , Mathews, Victoria	..	..	..	..	..	..
" "	<i>australis</i> , North, South Australia	..	..	..	..	..	<i>G. australis</i> , sub-sp.
<i>Geobasilens hedleyi</i>	Mathews, South-East of South Australia	..	..	..	..	..	..
" "	<i>postica</i> , Mathews, South Australia	..	..	..	..	..	..
<i>Geobasilens flaviventris</i>	Ashby, interior of South Australia	..	..	..	..	..	<i>A. flaviventris</i> , sp.
MATHEWS, 1913.—		HALL—	CAMPBELL—	NORTH—	R.A.O.U. CHECK-		
Species, 13.	Species, II.	Species, II.	Species, 12.	Species, 15.	LIST, 1913.		
Sub-species, 37.	Sub-species, 4.	Sub-species, 9.	Sub-species, 4.	Sub-species, 9.			

possibly discover, after the loss of much time in searching out an original description, that the supposed specific value does not exist, and that a name has been given to a form that very often does not merit even sub-specific recognition."

Gebasileus hedleyi, Mathews (*Aust. Avian Rec.*, vol. i., p. 78, 1912) occurs in the south-east of South Australia, and a sub-species (*G. h. rosinae*) near Adelaide, South Australia; but of this species ornithologists in Australia know little or nothing.

Gebasileus flaviventris, the last species in this group, was described in *The Emu*, vol. ix., p. 137 (1910), and was secured at Lake Frome, in the interior of South Australia. Mr. Ashby remarks:—"Acanthiza flaviventris differs from *A. chrysorrhoea* in the typical white spots on the forehead, face, and ear coverts being entirely absent; in the general buff coloration, yellow abdomen and under tail coverts."

Some New Australian Birds.

BY GREGORY M. MATHEWS, F.R.S.E.

THAT many new endemic Australian species will now be found is not expected, but the addition of well-marked specific forms may be anticipated by means of stragglers. Macgillivray's exploration of the Claudie River district of Cape York Peninsula, by means of M'Lennan, furnished a most extraordinary surprise in the discovery of the two large Parrots, but we cannot hope for further shocks in this delightful manner. We may obtain odd forms such as *Ashbyia lovensis* (Ashby), *Lacustroica whitei* (North), *Kempiella kempi* (Mathews), the two former being Centralian forms, the latter a Cape York species. Another addition is *Erythura trichroa*, a sub-species of which I recorded from the Cape York Peninsula. The erratic occurrence of this species is worthy of remark. It has turned up in various places, each time securing a new specific or sub-specific name. I am now doubtful of its sedentary habits, and am inclined to the belief that it is a sporadic migrant. I am collecting evidence on this point, and will deal fully with the matter at a later date.

I now record as Australian

Munia atricapilla.

Loxia atricapilla, Vieillot, *Hist. Nat. Oiseaux Chanteurs*, p. 84, pl. liii., 1805: "les Grandes Indes."

In the Catalogue of Birds of the British Museum, vol. xiii., p. 334 (1890), Sharpe gave as range—"Himalayas and Central India to the Burmese countries and the Malayan Peninsula."

A specimen was secured by Mr. Robin Kemp at Cape York, and I concluded it must be a cage-bird that had escaped. Mr. Kemp assures me that it was with wild Finches, and I therefore put it on record. I still think it may have been an escaped cage-

bird, but it deserves record in case the species may be extending its range, though I confess I have no facts at present that this is so.

Another addition is

Collocalia fuciphaga.

A small Swiftlet procured by Mr. Robin Kemp at Cape York, Queensland, was not viewed with much favour, and laid aside for future consideration. A few months ago it was observed to differ from the known Queensland form, and, having little knowledge of this difficult group, but considering the differences merited a sub-specific term, I diagnosed it under the name *Collocalia francica yorkei*. Upon re-examination I found the differences cumulative, and I thereupon made further study. The full results will appear in my "Birds of Australia"; but here I may state that the bird was referable to a distinct species—*fuciphaga*, not *francica*—and, further, that up till a couple of years ago *two* species were confused under the name *fuciphaga*. My blunder may thus receive excuse when I record just a few of the experts' results in connection with this species.

In 1906 Oberholser reviewed the species, and admitted three sub-species and a distinct species. In 1912 he again revised the species and now admitted ten sub-species, reducing the aforesaid species to sub-specific rank. He writes:—"Although the differences between the several races are apparently slight, they are reasonably constant, for individual variation is not great."

Stresemann (*Verhandl. Ornith. Gesellsch. Bayern*, bd. xii., Heft I., pp. 1-12, Mai 15, 1914) reconsidered the matter, and showed two species were confused, and of *fuciphaga* alone he admitted *ten* sub-species. Though separating sub-species from small groups of islands, New Guinea birds were classed under two sub-specific names only—*C. fuciphaga hirundinacea*, Stresemann, being proposed for Western New Guinea birds, and *C. f. vanikorensis*, ex Quoy and Gaimard, being used, following Oberholser, for specimens for East New Guinea, Louisiades, Santa Cruz, New Hebrides, &c. Quoy and Gaimard (*Voy. de l'Astrol. : Zool.*, vol. i., p. 206) proposed *Hirundo vanikorensis* for a Vanikoro bird. Vanikoro is one of the Santa Cruz group, and the bird was figured on pl. xii., fig. 3. No specimens from this group are available, and had no figure been given I should not have concluded the name was applicable to this species, as Quoy and Gaimard wrote:—"Hirundo, toto corpore nigro cauda longa. . . . Petite espece remarquable par la longueur de sa queue toute noire en dessus." The bird is not black. It is interesting to note that Thunberg's description reads—"Supra atra cauda rotundata"; but again the figure given shows this species.

Ogilvie-Grant (*Ibis*, Jubilee Suppl., No. 2, Dec., 1915) continued the use of *C. f. vanikorensis* for South-West New Guinea specimens, but added a new sub-species of *Collocalia hirundinacea*—

viz., *exclsa*. He had determined that the sub-species *C. f. hirundinacea*, Stresemann, was of specific value.

Having shown that even "doctors have disagreed," I now claim usage for my own sub-species name in preference to *vanikorensis*, Quoy and Gaimard.

I have given Oberholser's comment that the species shows constancy and little variation in its sub-specific forms. This is confirmed by measurements taken by Stresemann, Ogilvie-Grant, and myself. Thus two birds are in the British Museum from the New Hebrides, the nearest locality to the Santa Cruz group. They are both poor specimens, and a female from Efate Island measures 112.5 mm. in the wing; a male from Espiritu Santo Island measures 117 mm. in the wing. Which of these is nearer the typical *vanikorensis* it is impossible to decide. However, I found two birds from St. Aignan Island, South-East New Guinea, collected by A. S. Meek, and I made the wings of both these—one a male, the other a female—to measure 122 mm. I then noted that Stresemann records six specimens from that locality—two in the British Museum and four in Lord Rothschild's museum at Tring. He gives the measurement of the wing as 122, 122, 122, 122, 122, 123.5 mm.

Now, these show such constancy that they cannot be regarded as the same as the New Hebrides birds, and are consequently not true *vanikorensis*. Another bird in the same box in the British Museum, labelled Astrolabe Range, New Guinea, collected by Goldie, is smaller, wing 106 mm. (Stresemann records it as 110), darker above and greyer underneath, with shorter feathered tarsus; this is referable to a different species, as the present one has the tarsus unfeathered.

The Cape York specimen has the wing 117 mm., and Ogilvie-Grant gives the measurements of the birds from S.W. New Guinea as—wing, 117, 117, 116, 115, 111; so that my bird is nearest those in measurement. Until more birds are available, and especially specimens from the type locality of *vanikorensis*, my name should be preferred for the Cape York specimen, and may be used for the Southern New Guinea form.

The name and references read—

Collocalia fuciphaga.

[**Collocalia fuciphaga fuciphaga.**

Hirundo fuciphaga, Thunberg, Kongl. Vetensk. Acad. Handl. (Stockh.), vol. xxxiii., p. 153, pl. iv., 1812; "Java in montium." Extra limital.]

Collocalia fuciphaga yorki.

Collocalia francica yorki, Mathews, Bull. Brit. Orn. Club, vol. xxxvi., p. 77, 27th April, 1916. Cape York, North Australia. Range, Cape York, North Australia. ? Extra limital.

Notwithstanding this addition, the Australian specific forms do

not increase by one, as it is necessary to eliminate *Collocalia esculenta*. No authentic occurrence of this species in Australia is at present known. The species was added on account of the specimens in the British Museum, but these are "Cockerell" birds. No "Cockerell" species can, in my opinion, be admitted without confirmation.

When I introduced *C. f. yorki* I wrote:—"Differs from *C. f. terra-reginæ* (Ramsay) in lacking the whitish rump, in being darker below, and in having the bill bigger and broader." These characters will suffice to determine any other Australian specimens, but the legs should be carefully examined under a lens, as there is a very closely allied species which has the tarsus feathered on the outside. This might also occur in Australia, as there is a specimen from Southern New Guinea in the British Museum. As above noted, I will give fuller particulars in my "Birds of Australia," where the present bird will be figured.

Magnamytis dorotheæ.

Barnard recorded (*Emu*, vol. xiii., p. 188, 1914) his "Search for *Amytornis woodwardi* in the Northern Territory," and in vol. xiv., p. 45 (1914), added a further note.

In the *Austral Avian Record*, vol. ii., p. 99 (24th September, 1914), I sub-specifically separated these under the name *Magnamytis woodwardi dorotheæ*, writing:—"Differs from *M. w. woodwardi* in its much smaller size and in lacking the black feathers on the head, the head feathers having only a narrow black line on each side of the white shaft. The co-type of *M. woodwardi* measures—culmen 15, wing 78, tail 103, tarsus 26 mm.; *M. w. dorotheæ*—culmen 12, wing 62, tail 86, tarsus 23 mm. Type from Macarthur River, Gulf of Carpentaria, Northern Territory; collected on the 24th September, 1913. Range, Northern Territory (east)."

Recently, reconsideration of this group has convinced me that the bird is specifically distinct, though it is certainly allied to *M. woodwardi* and is referable to the genus *Magnamytis*. Thus it agrees in bill characters, wing formula, feet, and tail with that genus, and differs from *Diaphorillas* in the bill structure, though approaching in its small size the latter genus. In *M. woodwardi* the feathers of the sides of the lower breast are like those of the top of the head, white centres and black edges; these continue across the lower breast, fading into the deep red-brown of the abdomen. In *M. dorotheæ* these black-edged feathers are entirely missing, the sides of the breast agreeing in coloration with the abdomen, which is very pale buff. The mantle feathers are reddish-brown, not black, with white centres, while the secondaries show a broad reddish margin which is only seen as a very narrow line in *M. woodwardi*. Further, the inner primaries of *M. dorotheæ* show the inner edges to be reddish, whereas this is missing in *M. woodwardi*. The accumulation of all these differences compels the specific distinction of *M. dorotheæ*.

Eudyptes serresianus, Oustalet.

In my "Birds of Australia" *Penguinus chrysocome* was included and figured, no authentic Australian specimen being available. When drawing up the "List of the Birds of New Zealand," in conjunction with Iredale, more study had to be given to these birds, and it was found that there was much confusion. Afterwards, continued investigations showed peculiar results, which have been fully developed in *The Ibis*. I give here the items especially affecting the Australian avifauna.

Examination of Forster's drawing, preserved in the British Museum, proved that the first record from Tasmania was of the species known as "*pachyrhynchus*." This suggested further reference to Gould's "Birds of Australia," when plate 83 of vol. vii. was seen to portray the latter species, though given under the name "*chrysocome*." Gould wrote:—"For a fine example of this singular Penguin I am indebted to my friend Ronald C. Gunn, Esq., of Launceston, Van Diemen's Land, who informed me that it had been washed on shore on the northern coast of that island after a heavy gale." I at once wrote to Mr. Witmer Stone, who is in charge of the Gouldian collection at Philadelphia, and he courteously replied (8th September, 1913):—"We have a single specimen from Tasmania marked as *Eudyptes chrysocome*, type of Gould's 'Birds of Australia,' and which matches well Gould's plate, so I have no doubt it is the specimen referred to by him as the basis of the painting. The tufts are bleached almost white from exposure to light, and from the beginning of the white stripe on the lore to the end of the longest feather of the tuft measures 4 inches; the bill, from feathering at base to tip, 2 inches; depth through nostril, .90 inch; width at nostril, .56 inch; width at beginning of basal feathering, .86 inch; tail, 4.15 inches; wing (*i.e.*, from carpal joint to tip), 3.75 inches. The total length I should judge to be 19 inches, but, as the specimen is mounted and head bent, this is somewhat guesswork. I see I have identified the specimen as *pachyrhynchus* . . . many years ago."

It should be noted that Coues also so determined this specimen, though he used the name *chrysocome* as equivalent to *pachyrhynchus*. In the Rothschild Museum at Tring is a specimen labelled "Hobart, Tasmania, 7/1/91, ex Mus. Dresser." This is also referable to *E. pachyrhynchus*.

Consequently, in my "List of the Birds of Australia" I replaced the species *chrysocome* by *pachyrhynchus*. When I was in Australia, however, I noted in the Macleay Museum a specimen of another species, also from Hobart. The trustees acceded to my request, and forwarded this specimen to the British Museum, so that it could be accurately named. This necessitated a review of the group, which was undertaken, with the result that the name of the species proved to be the one given at the head of the note. The two species differ in the following features:—*Eudyptes pachyrhynchus* is the larger bird, with dark blue upper coloration, and

the throat deep velvety-black, agreeing with the colour of the cheeks and top of the head. A full crest of yellow feathers commences as a thick line at the lores and extends over the eyes on each side of the head. The bill is very stout, though short. *E. serresianus* is the smaller bird, with generally lighter slate-blue upper coloration, and the throat is slaty or grey-black, agreeing with the cheeks, and much lighter than the black of the top of the head. A long, flowing crest of yellow and black feathers commences at the lores as a thin yellow line extending over the eyes. The bill is shorter than in the preceding, and comparatively slender. When these differences are grasped the birds are easily separable, but without actual comparison of specimens it is difficult to attach the existing records of Penguins in Australian waters. Thus, H. Stuart Dove, in *The Ibis* (1916, p. 86), appears to have been dealing with the smaller species, while Brooke Nicholls's Victorian specimen seems to have undoubtedly been the larger species. In *The Emu*, vol. ix., p. 92 (1909), Conigrave recorded a specimen from Rottneest Island, Western Australia, noting that A. J. Campbell in 1889 had recorded the first from West Australia from Hamelin Harbour, near Cape Leeuwin. I saw two specimens in the South Australian Museum, one of which seemed to be the smaller species, the other the larger; but these must be re-examined. In the Donations to the South Australian Museum, 1914 (Report, p. 12, 1915), appears:—"A big crested Penguin (*Eudyptes pachyrhynchus*) from Mr. J. W. Hilton, head keeper of the Cape Banks lighthouse." As Mr. E. A. Waite, the Director of the Museum, is familiar with these birds, we can with certainty attach this record to the larger species.

We have, then, for Australia

***Eudyptes pachyrhynchus*, Gray.**

Reference as given in my "List of the Birds of Australia." Tasmania (less than half a dozen records, as Forster, Gould, Dresser Coll. in Tring Museum). (?) Victoria, Brooke Nicholls. South Australian Museum, as above. (?) Western Australia (two records).

To be added—

***Eudyptes serresianus*, Oustalet.**

[*Eudyptula serresiana*, Oustalet, Ann. Sci. Nat. Paris, Ser. vi., Zool., vol. viii., Art. 4, 1878. Tierra del Fuego.]

***Eudyptes serresianus filholi*, Hutton.**

Eudyptes filholi, Hutton, Proc. Linn. Soc., N.S.W., vol. iii., p. 334, 1879. Campbell Island, N.Z.

One definite occurrence: Hobart, Tasmania (Macleay Museum). (?) Devonport, Tasmania (Dove). (?) Specimen in South Australian Museum.

The Neozelanic sub-specific name must be used, as the Neozelanic birds slightly differ from the typical South American form.

Progress of Bird Study in Queensland.

BY A. H. CHISHOLM.

IN his presidential address to the R.A.O.U. congress at Adelaide in November, 1913, Mr. Robert Hall made passing reference to the position of bird-study in the several States. "Such centres as Brisbane, Hobart, and Perth should be doing better work than they are at present," he declared. "Let us trust them, in the next year or two, to send to the editors of *The Emu* some useful notices of the work of their little bands."

Three years having gone by since Mr. Hall wrote this, the time seems opportune for examining the ornithological situation in the centres referred to, or, better still, as far as possible in the States at large of which they are the capital cities.

I speak of Queensland on the experience of little more than one year. So far as Brisbane is concerned, I must confess to a sense of disappointment at the comparative lack of working bird-observers. To one who knew something of the numbers and enthusiasm of ornithological workers in Adelaide and Melbourne, the almost entire absence of such in the chief city of this richly-endowed State of the north was bound to come as somewhat of a shock. That is not to say, of course, that it was not possible to find *any* who were interested in birds; the point is that anything in the nature of field-work was practically a dead letter. The only ornithological company this writer has had among many excursions held during the year was that of Mr. A. J. Campbell, C.M.B.O.U., when the veteran ornithologist was in this city in June, and Mr. W. J. Colclough, a sound observer, who had a few hours' leave from the Queensland Museum to accompany us. A capable bird-student of years gone by, Mr. R. Illidge, of Bulimba, still has an attractive collection, but he now confines his field pursuits to entomology. The Government Entomologist (Mr. Henry Tryon) also finds his attention fully occupied in matters insectivorous, and does not devote to the birds a fraction of the time he did when State secretary of the Union. It is possible that there are others who might give attention to ornithology were it not for the demands of war-time matters, but, on the whole, I decidedly do not think it is yet possible to form a Bird Observers' Club in Brisbane with the expectation of making it live and successful. All that can be done at present, in my opinion, is to keep the birds before the Field Naturalists' Club and the Royal Society, and to help forward the work of the Gould League of Bird-Lovers.

It is in connection with the last-mentioned body that the most valuable work of the Queensland year—or of many years—in an avine respect, has been accomplished. At the end of last year the Bird-Lovers' League was not particularly active. The handsome certificate (bearing a representation of the regal Regent-Bird) had been produced by the Department of Public Instruction some months previously, but no very definite effort

had been made to reach the school children. Obviously, the way to do this was through the departmental *School Paper*, such policy making, as Mr. Hall aptly observed in the address earlier quoted, "a happy union of strength and usefulness." The Under-Secretary for Public Instruction (Mr. J. D. Story), when approached, was good enough to speak very appreciatively of the nature-study work carried on in the southern States, and, with the Minister's approval, readily assented to Queensland schools holding a Bird Day in October, the Gould League to supply material for special issues of the *School Paper*.

The collecting and arranging of the necessary articles, verses, and photographs took some little time, but it was a most pleasant occupation, made doubly so by the readiness of the response of those approached. Messrs. A. H. E. Mattingley, C.M.Z.S., R.A.O.U., R. T. Littlejohns, R.A.O.U., S. A. Lawrence, R.A.O.U. (of Melbourne), and Mr. E. M. Cornwall, of Mackay, Queensland secretary of the R.A.O.U., are especially to be thanked for contributing many fine photographs. Other members of the Union who lent willing assistance were Messrs. E. J. Banfield, of Dunk Island; N. V. J. Agnew, of Peel Island; and A. J. Campbell (the latter writing from Cardwell). It will be stimulating to these contributors to learn that, since the issue of the *School Paper*, the juvenile membership of the Queensland Gould League of Bird-Lovers has jumped from some few hundreds to approximately 7,000.

In connection with this wave of enthusiasm, one of the most pleasing features is the interest that has been aroused in the far north of the State, particularly in the neighbourhood of Cairns and Atherton. This seems to point to "a brighter day to be" for the unique and beautiful bird-forms of those tropical localities; and the impression is strengthened by the fact that the Barron Shire Council (Cairns) has carried a resolution congratulating the educational authorities on the prominence being given to the value and interest of birds. It is probable that this Shire Council will act shortly in the direction of having ornithologically rich areas reserved as sanctuaries.

In going through some hundreds of letters received by the League from various schools, I have been much struck with the apparent earnestness of the children in their desire to protect the birds and learn more of them. Many teachers also have written in similar strain. One small school reported that, on Bird Day, 25 nests were located *within the school area*, which is a sanctuary. Another locality reports Finches nesting in the orange trees, and Black-throated Butcher-Birds (*Cracticus nigrigularis*) coming to the kitchen for scraps; while yet again there is a report from the North of children studying Bower-Birds at close quarters, and, better still, keeping an intimate watch on the movements of migratory birds.

In the matter of providing food and drink for bird visitors, an excellent example is set by Mr. Cornwall. His pictures of

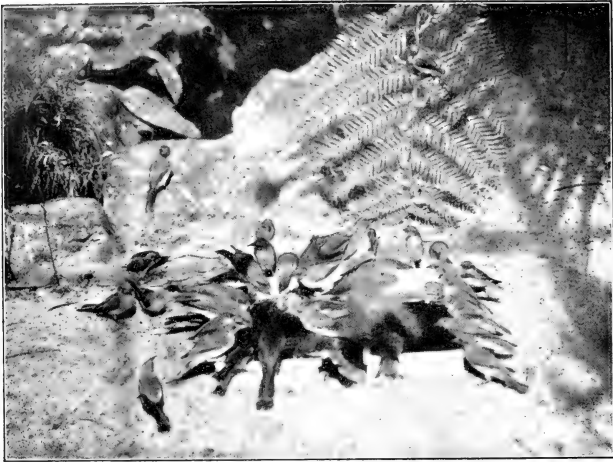
Finches and other birds crowding to a tank have aroused marked interest. Mr. Cornwall's good work during the year was followed up on Bird Day, when he took many of the Mackay school children in hand. At Rockhampton, too, the cause of the birds found champions on Bird Day in members of the Central Queensland Bird Protection Association. This Association, in a quiet way, has been doing signal service for quite a while. Its members are unselfish enough to devote much time to patrolling the big



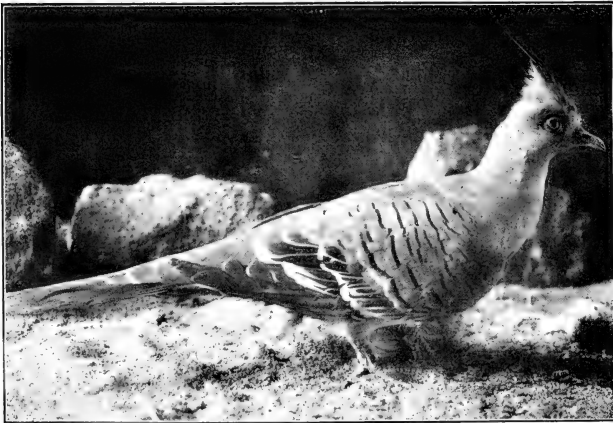
A Queensland Bird Student.

PHOTO. BY A. H. CHISHOLM, R.A.O.U.

lagoons adjacent to the town. They have been out at daybreak on many occasions, and have had the courage to prosecute—always successfully—several offenders against the game laws. A few months ago the president (Mr. W. J. King) came to Brisbane to offer resistance to an attempt that was being made to narrow the close season for native game. He was quite successful, for we heard no more of the misplaced effort.



Honey-eaters at Breakfast, Melbourne Zoo.



Crested Pigeon, *Ocyphaps lophotes*.

Intermediately, there have been the usual periodical outcries against particular birds that have proved temporarily troublesome. First it was the "Currawong" (*Strepera graculina*), whose collective head was demanded to be served up on a (metaphorical) charger to certain men on the land; then the "Red-bill" (presumably *Porphyrio melanonotus*) was roundly abused by sugar-growers—Halifax farmers actually were found to be paying 9d. a head for this *protected* bird; and, thirdly, various apiarists raised a shout of execration against the Bee-eater (*Merops ornatus*)—chiefly, one suspects, because of its unhappy name. However, *Porphyrio* and *Merops* continue to enjoy whatever protection the law affords, but the *Strepera* has to look after its own welfare—a thing the vigorous bird is not at all incapable of doing.

Reverting, in conclusion, to the personal note, it may be mentioned that, in addition to Mr. Campbell, two travelling members of the Union were welcomed to Brisbane during the year. These were Colonel T. Anderson, formerly of Ballarat, who is now on transport duty, and Mr. F. L. Berney, formerly of Western Queensland, who has been in England for two years. This absence has in no way lessened Mr. Berney's interest in Australian bird-life.

It is worthy of note also that, on the occasion of a Field Naturalists' outing to Oxley, an outer suburb of Brisbane, we made the acquaintance of Mr. Daniel O'Connor, a venerable gentleman who had been a friend of John Gould's mother. Mr. O'Connor* is over 90 years of age, but still takes a healthy interest in things of the outdoor world, and still retains a vigorous memory. He told us that, on the last occasion he saw Mrs. Gould, she spoke of her son John, who had left for Australia a short time before "to study birds." Mr. O'Connor was also to leave for Australia in a few days' time, and the lady expressed the hope that he would meet her son. Unfortunately, he never did.

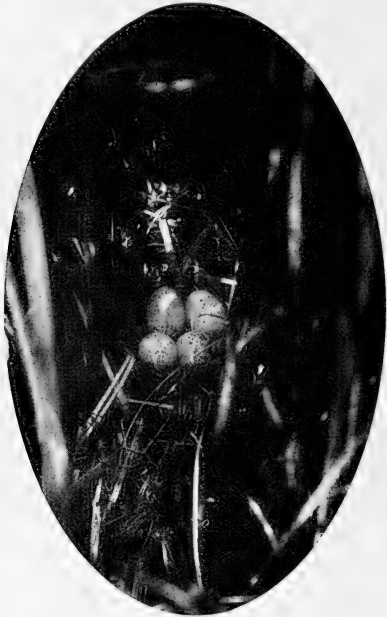
Brisbane, 1st December, 1916.

Camera Craft Notes.

Crested Pigeons.—Crested Pigeons (*Ocyphaps lophotes*) are common in Northern Victoria in open country, being usually found feeding on the ground. They make a loud whirring with their wings when they fly, and, as a rule, are not shy. They generally nest on salt and other bushes. They are easily kept in captivity, and breed every year in the aviaries at the Melbourne Zoological Gardens, where I took the photograph.—D. LE SOUËF. Melbourne.

* Mr. O'Connor passed peacefully away on 5th December, aged 91.

Nest of Lewin Rail.—This interesting photograph of a Lewin Rail's nest shows the "staging" plainly. This staging was 2 feet long to the level of the water. One nest I found was built $3\frac{1}{2}$ feet up, and had a remarkably long ladder or stairway.



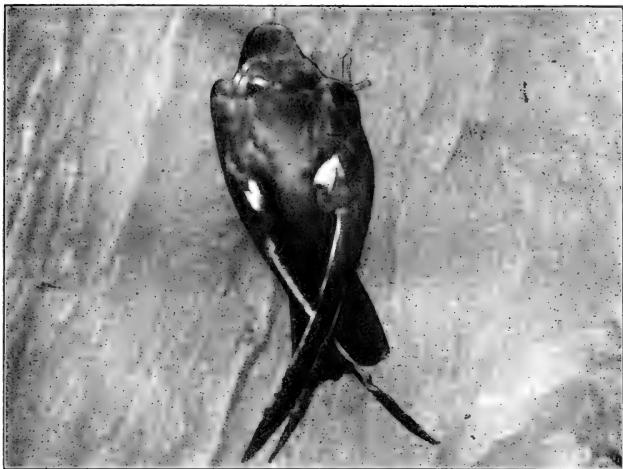
Nest of Lewin Rail, showing pathway.

PHOTO. BY MISS J. A. FLETCHER, R.A.O.U.

This, instead of going straight down, wound in and out, and I was unable to get a satisfactory photograph of it. The enclosed was taken on 28th August, 1915. —(Miss) J. A. FLETCHER, R.A.O.U. Boat Harbour, Tasmania.

* * *

Spine-tailed Swift.—The photograph of the Spine-tailed Swift (*Chaetura caudacuta*) was from a specimen which was picked up on the ground under some telegraph wires. It must have struck one of these, probably in partial darkness. It had quite recovered when I had it, but naturally could not fly off the ground. I took the photograph as it clung on to the rough bark of a tree,



Spine-tailed Swift on Tree.

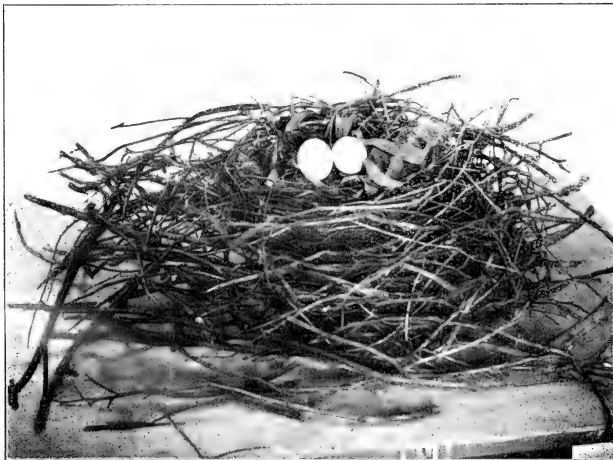


Spine-tailed Swift.



Photograph of *Sericornis* in an old frying-pan in a hut.

PHOTO. BY A. H. E. MATTINGLEY, R.A.O.U.



Nest and Eggs of Frogmouth (*Podargus*) in old nest of Magpie (*Gymnorhina*).

PHOTO. BY J. A. KERSHAW, F.E.S., NATIONAL MUSEUM, MELBOURNE.

its natural perching place. Unfortunately, the photograph was slightly out of focus. When I had finished I threw the bird into the air, and off it flew.—D. LE SOUËF. Melbourne.

* * *

An Unusual Nest of the Frogmouth (*Podargus strigoides*).—During the recent stormy weather a nest of this bird, with the unusual clutch of three eggs, was blown down. The birds then went higher up the gully to a more sheltered spot, and, for greater stability, built in an old nest of the White-backed Magpie (*Gymnorhina leuconota*). It was in the fork of a manna gum, about 30 feet from the ground. The bird was on the nest when I discovered it, and was also on it the following day, when the eggs were taken. It may be of interest to state that this nocturnal bird flew apparently at its usual speed through several trees, and appeared to have no difficulty in alighting, in the broad daylight.—J. M. MOLESWORTH, R.A.O.U. Ballark, Morrisons (Vic.)

* * *

Flight Aviary, Melbourne Zoo.—The birds shown in the photograph, taken in the Flight Aviary at the Melbourne Zoological Gardens, are nearly all Honey-eaters. We find they are very hardy birds to keep, and live for years, and are a constant source of attraction; and so they should be, with their beautiful, graceful forms and lively, engaging ways.

Last year a pair of White-plumed Honey-eaters (*Ptilotis penicillata*) hatched and reared two young, which early assumed the same phase of plumage as their parents, but the young White-naped Honey-eaters (*Melithreptus lunulatus*), of which several were reared, had the top part of the head green, like the back, and only assumed the black head and white crescent when well over six months old.—D. LE SOUËF. Melbourne.

* * *

Pilot-Birds.—In December, 1911, whilst camping near Olinda, in the Dandenongs, Victoria, with two other enthusiastic bird-lovers, we were fortunate enough to locate a nest of the Pilot-Bird (*Pycnoptilus floccosus*) in rather a strange way. While scrambling down a dense, scrubby hillside, one member of the party, on stepping over a log, was startled by a loud clamouring suddenly arising from a tangle of dry bracken at his feet. We excitedly searched for what we thought must be a nest of some kind, and almost immediately located a dome-shaped nest of grasses, bark, and leaves firmly woven together. It was lined very snugly with feathers, and contained two fine half-fledged youngsters. Although the nestlings called lustily every time the nest was disturbed, no parent bird put in an appearance for some considerable time. Eventually a beautiful chocolate-coloured bird came hopping quite close to where we were sitting, and, proceeding to the nest, fed the young birds with a large moth. Having had no previous

experience with the Pilot-Bird, we were rather mystified as to what it could be. It was not till we reached the camp and consulted Dr. Leach's "Bird Book" that we discovered what our find was. We decided to try next day for some photographs of the adult birds. Daybreak found us at the nest determined to secure pictures at any cost. Having fixed one of the cameras in position, we patiently waited for the parents to visit the nest. After about twenty-five minutes the female appeared, and, without taking any notice of the camera, which was focussed only some 18 inches from the nest, fed the young and departed without giving us a good position. As we received similar treatment on four or five visits, occupying roughly an hour, we grew weary of waiting, and decided to keep the parents around the nest by preventing them from feeding the young. This method proved effective, and we succeeded in securing several exposures without delay. During the day we had unlimited opportunities, the birds becoming so tame as even to allow themselves to be handled. We were also fortunate as regards the light, but, owing probably to our inexperience of photography at that time, the two photographs reproduced were the total result of many exposures.—S. A. LAWRENCE and R. T. LITTLEJOHNS.

Stray Feathers.

Some New Zealand Bird Notes.—I wonder if the following notes are of any interest? The Waiuku district consists mostly of small dairy farms, and most of the original forest has long ago disappeared. It was mostly kauri, puriri, and rimu on the low, rolling hills, and kahikatea or white (butter-box) pine on the rich swamp land north of the Waikato Heads. Starlings are here in thousands, and where they can find an old puriri are well off for nesting-places, as the puriri "pipes" just as eucalypts do. But standing timber is scarce, and these birds have taken to nesting within a foot or so of the ground. You see, nearly all corner-posts and gate-posts are of puriri in the round. These have, as usual, "piped," decaying down the middle and leaving sufficient space for a Starling to descend, and sometimes for a human arm to follow and even reach the nest. Perhaps the same thing happens in Australia, but I think it would be novel in England—I mean, of course, for the nest to be so near, if not sometimes on, *terra firma*. Besides Starlings we have several other acclimatized birds. Blackbirds and Thrushes are common; there are probably three nests of each in my grounds of a couple of acres. Skylarks also are very numerous, so you can see we get plenty of music. Goldfinches, Chaffinches, and Greenfinches are in about that order of frequency. (I leave a corner of the orchard waste *pour les encourager*.) The Yellow Hammer is also a common bird—and the Sparrow!



Pilot-Bird.



Nest of Pilot-Bird.



Nest and Eggs of Dusky Robin (*Amurodryas vittata*), with egg of Pallid Cuckoo (*Cuculus pallidus*), Launceston.

PHOTO. BY H. C. THOMPSON, R.A.O.U.



Nest of Australian Coot (*Fulica australis*).

PHOTO. BY W. J. SANDOW, ELEMENTARY SCHOOL, MILNE'S BRIDGE.

As for native birds, the commonest is, I think, the Ground-Lark (*Anthus novæ-zealandiæ*). The Harrier (*Circus gouldi*), the Kingfisher (*Halcyon vagans*), the Fantail (*Rhipidura flabellifera*), and the Grey Warbler (*Pseudogerygone igata*), are about equally numerous. The Weka (*Ocydromus carli*) is not uncommon, being more often heard than seen, and aquatic birds are plentiful on the swamps along the Waikato River. The only rare bird I have seen there is a small Rail, but which one I am not sure, as I only glimpsed it twice while driving along the road. I have heard the Tui once (further north I have seen scores), and seen a Kaka once; these also I have seen on several occasions north of Auckland. Even when to the above list I add the beautiful Californian Quail, which are plentiful, and the equally beautiful but rare Pheasant, the ubiquitous White-eye (*Zosterops carulescens*)—like myself, an Australian migrant come to stay—the Banded Dottrel (seen at Tokomaru Bay, on the East Coast), the Indian Myna (seen also at the same place), and the dear old Australian Magpie (*Gymnorhina tibicen*), found on the mainland opposite Kawan Island, to which they were introduced by Sir George Grey. The Shining Cuckoo should be added to the list, also the "More-pork" Owl. Even with all that I can scrape together, you will see what a short bird list I have, and understand how I miss my native land, with its wealth of bird-life.—T. J. ICK-HEWINS, M.B., B.S.

Ornithological Notes.

BY EDWIN ASHBY, M.B.O.U., R.A.O.U., "WITTUNGA," BLACKWOOD, SOUTH AUSTRALIA.

IN looking through my diary I have culled the following notes, which may be of interest.

Pomatostomus superciliosus, V. and H. (White-browed Babbler).—On the 14th March, 1916, observed a pair of these birds feeding their young in nest situated in a peppermint (*Eucalyptus odoratus*), about 15 feet from the ground. I could not help spending some time watching these birds; I think they are in some respects the most interesting of all the native birds in this locality. They spread their tails when they make their short flights, the white tips to the tail feathers giving a pretty fan-like appearance. The short, quick beats of their wings make a fluttering sound, very noticeable even when the birds are not visible. The habit of alighting on the ground at some distance from the tree that they wish to ascend, and completing the final few feet by taking a series of huge hops is almost grotesque, and this is added to as each of the flock follows its leader, the whole party ascending the branches of the tree in a spiral fashion. The notes are most varied; the most common is a combination between a warble and a scold, followed by a loud scolding noise without the warble, or some-

times the warbling notes in a little higher tone without any scolding at all. At dawn they utter a soft cry, quite different from the notes uttered during the day-time. Their actions when feeding on the ground are always worth watching. They turn over dead leaves and sticks with a quick movement, and often in their hurry throw leaves and sticks a distance of a foot or two.

On the same date (14/3/16) I noted the first *Cacomantis (flabelliformis) rubricatus*, Lath. (Fan-tailed Cuckoo), which stays with us in this district till July, when it disappears.

On the 1st of June large numbers of *Meliphaga (Ptilotis) sonora* (Southern Singing Honey-eater) and *Acanthogenys rufogularis*, Gld. (Spiny-cheeked Honey-eater) were about my garden—the first time I have seen either of these species in this district, and we have lived here 14 years. The varied notes of the Spiny-cheeks as they chivied one another about the shrubs and trees in the garden were most pleasing; we wish we could always have them with us. Unfortunately, we had about 11 inches of rain in June, and by the end of the month both these visitors, except a few pairs, had left. Warty-faced Honey-eaters (*Zanthoniza (Meliphaga) phrygia tregellasi*, Mat.) also visited us in May, but they all disappeared before the breeding season. Every few years they breed with us, and at other times they do not put in an appearance.

Geobasileus chrysorrhous perksi, Mat. (Southern Yellow-rumped Tit-Warbler).—A pair nested in a creeper in my front verandah. The first egg was laid on 11/8/16. On the 13th there were two eggs, and the nest was soaked through and through with heavy rain and a leak or overflow of the gutter; on 15th, three eggs, and the same number of eggs on 24th and 27th. On 30th there were four eggs, and the same number on 3rd September. On the 6th or 7th September the four chicks were hatched, showing that the wetting had not damaged the vitality of the eggs. This brood was fledged while I was away from home. Directly the young had left the nest the parent birds commenced tidying and mending it. They disappeared for ten days, and then commenced laying a second clutch; the second brood left the nest yesterday (15/11/16).

Geobasileus chrysorrhous perksi.—Additional Notes.—The parent birds began tidying the nest ready for the third brood two days later—viz., 17/11/1916. The first egg of the third brood was laid on 20th November, or the fifth day after the second brood left the nest; it was a fertile egg, as subsequently proved. On 1st December there were four eggs; 15th December, three chicks hatched, one egg; the next day, 16th, four chicks; 27th December, the chicks were a good size, with fairly long quills. Noticed that the parent birds were neglecting the family. On examination found a dead chick at entrance of nest; removed same, when parents immediately commenced feeding the three young left.

Bird Observers' Club.

At the October meeting of the B.O.C., Mr. Edwin Ashby, M.B.O.U., of South Australia, gave an account of his recent collecting trips in South Australia and Tasmania. He first told of the bird-life found in a narrow strip of country about 5 miles wide and 40 miles long at Port Germein, South Australia. One side of this strip is bordered by the sea and the other by a mountain range, and in it were associated *Malurus callainus*, *M. cyanotus*, *Megalurus gramineus*, and other interesting forms. Mr. Ashby considered that the first-named species was now almost extinct. He made his remarks most interesting by handing round specimen skins of the birds under discussion. Many fine skins secured from Tasmania a few days before the meeting were also shown, and they included rare species such as *Acanthornis magna*, *Acanthiza ewingi*, *Melithreptus validirostris*, and *M. melanocephalus*. Mr. Ashby dwelt at length on the plumage phases of the birds he exhibited. The hon. secretary (Mr. F. E. Wilson) exhibited a number of Victorian skins of the same species as those collected by Mr. Ashby, and some interesting comparisons were made.

The November meeting of the Club was held at the residence of the hon. secretary, Mr. F. E. Wilson. Mr. Wilson read an interesting paper on his ornithological trip to Winiam, in the Nhill district. He showed specimens of a new *Acanthiza* which he discovered in the district, and which he proposed to name *Acanthiza winiamida*. About 85 species of birds were met with, including some of the Mallee forms, such as *Drymodes brunncopygius*, *Hylacola cauta*, *Pachycephala gilberti*, and *Acanthiza pyrrhopygia*. Mr. Wilson illustrated his paper in an interesting manner with a collection of birds, nests, eggs, plants, and other forms of life met with in the district. The president, Mr. A. H. E. Mattingley, C.M.Z.S., welcomed to the meeting Mr. Berney, of Queensland, and spoke of the excellent work Mr. Berney was doing in preparing an index to *The Emu*. Mr. Berney, in response, spoke of his recent trip to England, and of the notable ornithologists he had met there. He showed a number of photographs of the Bustard (*Otis tarda*) displaying its magnificent plumage. From the remarks of Mr. F. E. Howe, there are still some rare birds to be found breeding near Melbourne. Mr. Howe referred to a gully near Ferntree Gully, where he met with the Red-browed Tree-creeper, Rose-breasted Robin, Rufous Fantail, Lewin's Honey-eater, Olive Thickhead, Satin Flycatcher, Black-faced Flycatcher, and Pilot-Bird.

Correspondence.

To the Editors of "The Emu."

SIRS,—Referring to Dr. Shufeldt's interesting and instructive paper on "Fossil Birds' Eggs" in the last number of *The Emu*, I would be glad to make a few comments on it.

He states the difficulty there is in the contents of the egg becoming fossilized. That is quite true, unless the contents had dried or hardened in the first instance. The few eggs that have been found are probably those of ground-laying birds, whose eggs were probably swept away in a flood and deeply buried in mud.

Then, again, they may be those of mound-building birds, and this class of bird may have been far more numerous than they are now. I have found eggs of these birds that had been 3 or 4 feet down in an old mound for many years, and were perfect, although fragile, and the interior always filled with soil that had worked in through some crack.

Then, again, take birds that nest in burrows, such as Petrels and others. On several occasions I have found buried eggs of Mutton-Birds (*Puffinus brevicaudus*) that had been originally laid in a burrow possibly 2 to 3 feet deep; the parent had been killed and the egg left. In time the hole fell in and the egg was covered, and, as the ground above may possibly be raised by sand drifts and other means, the egg was quite protected from the weather. Only last year I examined a cliff of hardened sand which had been eroded by the wind, and about 8 feet from the surface saw half an egg projecting from the bank. The erosion was taking place across an old Mutton-Bird nesting-ground, which probably had not been used for over one hundred years. On removing the egg I found it full of sand, and the surface slightly cracked. If this mound had eventually been formed into dune sandstone instead of being eroded away, this egg would have become fossilized also, and the shell would have been almost perfect. I have found three eggs of these birds in similar circumstances, and all full of sand, which would agree with Dr. Shufeldt's contention.

Although we have found fossil remains of animals in dune sandstone, no signs of eggs have been noticed, but they may easily be overlooked. Of course, this rock is of recent origin, but the same principle would apply.

W. H. D. LE SOUËF.

Zoological Gardens, Melbourne.

To the Editors of "The Emu."

SIRS, —The Executive Committee of the Commonwealth Advisory Council of Science and Industry has had brought before it the possibility that the completion of the Transcontinental Railway may lead to the introduction of European Sparrows into Western Australia, in which State they are at present unknown.

The Committee are endeavouring to ascertain whether Sparrows have followed the construction of the line from the Port Augusta end, and if so, to what distance; and it has occurred to them that some reader of *The Emu* may have travelled on the line and made observations on the birds seen, which would enable him to answer these questions. If so, I should be much obliged if he would communicate with me as soon as possible.—Yours faithfully,

GERALD LIGHTFOOT,

Acting Secretary, Executive Committee, Advisory
Council of Science and Industry.

314 Albert-street, East Melbourne, 14/11/16.

Publications Received.

The School Paper of Queensland, Classes I.-II., III.-IV., V.-VI., October, 1916.

The first issue of a special Bird Day number of this *School Paper*. It is a pleasing and praiseworthy production. Stories, articles, poems, and pictures are devoted to the instruction of the youngsters in bird-lore. To Mr. A. H. Chisholm, R.A.O.U., is due the credit of having secured the contributions, which are from observers in many States of Australia.

Mr. R. C. Murphy's interesting paper on the Anatidæ of South Georgia, on which island he had the unique opportunity of studying bird-life, has been received. It is a reprint from *The Auk*, vol. xxxiii., No. 3. One is glad to see that there is not much chance at present of the Ducks mentioned being exterminated, and it is to be hoped that the introduced Magellanic Geese will survive.

Messrs. Witherby and Co., publishers, 326 High Holborn, London, W.C., announce the publication of a volume entitled "A Veteran Naturalist," being the life and work of W. B. Tegetmeier, by E. W. Richardson, with an introduction by the late Sir Walter Gilbey, Bart.; with portraits and many other illustrations, demy 8vo, cloth, 10s. net. The subjects dealt with include:—The First Pigeon Flight in England; Use of Carrier Pigeons for Lightships; the Discovery of the Cylindrical Origin of the Bee's Cell; Co-operation with Charles Darwin; Long Connection with *The Field*; Introduction of Anæsthetics and Automobiles; the Introduction of Decimal Coinage in England; of Balloon Post and "Pigeongrams"; Axolotls; Aeroplanes; Bees; Cock-fighting; Mendelism; Micro-photography; Okapi; Pallas's Sand-Grouse; Pheasants and Game Preserving; Pigeons; Poultry; the Savage Club; Snakes and Vipers; Sparrows; "Wireless"; Zebras.

Obituary.

MR. B. H. WOODWARD.

WE regret to learn of the death of Bernard H. Woodward, F.G.S., C.M.Z.S., which took place in October last at Harvey, Western Australia. Mr. Woodward was a member of a Norwich family which has produced a number of men well known in the scientific world. As a young man he came out to Western Australia for the sake of his health, and acted as mineral registrar and assayer, and when a Geological Museum was established in 1889 he was appointed Curator. From that date until his retirement at the end of 1914 the advancement of the Museum was the leading object of his activities, and his enthusiasm for and interest in natural history, geology, and art enabled him to gather valuable

collections in all these branches, so that the Western Australian Museum and Art Gallery compares favourably with similar institutions in the other States. Mr. Woodward was specially interested in ornithology, and was for many years a member of the R.A.O.U. He organized numerous collecting expeditions to various parts of Western Australia, with the result that the W.A. Museum contains some 6,000 skins of local birds, besides a good series of birds from all parts of the world obtained by purchase and exchange. In 1899 a special Bird Gallery was opened, one end of which is occupied by a case illustrating the bird-life of a Western Australian swamp, the details of which were copied from photographs taken by him. Mr. Woodward's interest in Australian ornithology will be preserved for all time by the fact that three species discovered by Mr. J. T. Tunney, the W.A. Museum collector, were named after him—viz., *Amytornis woodwardi*, Hartert, *Colluricincla woodwardi*, Hartert, and *Mirafraga woodwardi*, Milligan, whilst Mr. G. M. Mathews subsequently named several Western Australian sub-species in his honour. Mr. Woodward was much interested in the preservation of the disappearing fauna of Australia, and mainly as the result of his efforts several faunal reserves were set aside by the Western Australian Government, of which the most important are Barrow Island, off the North-West coast, and a large area in the Darling Ranges, in the south-west. He was always ready to welcome and help any naturalist who visited his State, and his own activities for the advancement of the study of natural history in Western Australia will be much missed.

MISS W. MELLOR.

Members of the R.A.O.U. will regret to hear of the death of Miss Winifred Mellor, younger daughter of Mrs. J. F. Mellor, of Fulham, Adelaide, S.A. For a number of years Miss Mellor was a regular attendant at the annual meetings and excursions of the Society, and, during the "camp-out" expeditions held throughout the Commonwealth her unselfish manner and cheerful personality endeared her to all. In her own State Miss Mellor was a well-known nature-lover, and she took an active interest in the welfare of ornithology.

Royal Australasian Ornithologists' Union.

THE annual meeting of the Union was held in Melbourne on 13th December, 1916, at 7.30 p.m., to receive the answers to the printed questions sent out to all members. There were present:—Dr. J. A. Leach (in the chair), Col. G. Horne, Col. H. W. Bryant, Dr. B. Nicholls, Messrs. W. B. Alexander, C. Barrett, J. Barr, A. J. Campbell, R. H. Croll, G. A. Dyer, W. F. Gates, C. G. Gibson, Z. Gray, F. Howe, W. H. D. Le Souëf, A. H. Mattingley, A. F. Phillips, H. Pottenger, T. Tregellas, and A. Wilkie.

ANNUAL REPORT, 1916.

GENTLEMEN,—Your Council has much pleasure in presenting to you its Sixteenth Annual Report.

As the dreadful war is still going on, the Council considered it advisable to postpone again the annual congress and camp-out in Queensland, as it considered that all our energies and spare cash should go towards helping our country in its time of need.

During the year thirty-three new members have been enrolled, eleven have resigned, and nineteen have enlisted for active service in the war now going on. We have lost four members through death, which include Mr. Bernard Woodward, late Director of the Perth Museum, and Miss Winnie Mellor, of Adelaide, obituary notices of whom appear in this *Emu*.

Captain S. A. White, the retiring president, has kindly undertaken the duties of local State secretary for South Australia, and Mr. W. T. Foster for Western Australia. Dr. E. A. D'Ombraïn and Dr. J. Burton Cleland now represent New South Wales on the Council in place of Dr. Macgillivray and Mr. A. F. Basset Hull, who are now president and vice-president respectively. As Mr. C. L. Barrett, the co-editor of *The Emu*, has enlisted, Mr. R. H. Croll has kindly undertaken the duties of assistant editor. Mr. A. J. Campbell and Mr. W. B. Alexander have joined the printing committee, and Mr. C. L. Barrett has consented to act as honorary librarian until his departure.

During the year the Union has had donated to it the sum of £1,000, to enable it to have its own room, in which to house its library and collections and to hold the Council meetings. A room, No. 2 Temple Court, Collins-street, Melbourne, has now been secured and furnished. The same generous donor has also presented to the Union a copy of Gould's valuable "Birds of Australia." The Council cannot sufficiently express the thanks of the Union to this gentleman for his great generosity and whole-hearted interest in the cause of ornithology.

The Council has again to thank the Royal Zoological and Acclimatization Society of Victoria for so kindly continuing to house the Union's growing library.

The Emu is still being kept up to its normal standard of excellence, and many instructive papers have been published during the year, some of which have been well illustrated; many interesting photographs have also been published in the Camera Craft column, the Council realizing the value of photography in ornithology.

W. H. D. LE SOUËF, Hon. Sec.

The following office-bearers were unanimously elected:—President, Dr. W. Macgillivray; vice-presidents, Dr. J. A. Leach, A. F. Basset Hull; hon. secretary, W. H. D. Le Souëf; hon. treasurer, Z. Gray; hon. librarian, C. L. Barrett; hon. editor of *Emu*, Dr. J. A. Leach; hon. assistant editor, R. H. Croll; hon. press correspondent, Dr. B. Nicholls; hon. auditor, J. Barr:

printing committee, A. J. Campbell, A. H. E. Mattingley, W. B. Alexander.

Local State secretaries:—New South Wales, A. S. Le Souëf; South Australia, Capt. S. A. White; Western Australia, W. T. Forster; Tasmania, W. L. May; New Zealand, W. R. B. Oliver; Northern Territory, G. F. Hill; Queensland, E. M. Cornwall.

Members of Council:—Victoria, Col. C. S. Ryan, C.B., A. H. E. Mattingley, A. C. Stone; New South Wales, Dr. J. B. Cleland, Dr. E. A. D'Ombraïn; Queensland, C. A. Barnard; South Australia, E. Ashby; Western Australia, Major A. E. Le Souëf; Tasmania, Col. W. V. Legge.

Col. Charles S. Ryan, C.B., and Mr. A. W. Milligan were elected honorary associate members.

The following new members were also elected:—

Victoria.—Miss C. C. Currie, Lardner; Mrs. Strange, Ararat; Dr. A. N. M'Arthur, Boundary-road, Toorak; Messrs. J. Cross, B.A., Evan-street, Port Melbourne; R. H. Croll, Education Department, Melbourne; W. J. Lindsay, "Quamby," Woolsthorpe; W. Laidlaw, Department of Agriculture, Melbourne; C. A. Ladwig, 154 Williams-road, Prahran; K. MacMeikan, Neerim-road, Murrumbena; H. Pottenger, Kinross-avenue, Caulfield; W. H. Sloane, Buckland-avenue, Geelong; H. B. Williamson, Redan; T. Tregellas, Robinson's-road, Auburn; A. Wilkie, Zoological Gardens, Melbourne; and Victorian Railways Institute, Melbourne.

New South Wales.—Mrs. A. K. Smith, Wanganella, *via* Deniliquin; Messrs. D. B. Jolley, Lismore; E. A. W. Tubman, Dulwich Hill; H. J. Tanner, Lismore; A. M'L. Bowler, Annandayle South, Holbrook; and J. Sloane, Mulwala Station, Mulwala.

Queensland.—Mrs. J. Black, Pajingo Station, Charters Towers; Mr. H. M. Moore, Barambah, Goomeri.

South Australia.—Messrs. Atkinson and Co., Adelaide; Mr. M. E. Saunders, 101 King William-street, Adelaide.

Western Australia.—Mr. M. W. Elliott, Dumbleyung; the Librarian, Parliament House, Perth.

Tasmania.—Messrs. L. A. Thurston, West Devonport; J. Harrison, Wynyard; B. G. Nicholls, King Island.

New Zealand.—Dr. T. J. Ick-Hewins, Box 13, Waiuku.

England.—Mr. A. H. Evans, Cambridge.

America.—Mr. F. M. Bean, Gross Point, Michigan.

The meeting then resolved itself into a special general meeting, in accordance with the notice that had been sent out to all members.

Messrs. Hedderwick, Fookes and Alston, solicitors, had strongly advised that the Union should be registered, as, until that was done, the donor of £1,000 could not hand over the money, there being no legally constituted association to receive it.

The following resolutions were carried unanimously:—

"That the Council of this Union be and it is hereby authorized to take steps to have this Union registered under the *Companies Act* 1915 of Victoria as a company limited by guarantee and not

having a capital divided into shares and that application be made to the Attorney-General of Victoria for a licence directing the registration of this Union with limited liability without the addition of the word 'limited' but with the addition of the word 'Royal' to its name."

"That the president of the Council be and he is hereby authorized to enter into and sign on behalf of this Union a preliminary agreement with a trustee for the intended association providing (amongst other things) for the transference to it of the assets and liabilities of this Union, the continuance of its proceedings, and the admission of its ordinary members, officers, and honorary members into the new association, upon such terms and conditions and with such status as the Council of this Union shall stipulate or approve."

Mr. Z. Gray, hon. treasurer, was appointed the trustee.

The memorandum and articles of association will be printed, and a copy sent to each member, before they are finally adopted at a special general meeting called for that purpose.

The ordinary meeting was then resumed.

Letters were read from the retiring president, Capt. S. A. White; Judge Belcher, of Entebbe, Uganda, British East Africa; Major E. A. Le Souëf, on active service in Egypt; and Lieut. H. W. Wilson, on active service in France, the latter stating that when out "naturalizing" on the banks of a canal he had accidentally met Private Chandler, who was doing the same thing.

It was decided that the Camera Craft section in *The Emu* be continued, but that discretion should be used as to the photographs reproduced.

A cordial vote of thanks was carried, with acclamation, to Messrs. Hedderwick, Fookes and Alston, solicitors, for the heavy gratuitous work they had done in preparing the memorandum and articles of association for the Union.

It was also decided that a letter of appreciation be sent to Capt. S. A. White and Mr. H. L. White for the splendid work these gentlemen had done in the interests of ornithology; it is impossible to estimate its value.

Mr. G. Gibson stated that all the Egret rookeries in the Northern Territory should be protected, and it was resolved to ask the Federal Government to make sanctuaries of all the known Egret rookeries in the Northern Territory.

It was stated that the anonymous donor of the £1,000 to the Union had also presented it with a complete set of Gould's "Birds of Australia." The Union has provided a handsome bookcase for its reception.

Dr. H. W. Bryant suggested that the Ægean Partridges should be introduced into Australia for the purpose of stocking the islands of Bass Strait with these splendid game birds. They would stand a better chance of becoming established there than on the mainland, where they would have so many more enemies to contend with. He had seen many of these birds at Lemnos and the other islands.

RECEIPTS AND

For Year ended

RECEIPTS.		£	s.	d.	£	s.	d.
To	Balance—General Fund	68	6	8			
"	" Coloured Figure Fund	23	16	2			
		<hr/>			92	2	10
"	Subscriptions—1914	8	4	0			
"	" 1915	30	10	0			
"	" 1916 (160 subs.)	120	10	0			
"	" 1917	11	5	0			
"	" 1918	0	15	0			
"	" Check-lists	0	8	6			
		<hr/>			171	12	6
"	Sales— <i>The Emu</i>				14	7	0
"	Exchange, £1 14s. ; Interest, £2 8s. 9d.				4	2	9
"	Blocks, £1 ; Postage, £1 12s.				2	12	0
"	Donations—Coloured Figure Fund	56	8	3			
"	Advertisement " "	1	0	0			
		<hr/>			57	8	3
"	Trust Fund—Half-year's Interest on £1,000 War Loan ..				22	10	0
		<hr/>					
					<u>£364</u>	<u>15</u>	<u>4</u>

ASSETS AND

At 30th

ASSETS.		£	s.	d.	£	s.	d.
Savings Bank—Cr. Balance					85	1	9
Subscription Arrears (estimated good)		30	0	0			
Less Prepaid		18	0	0			
		<hr/>			12	0	0
Library					25	0	0
Illustration Blocks (estimated value, say)					20	0	0
<i>The Emu</i> in Stock " "					200	0	0
Tent, Material, Punch, and Register					3	17	6
		<hr/>			<u>£345</u>	<u>19</u>	<u>3</u>

Z. GRAY, L.C.A., *Hon. Treasurer.*

MELBOURNE, 1st July, 1916.

The President, Royal Australasian Ornithologists' Union, Melbourne.

Sir,—I have the honour to report having completed the audit of the

The books and accounts were presented in excellent order by the honour to be, Sir, yours faithfully,

EXPENDITURE

30th June, 1916.

EXPENDITURE.		£	s.	d.	£	s.	d.
By	<i>The Emu</i> , vol. xv.—Printing, &c. ...	161	11	10			
"	" vol. xiv.—Printing Index ...	14	0	0			
"	" vol. xv.—Blocks ...	36	9	2			
"	" vol. xv.—Coloured Plates ...	31	12	6			
"	" vols. xiii., xiv., xv.—Royal Patrons ...				243	13	6
"	" early volumes repurchased ...				2	7	6
					256	19	6
"	Stationery, £6 11s. 6d.; Postage—Secretary £1 15s. 6d., Treasurer £2 8s. 11d., Librarian £2 4s., Witherby £2 1s. 5d.				15	1	4
"	Ringed Register				1	7	0
"	Binding, £3 6s. 6d.; Commission, £1 os. 3d.; Exchange, £1 13s. 7d.; Insurance, 5s. 5d.				6	5	9
					279	13	7
"	Cr. Balance—General Fund	12	19	10			
"	" Coloured Figure Fund	49	11	11			
"	" Trust Fund	22	10	0			
					85	1	9
					£364	15	4

LIABILITIES

June, 1916.

LIABILITIES.					£	s.	d.
		<i>Nil.</i>					
By	Balance				345	19	3
					£345	19	3

*Audited and found correct.*JAMES BARR, A.I.A.V., A.C.P.A., *Hon. Auditor.*

42 TEMPLE COURT,

MELBOURNE, 30th August, 1916.

books and accounts of the Union for the year ended 30th June, 1916.
treasurer, Mr. Z. Gray, and I have certified them correct.—I have the
JAMES BARR, A.I.A.V., A.C.P.A., *Hon. Auditor.*

Colonel Home stated that he had noted in France that about 10 per cent. of the Starlings suffered from frost-bitten feet, one or two toes being lost. It is possible that their immunity from this and other conditions in Australia accounted for their remarkable and serious spread throughout the Commonwealth.

Mr. A. J. Campbell made some interesting remarks about his recent visit to North Queensland, and said that he had identified about two hundred species of birds, and that later on he hoped to give an account of his results in *The Emu*.

Messrs. Howe, Mattingley, Tregellas, Alexander, Dyer, Le Souëf, and the chairman contributed ornithological notes of interest.

Annual Donations to Coloured Figure Fund,

YEAR ENDED 30TH JUNE, 1916.

Victoria—

Advertisement	..£1	0	0
W. J. T. Armstrong	0	10	0
L. Buckland	.. 0	10	0
G. A. Dyer	.. 1	1	0
Geo. Finlay	.. 0	5	0
H. W. Ford	.. 0	5	0
W. F. Gates	.. 0	5	0
John Hooks	.. 0	10	0
Mrs. J. S. Hutchinson	0	3	9
Mrs. J. W. Israel	.. 0	10	0
F. Keep	.. 0	10	0
W. Lawford	.. 0	5	0
W. H. D. Le Souëf	.. 0	10	0
Mrs. Jas. Lindsay	.. 0	5	0
Dr. Long	.. 0	5	6
J. M. Molesworth	.. 0	15	0
Dr. E. B. Nicholls	.. 0	5	0
H. A. Purnell	.. 0	2	6
H. Quiney	.. 0	5	0
E. Ricardo	.. 0	10	0
A. E. Rodda	.. 0	5	0
J. A. Ross	.. 0	5	0
A. Scott	.. 0	5	0
C. E. Simson	.. 0	5	0
Mrs. J. Simson	.. 3	0	0
A. C. Stone	.. 0	5	0
T. Tindale	.. 0	6	0
T. Tindale	.. 0	15	0
W. Young	.. 0	4	6

Tasmania—

Miss M. Brumby	.. 0	5	0
Col. T. M. Evans	.. 0	5	0
Col. Legge	.. 0	5	0

New South Wales—

T. P. Austin	.. 2	0	0
--------------	------	---	---

B. C. J. Bettington	..£0	10	0
A. Borthwick	.. 0	10	6
H. Burrell	.. 0	6	0
Mrs. Burrell	.. 1	1	0
Dr. E. C. Chisholm	.. 1	1	0
Dr. J. B. Cleland	.. 0	7	6
Dr. E. W. Ferguson	0	5	0
Dr. G. Hurst	.. 0	10	6
J. K. M'Crac	.. 0	5	0
Dr. Macgillivray	.. 5	5	0
J. F. Thomas	.. 0	4	0
H. L. White	.. 3	16	6
H. L. White	.. 18	0	0

Queensland—

Noel V. I. Agnew	.. 0	10	0
C. A. Barnard	.. 2	2	0
H. G. Barnard	.. 0	5	0
A. H. Chippindall	.. 0	5	0
E. M. Cornwall—1916	0	10	0
E. M. Cornwall—1917	0	10	0
Leslie A. Hall	.. 0	5	0
H. Thoneman	.. 1	0	0

South Australia—

Miss H. T. Sanderson	0	5	0
J. D. Somerville	.. 0	5	0
Capt. S. A. White	.. 1	0	0
Mrs. S. A. White	.. 0	5	0

Western Australia—

W. B. Alexander	.. 0	5	0
E. A. Le Souëf	.. 1	0	0

Philippine Islands—

R. C. M'Gregor	.. 0	1	0
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Total .. £57 8 3

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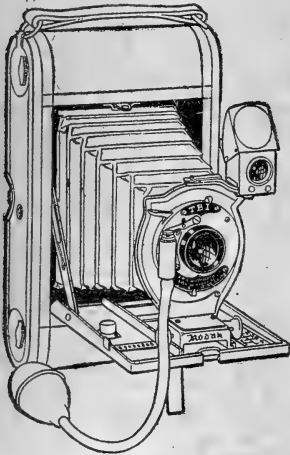
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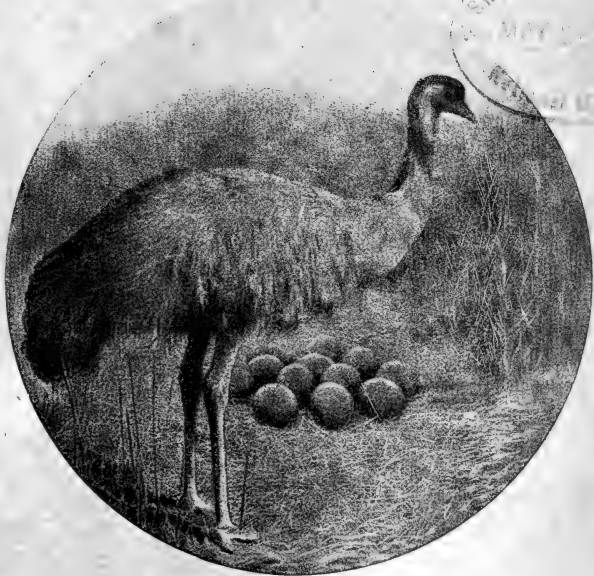
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The Emu

A Quarterly Magazine to popularize the Study and Protection of Native Birds and to record Results of Scientific Research in Ornithology.

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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("Eyrecourt," Canterbury.)

Assistant Editor: R. H. CROLL, R.A.O.U.
(Education Department, Melbourne.)

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1917.

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(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

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WHITE-STRIPE HONEY-EATER

Ptilotis albilincata

[For description see THE EMU, Vol. XVI., Pt. 3, p. 165.]

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. XVI.]

21ST APRIL, 1917.

[PART 4.

North Australian Birds †

OBSERVED BY WILLIAM M'LENNAN.

(Communicated by H. L. WHITE, R.A.O.U., Belltrees, N.S.W.)

* Skins secured. † From type locality.

Dromaius novæ-hollandiæ. Emu.

Dromiceus novæhollandiæ novæhollandiæ.

King River; 24/11/15. The fresh tracks of two birds seen in mud along edge of salt-pans, up river from camp.

*† **Megapodius tumulus.** Scrub-Fowl.

Megapodius duperryii tumulus.

Bickerton Island, 23/8/15.—A single bird procured in small patch of tangled scrub. Woodah Island, 26/8/15.—Heard calling after dark. King River.—Three birds seen: 14/10/15, a single bird seen in small patch of scrub; 29/10/15, single bird taken in mangroves; 21/11/15, a bird noticed in small patch of brush in sandstone ranges. Liverpool River Island, 27/1/16.—Couple of birds heard and a nesting-mound noted. Port Bradshaw, 5/2/16.—A few birds heard in patches of scrub.

Gizzard contained remains of beetles.

*† **Synœcus cervinus.** Northern Brown Quail.

Synœcus ypsilophorus cervinus.

Macarthur River, 10/8/15.—A few birds flushed from rushes at edge of river. Maria Island, 20/8/15.—Couple of coveys flushed; about a dozen old nests noted in long grass on coral and sandstone ridge. Cape Barrow, 25/8/15.—Small covey flushed in forest country. King River.—Small coveys often met along the river flat. 2/11/15.—Covey of about a dozen birds have been coming to bough-shed where we have our meals, after bread crumbs; they are very tame, and will come within a few feet of where we are sitting. They continued to come until we shifted camp.

Gizzard contained seeds and sand

*† **Turnix castanonota.** Chestnut-backed Quail.

Austroturnix castanonota castanonota.

King River.—Small coveys, up to a dozen birds, were often met about the ridges in forest country.

Gizzard contained beetles, ants, seeds, sand, and insects' eggs. Small worms in chest and abdominal cavity and eye socket.

* **Turnix melanotus.** Black-backed Quail.

Turnix maculosa pseutes.

† For narrative, with map, see *Emu*, ante, pp. 117-158. Nomenclature, R.A.O.U. "Check-list"; trinomials, Mathews's 1913 "List."

King River.—Occasional birds flushed from the long grass about springs and marshy places at foot of ridges. They would only fly a few yards and drop into grass again, and could not be flushed a second time.

Gizzard contained seeds and sand.

Ptilonopus ewingi. Rose-crowned Fruit-Pigeon.

Ptilonopus regina ewingi.

Liverpool River Island, 27/1/16.—Several heard calling, but could only get a fleeting glimpse of them as they flew through scrub. Port Bradshaw, 5/2/16.—Heard in patches of scrub.

****Myristicivora spilorrhoea.*** Nutmeg-Pigeon.

Myristicivora bicolor spilorrhoea.

Goyder River, 8/9/15.—Several small flocks seen coming from the south-west and heading for mouth of river, a little before sunset. Glyde River, 9/9/15.—A few heard calling in mangroves, and (10/9/15) seen along the river. Liverpool River, 19/9/15.—A few along the river. King River, 26/9/15.—Two large flocks seen flying west a little before sunset. Some were often noticed in patch of scrub at spring near camp. Port Bradshaw, 5/2/16.—An occasional bird seen.

Crop contained small fruit.

Geopelia humeralis. Barred-shouldered Dove.

Chrysauchaena humeralis apsleyi.

Cape Barrow, 25/8/15, and Port Bradshaw, 1/9/15.—A few birds seen in forest country. Glyde River, 10/9/15.—Heard and seen in mangroves. Liverpool River, 19/9/15.—A few birds noticed. King River.—Fairly numerous in forest country till end of year; then they went into the mangroves, and were rarely met with in the forest. 18/1/16 and 20/1/16, noted building in mangroves along river. 21/1/16.—Nest with two eggs taken in mangroves. Port Bradshaw, 5/2/16.—Occasionally seen. Roper River, 17/2/16.—Few birds seen and numbers calling along the river. Maria Island, 13/4/16.—Occasionally seen in clumps of mangroves along beach

*†***Geopelia placida (tranquilla).*** Ground-Dove.

Geopelia placida placida

Mornington Island, 30/7/15.—Numerous about mission station. Cape Barrow, 25/8/15, and Port Bradshaw, 1/9/15.—A few birds seen in forest. Goyder River, 8/9/15.—A few along the edge of mangroves. Glyde River, 11/9/15, and Liverpool River, 21/9/15.—Few noted along the streams. King River.—Fairly plentiful along river flats. A number of birds were constant visitors at bough-shed where we had meals. Port Bradshaw, 5/2/16.—A few observed. Roper River, 17/2/16.—Fairly plentiful along river.

*†***Chalcophaps longirostris.*** Long-billed Green-Pigeon.

Chalcophaps chrysochlora longirostris.

King River, 6/10/15.—A bird shot in patch of scrub at spring near camp. 14/10/15.—A bird shot in scrubby ravine, sandstone ranges. Another bird seen near here, 21/11/15. A bird seen in patch of scrub at small sandstone range down the river, 1/12/15, 15/12/15, 6/1/16. Noted building here, 16/1/16. Nest, a frail platform of twigs 5 feet from the ground in a small bush, in scrub. Liverpool River Island.—Couple of birds seen, and several heard in the scrub. Port Bradshaw, 5/2/16.—Several birds calling in scrub.

Crop contained seeds and small fruit, and gizzard seeds and sand.

***Phaps chalcoptera.** Bronze-winged Pigeon.*Phaps chalcoptera chalcoptera.*

Macarthur River, 7. 8. 15.—Couple of birds flushed from bank of river as we were passing in boat 13. 8. 15, a bird shot from the boat. Maria Island, 19. 8. 15.—A few birds seen near some bushes on beach; they were very wary. 20/8/15.—Occasionally seen amongst the timber. Cape Barrow, 25/8/15.—Bird flushed in forest. King River 11/10/15.—Couple of birds seen at spring near camp. Bird seen on three occasions in forest country during stay.

Crop contained seeds, and gizzard seeds and small pebbles.

***†Geophaps smithi.** Naked-eyed Partridge-Pigeon.*Terraphaps smithi smithi.*

King River.—Fairly plentiful in forest country. Met in small flocks up to a dozen birds. When flushed they fly into nearest tree, perch a few seconds, and then dash out of sight.

Crop, seeds and beetles; gizzard, seeds and sand.

***†Eulabeornis castaneiventris.** Chestnut-bellied Rail.*Eulabeornis castaneiventris castaneiventris.*

Cadell Strait, 6/9/15.—Heard calling in the mangroves. Goyder River, 6/9/15, and Glyde River, 10/9/15.—Heard calling in the mangroves. Two birds seen at water's edge at low tide. Liverpool River, 19/9/15.—Heard in mangroves. King River.—Numerous in mangroves all along river. Always heard calling, but rarely seen. The call is a harsh screech, preceded by a short grunting note, rapidly repeated about twelve times. When disturbed they utter the grunting note at intervals, and occasionally a bird would utter a single screech, preceded by the short grunt. Adepts at keeping out of sight; I often heard them within 10 feet of me, but could not see them. They appear to be very local in their habits, and would always remain within a radius of 150 yards of where they were first heard calling. (Refer notes 26/9/15, 14 and 29/10/15, 29 and 30/11/15, 1, 2, 3, 5, 6, 9, 10, 11, 13, 15, 17, 19, 25, 27, 28, and 30/12/15, 5, 13, 16, 18, and 24/1/16; see narrative.) Howard Island Channel, 30 and 31/1/16, and Roper River, 17, 27, and 29/2/16.—Heard calling in mangroves.

Stomach contained small crabs.

Amaurornis ruficrissa. Rufous-tailed Rail;*Amaurornis moluccanus ruficrissus.*

King River.—These birds were first heard calling 9/12/15. They frequented long grass round springs and billabongs. Although I did not see these birds, I am quite certain of their identity; the call cannot be mistaken for that of any other bird. G. M. Mathews questions their occurrence in the Northern Territory.

***Podiceps gularis.** Black-throated Grebe.*Tachybaptus ruficollis novæhollandiæ.*

King River, 3/1/16.—A few birds seen on small water-hole about 6 miles from camp. Set of four eggs was taken, a nest containing one egg noted, and two lots of birds found building. 7/1/16, sent the natives out to get nest noted with one egg (4/1/16); it contained four eggs. They went further afield, and found another nest containing five eggs.

Stomach contained pebbles, charcoal, small beetles, and other insects.

***Gelocheledon macrotarsa.** Gull-billed Tern.*Gelocheledon nilotica macrotarsa.*

King River, 21/10/15.—A single bird shot as it was flying along the river.

Sylocheledon caspia. Caspian Tern.*Hydroprogne tschegrava strenua.*Little Archer River, 6/7/15.—A number of birds seen amongst a large flock of *S. cristata* and *S. media* on sand-bank at mouth of river. Mornington Island, 23/7/15.—A single bird seen. Maria Island, 20/8/15.—A few birds seen.**Sterna gracilis.** Graceful Tern.*Sterna dougalli gracilis.*

Cape Braithwaite, 26/9/15.—A few birds seen.

Sterna media. Lesser Crested Tern.*Thalasseus bengalensis torresii.*Little Archer River, 6/7/15.—Large flock seen in company with *S. cristata* and *S. caspia* on sand-banks at mouth of river. Noted all along the coast from Thursday Island to Mornington Island, usually in company with the former.**Sterna cristata.** Crested Tern.*Thalasseus bergii pelecanoides.*Noted along the coast from Thursday Island to King River. Little Archer River, 6/7/15.—A large flock seen in company with *S. media* and *S. caspia* on sand-bank at mouth of river. Ellis Island, 26/7/15.—A flock seen. Sandy Island, 17/9/15.—A large flock seen. This island is evidently a breeding ground, as great numbers of dead young and addled eggs were noted about.**Sterna melanauchen.** Black-naped Tern.*Gygisterna sumatrana kempi.*Sweers Island, 21/7/15, and Cape Shield, 29/8/15.—A few birds seen in company with *S. cristata*. Cadell Strait, 6/9/15.—A large flock noted at western entrance. 2/2/16.—A few birds noted at eastern entrance.**Larus novæ-hollandiæ.** Silver Gull.*Bruchigavia novæhollandiæ gouldi.*Seen occasionally along the coast from Thursday Island to King River. Ellis Island, 27/7/15.—A number followed us around the island, ready to pounce on any unguarded eggs of *Sula fusca*.**Hæmatopus longirostris.** Pied Oyster-catcher.*Hæmatopus ostralegus longirostris.*

Little Archer River, 6/7/15.—Pair seen on sand-bank at the mouth and a couple of pairs seen on the mud-banks in the river. Glyde River, 9/9/15.—A pair seen at mouth of river; 10/9/15, a flock—ten birds—flying up the river. Sandy Island, 17/9/15.—A couple of pairs noted.

***Hæmatopus ophthalmicus.** Barc-eyed Oyster-catcher.*Hæmatopus niger ophthalmicus.*

Sandy Island, 17/9/15.—A couple of pairs seen, and a nest with two eggs found.

Stomach contained oysters.

Erythrogonys cinctus. Red-kneed Dottrel.*Erythrogonys cinctus mixtus.*

Macarthur River, 7/8/15.—A few birds seen on a small islet in river. King River, 17/11/15.—A single bird observed on salt-pans.

†*Lobivanellus personatus. Masked Plover.*Lobivanellus miles personata.*

Little Archer River, 6/7/15.—A number of birds seen on mud-banks in river. Macarthur River, 8/8/15.—Two birds noted along river. Glyde River, 11/9/15.—Occasionally birds noted along river. King River.—A few pairs always seen about salt-pans. (Refer notes 19/10/15, 8/11/15, 17, 18, 21, 22, 25, and 26/12/15, 7, 15, and 21/1/16.) Roper River, 17/2/16.—An occasional pair seen on salt-pans along river; 25/2/16, a nest containing four much incubated eggs found on a salt-pan.

Stomach, insect remains and sand.

****Ochthodromus geoffroyi.*** Large Sand-Dottrel.*Pagoa geoffroyi.*

King River, 21/10/15.—A number of birds seen on a mud-bank in river in company with *Æ. ruficapilla*; 2/11/15, a few birds seen on salt-pan down river; 17/11/15, numerous on salt-pans up river. Cadell Strait, 2/2/16, and Port Bradshaw, 6/2/16.—A few noted on sand-banks.

Stomach, small shellfish, crabs, shrimps, and insects.

Ægialitis ruficapilla. Red-capped Dottrel.*Leucopodius ruficapillus tormenti.*

Little Archer River, 6/7/15.—Small flock noted on sand-banks at mouth and several small flocks noted on mud-banks in river. Maria Island, 20/8/15.—A single bird seen on beach. King River, 21/10/15.—A number of birds seen on mud-bank in river in company with *O. geoffroyi*.

****Ægialitis nigrifrons.*** Black-fronted Dottrel.*Elseya melanops melanops.*

Little Archer River, 6/7/15.—Several small flocks seen on mud-banks in river. King River, 10/10/15.—A single bird seen on salt-pans up river; 17/11/15, a couple of birds seen on salt-pans up river.

Stomach, insect remains.

****Himantopus leucocephalus.*** White-headed Stilt.*Himantopus leucocephalus leucocephalus.*

Little Archer River, 6/7/15.—Small flocks noted on mud-banks in river. Macarthur River, 7/8/15.—A few birds noted flying past. King River, 2/11/15.—Four birds seen on a salt-pan down river.

Stomach, insects and sand.

Recurvirostra rubricollis. Red-necked Avocet.*Recurvirostra novæhollandiæ.*

Little Archer River, 6/7/15.—A few birds seen on mud-banks in river.

****Numenius cyanopus*** and ****N. uropygialis.*** Curlew and Whimbrel.*Numenius cyanopus* and *Phæopus phæopus variegatus.*

Macarthur River, 6/8/15.—Small flocks flying across bay; 7/8/15, a large flock noted at mouth of, and odd birds seen along, river. Maria Island, 19/8/15.—A couple of birds seen along beach. Cadell Strait, 6/9/15.—Numerous all through straits. Goyder River, 7/9/15, and Glyde River, 10/9/15.—A few seen along river. King River.—A few birds always to be seen by river. Howard Island Channel, 30 and 31/1/16.—A few birds along channel. Cadell Straits, 2/2/16.—A few noted. Port Bradshaw, 6/2/16.—A few birds seen on the banks in the bay, always busily feeding. Roper River.—Birds always seen along river.

Stomach, remain of crabs and mud; claw of crab fastened to bill.

Mesoscolopax minutus. Little Whimbrel.*Mesoscolopax minutus.*

Cadell Straits, 6/9/15.—Numerous through straits. King River, 19/10/15.—One bird seen on salt-pan up river.

Totanus stagnatilis. Little Greenshank.*Iliornis stagnatilis horsfieldii.*

King River, 19/10/15.—A few birds on salt-pans up river.

***Glottis nebularius.** Greenshank.*Glottis nebularius glottoides.*

Macarthur River, 6/8/15.—Small flocks flying across bay; 7/8/15, a large flock, about 150 birds, seen at mouth of river. Maria Island, 19/8/15.—A bird seen. Cadell Straits, 6/9/15.—Numerous along the straits. Glyde River, 10/9/15.—Occasionally seen along river. King River.—Often seen about salt-pans, and occasionally along river, at low water. Howard Island Channel, 31/1/16.—An occasional bird noted. Roper River, 16/2/16.—A few birds flushed from grass on plain. A few birds always along river and on salt-pans.

Stomach contained remains of small shrimps.

***Pisobia ruficollis.** Eastern Little Stint.*Pisobia minuta ruficollis.*

Macarthur River, 6/8/15.—Small flocks flying across the bay. Cadell Straits, 6/9/15.—Numerous along straits. Glyde River, 9/9/15.—A few birds noted at mouth of river. King River, 19/10/15.—Three birds seen on salt-pan up river. Cadell Straits, 2/2/16.—A few birds seen. Roper River, 16/2/16.—A few birds flushed from grass on plain; occasionally seen about river.

Stomach, insect remains.

***Pisobia acuminata.** Sharp-tailed Stint.*Limnocinctus acuminatus.*

King River, 12/10/15.—About a dozen birds seen on salt-pan up river; 19/10/15, several small flocks seen on salt-pans; 2/11/15, a few birds seen on salt-pans down river; 17/11/15, numerous on salt-pans up river. Roper River, 16/2/16.—A few birds flushed from amongst the grass on plain.

Stomach, small salt-water shells, black seeds, and sand, as well as insect remains.

***Actitis hypoleucos.** Common Sandpiper.*Actitis hypoleucos auritus.*

King River.—Single birds seen occasionally along river. Howard Island Channel, 31/1/16.—Fairly numerous along the channel.

Stomach, remains of small crabs.

***†Heteractitis brevipes.** Grey-rumped Sandpiper.*Heteroscelus incanus brevipes.*

King River, 11/11/15.—Single bird shot along the river.

***Gallinago megala.** Swinhoe Snipe.

King River, 7/1/16.—A few birds were flushed from long grass in a marshy spot in a gully; shot one.

Stomach, mud and sand.

Parra gallinacea. Comb-crested Jacana.*Ivediparra gallinacea rothschildi.*

Liverpool River, 21/9/15.—A few birds seen on lily-covered billabong;

Œdicnemus grallarius. Southern Stone-Curlew.

Burhinus magnirostris rufescens.

Liverpool River, 19/9/15.—A flock, 12 birds, flushed from outer edge of mangroves; 21/9/15, heard calling through the night.

Esacus magnirostris. Long-billed Stone-Curlew.

Orthorhamphus magnirostris neglectus.

Woodah Island, 10/2/16.—Three birds seen flying along shore.

Eupodotis australis. Bustard (Wild Turkey)

Austrotis australis derbyi.

Macarthur River, 7/8/15.—Two birds seen at bank of river.

Liverpool River, 19/9/15 and 23/9/15.—Birds seen on a salt-pan.

King River, 2/10/15.—Bird seen flying past.

Antigone australasiana. Crane (Native Companion).

Mathewsia rubicunda argentea.

Batavia River, 1/7/15.—A few small flocks seen flying along shore

about 10 miles south of the river. Glyde River, 11/9/15.—A few

seen. King River.—Three birds often met about the salt-pans and

billabongs up river. 30/10/15.—A flock of 11 birds was flying high

overhead. Several pairs of birds seen about salt-pans along river

after the first rains in December. 21/1/16.—A pair was found

building amongst rushes in salt-pan. Howard Island Channel,

30/1/16.—Heard calling beyond the mangroves. Port Bradshaw,

5/2/16.—Three birds seen at small swamp. Roper River, 16/2/16.

—A flock of about 20 birds seen out on plain.

Ibis molucca. White Ibis.

Threskiornis molucca strictipennis.

Little Archer River, 6/7/15.—Fairly numerous on the mud-banks.

Macarthur River, 7/8/15.—A few along the river. Cadell Straits,

6/9/15.—A few birds seen in straits. Glyde River, 11/9/15.—Flock

seen along river. King River, 4 and 5/10/15.—A bird seen up river.

Roper River, 17/2/16.—Several small flocks seen coming from the

west and heading for mouth of river; 18/2/16, a number noted along

river.

Carphibis spinicollis. Straw-necked Ibis.

Carphibis spinicollis.

Little Archer River, 6/7/15.—Fairly numerous on mud-banks.

Platalea regia. Black-billed Spoonbill.

Spatherodia regia.

Little Archer River, 6/7/15.—Several small flocks seen on mud-

banks. Macarthur River, 7/8/15.—A small flock flying overhead.

Glyde River, 11/9/15.—A few birds noted along river. King River,

5/10/15 and 18/10/15.—A single bird seen on each occasion. Cadell

Straits, 2/2/16.—Three birds seen. Roper River, 17/2/16.—Six

birds seen flying to the north; 18/2/16, a number seen; 19/2/16, a

large flock seen in the paper-barks along river.

Xenorhynchus asiaticus. Black-necked Stork (Jabiru).

Xenorhynchus asiaticus asiaticus.

Pera Head, 4/7/15.—A pair seen circling round a small fresh-

water swamp. Little Archer River, 6/7/15.—Two birds seen on

mud-banks. Mornington Island, 23/7/15.—One bird seen on beach.

Van Alphen River, 4/8/15.—Three birds seen on sand-banks. Mac-

carthur River, 6/8/15.—A couple of birds on banks, outside the

mouth; 7/8/15, one bird seen along river. Maria Island, 19/8/15.—

One bird seen along beach. King River.—A single bird and occasion-

ally the pair of birds often noticed. Port Bradshaw, 6/2/16.—A single bird seen on mud-bank. Roper River, 20/2/16.—A couple of birds seen at a big billabong.

Ardea sumatrana. Great-billed Heron.

Typhon sumatrana mathewsæ.

Little Archer River, 6/7/15.—A single bird seen; 7/7/15, a nest containing one fully-fledged young found. Goyder River, 6/9/15, and Glyde River, 11/9/15.—A single bird seen along the river. Liverpool River, 19/9/15.—Two birds noted. King River.—Single birds often seen along river. On one occasion only was a pair seen. Often heard calling, the call being a deep guttural roar repeated three or four times, mostly heard at night, and occasionally during the day. (Refer notes 5, 20, 30, and 31/10/15, 13/11/15, 2, 4, 5, 10, 11, 19, and 30/12/15, 1, 9, 11, 13, 18, 20, 21, and 23/1/16 in narrative.) Howard Island Channel, 30/1/16.—One heard calling; 31/1/16, one seen along the channel. Roper River, 17/2/16.—One bird heard calling. Often seen and heard calling during our stay here.

Mesophoyx plumifera. Plumed Egret.

Mesophoyx intermedia plumifera.

Roper River (see narrative).

Stomach, small fish.

****Herodias symmatophorus (timoriensis).*** Egret.

Herodias alba symmatophora.

Little Archer River, 6/7/15.—Odd birds seen about mud-banks. Macarthur River, 6/8/15.—A few birds seen on banks outside mouth of river; 7/8/15, an occasional bird seen along river. Cadell Straits, 6/9/15.—A few birds seen along straits. Glyde River, 9/9/15.—A couple of birds seen at mouth of river; 14/9/15, a few birds seen in company with *N. flavirostris*. Liverpool River, 19/9/15.—A few noted along river. King River, 26/9/15.—An occasional bird seen along river; 29/9/15, a single bird noted. Port Bradshaw, 6/2/16.—A single bird seen. Roper River.—See narrative.

Stomach, small fish.

Notophoyx novæ-hollandiæ. White-fronted Heron.

Notophoyx novæhollandiæ.

Mornington Island, 23/7/15.—A couple of birds seen along beach. Macarthur River, 7/8/15.—A few birds about river. Maria Island, 20/8/15.—Couple seen along beach. Glyde River, 11/9/15.—A few birds seen along river. King River, 26/9/15.—An occasional bird seen; 29/9/15, a single bird seen; 2/10/15, a single bird seen at billabong.

Notophoyx pacifica. White-necked Heron.

Myola pacifica.

Macarthur River, 7/8/15.—Odd birds seen.

*†***Notophoyx flavirostris.*** Pied Egret.

Notophoyx aruensis flavirostris.

Glyde River, 14/9/15.—A flock of about a dozen birds noted. Alger Island, 2/2/16.—Four birds seen coming from the north-east and heading for mainland a little before dark. Roper River.—See narrative.

Stomach, small fish.

*†***Garzetta immaculata (nigripes).*** Lesser Egret.

Egretta garzetta immaculata.

Little Archer River, 6/7/15.—Odd birds seen on mud-banks.

Mornington Island, 23/7/15.—A couple of birds on beach. Macarthur River, 6/8/15.—A few birds seen on mud-banks outside mouth of river; 7/8/15, a few birds seen. Cadell Straits, 6/9/15.—A few birds seen in straits. Glyde River, 9/9/15, and Liverpool River, 19/9/15.—A few birds seen along river. King River, 21 and 22/12/15.—A few birds seen on salt-pans. Alger Island, 2/2/16.—A single bird seen coming from the north-east and heading for mainland a little before dark. Roper River.—See narrative.

Stomach, small fish.

Demigretta sacra. Reef-Heron.

Demigretta sacra cooktowni and *D. greyi*.

Ellis Island, 26/7/15.—A few birds seen on reef. Several nests were found in rock-holes and caves round island; all raided by rats. Port Bradshaw, 5/2/16.—A number of birds flushed from bushes on small islet in bay. Several fresh nests found without eggs—probably raided by natives.

Nycticorax caledonicus. Nankeen Night-Heron.

Nycticorax caledonicus australasiæ.

Macarthur River, 7/8/15.—An occasional bird flushed from mangroves as the boat passed. Glyde River, 11/9/15.—Occasional bird flushed from mangroves. King River, 29/9/15.—A single bird flushed from mangroves. Howard Island Channel, 31/1/16.—A couple of birds flushed from mangroves, disturbed by passing boat. Roper River, 18/2/16.—Hundreds of birds flushed from dense growth of mangroves on left bank of river as the boat passed; 19/2/16, a few birds seen in a mangrove and paper-bark swamp.

****Dupetor gouldi*.** Yellow-necked Mangrove-Bittern.

Dupetor flavicollis olivei.

Goyder River, 7/9/15.—One bird noted. King River, 22/10/15.—A bird shot. Occasionally heard calling along river. Great numbers were seen and heard along river after first rains, and several nests found. (Refer notes 30/12/15, 9/11/16, 18, 20/1/16.) Roper River, 17 and 18/2/16.—Heard calling along river.

Stomach, small fish and remains of small lizards.

***†*Butorides stagnatilis*.** Little Mangrove-Bittern.

Butorides striata stagnatilis.

Macarthur River, 10/8/15.—A single bird seen. Glyde River, 11/9/15.—A couple of birds seen. Liverpool River, 19/9/15.—Occasionally seen. King River.—Single birds seen occasionally. (Refer notes 1, 4, 11, and 30/12/15, 1, 18, 20, and 27/1/16.) Roper River, 18/2/16.—An occasional bird noted.

Stomach, small fish and shrimps; several small worms in stomach.

***Anseranas melanoleuca*.** Pied Goose.

Anseranas semipalmata.

Glyde River, 11/9/15.—A single bird noted in mangroves; 13/9/15, a large flock passed over at dusk heading south-east. Liverpool River, 20/9/15.—A passing flock. King River, 3/10/15.—A large flock flew over the camp after dark, heading south-west; 20/10/15, a single bird flushed from mangroves. Roper River, 18/2/16.—A flock heard passing up stream after dark; 19/2/16, a flock seen in paper-barks by river; 22/2/16, noted again in same place.

***Nettopus pulchellus*.** Green Pigmy-Goose.

Cheniscus pulchellus.

Liverpool River, 21/9/15.—A few birds seen on salt-water billabong near river.

Dendrocygna arcuata. Whistling-Duck.*Dendrocygna javanica gouldi.*

King River, 7/11/15.—Ten birds seen flying past at salt-pans, up river.

Dendrocygna eytoni. Plumed Whistling-Duck.*Leptotarsis eytoni.*

Macarthur River, 12/8/15.—A small flock flushed from the mangroves. Glyde River, 10/9/15.—Small flock flushed from the mangroves; 11/9/15, another small flock seen. Liverpool River, 19/9/15.—Two small flocks flushed from mangroves. King River, 29/9/15.—A large flock flushed from the mangroves—they were often seen about the same place; 3/10/15, flocks heard passing over camp through the night; 19/10/15, a large flock seen at the salt-pans up river. Roper River, 18/2/16.—Two birds seen.

***†Tadorna rufigerum.** White-headed Shieldrake.*Radjah radjah rufigerum.*

Little Archer River, 6/7/15.—Flock of about 200 birds noted on the sand-banks at mouth of river. Cadell Straits, 6/9/15.—A few noted. Glyde River, 9/9/15.—A couple of birds noted; 11/9/15, a few birds noted along the river. Liverpool River, 19/9/15.—A few birds seen along the stream. King River.—Few pairs seen occasionally along river and about salt-pans; more plentiful during the rains. 4/11/15.—A flock of about 20 noted on the billabongs. (Refer notes 7/11/15, 8, 9, 20, 21, and 22/12/15.) Roper River, 21/2/16.—A single bird seen.

Gizzard, sand and fibrous green scum.

Anas superciliosa. Black Duck.*Anas superciliosa rogersi.*

Batavia River, 2/7/15.—Several flocks noted flying along the shore 10 miles south of river mouth. Pera Head, 4/7/15.—Small flock seen on the swamp. Little Archer River, 6/7/15.—A few birds on mud-banks. Macarthur River, 7/8/15.—A few birds along the river. Glyde River, 11/9/15.—A few birds seen. Roper River, 17/2/16.—A single bird flew down river.

Nettion gibberifrons. Grey Teal.*Virago castanea rogersi.*

Macarthur River, 7/8/15.—Three birds noted. King River, 19/10/15.—Three birds seen on the salt-pans up river.

***Phalacrocorax sulcirostris.** Little Black Cormorant.*Mesocarbo ater ater.*

Macarthur River, 7/8/15, and Glyde River, 11/9/15.—Birds seen along river. King River, 18/12/15.—Pair of birds seen on the salt-water billabongs. Roper River, 2/3/16.—Breeding in the Egret rookery (see narrative).

Phalacrocorax melanoleucus. Little Pied Cormorant.*Microcarbo melanoleucus.*

Roper River, 19/2/16.—A number of birds noted building in a paper-bark overhanging the stream; 2/3/16, breeding in the Egret rookery

Plotus novæ-hollandiæ. Darter.*Anhinga novæhollandiæ.*Macarthur River, 7/8/15.—Odd birds seen. King River.—Birds noted along the river and about the billabongs. Roper River, 19/2/16.—Two pairs seen building in a paper-bark overhanging the river, in company with *Phalacrocorax melanoleucus.*

Sula fusca. Brown Gannet (Booby).

Hemisula leucogaster plotus.

Noted all along the coast, from Thursday Island to King River. Ellis and Rocky Islands, 26/7/15.—Thousands of birds breeding. Sandy Island, 17/9/15.—Large flock seen.

Fregata ariel. Lesser Frigate-Bird.

Fregata ariel.

Batavia River, 1/7/15.—A couple of flocks seen coming in from the west. Ellis Island, 26/7/15.—A large flock circling round this island. Rocky Island, 27/7/15.—Over a thousand birds breeding.

Pelecanus conspicillatus. Pelican.

Catoptropelicanus conspicillatus conspicillatus.

Little Archer River, 6/7/15.—Fairly numerous on the mud-banks. Noted all along the coast to Sandy Island. Ellis Island, 26/7/15.—A few seen out on the reef, and several old rookeries noted.

Circus gouldi. Allied Swamp-Hawk (Harrier).

Circus approximans inexpectatus.

Macarthur River, 7/8/15.—A couple of birds seen circling overhead.

***Astur approximans.** Goshawk.

Urospiza fasciata didima.

Mornington Island, 30/7/15.—One bird noted. Macarthur River, 7/8/15.—A couple noted. Glyde River, 11/9/15.—One bird noted. King River.—A single bird seen on a few occasions. Roper River, 19/2/16.—Odd birds seen about a mangrove and paper-bark swamp. Stomach, remains of grasshoppers, a young goanna, and feathers.

Astur novæ-hollandiæ. White Goshawk.

Leucospiza novæhollandiæ.

King River, 4/11/15.—A single bird seen in scrub at spring near camp

***Erythrotriorchis radiatus.** Red Goshawk.

Erythrotriorchis radiatus.

King River, 9/11/15.—A single bird procured at spring near camp; 19/11/15, a single bird seen in a tall paper-bark at a spring up river. Maria Island, 12/4/16.—A bird flushed from its nest, building.

Uroæetus audax. Wedge-tailed Eagle.

Uroæetus audax carteri.

King River, 29/9/15.—A single bird seen circling over small sandstone range near river; 23/11/15, a nest, apparently fresh, noted in the ranges; visited again 2/1/16, but it appeared deserted. Port Bradshaw, 6/2/16.—A single bird seen.

***Hieraetus morphnoides.** Little Eagle.

Hieraetus morphnoides morphnoides.

King River, 9/10/15.—A single bird shot; 2/11/15, bird seen circling high overhead.

Halæetus leucogaster. White-bellied Sea-Eagle.

Cuncuma leucogaster.

Pera Head, 4/7/15.—A bird flushed from its nest. Macarthur River.—Two birds noted by river. Goyder River, 7/9/15.—A number of birds seen flying, circling through thousands of flying foxes that were disturbed by our passing boat; the birds did not attempt to molest them. Liverpool River, 19/9/15.—One bird seen. King River. An odd bird seen occasionally along river and about billabongs. 5/12/15.—Disturbed a big flying fox from the man-

groves, which flew off. An immature Sea-Eagle gave chase, and a few seconds afterwards we heard the animal screaming—evidently captured. Roper River, 18/2/16.—Noted along the river.

Haliastur leucosternus. White-headed Sea-Eagle.

Haliastur indus leucosternus.

Macarthur River, 7/8/15, and Glyde River, 10/9/15.—A couple of birds noted. Roper River, 18/2/16.—One noted.

Haliastur sphenurus. Whistling-Eagle.

Haliastur sphenurus.

Pera Head, 4/7/15.—A couple of birds noted. Macarthur River, 7/8/15.—Fairly numerous along stream. Cape Barrow, 25/8/15, and Port Bradshaw, 1/9/15.—A few birds noted. Goyder River, 7/9/15.—Many birds noted. Glyde River, 11/9/15.—Fairly numerous. Liverpool River, 21/9/15.—Fairly numerous. King River.—A few birds always about the river and billabongs, and occasionally seen in the forest country. Roper River, 18/2/16.—Fairly numerous.

Gypoietinia melanosternon. Black-breasted Buzzard.

Gypoietinia melanosternon decepta.

King River, 13/10/15.—Bird seen passing overhead.

Falco melanogenys. Black-cheeked Falcon.

Rhynchodon peregrinus macropus.

King River, 7/12/15.—Pair seen in the sandstone ranges.

***Falco lunulatus.** Little Falcon.

Falco longipennis apsleyi.

Mornington Island, 30/7/15.—One seen in full chase of a Dove (*G. placida*). Macarthur River, 10/8/15.—A single bird noted. King River, 29/9/15.—A single bird noted. 2/10/15.—A Falcon was seen to swoop at a Dove (*G. placida*) in a tree; it missed, hovered for a couple of seconds, then tried to drop on the Dove, but again missed. The Dove darted to a safe refuge in the mangroves, 300 yards away. The Falcon soared over the place, then disappeared. 13/10/15.—Found nest containing three eggs. 18/10/15.—Falcon seen attacking a Whistling-Eagle, swooping repeatedly, but never actually striking it, and all the time uttering a sharp, querulous call. 16/11/15.—One bird seen.

Stomach, remains of a Dove (*G. placida*) and of a Quail (*S. cervinus*). Tape-worms in mass of yellow pus, and a growth containing pus and worms on left leg. Very small worms in eye-socket and membrane. Short, thick, round worm in abdominal cavity. Mass of long, thin, round worms over kidneys and testes; the testes almost totally destroyed. Some of the worms over 6 inches long. Bird shot at nest.

Hieracidea berigora. Brown Hawk.

Hieracidea berigora melvillensis.

Macarthur River, 7/8/15, and Cape Barrow, 25/8/15.—An occasional bird noted. Glyde River, 11/9/15.—Pair of birds noted on the ridges. Port Bradshaw, 1/9/15, and Liverpool River, 23/9/15.—A single bird noted. King River.—Occasionally seen. 12/10/15.—A bird flushed from its nest 50 feet from the ground in a paper-bark.

Cerchneis cenchroides. Nankeen Kestrel.

Cerchneis cenchroides milligani.

Rocky Island, 27/7/15.—A single bird seen coming to roost on cliffs a little before dark. Macarthur River, 7/8/15.—One seen.

Pandion leucocephalus. White-headed Osprey.*Pandion haliaëtus cristatus.*

Pera Head, 4/7/15.—Pair of birds seen. Noted along the coast and on most islands to King River. Little Archer River, 6/7/15.—Pair building. Mornington Island, 25/7/15.—Nest containing three eggs found. Port Bradshaw, 1/9/15.—Nest noted on a rock in bay. Noted on all the rivers.

***Ninox boobook.** Boobook Owl.*Spiloglaux boobook mixta.*

Mornington Island, 30/7/15, and Macarthur River, 7/8/15.—Small *Ninox* heard calling during the night. King River.—Small *Ninox* often heard calling at night. 23/11/15.—A pair seen in sandstone ranges; shot one. 24/11/15, shot another near camp.

Stomach, beetle remains and grasshoppers. Mass of worms in inflamed fibrous membrane on the skull between the eyes; two more in left eye-socket, and one in abdominal cavity.

***Ninox connivens.** Winking-Owl.*Hieracoglaux connivens occidentalis.*

Mornington Island, 30/7/15, and Macarthur River, 7/8/15.—Heard calling at night. Cape Barrow, 25/8/15.—Nest containing two eggs found; one bird shot. King River, 28/9/15.—Pair of birds calling after dark.

Stomach contents, fur and remains of a grasshopper. Several worms under skin of body and legs. Bird shot from nest.

***†Ninox rufa.** Rufous Owl.*Rhabdoglaux rufa rufa.*

King River, 15/10/15.—Bird seen in mangroves. 17/10/15.—Two birds seen in mangroves; shot one. 19/10/15.—Three birds seen in small patch of scrub up river; shot two. 22/10/15.—One seen in patch of scrub up river. 4/12/15.—Another seen in small patch of scrub across river.

Stomach, pellet of fur, remains of beetles, feathers, jaws of an insect, insect eggs. Numerous tape-worms under skin of legs; round worm in left eye.

***Strix delicatula.** Delicate Owl.*Tyto alba delicatula.*

Glyde River, 9/9/15.—Heard calling in mangroves after dark. 10/9/15.—One flying about in mangroves as if in search of food; procured it. King River.—Heard calling at night, near camp, on several occasions. Liverpool River Island, 27/1/16.—Shot one in patch of scrub.

Stomach contents, bones and fur of small animal, probably a rat.

***Trichoglossus rubritorques.** Red-collared Lorikeet.*Trichoglossus rubritorques.*

Macarthur River, 7/8/15, and Goyder River, 8/9/15.—Small flocks seen flying very high; not sure of identity. Liverpool River, 22/9/15.—Several flocks seen flying to the east. King River.—Numerous wherever flowering trees till end of the year, then most of them left. (Refer notes 27/9/15, 3, 4, 10, 12, 13, 24, and 31/10/15, 16/11/15, 3/12/15, in narrative).

Stomach, honey and portions of blossoms. A number of large tape-worms in abdominal cavity.

***Ptilosclera versicolor.** Varied Lorikeet.*Psittuteles versicolor mellori.*

Goyder River, 8/9/15.—Small flocks noted flying high. Liverpool River, 22/9/15.—Large flocks flying eastward. King River.—Small flocks often passing; occasionally seen in the forest country amongst flowering trees.

Stomach, honey and portions of blossoms.

***†Calyptorhynchus macrorhynchus.** Great-billed Cockatoo.*Calyptorhynchus banksii macrorhynchus.*

Mornington Island, 25/7/15.—A single bird flying; 30/7/15, flock of 14 birds flying past. Bickerton Island, 24/8/15, and Glyde River, 9/9/15.—Birds noted on the wing. King River, 26/9/15.—Scattered flock of 24 birds passing to westward. Small flocks, usually five birds, often seen passing, and occasionally some seen in the forest country or in tall paper-barks about billabongs. Roper River, 18/2/16.—A couple of birds seen, others heard calling beyond the mangroves.

Crop contained seeds.

Cacatua galerita. White Cockatoo.*Cacatoes galerita melvillensis.*

Macarthur River, 7/8/15.—A few along the river. Bickerton Island, 24/8/15; Cape Barrow, 25/8/15; Port Bradshaw, 1/9/15; and Glyde River, 10/9/15.—A few seen each place. Liverpool River, 19/9/15.—Two birds seen; 21/9/15, few seen about billabongs. King River.—A few often about the billabongs and occasionally in the forest. Roper River, 20/2/16.—Few noted along the stream.

Cacatua sanguinea. Blood-stained Cockatoo.*Ducorpsius sanguineus sanguineus.*

Mornington Island, 30/7/15.—Some seen at the mission station. Macarthur River, 7/8/15.—A few observed in mangroves near mouth of river. Port Bradshaw, 1/9/15.—A number seen. Glyde River, 10/9/15.—A few seen. Liverpool River, 21/9/15.—Numbers observed. King River, 26/9/15.—A small flock seen in mangroves by river, and occasionally along the river and in tall paper-barks around billabongs. Roper River, 19 and 20/2/16.—A few noted. 26/2/16.—A large flock observed feeding on ground at edge of plain. A large flock often seen in mangroves up the river. Maria Island, 12/4/16.—Numerous.

***Cacatua derbyana.**‡ Pallid Rose Cockatoo.*Eolophus roseicapillus kuhli.*

Macarthur River, 7/8/15, and Liverpool River, 21/9/15.—A few birds noted. King River, 6/10/15.—Birds seen flying past camp; 26/12/15, a pair seen, and one bird shot.

Crop, small tubers.

***†Ptistes coccyneopterus.** Crimson-winged Parrot.*Prosmictus erythropterus coccyneopterus*

Macarthur River, 8/8/15; Cape Barrow, 25/8/15; and Liverpool River, 21/9/15.—Few observed. King River.—Occasional pairs seen in forest and about billabongs.

Crop, seeds; gizzard, seeds and sand.

‡ Mathews gives three names for the pale-coloured Rose-breasted Cockatoo—*kuhli*, *assimilis*, and *derbyana*. The "Check-list" (p. 51) uses the last; the matter will soon be finally dealt with by Mr. Matthews in his "Birds of Australia."—Eds.

*†**Platycercus browni.** Smutty Parrot.*Platycercus venustus venustus.*

Cape Barrow, 25/8/15.—In the forest country. Liverpool River, 21/9/15.—A pair seen. King River.—Occasional pairs in the forest country and on the river flats.

Crop, seeds; gizzard, seeds and sand.

*†**Podargus phalænoides.** Freckled Frogmouth.*Podargus strigoides phalænoides.*

King River, 3/10/15.—Nest containing two eggs found. One bird taken, another bird seen and shot later. 10/10/15.—Single bird noted. 23/10/15.—Pair flushed from a blood-wood, in which was nest containing two small young. 27/10/15.—A single bird procured. 10/11/15.—A nest containing two half-fledged young noted.

Stomach, remains of beetles. Bird shot from nest. Skin of breast and abdomen puffed and containing watery fluid.

***Egotheles novæ-hollandiæ.** Owllet-Nightjar.†*Egotheles cristata leucogaster.*

King River.—Often heard calling near camp after dark. 10/10/15.—One flushed from hollow in eucalypt; shot specimen.

Stomach, remains of beetles.

***Eurystomus pacificus.** Roller.*Eurystomus orientalis pacificus.*

King River.—Fairly numerous on the flats till after the first rains. 25/12/15.—Nest containing two small young examined. Roper River, 19/2/16.—Couple of birds noted.

Stomach, remains of insects and wasp.

*†**Alcyone pulchra.** Purple Kingfisher.*Alcyone azurea pulchra.*

Little Archer River, 6/7/15.—Occasionally noted along the small creeks in mangroves. Goyder River, 7/9/15.—Two birds noted at small creek in the mangroves. Liverpool River, 21/9/15.—Pair noted along stream. King River.—Occasionally seen along river and small creeks in mangroves. (Refer notes 19 and 26/12/15, 5, 9, and 23/1/16; see narrative.) Roper River, 18/3/16.—Nest containing six eggs found.

Stomach, small fish and shrimps

***Alcyone ramsayi.** Ramsay Kingfisher.†*Alcyone pusilla ramsayi.*

Little Archer River, 6/7/15.—Pairs noted along the small creeks in mangroves. King River.—Occasionally noted along the river and mangrove creeks. Howard Island Channel, 31/1/16.—One noted.

Stomach, small fish.

*†**Dacelo cervina.** Fawn-breasted Kingfisher.*Dacelo leachii cervina.*

Port Bradshaw, 1/9/15.—Pair seen. Liverpool River, 21/9/15.—A few noted. King River.—Occasional pairs along the river flats, also in forest country. Port Bradshaw, 6/2/16.—Birds observed in forest. Pera Head, 4/7/15.—Pair noted.

Stomach, beetles, a grasshopper, a young goanna, and small bones.

***Halcyon macleayi.** Forest Kingfisher.*Cyanalcyon macleayi barnardi.*

Pera Head, 4/7/15, and Liverpool River, 21/9/15.—A few birds noted. King River.—Few pairs noted on river flats and in the forest

country. 31/10/15.—Nest containing four eggs found. Port Bradshaw, 6/2/16.—A few.

Stomach, remains of beetles, grasshoppers, and other insects.

***Halcyon sanctus.** Sacred Kingfisher.

Sauropatis sancta ramsayi.

Little Archer River, 6/7/15, and Goyder River, 7/9/15.—An occasional bird noted along the small creeks in mangroves. Liverpool River, 21/9/15.—Few birds noted. King River.—Few birds noted during November. Roper River, 28/3/16.—Some birds seen in mangroves

Stomach, remains of grasshoppers. Two large and two small worms in neck. One large worm in abdominal cavity.

Halcyon sordidus. Mangrove-Kingfisher.

Sauropatis sordidus melvillensis.

King River.—A bird occasionally seen or heard calling at particular spot in mangroves along the river.

Halcyon pyrrhopygius. Red-backed Kingfisher.

Cyanalcyon pyrrhopygius obscurus.

Roper River, 21/2/16.—A couple of birds noted.

***Merops ornatus.** Bee-eater.

Cosmærops ornatus shortridgei.

Macarthur River, 12/8/15.—A few birds noted along the river. Maria Island, 19/8/15; Cape Shield, 28/8/15; and Liverpool River, 21/9/15.—Few noted at each locality. King River.—A few birds always along river flats. Roper River, 19 and 20/2/16.—A few noted; 27/3/16, some seen about mangroves near camp.

Stomach, insect remains.

***Caprimulgus macrurus.** Large-tailed Nightjar.

Caprimulgus macrurus keasti.

Liverpool River, 21/9/15.—Heard calling through the night. King River, 6/11/15.—Pair of birds flushed in scrub at small sandstone range; shot one.

Stomach, remains of beetles.

Cuculus optatus. Cuckoo.

Cuculus optatus.

Roper River, 19/2/16.—A single specimen of this scarce bird noted.

***Cacomantis variolosus.** Square-tailed Cuckoo.

†*Cacomantis pyrrophanus dumetorum.*

King River, 20/10/15.—Heard in the mangroves. Fairly numerous after the rains. Roper River, 19/2/16.—Heard along the river.

Stomach, caterpillar, wasps, termites, and other insects.

*†**Chaleococcyx minutillus.** Little Bronze-Cuckoo.

Lamprococcyx minutillus minutillus.

King River, 20/10/15.—Heard in the mangroves. Fairly numerous after the rains. Roper River.—Occasionally calling in mangroves.

Stomach, remains beetles, beetle larvæ, and other insects.

***Eudynamis cyanocephala.** Koel.

Eudynamis orientalis subcyanocephalus.

King River, 30/10/15.—One heard after dark as it was flying past camp. Fairly numerous in the forest, along the river, and in the sandstone ranges, after the first rains. Port Bradshaw, 5/2/16.—Heard calling in scrub.

Stomach, wild figs and other fruit.

***Centropus phasianus.** Pheasant-Coucal.†*Polophilus phasianus macrourus.*

Liverpool River, 21/9/15.—Bird seen along the river. King River.—Occasionally seen in the long grass at the springs. Howard Island Channel, 31/1/16.—Heard calling in a couple of places along channel. Port Bradshaw, 5/2/16.—Two birds noted. Roper River, 18/2/16.—Heard calling occasionally.

***Cypselus pacificus.** White-rumped Swift.*Micropus pacificus pacificus.*

King River, 24/11/15.—Bird seen flying southward. 11/12/15.—Large flock of Swifts passed over camp after the rain, but not sure of identity. 12/12/15.—Another flock passed after a heavy shower. 25/12/15.—A number of *C. pacificus* seen circling high over sandstone ranges.

***†Pitta iris.** Rainbow Pitta.*Pulchripitta iris.*

King River, 29/9/15.—A couple of birds heard calling in scrub at small sandstone range; shot one. 14/10/15.—A single bird seen in a scrubby ravine, sandstone ranges. 6/11/15.—A couple heard calling, and four old nests examined in scrub at sandstone ranges. They were either seen or heard on every subsequent visit, and found building 24/1/16. Liverpool River Island, 27/1/16.—Pair of birds seen in scrub. Port Bradshaw, 5/2/16.—Heard calling in the patches of scrub, and two pairs observed building.

Stomach, remains of beetles and other insects.

Microœca pallida. Pale Flycatcher.*Microœca fascians pallida.*

King River, 4/10/15.—A few seen amongst stunted paper-barks on river flat about 3½ miles above the camp. 7/10/15.—A couple of *Microœca* seen near camp.

***†Microœca flavigaster.** Yellow-breasted Flycatcher.*Kempia flavigaster flavigaster.*

Macarthur River, 7/8/15, and Liverpool River, 21/9/15.—Fairly plentiful all along the rivers. King River.—Numerous in mangroves, rarely seen in forest. (Refer notes 29 and 30/9/15, 7, 11, 12, 14, 16, 17, 20, 21, 24, and 30/10/15, 6 and 11/11/15, in narrative.) Port Bradshaw, 5/2/16.—A few noted in the forest country.

Stomach, insect remains.

Petrœca picata. Pied Robin.*Melanodryas cucullata picata.*

Goyder River, 8/9/15.—Bird shot (skin No. 4). Roper River, 27/2/16.—An occasional bird seen.

***†Smicrornis flavescens.** Yellow-tinted Tree-Tit.*Smicrornis brevirostris flavescens.*

King River.—Occasionally met in the forest country, usually in company with *Gerygone albogularis*. Noted Roper River, 27/2/16.

Stomach, small insects.

***Gerygone albogularis.** White-throated Fly-eater.*Gerygone olivacea olivacea.*

Macarthur River, 7/8/15.—Occasionally heard. King River.—Occasionally observed in forest country, usually in company with *S. flavescens*.

Stomach, small insects.

*† **Pseudogerygone magnirostris.** Large-billed Fly-eater.*Ethelornis magnirostris magnirostris.*

Macarthur River, 7/8/15, and Liverpool River, 19/9/15.—Heard calling in the mangroves. King River.—Numerous all along river in mangroves. (Refer notes, various dates, in narrative.) Howard Island Channel, 31/1/16.—Heard in mangroves. Roper River, 23/3/16.—Pair found breeding.

Stomach, small insects and insects' eggs and beetles.

*† **Pseudogerygone chloronota.** Green-backed Fly-eater.*Wilsonavis chloronota chloronota.*

King River, 16/10/15.—Couple seen in a small patch of scrub; shot one. 1/12/15.—Pair seen in scrub at sandstone range.

Stomach, small insects.

*† **Pseudogerygone lævigaster.** Buff-breasted Fly-eater.*Wilsonavis lævigaster lævigaster.*

Roper River.—Numerous in the mangroves about the Egret rookery. (Refer notes, 16, 19, 23, 24, 27, 28, and 31/3/16; see narrative.)

Stomach, remains of small insects.

* **Pœcilodryas pulverulentus.** White-tailed Shrike-Robin.*Quoyornis leucurus alligator.*

Little Archer River, 7/7/15.—Pair noted in the mangroves. Macarthur River, 7/8/15.—Heard in mangroves. Bickerton Island, 23/8/15; Goyder River, 7/9/15; Glyde River, 10/9/15; and Liverpool River, 19/9/15.—Both heard and seen in mangroves. King River.—Fairly plentiful in the mangroves. (Refer notes 28 and 30/11/15; see narrative.) Howard Island Channel, 31/1/16.—Heard in mangroves. Roper River.—Fairly plentiful in mangroves. (Refer notes, 18, 24, 28, 29, and 31/3/16, 1 and 8/4/16; see narrative.)

Stomach, remains of beetles, other insects, and caterpillars.

*† **Rhipidura dryas.** Wood-Fantail.*Howeavis rufifrons dryas.*

Glyde River, 10/9/15.—Single bird noted in mangroves. King River, 11/10/15.—A bird shot in scrub at spring near camp. Liverpool River Island, 27/1/16.—A pair building.

Stomach, insect remains.

* **Rhipidura phasiana.** Pheasant Fantail.*Rhipidura flabellifera phasiana.*

Roper River, 28/3/16.—Bird shot in mangroves. 29/3/16.—Bird seen. 8/4/16.—Another shot.

Stomach, remains of small insects

*† **Rhipidura isura.** Northern Fantail.*Setosura setosa isura.*

Macarthur River, 7/8/15.—Fairly plentiful along the river. Bickerton Island, 23/8/15; Cape Barrow, 25/8/15; and Glyde River, 11/9/15.—A few birds seen. King River.—Numerous in forest country, and a few seen in mangroves and along the river. (Refer notes various dates in narrative.) Roper River, 19 and 20/2/16.—A few noted.

Stomach, small insects, termites, and small beetles.

***Rhipidura motacilloides.** Black-and-White Fantail.†*Leucocirca tricolor picata.*

Pera Head, 4/7/15.—A few noted. Mornington Island, 30/7/15.—Numerous about the mission station. Macarthur River, 7/8/15; Maria Island, 19/8/15; Bickerton Island, 23/8/15; Cape Barrow, 25/8/15; Cape Shield, 28/8/15; Port Bradshaw, 1/9/15; Goyder River, 8/9/15; Glyde River, 11/9/15; and Liverpool River, 21/9/15.—Noted at all localities. King River.—Numerous in the forest country and on river flats till December, when all disappeared. Roper River.—Numerous along the river above the limit of mangroves. Maria Island, 13/4/16.—A few observed.

Stomach, insect remains.

***†Myiagra concinna.** Blue Fantail.*Myiagra rubecula concinna.*

King River.—Occasionally seen in forest country and mangroves. Liverpool River Island, 27/1/16.—A couple noted; one seen building in scrub. Port Bradshaw, 5/2/16.—An occasional bird noted.

Stomach, insect remains.

Myiagra latirostris. Broad-billed Flycatcher.*Myiagra latirostris latirostris.*

Roper River, 24/3/16.—Pair noted in mangroves.

***†Piezorhynchus nitidus.** Shining Flycatcher*Piezorhynchus alecto nitidus.*

Macarthur River, 7/8/15; Bickerton Island, 23/8/15; Goyder River, 7/9/15; Glyde River, 11/9/15; and Liverpool River, 19/9/15.—Calling in mangroves. King River.—Numerous along river and mangrove creeks. (Refer notes 28/11/15, 9, 20, and 22/12/15, 20, 21, 23, and 24/1/16; see narrative.) Howard Island Channel, 31/1/16.—Heard in mangroves. Roper River, 17 and 18/2/16.—In the mangroves. 10/3/16.—Nest found containing two hard-set eggs.

Stomach, insect remains.

Piezorhynchus wardelli. Long-billed Shining Flycatcher.*Piezorhynchus alecto wardelli.*

Little Archer River, 7/7/15.—Occasionally noted along the mangrove channels.

***Graucalus melanops.** Black-faced Cuckoo-Shrike.*Coracina novæhollandiæ subpallida.*

Mornington Island, 23/7/15.—Pair noted. 30/7/15.—Fairly numerous about mission station. Maria Island, 20/8/15.—A couple seen. Cape Shield, 28/8/15; Port Bradshaw, 1/9/15; Glyde River, 11/9/15; and Liverpool River, 21/9/15.—A few birds seen at each place. King River.—Occasionally met in forest country and in mangroves. 29/12/15.—A pair of birds selecting a nesting-site. Roper River.—Noted 19 and 27/2/16.

Stomach, remains of beetles, seeds of fruit. Small worms in nictitating membrane. Large tape-worms in the intestines.

***†Graucalus hypoleucus.** White-bellied Cuckoo-Shrike.*Coracina hypoleuca hypoleuca.*

King River.—Occasionally met with in forest country and in mangroves. 5/1/16.—Nest containing two eggs found.

Stomach, insect remains. Worms under skin of thighs.

***Edolisoma jardinii.** Great Caterpillar-eater.*Melagraucalus tenuirostris melvillensis.*

King River, 16/11/15.—A single bird seen. 28/11/15.—Number of birds calling in mangroves. Continued fairly plentiful in mangroves, scrub, and forest till I left the district.

Stomach contained pale green caterpillars.

***Campephaga humeralis.** White-shouldered Caterpillar-eater.*Lalage tricolor indistincta.*

Mornington Island, 30/7/15.—Fairly plentiful about mission station. Maria Island, 20/8/15.—Few birds seen. King River.—A few in forest country. Roper River.—Fairly numerous.

Stomach, remains of beetles and caterpillars, termites, and other insects.

***Campephaga leucomela.** Pied Caterpillar-eater.*Karua leucomela rufiventris.*

Glyde River, 11/9/15.—Bird seen. Liverpool River, 21/9/15.—A couple noted. King River.—Occasionally seen about scrub.

Stomach, small fruit.

*†**Pomatorhinus rubeculus.** Red-breasted Babbler.*Pomatostomus temporalis rubeculus.*

King River.—Occasionally met with in the forest. 18/10/15.—Found nest containing three small young.

Stomach, insect remains.

***Cisticola exilis.** Grass-Warbler.†*Cisticola exilis lineocapilla.*

King River.—Occasionally seen in long grass about the springs.

Stomach, insect remains.

***Megalurus galactotes.** Tawny Grass-Bird.*Dulciornis alisteri melvillensis.*

King River.—Occasionally seen in long grass about springs. Roper River, 16/2/16.—Occasionally seen in long grass on plain.

Stomach, insect remains.

*†**Malurus dulcis.** Lavender-flanked Wren-Warbler.*Leggeornis amabilis dulcis.*

King River.—Occasional parties seen in the sandstone ranges, amongst the spinifex and brush. (Refer notes 28/9/15, 20, 21, 23, and 27/11/15, 14/12/15, 10 and 15/1/16; see narrative.)

Stomach, small insects and beetles.

Malurus coronatus. Purple-crowned Wren-Warbler.*Rosina coronata macgillivrayi.*

Macarthur River, 11/8/15.—A small party seen in brush by the river bank when passing in boat.

*†**Malurus cruentatus.** Red-backed Wren-Warbler.*Ryania melanocephala cruentata.*

King River.—Parties met occasionally in the forest, along the river flats, and about springs.

Stomach, insects.

Artamus leucogaster. White-rumped Wood-Swallow.*Artamus leucorhynchus harterti.*

Roper River, 28/3/16.—A few seen about the mangroves

***Artamus cinereus.** Grey-breasted Wood-Swallow.

Austrartamus melanops florenciæ.

Mornington Island, 25/7/15, and Macarthur River, 12/8/15.—A few birds observed. King River.—Small flocks seen till December, when they disappeared.

Stomach, beetles and other insects.

***Artamus minor.** Little Wood-Swallow.

Micrartamus minor derbyi.

King River.—A few birds always about the precipitous bluffs in sandstone ranges.

Stomach, small winged insects.

*†**Colluricincla brunnea.** Brown Shrike-Thrush.

Colluricincla brunnea brunnea.

King River.—Fairly plentiful in forest country. (Refer notes, 3, 4, 11, 12, and 13/1/16; see narrative.)

Stomach, small remains of insects and seeds, beetles, grasshoppers, and lizard bones. Small worms in eye membrane, and larger ones in liver.

*†**Colluricincla woodwardi.** Brown-breasted Shrike-Thrush.

Colluricincla woodwardi.

King River.—Numerous in the sandstone ranges. (Refer notes, various, in narrative.)

Stomach, remains of insects, grasshoppers, and spider. Worms under skin.

*†**Colluricincla parvula.** Little Shrike-Thrush.

Conigrava parvula parvula.

King River.—Fairly plentiful in mangroves. One pair was met with in small patch of scrub a mile away from river.

Stomach, remains of beetles.

***Cracticus quoyi.** Quoy Butcher-Bird.

†*Melloria quoyi spaldingi.*

Goyder River, 7/9/15.—Heard calling in mangroves. King River.—A few scattered pairs always heard or seen about the same places in mangroves. (Refer notes 28 and 29/11/15, 2 and 20/12/15, 31/1/16; see narrative.)

Stomach, small crabs and remains of beetles.

*†**Cracticus picatus.** Pied Butcher-Bird.

Cracticus nigrogularis picatus.

Goyder River, 8/9/15.—One bird seen. King River.—Occasional pairs noted in forest country.

Stomach, insect remains.

*†**Cracticus argenteus.** Silvery-backed Butcher-Bird.

Bulestes torquatus argenteus.

King River.—Occasional pairs seen in forest.

Stomach, remains of beetles, wasps, ants, and other insects

*†**Pachycephala falcata.** Northern Whistler.

Lewinornis rufiventris falcatus.

Pera Head, 4/7/15.—A few birds. Mornington Island, 30/7/15, Macarthur River, 7/8/15; Bickerton Island, 23/8/15; and Cape Barrow, 25/8/15.—In each instance a few birds. Cape Shield, 28/8/15, and Glyde River, 11/9/15.—A few birds noted. King River.—Numerous in the forest till December, when the majority disappeared.

Stomach, insect remains and a large caterpillar.

***Pachycephala melanura.** Black-tailed Whistler.*Pachycephala pectoralis melanura.*

Liverpool River Island, 27/1/16.—Fairly plentiful in scrub. Roper River.—Fairly plentiful in mangroves.

Stomach, insect and beetle remains, also caterpillars.

***†Pachycephala simplex.** Brown Whistler.*Muscivora griseola simplex.*Glyde River, 10/9/15, and Liverpool River, 19/9/15.—Heard calling in mangroves. King River.—Numerous in the mangroves. Call and habits similar to *Pachycephala inornata*. Howard Island Channel, 31/1/16.—Heard in mangroves. Port Bradshaw, 5/2/16.—Heard in patches of scrub.

Stomach, remains of small beetles and insect eggs.

***Pachycephala lanioides.** White-bellied Whistler.*Alisterornis lanioides lanioides.*

Roper River.—Refer notes 19, 22, 24, 28, and 31/3/16, 8/4/16; see narrative.

Stomach, insect remains.

***Climacteris melanura.** Black-tailed Tree-creeper.*Whitlocka melanura melanura.*

King River.—Fairly plentiful in forest. (Refer notes, 18, 23, and 28/10/15, 10/, 11, 12, 13, and 28/11/15, 8, 15, and 29/12/15; see narrative.)

Stomach, remains of small beetles and other insects.

***†Neositta leucoptera.** White-winged Tree-runner.*Neositta pileata leucoptera.*

King River, 12/11/15.—A bird shot. 2/1/16.—Pair shot in forest country.

Stomach, insect remains.

***†Zosterops lutea.** Yellow White-eye.*Zosterops lutea lutea.*

Morningson Island, 30/7/15; Macarthur River, 7/8/15; Bickerton Island, 23/8/15; and Glyde River, 11/9/15.—Noted in the mangroves. King River—Often seen in mangroves along river. (Refer notes, 29/10/15, 31/10/15, 9, 11, and 20/1/16; see narrative.) Liverpool River Island, 27/1/16.—Noted in the scrub. Roper River, 18/2/16 and 18/3/16.—Noted in the mangroves.

Stomach, remains of small beetles and other insects.

***Dicæum hirundinaceum.** Mistletoe-Bird.*Austrodicæum hirundinaceum tormenti.*

King River.—An occasional bird seen in patches of scrub and amongst bushes at springs. Port Bradshaw, 6/2/16.—An occasional bird seen in the forest country.

Stomach, mistletoe berries and some deep indigo-coloured berries.

***†Pardalotus uropygialis.** Chestnut-rumped Pardalote.*Pardalotus melanocephalus uropygialis.*

King River, 26/10/15.—Three birds seen. 20/12/15.—One bird shot. 29/12/15.—Heard calling.

Stomach, small insects.

Pardalotus rubricatus. Red-browed Pardalote.*Pardalotus rubricatus leichhardti.*

Roper River, 20/2/16.—A couple of birds noted.

*† **Melithreptus albogularis.** White-throated Honey-eater.

Melithreptus lunatus albogularis.

Pera Head, 4/7/15; Mornington Island, 23 and 30/7/15; Cape Barrow, 25/8/15; and Liverpool River, 21/9/15.—A few birds noted at each locality. King River and Port Bradshaw.—Numerous in the forest country.

Stomach, a small grub and insect remains.

*† **Myzomela erythrocephala.** Red-headed Honey-eater.

Myzomela erythrocephala erythrocephala.

Little Archer River, 6/7/15.—Noted in mangroves. Bickerton Island, 23/8/15; Goyder River, 7/9/15; and Liverpool River, 19/9/15.—A few noted in mangroves. King River.—Numerous in mangroves and in the flowering trees along river.

Stomach, small beetles and other insects.

* **Myzomela pectoralis.** Banded Honey-eater.

Cissomela pectoralis pectoralis.

King River.—Noted occasionally amongst the flowering trees in forest.

Stomach, insect remains.

*† **Myzomela obscura.** Dusky Honey-eater.

Melomyza obscura obscura.

Pera Head, 4/7/15.—Noted amongst some flowering paper-barks. King River.—Fairly plentiful about mangroves and in flowering trees near river. Liverpool River Island, 27/1/16.—Noted in scrub. Port Bradshaw, 5/2/16.—Fairly plentiful about scrubs and in forest.

Stomach, insect remains and honey.

*† **Glyciphila fasciata.** White-breasted Honey-eater.

Ramsayornis fasciatus fasciatus.

Pera Head, 4/7/15.—A few noted amongst flowering paper-barks. Glyde River, 11/9/15.—A few noted about the ridges. Liverpool River, 21/9/15.—Some seen amongst the paper-barks round billabongs. King River.—Fairly numerous amongst flowering trees. Roper River, 27/2/16.—Fairly numerous in paper-barks in swamps.

Stomach, insects.

* **Conopophila rufogularis.** Rufous-breasted Honey-eater.

Conopophila rufogularis-queenslandica.

Mornington Island, 25/7/15.—A few noted. King River, 4/10/15.—Two noted coming to water at small water-hole. 31/10/15.—A bird shot at the same place. 16/11/15.—Three birds seen at spring up river from camp.

Stomach, small insects.

*† **Conopophila albogularis.** Red-throated Honey-eater.

Conopophila albogularis albogularis.

King River, 2/11/15.—Single bird seen at spring near camp. 9/11/15.—Shot three birds and saw more at spring near camp. Often seen after this date about the salt-pans and along edge of mangroves. Roper River.—Fairly numerous in places along river and in the mangroves over the river, near Egret rookery. (Refer notes 6/1/16, 28/3/16, 8/4/16; see narrative.)

Stomach, insect and termites' remains.

Stigmatops ocellaris. Brown Honey-eater.

Stigmatops indistincta melvillensis.

Pera Head, 4/7/15, and Macarthur River, 7/8/15.—Numerous in

flowering paper-barks. Bickerton Island, 23/8/15.—A few birds. Goyder River, 8/9/15; Glyde River, 11/9/15; and Liverpool River, 19/9/15 and 21/9/15.—Numerous in mangroves. King River.—Numerous in mangroves, in flowering trees along river flats, about springs, and occasionally seen in sandstone ranges. Roper River.—Numerous in the mangroves along river.

Stomach, small insects.

*† *Ptilotis unicolor*. White-gaped Honey-eater
Stomiopera unicolor unicolor.

Macarthur River, 7/8/15.—Fairly plentiful along river above limit of mangroves. Liverpool River, 21/9/15.—A few noted. King River.—Fairly plentiful about river flats and in small patches of scrub at springs. Occasionally seen in the mangroves. 21/1/16.—Found building in the mangroves. Roper River.—Noted along the river beyond the limit of mangroves.

Stomach, skins and seeds of berries and fruit, remains of beetles and other insects.

Ptilotis flava. Yellow Honey-eater.
Broadbentia flava flava.

Pera Head, 4/7/15.—A few birds noted.

*† *Ptilotis albilineata*. White-stripe Honey-eater.

King River.—A few pairs of birds seen in the sandstone ranges only, usually in the deep, narrow ravines. Their call is a loud, clear whistle, "Tuuuher-tuu-un-eee," uttered occasionally; when imitated the birds would fly up to within a couple of feet of one and peer all round, endeavouring to locate the imitator. On one occasion I called a pair of birds up and kept them, repeating the call. The birds got very excited, and flitted through every bush and shrub and examined the crevices and ledges in the ravines, then flew off. (Refer notes, various, in narrative.)

Stomach, honey and insect remains, skins and seeds of berries and fruit.

* *Myzantha flavigula*. Yellow-throated Miner.
Myzantha flavigula alligator.

King River.—Small parties up to six birds often met in the forest. Stomach, insect remains.

*† *Entomyza albigennis*. White-quilled Honey-eater.
Entomyza cyanotis albigennis.

Cape Shield, 28/8/15; Port Bradshaw, 1/9/15; and Liverpool River, 21/9/15.—A few birds seen each locality. King River.—Birds seen occasionally in the forest, and large party often noted at fresh-water billabong up river before the rains.

Stomach, insect remains.

*† *Philemon sordidus*. Little Friar-Bird.
Microphilemon orientalis sordidus.

Macarthur River, 7/8/15, and Cape Shield, 28/8/15.—Occasionally seen. King River, 28/10/15.—A bird shot. Subsequent dates during November.—Several seen coming to water. Roper River.—28/3/16.—Numerous in mangroves across the river near Egret rookery. Maria Island, 12/4/16.—Numerous.

Stomach, insect remains. Number of worms in abdominal cavity.

† For description see *Emu*, ante, p. 165.

*†**Tropidorhynchus argenteiceps.** Silvery-crowned Friar-Bird.
Philemon argenteiceps argenteiceps.

King River.—Numerous in forest amongst flowering trees, and occasionally seen in mangroves.

Stomach, honey and remains of insects.

***Mirafraga secunda.** Lesser Bush-Lark.

Mirafraga javanica nigrescens.

Roper River, 16/2/16.—Numerous on plain

Stomach, remains of insects and seeds.

Cinclorhynchus cruralis. Brown Song-Lark.

Cinclorhynchus cruralis rogersi.

Roper River, 16/2/16.—Numerous on plain.

Anthus australis. Pipit or Ground-Lark.

Anthus australis rogersi.

Glyde River, 11/9/15.—Single bird seen on plain. Liverpool River, 19/9/15.—Bird seen at salt-pan. Roper River, 16/2/16.—Fairly numerous on plain.

***Stictoptera annulosa.** Black-ringed Finch.

Stictoptera bichenovii annulosa.

Macarthur River, 7/8/15.—Noticed when passing in boat. Cape Barrow, 25/8/15.—Some seen in thick brush in forest. King River.—Small flocks always along river flat and about springs.

Crop, seeds.

***Poephila heeki.** Red-billed Grass-Finch.

Poephila acuticauda heeki.

King River.—Occasionally seen in forest country. Fairly plentiful about springs and billabongs before the rains.

Crop, seeds.

*†**Poephila personata.** Masked Grass-Finch.

Neopoephila personata personata.

King River.—Occasionally seen in forest and numerous along river flats and about springs prior to rains.

Crop, small seeds; gizzard, seeds and sand.

*†**Poephila gouldiæ.** Gouldian Grass-Finch.

Poephila gouldiæ gouldiæ.

King River. 8/11/15.—Five birds seen at spring near camp. 9/11/15.—Pair seen. 17/11/15.—Three birds at spring up river from camp. 18/11/15.—Two birds seen. 22/11/15.—Flock of about 50 birds seen at spring up river.

Crop, seeds.

*†**Neochmia phaeton.** Crimson Finch.

Neochmia phaeton phaeton.

King River.—Small flocks always seen along river flat and in long grass and pandani about springs. 17/11/15.—Small flock seen catching flying termites. Roper River, 21/2/16.—Birds seen along river amongst the pandani and vines.

Crop, termites and seeds; gizzard, seeds and sand.

***Munia assimilis.** Dark-breasted Finch.

Lonchura castaneithorax assimilis.

King River, 16/11/15.—Several small flocks coming to water at spring up river. Numerous about springs till the rains.

Crop, seeds.

****Munia flaviprymna.*** Yellow-rumped Finch.*Lonchura flaviprymna.*King River, 18/11/15.—Pair birds shot amongst flock of *M. castaneithorax*.

Crop, seeds.

†*Oriolus flavicinctus. Yellow Oriole.*Mimeta flavocincta flavocincta.*

Glyde River, 11/9/15.—Noted in small patches of tangled scrub on ridges. Liverpool River, 21/9/15.—Occasional bird noted along river. King River.—Occasionally seen in mangroves and in small patches of scrub. Howard Island Channel, 31/1/16.—Heard in mangroves. Port Bradshaw, 5/2/16.—Few seen and heard about small patches of scrub. (Refer notes 27/12/15, 20/1/16; see narrative.)

Stomach, remains of small figs, and skins and seeds of other fruit: Two small worms in abdominal cavity.

Oriolus affinis. Northern Oriole.*Mimeta sagittata affinis.*

King River, 11/11/15, 26/12/15.—A single bird seen each date.

Sphecothebes flaviventris. Yellow-bellied Fig-Bird.*Sphecothebes flaviventris ashbyi.*

Port Bradshaw, 1/9/15.—A few seen about small patch of scrub.

****Chibia bracteata.*** Spangled Drongo.*Dicruropsis bracteatus baileyi.*

Port Bradshaw, 1/9/15.—Birds noticed about small patch of scrub. Glyde River, 11/9/15.—Occasionally seen along the river and in patches of scrub on ridges. Liverpool River, 21/9/15.—Few birds seen. King River.—Occasionally seen along the flats. (Refer notes 26 and 29/12/15; see narrative.) Liverpool River Island, 27/1/16.—Two birds seen. Howard Island Channel, 31/1/16.—Seen occasionally. Port Bradshaw, 5/2/16.—A few seen.

Stomach, remains of insects.

****Chlamydera nuchalis.*** Great Bower-Bird:*Rogersornis nuchalis melvillensis.*

Morningson Island, 30/7/15.—Some birds seen and heard near the mission station. Macarthur River, 8/8/15.—Noted along river. Bickerton Island, 23/8/15.—Two seen. Liverpool River, 21/9/15.—Seen and heard by river. King River.—Occasional birds in mangroves and in small patch of scrub. Often observed in sandstone ranges. Port Bradshaw, 5/2/16.—Heard in patches of scrub.

Stomach, small berries.

Corvus coronoides. Crow:*Corvus coronoides bonhoti.*

Morningson Island, 23/7/15; Macarthur River, 7/8/15; Cape Barrow, 25/8/15; Glyde River, 11/9/15; and Liverpool River, 21/9/15.—Few noticed at each locality. King River.—Seen occasionally flying past. Roper River, 18 and 20/2/16, and Maria Island, 13/4/16.—Few seen.

****Grallina picata.*** Pied Grallina:*Grallina cyanoleuca neglecta.*

Pera Head, 4/7/15.—Seen about the swamp. Morningson Island, 30/7/15.—Fairly numerous about mission station Cape Barrow, 25/8/15.—A few seen. Goyder River, 8/9/15.—A few birds seen. Glyde River, 11/9/15.—A few birds seen. Liverpool River, 19

and 21/9/15.—A few birds seen. King River.—Often met with up till the first week in November, then they all disappeared. Roper River, 20/2/16.—Fairly numerous. Maria Island, 13/4/16.—A few birds seen.

Stomach, remains of beetles and grasshoppers.

Notes on a Collecting Trip in the Lower North of South Australia.

BY EDWIN ASHBY, M.B.O.U., R.A.O.U., "WITTUNGA," BLACKWOOD, S.A.

THE special object of the trip was to visit the habitats of *Malurus melanotus whitei*, Campbell, and *Malurus leuconotus*, Gould. The former is only met with in a narrow strip of salt-bush country between the Flinders Range and Spencer Gulf, only a few miles in width and about 40 miles in length, between Port Germein and Port Augusta. The latter was last met with by the writer in November, 1900, about 35 miles east of Petersburg, on the eastern side of the Flinders Range, in salt-bush and mallee country.

A start was made from Adelaide on the 4th September, and Adelaide was reached on the return trip on the 9th, so that all the following notes have reference to the intermediate dates. About 600 miles were covered by motor in the six days. Messrs. Frank E. Parsons and Maurice E. Saunders, both members of the R.A.O.U., with the writer, formed the party. Comparatively few birds were noted between Adelaide and Crystal Brook, 151 miles' run; but in a patch of large mallee near Mallala a short stop was made, as it was alive with birds. One specimen of *Plectorhyncha lanceolata neglecta*, Mat., Southern Striped Honey-eater, was obtained. This bird is decidedly one of the rarer of our South Australian Honey-eaters.

Mirafrja javanica secunda, Sharpe. Lesser Bush-Lark.—Was very numerous in many of the cornfields through which the road passed. Our attention was chiefly called to them by their sweet song, which rivals that of the English Lark, both species singing as they ascend high into the air.

Cinclorhamphus cruralis cantatoris, Gld. Southern Song-Lark.—Was in great numbers in the cornfields between Crystal Brook and Port Pirie. Several specimens were obtained, but no difference could be distinguished between them and specimens obtained in the neighbourhood of Adelaide.

Cinclorhamphus (rufescens) mathewsi vigorsi, Mat. Eastern Rufous Song-Lark.—In a patch of large red gum timber (*Eucalyptus rostrata*), thick with red gum saplings, growing along a water-course, a few miles from Port Germein, this bird entirely replaced the preceding species. The scrub resounded with their song, which was decidedly more pleasing than that of *C. cruralis*, and also more varied.

Artamus (sordidus) cyanopterus, Lath. Wood-Swallow.—Was very numerous in this bush, as it was in all suitable places throughout the trip. This was the only species of *Artamus* noted in any part of the

trip. I expected to meet with *A. melanops*, as I have skins from localities not much further north, but none was identified.

Three species of *Malurus* were met with in this belt of timber or in the low bushes immediately adjoining the belt of large timber.

Malurus melanotus whitei,* Campbell.—Only one specimen (a fine male) was seen and secured. We were informed that it used to build in a thick (box thorn?) hedge, now destroyed. Nearly the whole of the scrub has been cleared throughout the district, so it is not likely to be long before this lovely Wren is extinct.

Malurus (assimilis) lamberti morgani, White. Southern Blue-breasted Wren.—Was very numerous. The male birds obtained showed the crown of the head almost entirely blue, whereas the majority of specimens in my collection, obtained further south, have a good deal of black or blackish coloration on the crown; but it is possible that this is due to the perfect plumage of the specimen obtained here.

Malurus cyanotus, Gould. White-winged Wren.—A considerable number of these were seen, but it was most difficult to obtain males, they were so shy. They were only noted in the low bushes where the creek had overflowed the flat. Most of the mobs had two or three males, and on several occasions the former species was in company with them, the two species going about in the same mob. The female bird has a curious little tremulous song, quite distinct from the stronger notes of *Malurus cyaneus leggei*, Mat. A few days later we again met with this species in large numbers near Nackara, on the eastern side of the Flinders Range, some 80 miles further east, in "blue-bush" country. While we thought it possible that we saw *Malurus leuconotus*, we did not obtain any specimens.

Poodytes (Megalurus) gramineus dubius, Mat. Little Grass-Bird.—A nest in "polignum" bush was found with a clutch of freshly-laid eggs. The bird is considerably darker in plumage than specimens obtained on the River Murray swamps—a curious reversing of the usual order. As far as we could judge, there is very little country in the district suited to the habits of this bird. The nest had not the usual Coots' feathers, probably because Coots are unknown in the locality.

Smicrorhynchus brevirostris viridescens, Mat. Greenish Tree-Tit.—Was numerous in patches of scrub near Port Germein.

* *Malurus whitei*, Campbell (*Emu*, vol. i., p. 65).—Several ornithologists have considered the above a good species, and the careful comparison of the material in my hands supported this contention, but I have since writing the foregoing had an opportunity of examining seven more specimens of *M. callainus*, Gld., in Capt. S. A. White's collection. I find that some of the specimens collected on the west side of Spencer Gulf and the Gawler Ranges so closely approach the Port Germein (east side of the gulf) form that they are not separable. Those specimens of *M. callainus* collected in the Everard and Musgrave Ranges show more purple in the throat and a deeper blue in the abdomen. The larger material suggests a transition into deeper and more purple shades of blue as the distance from Spencer Gulf becomes greater, and therefore Campbell's *M. whitei* must stand as a synonym of *M. callainus*, Gld.

Epthianura aurifrons, Gould.—A few small flocks were seen on the samphire flats near Port Pirie, but this species was much more numerous near Nackara, the other side of the Flinders Range.

Epthianura albifrons.—Numerous almost everywhere.

Epthianura tricolor.—Three specimens seen near Nackara, but they were very shy, and none was obtained.

Pachycephala rufiventris.—Several noted near Port Germein; one specimen was obtained.

Pachycephala gilberti (*Gilbertornis rufigularis gilberti*, Gld.)—In the mallee on the east side of Flinders Range, near Dawson, they were quite numerous. The specimen obtained is a little more buff on abdomen and under tail coverts than specimens obtained from River Murray district.

Meliphaga (Ptilotis) sonora, Gld. Southern Singing Honey-eater.—Numerous near Port Germein.

Directly the Gorge into the Flinders Range was entered the vegetation altered, and evidences of a rapidly increasing rainfall were numerous; correspondingly, a distinct change in the bird-life was noted.

Myzantha flavigula, Gld. Yellow-throated Miner.—Was very numerous in the Port Germein district, also 80 miles further east, in similar country, on the other side of the Flinders Range.

Lichenostomus (Ptilotis) plumulus ethelæ, Mat.—These were very numerous in and near the entrance of the Gorge, but when the upper part of the Gorge was reached and a higher altitude attained this species was replaced with

Ptilotula (Ptilotis) penicillata rosinae, Mat. The Port Augusta White-plumed Honey-eater.—A comparison of specimens of *plumulus* obtained at the Gorge, and later on near Nackara, with those obtained by the writer near Callion, in Western Australia, show the Western Australian form to be smaller, back and wings paler, and dark dash markings on under side less pronounced and more buff. The *penicillata* obtained here, as compared with those obtained near Adelaide, show the Flinders Range specimens to be a little more yellow on face and crown, and generally a little brighter in wings and tail, breast paler, and the contrast between the light margins of breast feathers and the darker centres is almost as marked as in *plumulus*. In Adelaide specimens this marking is very indistinct.

Falcunculus frontatus, Lath. Crested Shrike-Tit.—Both male and female were obtained at the Gorge. The female is considerably yellower—more a buff-yellow than the greenish-yellow of the more southern form. The male was not so yellow, but of the buff shade similar to the female. Rump of both brighter yellowish-green than in Adelaide specimens.

Melithreptus gularis, Lath.—Obtained in the Gorge. Showed some slight differences from the Adelaide form. The nape ring was whiter and broader; the yellowish-green of rump extends right across the back to the black neck-ring.

Platycercus flaveolus. Pale Yellow Parrot.—At the top of the range a considerable number was met with, some being almost as red on the breast as *P. adalaidensis*, Gld.

Barnardius barnardi whitei, Mat. South Australian Mallee-Parrot.—These were met with near Clare, and again near Dawson, on the east side of the Flinders Range. Those handled were of the usual northern form that has recently been designated a sub-species.

Psephotus varius (multicolor). Many-coloured Parrot.—These were numerous in the Nackara district.

Owenavis (Chalcites) osculans, Gld. Black-eared Cuckoo.—One male was obtained near Nackara, and several were heard in the same locality. At a distance the note reminds one of the warning whistle of the Scrub-Robin. The sound carries much further than one would suppose. It is most difficult to judge the distance the bird is away by the whistle.

Of the genus *Sericornis* two species were secured—(**Sericornis**) **Pyrrholæmus brunneus**, Gld. (Redthroat), in the blue-bush country near Nackara, and **Sericornis maculatus**, Gld. (the Spotted Scrub-Wren). One specimen was obtained near Port Germein, in the dry country, and it is interesting to note that it is the pale form, similar to those obtained on Eyre Peninsula, and named sub-specifically *S. m. mellovi* by Mathews.

The specimens of **Geobasilæus chrysoorrhous** (Yellow-rumped Tit-Warbler) that were secured near Port Germein were brighter yellow in the rump than is usual in Adelaide specimens, and were similar to the form from Port Augusta, described by Mathews sub-specifically as *G. c. addendus*.

Acanthiza iredalei morgani, Mat. Southern Thin-billed Tit.—We were most interested in meeting with this bird in the blue-bush country near Nackara. It is a locality much further south than I believe it has been recorded from in this State before.

A considerable number of other species were noted, and a few more species were obtained; but the foregoing seem of interest as indicating certain definite tendencies of variation in the dry districts, even when they abut closely on localities favoured with a heavier rainfall. Also, in some cases the known range of the species has been extended.

In referring to variant forms it has seemed best to adopt Mr. Mathews's sub-specific names, but it is an open question as to whether it would not be better, in many of the cases under review, to refer simply to the variant forms as varieties and not attempt to give them sub-specific rank.

Bird Life as Affected by Drought.

BY CHARLES BARNARD.

UNDER this heading I would like to mention a few instances that have come under my notice, showing how certain forms of bird-life can be driven away from, or exterminated in, certain districts during times of severe drought, and also showing how birds can become a medium of conveying seeds of plants, or grasses, possibly of a injurious nature, from one district to another, in other ways than by the usually accepted one of eating and evacuating.

Referring particularly to the district round about Coomoo-boolaroo, Central Queensland, I can mention the case of the Beautiful Parrot (*Psephotus pulcherrimus*). Previous to the terrible drought of 1902 it was not very uncommon to see a pair of these birds when out mustering on the run, and on two occasions nests were found, but since that year not a single specimen has been seen.

About the year 1882, when on a collecting trip to Fairfield, a station about 70 miles south of Coomoo-boolaroo, many of these birds were seen, and several sets of eggs taken.

Since 1902 I have frequently asked the people living at Fairfield to keep a look-out for the birds, but they report that none has been seen. I have also been in the vicinity myself, but saw no birds. The reason of their disappearance is not hard to discover. For three years previous to the climax of the drought in 1902 there had been no wet season, and very little grass grew, consequently there was little seed; then the worst year came on, in which no grass grew, so that the birds could not find a living, and either perished or migrated. As there was more grass on the coastal country, the latter is possible, but if so, it is strange that they have not found their way back to their original haunts.

Then we have the case of the Scarlet-backed Malurus (*M. melanocephalus*). These little birds were always numerous in the long grass, but after that drought not one was seen on the run for at least three years, but since then an odd little flock has been seen. It is possible that as the grass became scarce inland they worked their way towards the coast, where the grass was longer. The year after the drought I had occasion to be on the coast country, and noticed numbers of *Malurus* in the long grass.

During the year of drought many of the far western birds came into our district, notably the Ground Graucalus (*Pteropodocys phasianella*), Western Miner (*Myzantha flavigula*), and Cockatoo-Parrot.

The Bustard, or Plain Turkey, is rarely seen in our district, but when a bad season occurs in the West, they work in towards the coast, and last winter I shot a female weighing 17 lbs. When plucking the feathers off I was surprised to find spear grass seed sticking thickly into the skin, principally round the base of the neck, but more or less all over the body, many of the "spears" being completely embedded in the flesh. Now, hundreds of these birds would find their way back to the Western plains, and eventually drop the dreaded spear grass in the sheep country.

In 1903 I was up towards the Gulf country, and was told that the Bustards were driven in towards the Gulf by the drought the previous year, and that hundreds died from drinking the salt water in the salt-pans.

The poor Laughing Jackass (*Dacelo gigas*) had a bad time in that year, and numbers died. Several times three or four were seen lying under the night-roost, and for some years after the drought it was rare to hear a "corrobboree" in the early morning. Now,

however, they have become plentiful again, and the "bushman's clock" chimes regularly every morning. Magpies became so weak that they could not fly, and no doubt many died. Also many of the smaller birds died.

Observations from the Fern-tree Gully District (Vic.)

BY R. T. LITTLEJOHNS, R.A.O.U., AND S. A. LAWRENCE, R.A.O.U.

FOR the last two or three seasons we have carried out our modest observations with the comfort of a house at Upper Fern-tree Gully as headquarters. Here we have used our limited opportunities in an endeavour to secure photographs and reliable information of the local birds in their natural surroundings. We always make it our aim to refrain from injuring our subjects in any way, and, probably for that reason, know very little of sub-species. We are more bent on obtaining photographs such as that of the Yellow Robin here reproduced than on seeking new forms. It appears to us that the bird in question would far rather be recorded by photography than have the honour of position as a type specimen.

Our experience has satisfied us that results can be obtained even with an inexpensive outfit. Some of our first photographs were obtained with an ordinary box camera of the cheapest variety. Much time and energy, however, we have always found it necessary to spend. During the season 1915-16 practically every week-end from June to January was spent at Fern-tree Gully. For the early part of this time our attention was confined almost entirely to the Lyre-Bird (*Menura victoriæ*), with which we were, and are, anxious to try conclusions. Several week-ends of strenuous hunting through damp gullies failed to disclose a nest. The time was not wasted, however, as on two or three occasions we were able to observe from very close quarters. The first occasion was at Belgrave, when we located a pair feeding a few yards from a tourist track. By carefully stepping from log to log we approached close enough to obtain a glimpse of the male as he paraded to and fro on a fallen tree-fern. For some time he treated us to imitations of various bird-calls, including those of the Laughing Jackass, Coachwhip-Bird, and many others. Eventually our presence became known, and the pair began to work slowly down the gully. A silent chase on hands and knees brought us more than once to within a few feet of them when they paused to feed.

A few weeks later we spent the whole of one damp, foggy morning watching a male bird we had often heard in the Fern-tree Gully Reserve. We had located a fresh dancing-mound the week before, and made our way carefully to this spot. Unfortunately for our proposed attempt at photography, the bird was already on the mound when we arrived. We were fully compensated, however, by a fine performance lasting about half an hour, and

at a distance of about six feet. We approached by crawling slowly forward while the bird was occupied with his performance, and lying motionless immediately he paused to listen for signs of possible danger. This he did frequently, and our progress became slow and tedious. Eventually we reached a position separated from the mound only by a thin screen of bracken. Then, although uncomfortably wet and cramped, we spent one of the most interesting half-hours of observation in our experience. Almost perfect imitations of many bird-calls followed each other in quick succession, that of the Jackass being most oft repeated and perhaps least perfect—slightly faulty always towards the finish. After this lengthy performance the bird walked slowly into the dense bracken at the far side of the mound, and to our delight turned again in our direction, passing unconcernedly within four feet of where we lay, unconcealed and almost afraid to breathe. He then disappeared again into the bracken. The movement of the fern marked his course until he presently reappeared on a fallen tree about 30 feet distant. Here he proceeded to preen himself and dry his plumage in the morning sunshine, now struggling through the thick fog. His toilet performed, he glided silently down the hill and out of sight. We had now little hope of his returning in a reasonable time, but remained on the off chance for an hour or two with the camera carefully concealed and focussed on the mound. At the end of that time we gave it up, but are still confident that a picture could, with patience, be obtained in this way.

In a gully at Ferny Creek, a little further afield, we located a pair of Pink-breasted Robins (*Erythrodryas rhodinogaster*), but, owing to being occupied at the nest of a Pilot-Bird (*Pycnoptilus floccosus*), we were unable to spend sufficient time to discover the nest, which was undoubtedly somewhere in the vicinity. In the same gully, on another occasion, we were photographing under difficulties at the nest of a Rufous Fantail (*Rhipidura rufifrons*), when the appearance of a male Leaden Flycatcher (*Myiagra plumbea*), a bird new to us, drove all thought of the Fantail out of our minds. A long search, however, failed to disclose any nest.

In the more open country towards Lower Fern-tree Gully we have given considerable attention to the Rufous and Yellow Whistlers, and have succeeded in securing photographs of both species. We have also, on one occasion, come across the rarer Olivaceous Whistler, but were not fortunate enough to find a nest.

However, we are often quite content to spend considerable time with some of the birds which are more common, and therefore give more opportunities for choosing suitable circumstances for photography. Probably the most frequent victim of our enthusiasm is the Yellow-breasted Robin (*Eopsaltria australis*), and our negatives of this bird number thirty or more. One of our chief aims, when time and circumstances allow, is to demonstrate the remarkable trustfulness exhibited by many of the subjects.

The picture reproduced was obtained without trouble. The nest contained newly-hatched young, and the parent bird took little notice when disturbed, as shown, or even placed by hand in a suitable position. Several other species, including the Jackass, Pilot-Bird, Flame-breasted Robin, Mistletoe-Bird, Rufous and Yellow Whistlers, Buff-rumped and Striated Tits, Blue Wren, White-shafted and Rufous Fantails, and Pardalotes, we have found quite as trustful after a little coaxing. Unfortunately, we have not been able to make a record of every case.

Description of Nest and Eggs of *Melithreptus atricapillus mallee*, Mathews.

(*Austral Avian Record*, vol. i., p. 192, 1913.)

BY F. E. HOWE, C.M.Z.S., R.A.O.U.

NEST made of grasses and lined with horsehair and fine grass, and decorated externally with a few spider cocoons. Dimensions in inches, $2\frac{3}{4}$ across by $1\frac{3}{4}$ depth, egg cavity $1\frac{3}{4} \times 1\frac{1}{2}$ in depth, and placed in the topmost branch of a mallee tree.

Eggs.—Two eggs taken from the above nest by Master Roy Ribbons at Carina, north-west Victoria, on 13th October, 1916, are now in my collection. In shape they are nearly oval, and the texture is fine and with a slight gloss. Colour beautiful salmon-pink, but deeper at the larger end, where they are boldly blotched and spotted with rich red-brown. In both specimens purplish-brown markings appear as if beneath the surface. Dimensions in inches:—(a) $.75 \times .56$, (b) $.74 \times .56$.

A set of three fresh eggs taken at Kiata, Victoria, by Mr. William Blutcher on 16th October, 1916, are much smaller than the type set. The colour, too, is much paler, and they are more like the eggs taken in southern Victoria. Dimensions in inches:—(a) $.66 \times .55$, (b) $.65 \times .53$, (c) $.68 \times .55$. This clutch is now in the collection of Mr. Erasmus F. Wilson, R.A.O.U.

Camera Craft Notes.

A Wood-Swallow Colony.—Of many pleasant rambles in quest of photographs in the Greensborough district, none has been more enjoyable than those spent at a little spot on the Plenty River known to us as the "Wood-Swallow Paddock." Intersected by dry watercourses, and in parts thickly grown with native and introduced shrubs, the paddock apparently possesses a great attraction for a colony of twenty or more pairs of White-browed Wood-Swallows (*Artamus superciliosus*), which nest there annually. The Sordid (*A. sordidus*) and the Masked (*A. personatus*) are also present, but not in any great numbers. Small prickly acacias appear to be most favoured as nesting sites, but the



Pair of White-browed Wood-Swallows (*Artamus superciliosus*) at nest.

PHOTO. BY R. T. LITTLEJOHNS, R.A.O.U.



Yellow-breasted Shrike-Robin (*Eopsaltria australis*) touched by observer.

PHOTO. BY S. A. LAWRENCE, R.A.O.U.



advantage of such an accessible position does not compensate for the extreme wariness of the bird. Several whole days have we spent without obtaining a picture. The nesting site is usually chosen close to a dead gum tree, and this appears to be used by the birds as an observation post. Occasionally an unthinking bird will alight on the look-out belonging to a neighbouring pair. This is the signal for an attack by the owners, who fiercely drive the offender some distance away. The photograph of the pair at the nest was taken in a furze hedge at Meredith. The camera in use in this case was a box one, which did not allow of focussing, everything having to be done by measurement. It was a remarkable chance, therefore, that the picture included both birds.—S. A. LAWRENCE, R. T. LITTLEJOHNS. 23/2/17.

Review.

[“The Birds of Britain: their Distribution and Habits.” By A. H. EVANS, M.A., F.Z.S., M.B.O.U. Cambridge: At the University Press. 1916.]

THE Syndics of the Cambridge University Press have been good enough to send a copy of the above little work for the acceptance of the R.A.O.U.; and interest is lent to the book because the author, having visited Australia, is known personally to many members of the Australasian Union.

Though primarily intended for the schools of the British Isles—geographically “a little spot,” yet the hub of a world-wide Empire—the book will also be useful for those who require a short handbook which includes results of recent observations, and is adapted to more modern nomenclature—*i.e.*, the new list of the B.O.U. The introduction, in a general way, deals briefly with the origin of birds, technical terms used for feathers, plumages, migration, geographical distribution, &c. The “classification” is also briefly explained; then follows in order each species, succinctly treated. As a sample, here is a little pen-picture about the Puffin (p. 241):—

“By name at least everyone knows the Puffin, Sea-Parrot, or Tammie Norie (*Fratercula arctica*), a black bird with white cheeks and under parts, orange feet, and orange and blue bill. The sheath of this huge compressed bill is shed in pieces in autumn. The bird breeds in suitable places all round our coasts, choosing to burrow in earthy slopes on islands or cliffs, and laying a coarse-grained, whitish egg with faint lilac markings, on the bare soil or a little dry grass. It is amusing to walk about a big colony and see the birds popping out of their holes one after the other and speeding like arrows to the sea, which soon becomes covered with them, while it is equally interesting to watch them passing to and fro with fish for their young later in the season. They bite severely if disturbed in their burrows. The Puffin ranges from

the Arctic seas in Europe to Portugal and to the Bay of Fundy in America. It returns very regularly to its breeding haunts in April, and is commonly met with in winter at sea."

The book is numerously illustrated by nearly one hundred excellent half-tone photo-blocks by various named photographers, depicting birds, nests, and eggs, those subjects which were taken in the open being, of course, the most natural.

Adverting to technical nomenclature, it will be observed that Mr. Evans has only employed trinomials where he deemed it absolutely necessary. Under the list of "Occasional Visitors" he shows the American Golden Plover (*Charadrius dominicus*) and the Eastern Golden Plover (*C. d. fulvus*). Can two birds, one of which is the so-called sub-species of the other, be found in the same region? If so, may it not prove that both birds are identical, or that they are specifically distinct?

Correspondence.

To the Editors of "The Emu."

DEAR SIRS,—A paragraph in *Nature* of 29th July, 1915, p. 599, in discussing the question of the alleged destruction of salmon by Cormorants in the Gulf of St. Lawrence, says:—"A precisely similar charge was levelled, some years ago, against the Cormorants of the Murray River, in Australia, where, to increase the salmon supply, a huge colony of Cormorants was wiped out. But the unexpected happened. The salmon disappeared with the birds. It was then found that the latter had been feeding on crabs and eels, which in turn fed upon salmon eggs and fry. With the extermination of their enemies they increased in such numbers that scarcely a salmon egg remained; the fry from such as did escape were eaten by the eels. Those responsible for the massacre of Cormorants are now repentant."

What ground is there for the above statement? Have salmon—or rather trout—been introduced into the Murray? (Perhaps this refers to a Murray River in Western Australia, not to the great Murray River—in fact, I believe it must.) Was there sufficient evidence to base the above statements on *re* crabs and eels, or was this merely surmise, and dependent on the failure of the introduced fish to establish themselves?

We all wish our birds protected, but every over-statement or misstatement does more harm to the cause than good—in fact, in such cases no statement at all is better. If the above account in *Nature* is correct, it is very interesting and important; if surmise in great part, let us know it as such.—Yours, &c.,

J. B. CLELAND.

93 Macquarie-street, Sydney, 4th April, 1917.

[Can any member give Dr. Cleland observations?—EDITORS.]



The late Dr. E. P. Ramsay, F.R.S.E., F.L.S., C.M.Z.S., &c.

To the Editors of "The Emu."

SIRS,—The "Note on the Finding of the Nest and Eggs of the Desert Chat (*Ashbyia lovensis*)," by Edgar R. Waite, F.L.S., Director of the South Australian Museum, which appeared on pp. 167 and 168 of the January issue of *The Emu*, was sent to me by Mr. Waite, and was forwarded by me to the editor as received.—Yours, &c.,

S. A. WHITE.

Wetunga, Adelaide, 12th March, 1917.

Eggs of *Garzetta nigripes*: a Correction.—In my article upon the eggs of *Garzetta nigripes* in last issue of *The Emu* (vol. xvi., p. 162), I wish to correct a possible mistake. My reference to the non-description of the bird's head plumes was meant to apply to the taking of the eggs rather than to the bird itself. Dr. Leach and Messrs. Hall, Lucas, and Le Souëf all have noted one or more head plumes during the breeding season, though collectors taking reputed clutches did not mention the plumes. In another part of the same article the average dimensions of eggs is given as 1.73 x 1.24 inches; this should read 1.69 x 1.23 inches.—H. L. WHITE. Belltrees, 4/2/17.

About Members.

MEMBERS of the R.A.O.U. will be pleased to learn that at the thirty-fourth stated meeting of the American Ornithologists' Union, held in Philadelphia, Pa., 13th to 16th November, our fellow-member, Mr. Robert Hall, C.M.B.O.U., C.M.Z.S., was elected a Corresponding Fellow of the American Ornithologists' Union. We congratulate Mr. Hall, who is a member of the R.A.O.U. Check-list Committee, on the honour conferred on him.

Obituary.

RAMSAY.—December 16, 1916, at his residence, Truro, Queensborough-road, Croydon Park, Edward Pearson Ramsay, LL.D., F.R.S.E., &c., third son of the late David Ramsay, M.D., aged 74 years.

ALL ornithologists—the older ones, at all events, to whom the late doctor was better known—will desire to pay tribute to the memory of Edward Pearson Ramsay.

On the 18th December his remains were laid to rest in the old-fashioned, vine-covered, stone vault with iron railings built by his father, the late David Ramsay, M.D., an early Australian settler, in the little private cemetery adjoining St. David's Presbyterian Church, Haberfield. The son inherited his love of Nature from his father, whose collections of birds, insects, &c., are preserved in the Perth Museum, Scotland. It was fitting, too, that Edward was buried near the old family Dobroyde estate, Ashfield, where he obtained so much first field knowledge, and

used to watch particular birds' nests containing various Cuckoo eggs to see what species the strange egg would hatch out.

Amongst the mourners were Mr. J. H. Maiden, I.S.O., Director of the Botanic Gardens, Sydney; Mr. Chas. Hedley, F.L.S., representing the Australian Museum, of which the deceased was erst-while Curator; there were also representatives present from the Technological Museum, the Royal Society of New South Wales, Australian Historical Society, and many notable persons.

The late Dr. E. P. Ramsay was born at Dobroyde House 74 years ago. He was educated at St. Mark's School, Macquarie Fields, and afterwards at Darling Point, under the Rev. G. S. Macarthur. Later he entered the Sydney University. For a time Dr. Ramsay was engaged in managing the Dobroyde Nursery, on the estate of his father, but he and his brothers finally entered upon a scheme of sugar-growing in Queensland, in which undertaking they were successful.

When Dr. Pittard was the Curator of the Australian Museum in Sydney, Dr. Ramsay travelled in New South Wales and Queensland, notably the Cardwell district, October, 1873, in search of specimens suitable for the Museum. In 1874 the curatorship of the Museum was vacant, and Dr. Ramsay was appointed to the position, a post he filled with much success until 1895, when he was compelled to retire through ill-health. His retirement was a great disappointment to his friends. As Baron von Mueller was great amongst botanists, it was thought that Ramsay would become a "Mueller" amongst ornithologists. However, Dr. Ramsay retained until his death the appointment of consulting ornithologist to the Museum, and during that time wrote many manuscripts pertaining to ornithology, which it is hoped the trustees of the institution may soon publish. There is no more popular nature study in Australia than its birds.

While natural history was the chief branch of his scientific research, Dr. Ramsay took a keen interest in the advancement of science generally. His early love for botany found expression in the Dobroyde new plant nursery, through which a large number of plants were first introduced to Australia. Bird and animal life also largely claimed his attention, and he worked in collaboration with the late Sir Richard Owen (England) on the extinct animals of Australia, among which were discovered the giant kangaroo and marsupial "lion." Dr. Ramsay was requested by John Gould to guard his Australian interests in his famous folio work, "Birds of Australia."

In the work of furthering the advancement of science in Australia, Dr. Ramsay was, together with Sir William Macleay, one of the founders of the Linnean Society. When a lad he was also the treasurer of the old Philosophical Society, which finally merged into the Royal Society of to-day. As a reward for his labours in this direction Dr. Ramsay was created a life member of the Royal Society. Dr. Ramsay was closely associated with scientific societies in Great Britain. He was a Fellow of the

Geological Society of England, a Fellow of the Royal Geographical Society, a corresponding member of the Zoological Society of England, and a member of the Royal Irish Academy.

In 1883 he was appointed Commissioner for New South Wales and Tasmania at the great International Fisheries Exhibition held in London, and while he was there the University of Edinburgh conferred upon him the degree of LL.D. At that time he was also created a life member of the Royal Society of Edinburgh, and the Italian Government made him a Knight of the Crown of Italy.

Dr. Ramsay published in 1888 a "Tabular List of the Birds of Australia" (an amended edition of his 1877 "List"), which was extremely useful, and was followed by the field workers of those days. Another important ornithological work was the "Catalogue of the Australian Birds in the Australian Museum, Sydney." Parts 1 and 2—Accipitres and Striges—were respectively issued 1874-8, and subsequent additions; part 3—Psittaci—was issued 1891; and part 4—Picariæ (Kingfishers)—in 1894.

Amongst the most remarkable Australian birds first described by Dr. Ramsay were *Atrichornis rufescens* (Rufous Scrub-Bird), *Heteromyias cinereifrons* (Ashy-fronted Robin), *Orthonyx spaldingi* (Black-headed Log-runner), *Colluricincla boweri* (Bower Shrike-Thrush), *Eopsaltria* (now *Pachycephala*) *inornata* (Grey Thick-head), *Ptilotis macleayana* (Yellow-streaked Honey-eater), *Ptilotis frenata* (Bridled Honey-eater), *Scenopæctes denti-rostris* (Tooth-billed Bower-Bird), and *Ailuredus maculosus* (Spotted Cat-Bird); and he described many new eggs.

In private life the deceased ornithologist was of a genial disposition. He was a great lover of music, and had a keen sense of humour. So has passed one of the most conspicuous of Australian-born workers among the *ornis* of his country.

Bird Observers' Club.

THE December meeting of the B.O.C. was held at the residence of Dr. Norman M'Arthur, Toorak. Mr. Barnard, of Queensland, was welcomed as a visitor, and read a short but valuable paper on "Bird Life as Affected by Drought." He stated that some birds were practically exterminated, whilst others usually worked towards the coast. Sometimes years elapsed before they returned to their locality again. He instanced such birds as the Orange-backed Wren-Warbler (*Malurus melanocephalus*) and the Beautiful Parrakeet (*Psephotus pulcherrimus*), which he had only seen once since 1882, when a big drought occurred. Mr. Tom. Tregellas read a paper describing in detail a collecting trip taken in October, 1916, to Linga, in the Mallee country. He illustrated his remarks with an excellent series of lantern slides, showing the plant and bird life of the district. A notable picture was the nest and egg of the Spotted Nightjar (*Eurostopodus guttatus*). Mr. Howat was provisionally elected a member of the Club.

At the January meeting Messrs. Lawrence and Littlejohns gave a lantern display which was a revelation to members. Remarkable pictures of the Mistletoe-Bird (*Dicaeum hirundinaceum*), Pilot-Bird (*Pycnoptilus floccosus*), and the *Acanthiza* were thrown on the screen.

Dr. Norman M'Arthur, who has been elected chairman of the Game Protection Society, stated that he had been instructed by his society to endeavour to bring about co-operation between the B.O.C., Gould's League, and the society, with respect to the furtherance of game protection.

Bird notes from places as far apart as Macquarie Island and Cooper's Creek were the outstanding feature of the February meeting, which was held at the residence of Mr. George Dyer, North Fitzroy. Dr. Macgillivray, of Broken Hill, President R.A.O.U., related his experiences amongst the birds on his last trip to Cooper's Creek. At Yanco Station he saw the tunnels of the Red-backed Kingfisher (*Halcyon pyrrhopygius*) in the mud walls of a bush hut. White-necked Herons (*Notophox pacifica*) and Shell Parrots (*Melopsittacus undulatus*) were nesting in great numbers. Numerous immature Pied and Black Honey-eaters were met with. Dragon-flies were plentiful, and were being freely taken by Bee-eaters (*Merops ornatus*). Dr. Macgillivray also described the country in the vicinity of the Claudie River, Queensland, where he established three camps in company with Mr. M'Lennan, Mr. J. A. Kershaw, and his son. He described the habits of many of the rarer birds, such as the Cockerell Honey-eater (*Trichodere cockerelli*), Striated Tree-runner (*Neositta striata*), Rifle-Bird (*Ptiloris paradisea*), and the new Parrot that he had discovered—viz., *Eclectus geoffreyi*. This bird nested in the very tall deciduous trees at the time when they were bare of leaves.

Mr. Henderson showed a very fine series of Penguin photos. taken by him when stationed at the wireless station at Macquarie Island. He exhibited an albino skin of the Royal Penguin. These birds lay two eggs, one of which is always infertile. One hundred and fifty thousand birds are killed annually for their oil, but he considered that there was no danger of their becoming exterminated.

Mr. F. E. Howe entertained the members in the city at the March meeting. He read an instructive and scientific paper on the genus *Hylacola*. He went into details concerning the nomenclature, description, distribution, and habits of *H. halmaturina*, *H. cauta*, and *H. pyrrhopygia*. A visitor to the meeting was Miss Manfield ("Guide Alice"), of Buffalo, who brought a number of slides showing the life of the Lyre-Bird and the country in which it lives. Miss Manfield promised to give a paper and lantern display on her travels and experiences over the Buffalo Mountains.

Publications Received.

D. LE SOUËF, C.M.Z.S., Hon. Librarian.

Proceedings of the Royal Society of Victoria, Vol. XXIX., part I (New Series).

The Victorian Naturalist, Vol. XXXIII., Nos. 5, 6, 7, 8.

The Victorian Education Gazette and Teacher's Aid, Vol. XVI., Nos. 9, 10, 11.

The Australian Naturalist, Vol. III., part 12.

The South Australian Ornithologist, Vol. II., part 8.

Tasmanian Field Naturalists' Club.

The Agricultural Gazette of New South Wales, Vol. XXVII., part 4.

The Proceedings of the Linnean Society of New South Wales, Vol. XLII., part 2.

The Ibis (10th series), Vol. IV., No. 4.

The *Ibis* Index from 1895-1912 has also come to hand; it is a bulky volume, and must have entailed much work in its preparation.

Avicultural Magazine (3rd series), Vol. VII., Nos. 10, 11, 12.

The Zoologist (4th series), Vol. XX., Nos. 901, 902, 903.

British Birds, Vol. X., No. 5.

Revue Francaise d'Ornithologie (8e), Nos. 88, 89, 90.

Bird Lore, Vol. XVIII., Nos. 4, 5.

The Condor, Vol. XVIII., No. 5.

University of California Publications in Zoology, Vol. XII., No. 17; Vol. XVI., No. 16; Vol. XVII., Nos. 1, 2, 3, 4, 5.

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. LXVIII., parts 1 and 2.

Birds of North and Middle America. By Robert Ridgway. Part 7.

The Auk, Vol. XXXIII., No. 4.

Transactions of the Royal Society of South Africa, Vol. V., part 5.

Ourselves.

THE generous donor who has insisted on being anonymous for 18 months has now given permission for his name to be revealed. He is no other than the chief benefactor of the Union, Mr. Henry L. White, of Belltrees, Scone, N.S.W. For services rendered, Mr. White was years ago elected a life member. Far from taking advantage of this position to reduce contributions, Mr. White suggested the scheme whereby *The Emu* has been improved by the addition of a coloured plate in each issue, and still pays half the total cost (which amounts to about £36 a year).

His gift of £1,000, invested in the War Loan, is now providing the Union with its own centrally-situated room, where the Council regularly meets, and members gather to discuss ornithological problems and welcome visiting ornithologists and members.

The special meeting of the R.A.O.U. on 18th April is likely to become as memorable in the history of the Union as that famous inaugural meeting at Adelaide in 1901. A unanimous vote of the members completed the legal business, and established our Union as a legal entity capable of suing for just debts and owning property. It afforded the necessary opportunity for Mr. White to complete the transfer of his gift. The room contains as one of its chief articles of furniture a beautiful specially-constructed book-

case, designed on Mr. White's suggestions to hold John Gould's great work, "The Birds of Australia." The volumes are in beautiful order, and are valued at £300.

Further obligations are laid on the Union by the gift of Mr. White's famous collection of Australian birds to the National Museum, Melbourne. This carries, as well as the privilege of inspection in common with the general public during official hours, the special privilege of a monthly meeting in the Bird-room of the National Museum, with Mr. White's collection available for inspection and illustration of papers, discussions, &c.

Working ornithologists again are indebted to Mr. White for the gift of his duplicate specimens to the Union. These are now at the Union's room, and are always available for examination and study.

For years, Mr. White, by sending and maintaining field ornithologists in distant parts of the Commonwealth, has been the sharer with Gregory M. Mathews and Captain White of the honour of chief workers in Australian ornithology. Mr. White has now consummated the work by placing his priceless collection in safe custody, where it is available for scientific workers, and by placing the members of the R.A.O.U. in the fortunate position of having a central meeting room, John Gould's "Birds of Australia" in the library, and a working collection of skins for young students desirous of learning Australian birds. Mr. White, in addition, has announced his intention of making the R.A.O.U. room second to none in the world. Other members of our Union are also assisting, but there is still room for contributions of furniture, eggs, skins, books, and other ornithological publications. The hon. secretary would be pleased to hear from those desirous of contributing at this historic juncture.

Notes.

OWING to financial stringency consequent on the war and the increase in cost of printing, paper, &c., the Council of the R.A.O.U. was reluctantly compelled to reduce the size of the current issue. It is hoped that the next issue will be of normal size.

THE well-known and old-established natural history monthly, *The Zoologist*, having been acquired by Messrs. Witherby and Co., will in future be incorporated with the illustrated monthly magazine, *British Birds*, published by the same firm at 326 High Holborn.

MESSRS. Witherby and Co. have been appointed European agents for the "Journal of the Natural History Society of Siam." The work is illustrated with plates and figures, and deals with all branches of the natural history of that country.

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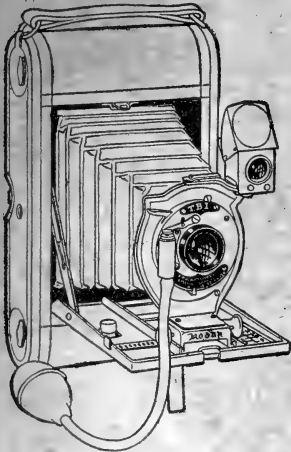
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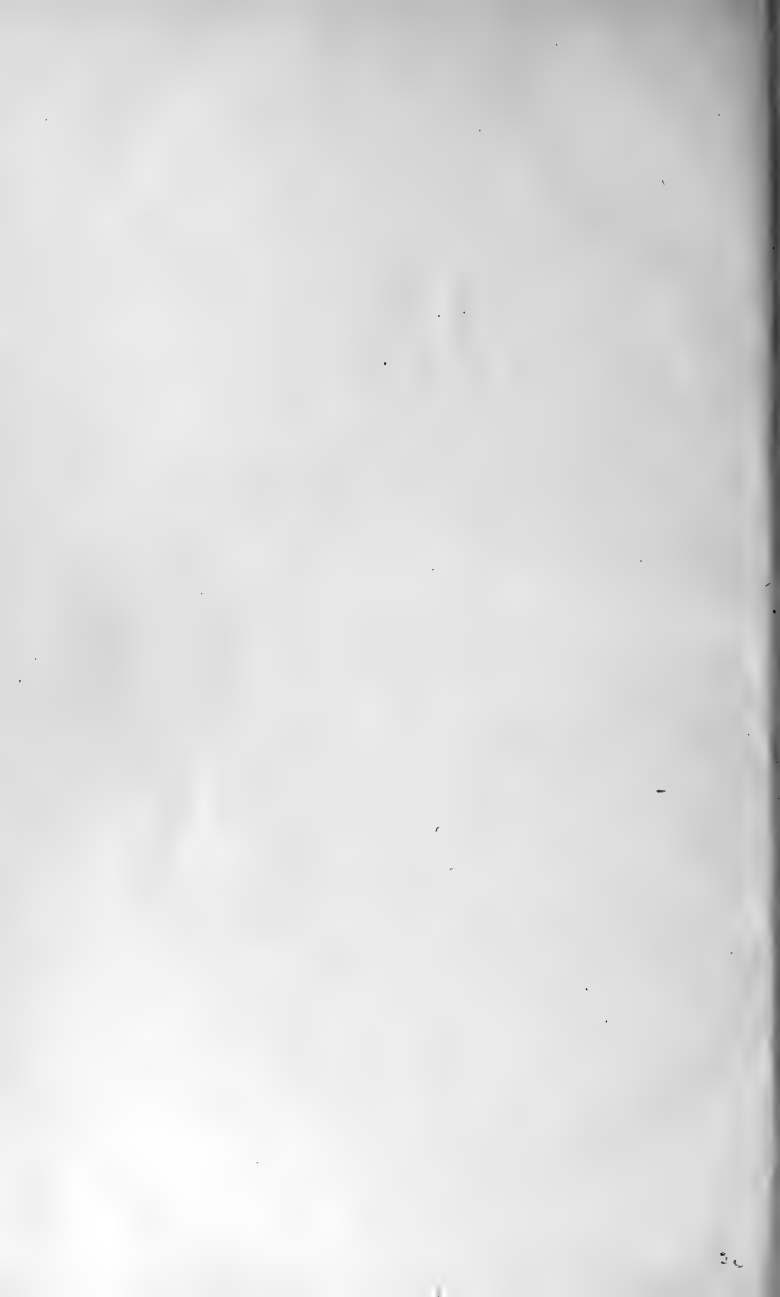
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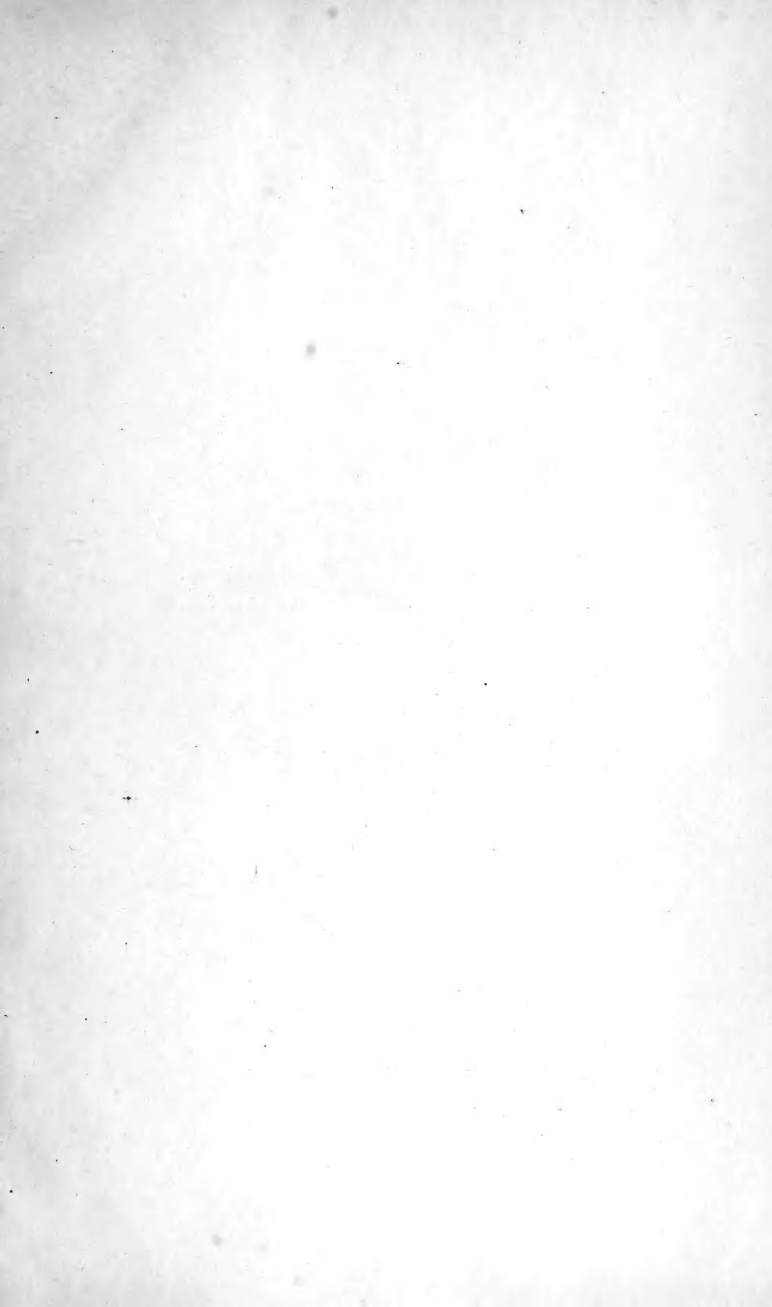
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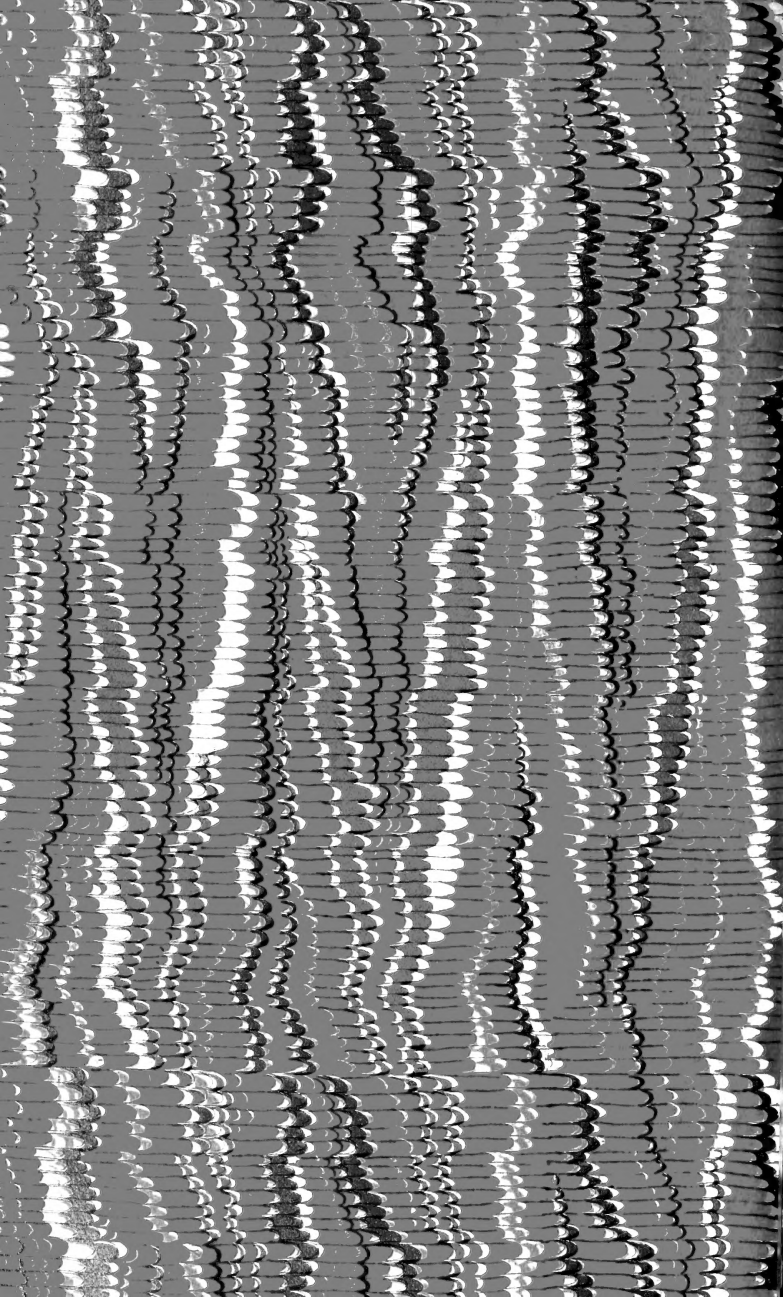
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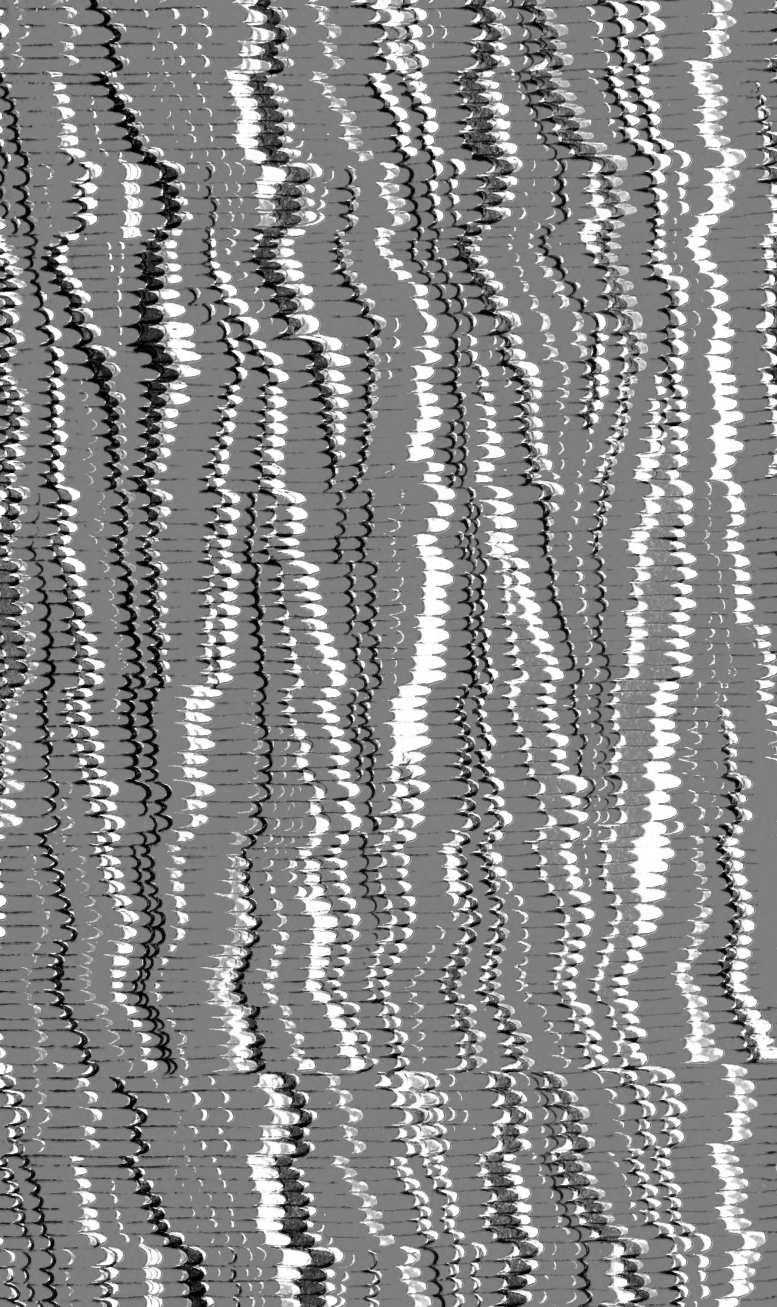
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