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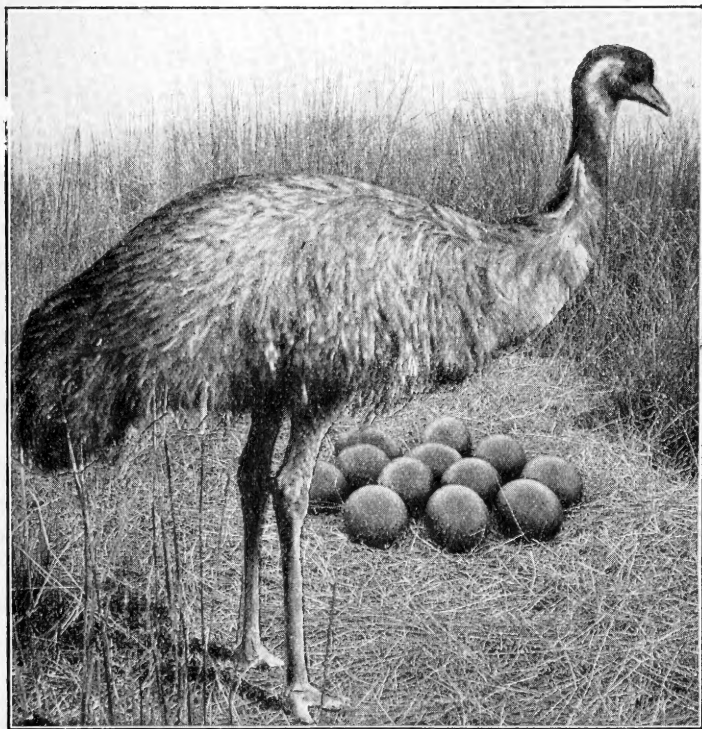
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The Emu

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

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



Editors { A. J. CAMPBELL, Col. Mem. B.O.U.
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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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ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

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J. G. Keulemans, del.
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RHIPIDURA PHASIANA.
(WHITE-FRONTED FANTAIL).

The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. X.]

1ST JULY, 1910.

[PART I.]

Note on *Rhipidura phasiana*, De Vis.

BY GREGORY M. MATHEWS, F.L.S., &c.

Rhipidura phasiana, De Vis, Proc. Roy. Soc. Queensland, i, p. 158 (1884); Rams., Add. to Tab. List Austr. Birds (1891); Math., Handl. B. Austr., p. 65, No. 477 (1908).

THE type of this bird was collected near the mouth of the Norman River by Mr. Kendall Broadbent. It belongs to the group of *R. albiscapa* and *R. preissi*, but differs in its pale ochreous-ashy colouration, the head being nearly of the same ash colour as the back. There is no black collar on the fore-neck, which is light ashy-grey, and the rest of the under surface is fawn-buff of about the same tint as in *R. albiscapa*. The principal difference in *R. phasiana* seems to be in the much greater extent of the white spotting on the wing coverts, which form two rows of white spots in the likeness of bands, the spots in *R. albiscapa* being rounded and terminal. In *R. phasiana* the primary coverts are also tipped with white.

The following description is taken from the typical specimen, which Mr. De Vis has kindly allowed to be brought to England by Mr. D. Le Souëf, C.M.Z.S.:—"General colour above ashy-brown, with an ochreous tinge; the wing coverts dusky-brown, with large white spots at the ends; primary coverts dusky-brown, fringed with white; quills dusky-brown, the innermost secondaries edged with white; upper tail coverts and central tail feathers dull ashy-brown, with dusky cross-bars under certain lights; remainder of tail feathers dusky-brown, with white shafts and a considerable amount of white towards the ends, which are also white, the outermost feather being white for nearly the whole length, with the base dark brown; crown of the head somewhat darker ashy than the back, with a slight evidence of a pale ochreous collar on the nape; lores conspicuous, with a faintly indicated white eyebrow; feathers below the eye and ear coverts dusky ash colour; cheeks and throat white, followed by a shade of ashy-grey on the fore-neck; remainder of under surface from the fore-neck downwards pale isabelline-buff."

This bird looks like an immature one. If so, what is it the

immature of? How many species have been discovered? Perhaps some of our brother ornithologists can tell us more.

Our artist has given us an excellent plate, but the wing coverts should be dusky-brown, not grey.

Mr. D. Le Souëf (*Emu*, iii., p. 54, 1903) has described the nest and eggs of this species.

Bird Life on the Kermadec Islands.

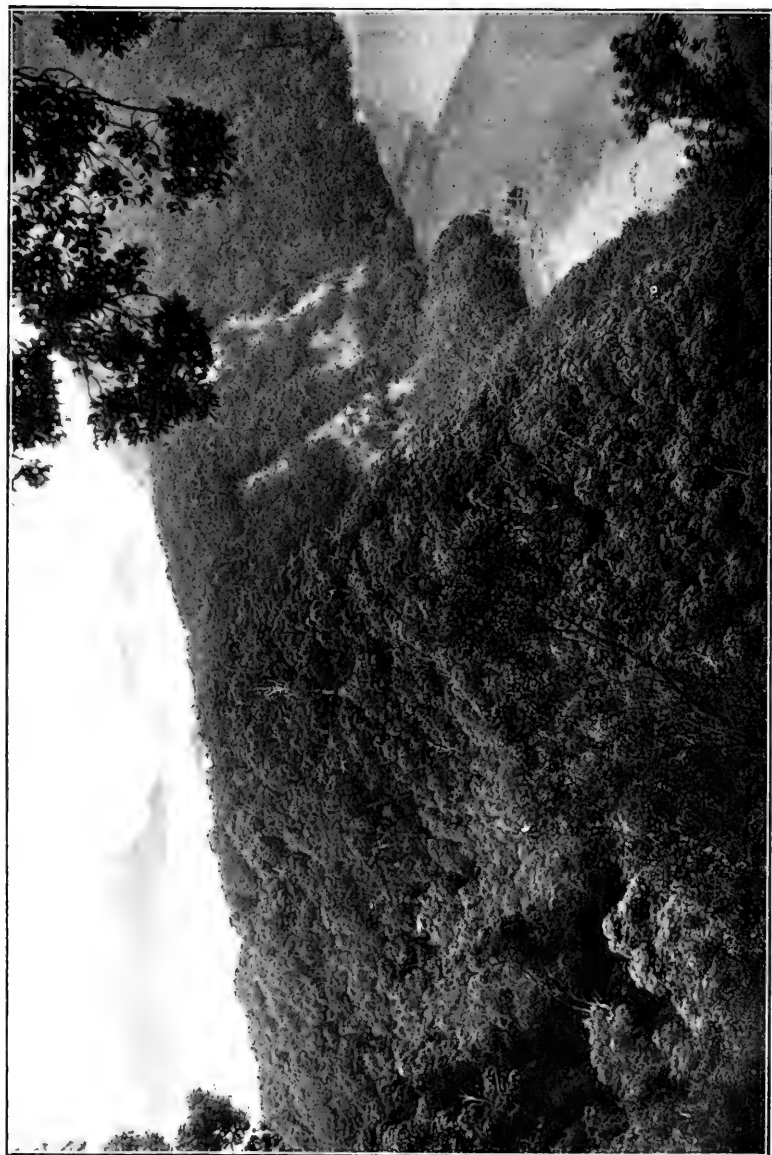
BY TOM IREDALE, NEW ZEALAND.

IN 1907 an expedition was organized in New Zealand for the purpose of making collections in every branch of natural history, and otherwise observing data of use to any of the sciences, on Raoul or Sunday Island, the chief island of the Kermadec Group.

This group, situated to the north-east of New Zealand, is politically a part of the Dominion, and biologically is included in the New Zealand region. Its geographical position invited investigation, but its inaccessibility had hitherto defied any who may have cast longing eyes upon it. Though discovered as long ago as 1788, it had remained practically unexplored, and nothing was known of the lower forms of life existing thereon.

In 1854 Sunday Island was surveyed by H.M.S. *Herald*, to which vessel was attached John Macgillivray, as naturalist. The botanical collection he made was almost immediately reported upon by Sir J. D. Hooker, and important deductions drawn from it. His collections of the fauna deposited in the British Museum were, however, never worked out, and whatever notes he handed in with them were overlooked, which is a matter for regret, as Macgillivray was a keen bird observer. In or about 1870 Dr. Graeffe, a naturalist in the employ of the Godeffroys, visited the island, but records of whatever collections he made, save a few land snails, do not appear to have been published.

In 1887 the group was annexed to New Zealand, and Mr. T. F. Cheeseman, of the Auckland Museum, accompanied the Government steamer. He made a botanical survey of Sunday Island, and also took notes concerning the birds. At the end of his paper, "On the Flora of the Kermadec Islands," published in the *Transactions of the New Zealand Institute* for 1887, he added a list of birds, with short notes. In the same periodical for 1890 he published a more exhaustive article, "On the Birds of the Kermadec Islands." This latter was written as a result of further information, with bird skins and eggs, received from the settlers on Sunday Island. About the same time he handed to Captain F. W. Hutton a collection of Petrels for study; the results were published in the *Proceedings of the*



Sunday Island : view from the crater rim, showing edge of lake inside, and the large double island (Meyer) in the sea outside.

FROM A PHOTO. BY TOM IREDALE, N.Z.

Zoological Society of London for 1891. That paper drew attention to the peculiarities existing among the Petrels that bred on the surface of the ground on Sunday Island. He endeavoured to differentiate three species, but later withdrew his views in favour of varieties only. As Buller recently still maintained the three species, I anticipated that the best work in bird observation would be done in settling this question.

Before proceeding further, a sketch of the extent of the group must be introduced, as it is due to the imperfect knowledge of the situation of the islets that much of the confusion regarding the last-mentioned birds has arisen. Sunday Island (previously known as Raoul Island) is the northernmost of the group, the largest and only habitable one. It is about 600 miles south of Tonga, 600 miles north-east of New Zealand, and 600 miles east of Norfolk Island. Sixty miles south of Sunday is Macauley Island, a grass-covered plateau, circular in shape and about a mile in diameter. Twenty-five miles to the south of Macauley are Curtis Islands—small, rocky, volcanic islets—whilst 50 miles yet further south is L'Esperance, a mere rock, the southernmost of the chain. Sunday Island is roughly triangular in shape, being the summit of a volcano of large size. The crater is about a mile and a quarter in diameter, and to the north-west and south-west run two high spurs. The whole of the island is densely bush-covered, the bush consisting of various trees, whilst tree-ferns and palms sometimes predominate. As a rule very little undergrowth was met with, though in some places the ferns grow so high as to make progress very difficult. Though of so small a size, travelling was so slow that camping-out was the order of the day. Off the north-east corner of Sunday Island lie a few islets known as the Herald Islets. Though insignificant in themselves, they claim especial attention from the ornithologist, as some birds which do not resort to the main island breed thereon. The largest, Meyer Island, is only about three-quarters of a mile distant from the north coast. Unfortunately, however, there was no place on that coast where our boat could be beached, and we had to come from the West Bay, a distance of 12 miles. Moreover, this was only practicable when a light east wind was blowing, and, consequently, our visits were very occasional and hurried.

In this paper I intend to treat only of the habits of the birds as observed during the year 1908. I landed on the 31st December, 1907, and stayed until the 11th of November, 1908. Thus the very best time for bird observing, as regards nesting habits was, unfortunately, not enjoyed. The bird-life consists mainly of sea-birds, which resort to the island to breed; many of these are well-known tropical species, whilst others of the Petrel order have not yet been discovered breeding elsewhere.

Land-birds are few in species, and only one (doubtful) species is claimed as endemic to the Kermadec Islands.

The Tui (*Prothemadera novæ-sealandiæ*) is very abundant, and, as it has practically no enemies, it must be increasing rapidly. It differs in no way from the mainland bird, but has lost its voice. To make up for this loss it endeavours to produce musical sounds all the year round. Its peculiar attempts to sing have been recorded by New Zealand writers, but they have always credited it with producing as well striking and melodious notes. Its clear bell-note is well known to all New Zealand observers. This note was only heard on two occasions, whilst, though I believe each bird honestly endeavoured to bring out some striking notes, none ever succeeded. At the commencement of the breeding season a pleasing little trill is developed to round off its efforts, but this attainment only lasts about a month. Another feature I have not previously seen noted was its night singing. All the year round on moonlight nights odd birds would be heard attempting to sing; and as one bird apparently fell asleep again another would carry on the tale. During the winter months I noted they disliked the wet weather. Whenever a shower broke they became silent, and as long as it continued the wood was hushed, save that now and then one broke the silence by venturing a plaintive appeal against the rain. As soon as it stopped, however, the bush was once more clamorous with their grotesque attempts at song. Their inquisitiveness was especially noticeable when travelling through the bush. Upon a stoppage being made a bird would appear and closely inspect the intruder; another would fly up, and, having satisfied itself, would retire, its place being taken by a new-comer. Sometimes as many as half a dozen would all silently criticise the stranger, coming within a few feet to obtain a good view. The breeding season was watched with interest, and, though probably nothing new was noted, the results of different observers are usually worth recording. The first bird was noted collecting twigs on the 9th of September, and a full clutch of eggs noted in this nest on the 27th. Some birds must have commenced much earlier, as a young bird was seen out of the nest on the 10th of October. The time of incubation was ascertained to be fourteen days, but the time of feathering was not obtained, owing to our departure from the island. In the only easily accessible nest the young were thirteen days old at that time.

The nest was placed near the top of a poutukava sapling or branch; as these were never of much thickness, and often very slight, it was not an easy matter to investigate the nests. Many of them were 30 feet high and at the end of leaning branches, so that less than half the nests seen were looked into. One feature of interest in their nest-building operations was the occurrence, in the early portion of the season, of empty nests.

A bird was noted building and when the nest was completed it never received eggs. This occurred so often that it became noticeable. As these nests were usually substantial, well built, and perfectly finished structures, it was surmised that the birds commenced early and completed operations before the hen was ready to lay. This supposition was supported by later on finding makeshift nests. One of these was such a shallow dish of twigs with a lining of moss that had it been found in New Zealand it would scarcely have been credited to a Tui. The other extreme was a nest built up almost a foot with stout twigs, at the top of which was placed a well-formed deep cup lined with dried grasses and goat hair.

The number of eggs was usually four, only one clutch of five being met with, though some complete clutches of three were noted. The colouration of the eggs varied, as did also the shape and size. The ground colour was usually white, and many examples were seen unspotted; some eggs were suffused with pinkish-brown, and the markings, of a red-brown, were usually spots congregated at the large end; the eggs in one clutch of three were, however, streaked with dark brown, and the ground colour in this clutch was a lightish brown.

The New Zealand Kingfisher (*Halcyon vagans*) was the only other land-bird occurring in numbers. Contrary to what I have noted about the Tui, this bird appears to have developed noisier habits. At any rate it was constantly heard, and when wet its shrill notes as it caught a worm or spider were especially frequent. From New Zealand literature I had understood it to be a silent bird, only uttering its unmusical notes during the breeding season. At this time it developed more notes, but at no time of the year could be said to be silent.

Another point of contrast afforded by this bird to the Tui was its extraordinary shyness. Though never interfered with, it was always unapproachable, whereas the Tui always invited itself to inspect every item of interest. Its nesting operations were not observed in detail, as its chief months were probably November and December. It had commenced its breeding song at the end of October, and young were seen flying at the end of January.

As there are no fresh-water fish, this bird has had to content its appetite with less tasty food. It now lives quite happily upon worms, spiders, flies, with now and then a rat. For a rare delicacy it will go to the sea-shore and catch small crabs or prawns.

On Meyer Island there still breeds in numbers a Parrakeet of the genus *Cyanorhamphus*. Whether it has ever bred on Sunday Island in recent years I cannot say, though the probability is to the contrary. A few birds are occasionally heard in the autumn on Sunday Island, but they do not appear

to stay. On Macauley Island a Parrakeet also occurs in fair numbers. The specific identity of these two birds is still a matter of uncertainty. Salvadori, working through the Parrots, came across the specimen collected by Magillivray, and upon it founded a species, *cyanurus*. This specimen is marked "Raoul Island," so apparently was collected on either that or Meyer Island. In 1906, in the "Supplement to the Birds of New Zealand," Sir Walter Buller referred the Meyer Island bird to Salvadori's species, but at the same time expressed the opinion that the Macauley Island bird could not be separated from *novæ-zealandiæ*. One of the chief features of *cyanurus* is its large size, and this is shared by the Macauley Island birds. Consequently more study of longer series is necessary before the matter can be said to be settled. I know nothing of their breeding habits, as I was never on Meyer Island during their breeding season. On Macauley Island two nests were found on 12th November, one with five, the other with two eggs.

The Long-tailed Cuckoo (*Urodynamis taitensis*) was met with in every month of the year. Apparently birds are driven to the island when migrating in spring and autumn and remain there. Being semi-nocturnal in habit, they are rarely observed unless first heard. It would seem that little is known of the seasonal changes of plumage this bird undergoes. Sir Walter Buller noted that the Kermadec-killed birds he had handled had reddish-coloured breasts, and was unable to account for this peculiarity. Later he obtained a bird from Stewart Island of similar colouration. I think that a series of birds killed at various dates and places would show the reddish colouration to be a phase of the young state.

A Harrier (*Circus gouldi* (?)) appeared at the end of March and made havoc with the young Wideawakes (Terns). Most of the old birds had left the island, and the young had to shift for themselves. Though unmolested, this bird was unapproachable, and its specific identity was not established. After the Wideawakes had gone this bird mostly seemed to live upon the young of the Petrel breeding on the surface of the ground on Meyer Island. As April advanced many of these Harriers were observed, sometimes as many as half a dozen being noted on the wing at once. As the young of the Meyer Island Petrel flew so did the Harriers decrease, and by the end of August they had disappeared. One was, however, noted at the end of October.

Upon the lakes in the crater could almost always be seen three or four Ducks. These were identified as *Anas superciliosa* (Grey or Black Duck). Though noted all the year, no young ones were seen. Sometimes they were seen on the lagoon in the West Bay, and upon being flushed immediately flew over the crater ridge.

This lagoon was favoured as a living-place by numbers of the

Spotless Crake (*Porzana plumbea*). These little birds were rarely seen, though constantly heard. A dead bird was picked up on the north coast, whilst a few lived in the crater. As they were also seen on Meyer Island, they were well distributed. During October the note of this bird was rarely heard, and on the 5th November a young bird, recently hatched, was caught. Perhaps the bird is silent during the sitting season.

The Pectoral Rail (*Rallus philippinensis*) has been recorded. I think the single bird seen must have been a straggler, as nothing was heard or seen like it during my stay.

Before leaving the land-birds I wish to note some other birds previously recorded from the group which I did not meet with. The White-eye (*Zosterops caeruleus*) was not noted, and certainly it is not a resident. It is said to appear some autumns after heavy weather from the south-west. We had no such weather. The Ground-Lark (*Anthus novæ-zealandiæ*) was reported as not uncommon on Macauley Island in 1887. I did not see any specimens, and I doubt if any are still resident there. It is interesting to record that three birds acclimatized in New Zealand have reached the island and firmly established themselves. These are the European Song-Thrush, Blackbird, and Starling. In these species unaccountable habits have developed, such as extreme shyness. Though never subjected to man's persecution, they are all unapproachable, and it was surmised that this fear was due to their constant bullying by the Kingfisher and Tui.

During the time I was on the island waders were rarely met with, and it is evident that Sunday Island is a long way from any line of regular migration. The birds noticed were usually solitary or in very small flocks. The largest number noted together on Sunday Island was seven, but a flock of thirteen was seen on Macauley Island. A remarkable (to me) feature of these chance waders was their extreme shyness. I had anticipated that, having undergone a trying flight, they would arrive exhausted and tame, and therefore easily procurable. Instead, I found that, owing to the exposed nature of the beach, I was rarely able to stalk them, and can only record those actually procured.

The Lesser Golden Plover (*Charadrius dominicus*) was noted during September and October, but the total number of birds seen only amounted to twelve. With them was another bird, unrecognized and unprocured. They haunted the sea-shore of Denham Bay, and, having arrived after a sou'-wester, did not seem to have any idea as to leaving. First noted the last week in September, they were still on the beach on 11th November. The bulk of the flock of thirteen seen on Macauley Island belonged to this species.

The Oriental Dottrel (*Ochthodromus veredus*) was obtained on

the West Bay shore towards the end of April; only a solitary bird was observed at that time. On Meyer Island the next day a few birds, apparently of the same species, were seen, and they were also noted on 20th May at the same place. They were too shy to allow approach to make identification certain.

A pair of Whimbrel (*Numenius variegatus*) were noted on the north coast the last week of September, and one was obtained. The following day three similar birds were seen on the west coast, but none was procured. A small, solitary Stint was walked up to and shot the last week of October. It proved to be *Heteropygia acuminata*. A few days later another solitary Sandpiper was observed and missed in the crater. It was a much larger bird than the last mentioned.

The Barred-rumped Godwit (*Limosa novæ-zealandiæ*), which occurs in New Zealand in countless numbers, does not pass close to this island, as it was not observed, though previously recorded on hearsay evidence only.

Of most interest to New Zealanders were the sea-birds, which breed upon the islands in large numbers. Four species of Terns, none of which otherwise occur in the New Zealand region, were regular visitors for breeding purposes.

The Sooty Tern (*Sterna fuliginosa*) is the most abundant, a large colony breeding on the level beach on the West Bay. A few bred on the rocks at the north-west point, and a small colony also visited Meyer Island. On 31st December, 1907, the majority were engaged in rearing young, though some were still sitting on eggs. Indeed, fresh eggs were collected from the plot farmed by the settlers. As the first eggs had been obtained on the 2nd November, this gives exactly two months during which fresh eggs were procurable. It would be interesting to correlate the various dates upon which this widely-spread species commences incubation in its diverse breeding localities. The beginning of February saw the earliest of the young birds on the wing, though eggs were still being sat upon by late comers. Of all birds I have ever observed or read about, these dislike wet weather the most. Owing to this failing, the young birds often perish in great numbers. At the first drop of rain the whole colony rise and fly away to sea, leaving either their eggs or young to the mercy of the weather.* If the rain persists, they stay away until it is finished, and in the meanwhile the young ones, unless well grown and strong, perish. I saw the effect of such weather early in February. Two wet days caused the death of many newly-hatched young and the desertion of all the eggs at that time being sat upon. The old birds commenced to leave the island the middle of March, and by the end of the following

* Mr. A. J. Campbell records a similar instance regarding Noddy Terns (*Anous stolidus*)—"Nests and Eggs of Australian Birds," p. 853.

month all the young had also gone. A couple of birds were heard on the 2nd of May; from the 8th to the 14th many birds were heard passing the island in the evening, and it was surmised that these might be birds bred on the southern islands of the group passing north. From the latter date until the 31st July we heard nothing whatever of these birds. Then an odd bird was heard calling at night; succeeding nights they were heard in increasing numbers. None were seen until the 20th of August, when a large flock was noted at dusk, away out over the bay. Every evening after this they were seen, and shortly afterwards settled at night on the beach, flying away just before sunrise and not returning until evening again. On the 18th September they were for the first time noted flying over the bay all day, and by the end of that month they circled above their proposed nesting sites all through the day. This continued throughout October, until on the last day they remained on the ground during the day. I expected they would lay in a day or two, but on the 2nd November rain set in, and every bird departed, and for two days whilst the rain persisted the bay was deserted. The third day a few birds returned, and then the bulk came back, but there never seemed to be the same numbers as before the wet weather. The first eggs were seen on the 9th November, and the next morning still only a very few. On the morning of the 11th a couple of hundred were noted, and in the afternoon several hundred were collected by the sailors for food. Two days later, on Curtis Island, eggs were very abundant. Though the White Tern (*Gygis alba*, Sparrm.) breeds on Sunday Island I was unable to note anything regarding its habits while engaged in incubation. The first birds to arrive in the spring came early in October, but no eggs had been found when we had to leave on the 11th November. Only a few pairs breed on the island, chiefly on the south coast. Few of the other two species of Noddies bred, and they principally resorted to Meyer Island.

White-capped Noddy (*Micranous leucocapillus*) did not breed on the main island at all, Meyer Island and one of the other islets being their only stations. On 29th February the Meyer Island colony was visited, and a few fully-feathered young were noted sitting in their huge nests in the short trees. No other notes relating to the breeding habits of this bird were obtained.

Grey Noddy (*Procelsterna cinerea*) bred very sparingly at each end of Denham Bay, but the nesting places were almost inaccessible. As far as was observed, they make no pretence at a nest, simply laying their eggs on a bare crevice of a rock. On 29th February many flying young were observed on Meyer Island, where a fair-sized colony bred. The birds were there observed in fair numbers on 3rd August, but no eggs were

noted. On 12th November at Macauley Island, and on the 13th at Curtis Island, hard-set eggs were seen.

In the "Supplement to the Birds of New Zealand" the Noddy Tern (*Anous stolidus*) is included, on the ground that Cheeseman reported it as breeding on the Kermadecs. This is an error, as reference to the quotation given immediately shows. This bird was not seen at Sunday Island, and it is pretty certain it does not breed there.

The Red-tailed Tropic-Bird from the Kermadecs has been previously recorded under the specific title of *rubricauda*, Bodd. Rothschild has separated a bird under the name *erubescens*, and this is the bird that bred on the Kermadec group. A striking characteristic is the bright pink colouration of the upper and lower parts, which in *rubricauda* are snowy-white. As the bird floated in the sunshine the pink gleam was very lovely, and to some degree its loveliness compensated for the harsh nature of its cries. The long red tail feathers seem to be the delight of its life; it passes most of its time in displaying these to the best advantage to its neighbour, who, in turn, endeavours to surpass it, each accompanying its evolutions with hoarse cries. The bird even moults these feathers one at a time, and is consequently never without one. If when sitting it is approached, and both tail feathers are pulled out, it will sulk until the feathers have grown. It is a most erratic breeder, but I was unable to observe the time of incubation. On 4th January eggs were fresh as well as hard-set, whilst one young one was already hatched. A young bird, fully feathered, was picked up on the beach the first week of April, and then in the last week fresh eggs were seen. I do not think the young would have been reared even if they were hatched out of these eggs. No birds were noted during June or July, but the beginning of August once more saw them back in their stations. The birds nested on grassy ledges on the sea-cliffs all round the coast. The down of the young varied from pale dove-grey to pure white.

The Masked Gannets (*Sula cyanops*) bred in numbers on one of the outlying islets, hence known to the settlers as Gannet Island. A couple of pairs had also bred on Meyer Island, but none were present on Sunday Island. A young bird was noted half-fledged on Meyer Island on 29th February, and the same bird flew when approached on 23rd April. On the 12th November birds were observed sitting on fresh eggs on Macauley Island, and the following day on Curtis Island. As far as was observed no nest was made, a slight hollow being selected to do duty, and the egg laid therein. In one case four eggs were seen in a nest, and two were noted more often than one.

The *Challenger* passed between Macauley and Sunday Islands going north, and records that in Kermadec waters were observed species of Albatrosses and Petrels, the Cape Pigeon being



Half-fledged young Masked Gannet (*Sula cyanops*), Meyer Island.



Half-fledged young *Phaethon rubescens*, Sunday Island.



Red-tailed Tropic-Bird (*Phaethon rubescens*) on egg in nesting-place, Sunday Island.



Nest of Sunday Island Petrel (*Estrelata neglecta*), Sunday Island.

especially noted as certainly identified. In 1887 Cheeseman also saw the same birds on the sea around Sunday Island, and surmised that the Albatross bred on the outlying islets. The latitude to a great extent precludes the possibility, and very rarely are Albatrosses seen in Sunday Island waters. Nothing was seen to support any such idea, and the only record I have is that of a Wandering Albatross (*Diomedea exulans*) which had been washed up previous to our arrival, but whose remains still persisted on the Denham Bay beach. The Cape Pigeon, with its characteristic colouration, was not noted near Sunday Island, neither did I see it on the outward or homeward trip.

The White-faced Storm-Petrel (*Pelagodroma marina*) has been recorded as breeding upon the group, but we did not find its nesting place. I met with two specimens washed up in October, and one, being perfectly fresh, was dissected, and proved to be a female, in which the eggs were of large size. It is therefore extremely probable that it does breed on some of the outlying islets.

Two species of *Puffinus* commonly bred, one on both Sunday and Meyer Islands, the other on Meyer Island alone. The former bird was the Wedge-tailed Petrel (*P. chlororhynchus*). It was recorded by Cheeseman as *carneipes*, Gould, at the same time as he noted *chlororhynchus* from one young specimen. From specimens sent to him by Cheeseman, Hutton, in 1891, showed that only *chlororhynchus* occurred. Hutton, however, recorded *tenuirostris*, Temm., from one skin received. This latter I believe to have been a bird washed up during the winter months. I did not see any bird which could have been that species, but still it could have been easily overlooked had it bred among the large colonies of *chlororhynchus* that existed. *P. chlororhynchus* arrives at the island about the middle of October, the earliest bird I observed being handled on the 18th. They frequent the north and east coasts in immense numbers, fewer colonies existing on the south coast, whilst very few birds bred in the West Bay, though on the north-west promontory they were very numerous. They were altogether absent from the crater. Hard-set eggs were noted on the 4th January, and the young were generally flying about the middle of May. About nightfall they come in from the sea, usually silently. After dark they fly overhead for a short time, calling to one another in a most mournful tone. This call suggests the idea of much misery, and is very weird. The bird's chief characteristic, as noted by myself, was its extreme quarrelsomeness. Its pugnacity was featured by extraordinary vindictiveness, and, moreover, it seemed ever ready for a fight. Its quarrels commenced with a question asked in a low tone; the answer came in the same one; then its voice was raised each time until it ended in a high shriek, and then the snarling and biting commenced. As a

matter of fact the noise when two or three quarrels were in progress was beyond the powers of description. Naturally this fighting disposition did not conduce to the examination of many nesting-holes. The birds' long, hooked bills were sufficient to draw blood even when the hand was heavily gloved, and their tenacity caused a nasty tear. Their burrows were long, often over 3 feet in length, and winding. The down of the young was dark grey. These downy young possessed the nature of the adult, and their note was very querulous. When half-grown they are left to shift for themselves, and consequently many perish.

Of a different nature was the little white-breasted Allied Petrel (*Puffinus assimilis*), which came in large numbers to Meyer Island alone to breed. It arrived about the beginning of May, an odd bird being heard passing overhead at nightfall the last week in April. The note of this bird has not the melancholy sound of the preceding; it is a short guttural cry, with a peculiar finish, which can to some degree be imitated by a human being by a deep indrawing of the breath. This peculiar sound was also present in the cry of the previous bird, but not so pronounced. It is a gentle bird, which does not seem to possess the nature of its ally. On 3rd August, as it did not breed on the main island, Meyer Island was visited, and a number of holes were examined. Fresh eggs were found, hard-set eggs predominated, and three downy young were noted. However, in some holes two birds with no egg were observed. The holes were short, being from 1 to 2 feet in length. The downy young has been carefully described by Sir Walter Buller. In A. J. Campbell's "Nests and Eggs of Australian Birds," p. 879, I note the following:—"Gould received two beautiful snow-white eggs of the Allied Petrel from Macgillivray. They were collected on Royal Island (wherever that island is situated) in July, 1854. [? Rossel Island, Louisiades, June, 1844.—E.A.P.]" The island referred to is Raoul, more commonly known in recent years as Sunday Island, and the date is correct. All Macgillivray's specimens were labelled "Raoul," whether collected on the main island or the outlying islets.

The Petrels of the genus *Āstrelata*, I find, are called the Dove-like Fulmars. This describes them very well. They have very gentle habits, and are meek in expression like a Dove. Two burrowing species of this genus bred on Sunday Island—*Ā. cervicalis*, Salv., and *Ā. nigripennis*, Rothsch. The former, technically known as the Black-capped Petrel, though sometimes called the Sunday Island Petrel, is, I believe, the handsomest bird of the genus. It has not yet been found breeding elsewhere, and it breeds only very sparingly on the island. It was estimated that less than 500 pairs were breeding, and that little increase is being made, owing to the ravages of wild cats. Scattered colonies exist



Æstrelata neglecta on Nest, Meyer Island.



Young in down, *Æstrelata neglecta*, Meyer Island

all over the island, but in no case are these of any extent, and none, as far as was known, exist on the outlying islets. The account given by Cheeseman of the breeding habits of this bird requires modification. That account was drawn up very shortly after the bird was discovered. As stated above, it is not solitary; the colonies are always placed on the ridges, and it would be a very exceptional bird that burrowed at the base of a tree-fern. It does not arrive until October, and leaves in May. A downy young one was examined on 29th March; it was of a beautiful dove-grey, with white on the breast. Fully-fledged young were noted as early as 3rd May.

The second burrowing *Ēstrelata* was formerly recorded as *Ē. cookii*, but, though a close ally, is perfectly distinct, and was separated by Rothschild under the name *nigripennis*. It breeds more numerously than the preceding species on Sunday Island, whilst colonies exist on the outlying islets, as well as Macauley and Curtis Islands. This is a most lovely and gentle little bird, never biting hard when handled. On 4th January a colony was examined, and fresh eggs were numerous, very few being hard-set, whilst in many holes birds, but no eggs, were found. On 29th February downy young were noted, and these were miniatures of those of *cervicalis*, though the adult plumage of these two species is very different.

Most interest was evinced in the species of *Ēstrelata* reported from the Kermadecs as breeding on the surface of the ground, and not burrowing, as is usual with members of that genus.

Cheeseman, in 1890, recorded three species—*mollis*, Gould, as breeding in the summer on Sunday Island; *sp. indet.*, as breeding in the winter on Meyer Island; and *neglecta*, Schlegel, as having been previously recorded.

In 1893 Hutton wrote on the Petrels of the Kermadecs, and then allowed three species. He showed that the bird Cheeseman recorded as *mollis*, Gould, on Buller's identification was *neglecta*, Schlegel; added *philippi*, Gray, and introduced a new species, *leucophrys*. Their habits he was not certain about, and, endeavouring to obtain fresh information, obtained such that in 1904 he reduced the three species to varieties. However, to his three varieties he accorded such distinct habits as to make doubtful the reduction. Consequently Buller, in 1906, in the "Supplement to the Birds of New Zealand," still maintained as valid three species, but with this difference: he retained *mollis*, *philippi*, and *neglecta*, including *leucophrys* as a synonym of the last-named. In the work quoted Buller strangely introduces under the three names habits at variance with his authorities, thus quoting under *philippi* Hutton's account of 1893, although in 1904 Hutton, from later information, had retracted that account.

It will be seen from the foregoing rough sketch that the

complexity of the situation appeared to afford much scope for investigation. It is too long a story to introduce in this place, so I will only deal with the habits of the birds as observed. The colouration of the birds varies immensely, and it is due to this variability that much of the confusion has arisen. Moreover, whilst Sunday Island is the resort during the summer months of many thousands of birds, only about half a dozen pairs breed on Meyer Island. During winter, however, Meyer Island is covered with birds, whilst none are found on Sunday Island. The darkest birds have the whole of the plumage of a dark black-grey—these are birds Hutton called *philippi*, Gray; the lightest have the head and all the under parts pure white—Hutton separated this as *leucophrys*. Between these two extremes every phase of plumage exists; the dark birds breed with the light ones as well as with dark birds. They bred on the high parts of the island as well as the low parts. Though tested in every manner that could be thought of, nothing that could be used as a separating test was found. Necessarily it devolved upon me to include all the birds under *neglecta*, as Hutton had previously done, but without any well-marked varieties. Hence all the following notes refer to birds of any style of colouration.

On Sunday Island, on 4th January, fresh eggs and hard-set eggs predominated, though some well-grown downy young were seen. The latest egg noticed was one just hatching on 9th February, at which time there were young ones showing wing and tail feathers. The earliest bird to be seen ready to fly was on the 29th March, whilst very few birds were seen in the middle of May. The first birds to arrive back at Sunday Island were observed on 30th July, whilst the first one settled on the ground was handled on 30th August. These immediately built nests, but no eggs were seen until the 28th October. The surface-breeding habit showed up this peculiarity, which may be general among the burrowing species.

At the end of September all the earlier birds had completed their nests, and left the island, to which they did not return until well in October, when they sorted up the nests, and soon after laid their eggs. From the 23rd to 25th September I made a tour round the island for the purpose of noting the colouration of the birds. A very large number of nests were built, and their size surprised me. The majority were decently put together, and some were really pretentious structures, whilst few were very scanty.

The nests were placed among fern, without any other shelter, some even in the open; mostly, however, they were situated under the aerial roots of the poutukava or under the shelter of fallen trees. A favourite site was at the base of a tree-fern, but any place was selected save in a hole. Some even selected flat

places on leaning trees, one being noted about 20 feet up a tree. Large nests were noted as follows:—Among ferns, well-formed cup, composed of dead leaves and long straws. Nest among fern, well-formed cup made of small dead twigs and dead leaves. Nest among ferns and cherry-pie, well-formed cup of dried grasses, twigs, and dead leaves, with green leaves and a piece of green cherry-pie twined round. Very large nest under shelter of fallen tree-fern was composed of dead leaves, moss, and nikau leaflets, whilst another nest close by was also very large, and made up entirely of dead slug-eaten leaves. A very large nest, situated entirely in the open, was composed of dead fern-stalks, twigs, and nikau leaflets. The manner of making these nests was studied, and the procedure adopted was found to a great extent to be identical. The site is selected apparently without reference to its nest-building suitability. The bird sits on its nest and picks up all the straws it fancies, and gravely throws them behind it, first on one side and then the other. Having selected all suitable, it moves forward, repeating the process, and straying as far as a yard from its nesting place. Whilst watching this performance one wonders if the bird will ever get a nest together, as after a couple of hours it seems no nearer. However, as previously shown, it makes an extensive nest. The only case in which no nest was made was when the location was under a fallen tree-fern, and no materials at all were handy. As many of the birds nest in situations from which they cannot readily rise, they climb trees in order to get a take-off. They climb by means of their bill and claws, with a constant flapping of the wings. This is the method most of the young have to adopt to take their first flight.

Whilst, as stated, these birds leave Sunday Island at the middle of May and do not return until the end of July, during that time Meyer Island is crowded with birds. These birds, in habits, size, and colouration, as also in their cries, cannot be separated from the Sunday Island birds. Having such a small extent of land, they are much more crowded, and, materials being unavailable, nests are less in size or absent. Furthermore, only scrubby trees existing, more nests are placed out in the open. The earliest date we were able to visit Meyer Island was 29th February, and we then found that birds were already there, but only about 20 per cent. had laid eggs. On 20th May young birds in all stages were observed, though still a few eggs were noted. On 3rd August almost all the young had flown.

In conclusion, I wish to tender my sincere thanks to all the other members of the expedition, Messrs. W. R. B. Oliver, S. R. Oliver, W. L. Wallace, and C. E. Warden, who, whatever their occupation might be, never missed an opportunity of informing me of any item of interest, or obtaining specimens. I particularly wish here to publicly recognize the aid of the settlers on the

island, Messrs. Roy and King Bell, who whole-heartedly put themselves at our service, and it is due to their knowledge of the avifauna of their native isle that so much fresh information has been received. Had it not been for their help I should not have been able to write so confidently as I have done regarding the bird-life of the Kermadecs.

The Region of the Barrier Range.

AN OOLOGIST'S HOLIDAY.

BY (DR.) W. MACGILLIVRAY, BROKEN HILL, N.S.W.

PART I.

DURING a nine years' residence at Broken Hill, which may be regarded as the capital of south-western New South Wales, I have made frequent excursions into the surrounding country, in order to further my knowledge of its avifauna. I propose in the following notes to give an account of an excursion made during September and October, 1909, in company of Mr. W. M'Lennan and a party of more or less interested friends on health or pleasure bent. Dr. Dobbyn (who has been my companion on many previous trips), Mr. J. M'Lennan, Mark Welsh (in charge of horses and culinary arrangements), my own son (aged 10 years), and his boy cousin, Barney Mackay.

I had planned to work several of the creeks which run out of the Barrier Range and through the open country between Broken Hill and a permanent camping place on Wyalla Lake, about 100 miles to the north, in scrub country, and then to return by a different route, so as to include other creeks, the whole trip to occupy one month. Our means of locomotion was a large express waggon, built for the back country roads, and drawn by four horses. Winter rains had been fairly good for a district in which desert conditions usually prevail, and a fairly good growth of herbage along all the creeks rendered it unnecessary for us to carry chaff or make a home-stead every day to procure feed for the horses. On two previous occasions our range of movement had been greatly restricted on this account.

Long before breakfast time on the 11th September we were crossing Stephens Creek, about 9 miles from the city, at a point just above the reservoir, from which the city water supply is drawn. This creek—and the description applies to most creeks in the district—is shallow and sandy, bordered with eucalypts and some other trees and shrubs. Our way led us through a patch of porcupine-grass, which was devoid of bird life; further on Tricoloured and Orange-fronted Chats (*Ephthianura tricolor* and *E. aurifrons*) and a few White-

winged Wrens (*Malurus*) were disturbed from the blue-bush by the wayside. Our road was now skirting the Barrier Range, through blue- and salt-bush country, with occasional turpentine-bushes, whose buds had not yet opened. Mulga begins at the foot of the hills and spreads over them. Occasional pairs of Black-faced Wood-Swallows (*Artamus melanops*) were seen. This species, unlike the Masked (*A. personatus*) or White-browed (*A. superciliosus*), is neither migratory nor gregarious, and is very local in its habits, being seen always either in pairs, or, after the nesting season, in families. It thus tends to form local variations, a condition not possible with the other species mentioned, which migrate regularly from north to south to a greater or less extent, according to food supply, and never permanently inhabit any one locality. We soon arrived at Nulcowinna Station, situate on the creek of the same name, about 30 miles from Broken Hill, stopping only long enough to inquire our way for the next day's journey.

Proceeding up the creek about 3 miles, we camped and had lunch. Water-pools still remained along the sandy bed; the gums looked fresh and green, but the feed did not tempt us to keep our horses here too long. Yellow-throated Miners (*Myzantha flavigula*), Spiny-cheeked Honey-eaters (*Acanthochnera ruficularis*), and "Greenies" (*Ptilotis penicillata*) were busy among the gums, and enlivened the creekside with their varied notes. The Red-tipped Pardalote (*Pardalotus ornatus*) was heard on every side, and the coo-cooing of the Little Dove (*Geopelia cuneata*) came from further down the creek. This species and the Ground-Dove (*G. tranquillia*) are about equally distributed along all the creeks throughout western New South Wales. Both are ground feeders (on seeds of eucalypts, grasses, and herbage), and never feed away from the protecting shelter of the creek timber. Their seasonal movements are guided mainly by the water supply. Barney Mackay soon found a Yellow-throated Miner's (*Myzantha flavigula*) nest, built in a small gum, about 15 feet from the ground; three eggs were in the nest. From an adjoining acacia a Crested Pigeon (*Ocyphaps lophotes*) flew, revealing her frail platform, on which two eggs could plainly be seen from beneath. Two Bare-eyed Cockatoos (*Cacatua gymnopis*) flew screeching from a gum-tree, a hollow in which, about 30 feet from the ground, with tell-tale down adhering to the entrance, contained one egg, resting at the bottom on decayed woody material. Only a few yards further on four Galah's (*Cacatua roseicapilla*) eggs, in a leaf-lined hollow, about 35 feet from the ground, were chipping. A Boobook Owl (*Ninox boobook*) hurriedly left another gum. The hollow being deep down in the tree, it was passed by. A pair of Galahs had a hollow neatly lined and ready for eggs. Two old nests of *Ocyphaps lophotes* were noted in an acacia and

a gum-tree respectively. The broods were reared earlier in the season. These birds sometimes nest in the late winter months. I have taken fledged young in July, and again autumn rain often results in eggs being laid in April and May. A Bronzewing (*Phaps chalcoptera*) rose from the ground, where it had been feeding, and went clattering through the trees. The two next hollows examined contained well-feathered young of the Mallee Parrakeet (*Barnardius barnardi*). These Parrakeets are early spring breeders, and throughout our trip most of the nesting hollows examined contained young. In a hollow of another tree, at a height of 15 feet, were found three fresh eggs of the Galah, resting on a leafy bed. Next two half-grown Mallee Parrakeets and a rotten egg in a hollow, at a height of 30 feet. A female of the same species sitting on two incubating eggs had to be removed before they were revealed; this hollow was only 6 feet from the ground. A little further on a Galah was sitting on four hard-set eggs in a hollow at a height of 20 feet from the ground. M'Lennan climbed to a Short-billed Crow's (*Corvus bennetti*) nest at a height of 40 feet up in one of the gums, and took five fresh eggs. This is an average clutch, although six and even seven eggs are sometimes laid. The birds lay early—namely, in August—so that nearly all of the nests examined by our party contained young birds or heavily incubated eggs. Not many Crows nest along the creek, as they mostly prefer the mulga on the hills, the leopard trees (*Flindersia maculosa*), or larger neelia (*Acacia rigens*) in the flat scrub. A tree from which a good outlook can be obtained is generally selected. They are wary birds, flying from the nest before one can closely approach it. The call is very distinct from that of the Raven (*Corone australis*), being a harsher and shorter "Gahr."

A few yards more tramping along the sandy bed brought us to the nest of a Little Eagle (*Nisaetus morphnoides*), situate in a gum-tree. The nest had been partly blown out of position by a storm, and built up again to a height of 2 feet. The leaf-lined cavity contained a pair of fresh eggs. From this point onwards for about 2 miles the effects of a terrific storm of wind and hail which had crossed the creek about three weeks previously were manifest. Many trees were torn to pieces, only trunk and main limbs remaining, and nearly all had lost a number of their branches; many large limbs were found fully 100 yards from where they had been broken off. The bark on the western sides of the trunks and limbs bore evidence of the size and velocity of the hailstones, being bruised, pitted, and scarred to a remarkable extent. We could not help noticing the scarcity of birds along this portion of the creek. No doubt these wind-storms do much good to the trees by pruning off the dead and decaying branches and cleaning the limbs of hanging

strips of bark, which shelter destructive insects. But they are responsible for the destruction of large numbers of nests, eggs, and young of many birds, especially of species like the Honey-eaters, which build more or less pensile nests.

Another Short-billed Crow's nest, high up, as usual, contained four hard-set eggs, which were not taken. Two hollows in separate trees each contained three Galah's eggs. A pair of Cockatoo-Parrakeets (*Calopsittacus novæ-hollandiæ*), passed us, coming from the north, the first evidence of that migratory movement from north to south which takes place every year in the spring to a greater or lesser extent. The birds drop off to breed wherever there is promise of a plentiful supply of seed for the rearing of their young. Occasionally, in the northern parts of this district, after good autumn or late summer rains, nesting takes place in April or May. In a tall tree in the next bend of the creek, well known to us from previous visits, was found the nest of a pair of Black-breasted Buzzards (*Gypoictinia melanosterna*), occupied for the third year in succession. The nest, a large, flat structure of sticks lined with green gum-leaves, was placed on a horizontal fork near the top of the tree, and M'Lennan, who is a skilful and careful climber, had to brace the limb to a more horizontal one with the climbing rope, and secure himself to the end of it, before venturing out to the nest. There was only one egg, which was left until next day in hopes of an addition. The female, soaring above us, did not seem so fine a bird as the one in possession during our other visits to this nest. We concluded that the old female had been killed, probably poisoned, and that the male had found a new mate. A hollow in the same tree, occupied on both our previous visits by a pair of Bare-eyed Cockatoos (*Cacatua gymnopsis*), this year was found to contain a clutch (four) of the eggs of this species. A steep and sheltered sandy bank opposite to the Buzzards' tree, usually a favourite nesting place of the Black-and-White Swallow (*Cheramæca leucosternum*) and Red-backed Kingfisher (*Halcyon pyrrhopygius*), was now untenanted by either species. A soft, sandy bank, such as this, is usually preferred for a nesting site by the Black-and-White Swallow. A bank may be occupied by several pairs, not because it is the habit of these Swallows to nest in company, but that the site is a favourable one; just as many nest singly in small washaways, or at long intervals along the same gully or washaway. I have seen the nests of these birds in small water ruts with a bank not more than a foot in height. Five pure white eggs form a clutch.

As the grass and herbage is not very good along this creek, we did not find the Bare-eyed Cockatoos, Galahs, and other species nesting so freely as usual, so that lack of interest, together with a feeling of weariness in limbs long unused

to such exercise, compelled us to return to camp by a rapid march across country, delayed only by a search for aboriginal stone relics on a sand-bank which has evidently been a favourite camping-place of old time. After tea we were soon abed and asleep. The morning broke fine and clear; breakfast was soon over, and a start made to investigate the creek back towards the station. A pair of Little Eagles (*Nisactus morphnoides*) had a nest ready for occupation in a tree near our camp. A Mallee Parrakeet's hollow contained two young birds in down. Young birds were seen in a Raven's nest. A "Greenie's" pendulous nest, just completed among the leaves of a gum, was seen, not far from a Yellow-throated Miner's (*Myzantha flavigula*) nest containing three eggs. Another Little Eagle was flushed, and flapped slowly away from a nest high up, as usual, to which she had evidently been putting the finishing touches. Two magnificent Black Falcons (*Falco ssp. niger*) were disturbed from their roosting-place in a eucalypt, and glided away through the trees. On the wing these birds appear to be the largest of our Falcons. More Miners' nests, and a Grallina (*Grallina picata*) sitting on its mud nest, led us on to a Goshawk's (*Astur fasciatus*) small platform-like structure, to which the bird returned when M'Lennan was half-way up to it. She soon quitted when she caught sight of the intruder. The nest was almost finished. A pair of Allied Kites (*Milvus affinis*) were soaring over the tree-tops, their dark bodies and swallow tails silhouetted against the clear sky, and their keen eyes watching every movement of the humans below. A Whistling Eagle (*Haliastur sphenurus*) was busy renewing an old home; these nests are, as a rule, securely built on a substantial limb at a good height from the ground, and are re-lined with green leaves year after year. In a tree near by a Little Eagle had nearly finished a nest. Unlike the Whistling Eagle, this species has little chance of re-occupying an old nest, as the site usually chosen—a slender limb at the top of a tree—does not tend to its survival from year to year in a region where winds are high and frequent. A Galah's nesting hollow, containing three hard-set eggs, was our turning point. M'Lennan, cutting across a salt-bush flat, on the opposite side to the rest of party, found, in a blue-bush, a nest of the White-winged Wren (*Malurus leucop-terus*) built almost wholly of sheep's wool and containing four eggs. In other bushes were two more nests, nearly completed. One was composed of sheep's wool, the other of dry grass and wool, lined with woolly seeding plants and rabbit fur. All the nests were placed at the tops of bushes in fairly conspicuous positions. M'Lennan also found a Crested Pigeon's (*Ocyphaps lophotes*) nest with two eggs in an outlying acacia.

After a flying visit to the Buzzard's nest, and an early lunch,

we made a start on the road again. The trap having to make a detour, crossing and recrossing the creek, in order to pick up the Gardiner's Creek track, M'Lennan and I cut across to it by a more direct route through the salt-bush, to look up the White-winged Wrens. Nearly every crab-hole, with its surrounding blue-bushes, was in possession of a family of these little birds. The tiny grey females, as they fly and skip along the ground from bush to bush, look almost like mice, and are in marked contrast to the fussy little male, resplendent in coat of dark blue and silver, as he shows himself occasionally on the top of a bush with a great pretence of guarding the line of retreat. Only the woolly outlines of several nests were found by us, and we soon joined the main party. Our objective now was a well on Gardiner's Creek, 20 miles in a W.N.W. direction. The country was at first hilly, thinly timbered with mulga (*Acacia aneura*) and turpentine-bush and patches of blue-bush. The herbage was good, and wild flowers were plentiful. The rumbling of our trap frequently disturbed Orange-fronted Chats (*Ephthiamura aurifrons*) and Tricoloured Chats (*E. tricolor*) from the bushes. They flew along the road in front of us from bush to bush, and then circled out and let us pass on to put up others in the same way. A Spotted Harrier (*Circus assimilis*) was beating the ground parallel with, but not too near, our track, on the look-out for prey; its widely-stretched grey wings, with their black tips, made it easily recognizable.

The strident note of the Brown Song-Lark (*Cinclorhamphus cruralis*) was heard ever and anon, and the male bird was seen, as he descended and perched on the top of a bush, with uplifted tail, to utter a warning "Wez-weet" to his wary mate. There are many flowering shrubs on these hills, which furnish a generous diet to the smaller insectivorous birds, notably *Eremophila alternifolia* and *E. duttoni*. When about 5 miles from our destination the trap met with an accident, and the breakage took some time to fix up. After proceeding carefully for a few hundred yards on a rough road the trap gave way again, and we had to leave it. Packing the horses with bedding and food, we tramped in single file to the well, which we found just after dark. A fire was soon lit and the billy on the boil. Daylight revealed the fact that about two tons of dead rabbits had not long before been cleaned out of the receiving tank from which we drew our water. Before breakfast next morning the two boys and myself took the billy down the creek to look for a soak in the sand, and were lucky enough to find a small pool of good water about half a mile from our camp. The feed on the creek flats around the camp was very luxuriant, but, despite this and the fact that they were hobbled, three of our horses had strayed away. After breakfast one of our number saddled the remaining horse and went in search of the others. The rest of

the party, excepting myself and the two boys, returned to the trap, where a forge was improvised in a washaway, and the turntable heated and straightened, tomahawks serving the purpose both of anvil and hammers. Going down the creek, Bare-eyed Cockatoos and Galahs flew from every tree. The Rufous Song-Lark (*Cinclorhamphus rufescens*) was heard on every side. The wonderful growth on these flats of annual salt-bush, marsh-mallow, yellow everlasting, and milk-thistle, especially where sheltered by the tobacco-bush scrub, affords these Larks good cover for nesting and an abundant supply of insect food. Many Babblers' (*Pomatorhinus superciliosus*) nests were seen among the trees and in the tobacco-bush, and Barney soon found one containing eggs. Like most of its family, this Babbler lays five eggs for a clutch, and often breeds very early in the season, even in June, although August is the regular laying month. Yellow-throated Miners (*Myzantha flavigula*), "Greenies" (*Ptilotis penicillata*), and Singing Honey-eaters (*Ptilotis sonora*) are here in numbers, the flowering tobacco-bush affording an unlimited supply of honey and insect food.

We found a nest of *Barnardius barnardi* in a hollow in a eucalypt. Whistling Eagles were seen preparing their nests, and several pairs of Little Eagles and Allied Kites were also noticed among the trees or flying overhead. The liquid notes of the Spiny-cheeked Honey-eater (*Acanthochæra ruficularis*) came from all parts of the scrub. We attempted to penetrate the bushes, but soon gave up, as the scrub was too dense and unproductive. We skirted the creek for half a mile on the east side, finding two good waterholes, and then got through to the west side on a cattle pad. Barney had a good climb after a Black-backed Magpie's (*Gymnorhina tibicen*) nest, and was rewarded with a nicely marked clutch of four eggs. This is the usual clutch for *G. tibicen* in this district.

We skirted the scrub for some distance, and then made our way back to camp, where the rest of the party soon joined us. After lunch we started up the creek. A Whistling Eagle was lining her nest in a tree at the back of the camp, and we watched her taking the leaves from the tops of the trees and carrying them in her claws to the nest. A Boobook Owl (*Ninox boobook*) was flushed from an empty hollow, and then a Bare-eyed Cockatoo (*Cacatua gymnopsis*) emerged from another, and flew screaming away. A Hawk flew from a nest at the top of a gum-tree, and was soon followed by another from a smaller nest in a lower fork. They proved to be a fine pair of Grey Falcons (*Falco hypoleucus*). M'Lennan was soon climbing to the higher nest, from which the female, somewhat larger than the male, had flown. The nest was placed in the upright fork of a thin limb, 60 feet from the ground; it was about 18 inches in diameter, loosely built of sticks and lined with wool, and con-

tained three eggs. The birds sailed uneasily round the tree, but made no attempt to molest the climber. After a further tramp over a dry stretch of creek, we came to a clear pool, and noted fox and Emu tracks on the damp sand. In an old, rugged tree near by a Kestrel (*Cerchneis cenchroides*) had her clutch of five eggs, a Cockatoo coming from a second hollow. Two more Bare-eyed Cockatoos' nests were found, each containing eggs. A Boobook Owl vacated a hollow, in which two eggs were seen. The "feed" along the creek had now almost reached the vanishing point, and there was a corresponding scarcity of bird life. It was useless to proceed further, so we turned back, cutting off a large bend in the creek. On the way we heard a horse-bell jingling, and, two of us going in search, the wanderers were brought back and short-hobbled on the green feed again. Next morning Barney was out before breakfast, among the small gums near the camp, and soon reported the finding of two nests of the Mallee Parrakeet, one with a complete clutch of five eggs on the point of hatching, and the other with two eggs only. One of those curious sand lizards (*Gymnodactylus milusii*) paid our breakfast table a visit, and was allowed to walk about in its peculiar, stilty way. Two of us went out with the horses to bring in the trap, while the others walked over the flats down the creek to where we commenced on the previous day. A Kestrel flew from a hollow in a large gum. Higher up in the same tree a Whistling Eagle was re-lining an old nest, under which a Yellow-rumped Tit (*Acanthiza chrysorrhoa*) had her home. A 'possum was seen sleeping the day away in still another limb. In the next tree a Little Eagle was building and a Grallina was sitting on eggs; a Boobook Owl flew from one of the tree's hollow limbs, and in another hollow a Cockatoo had her clutch of three eggs. In a small eucalypt near at hand was a compactly-built nest of the White-browed Babbler, with an incomplete clutch of three eggs. A Little Nightjar (*Egotheles novæ-hollandiæ*) flitted away from her leaf-lined hollow, in which she had not yet laid. These interesting little birds are common throughout this country, and their "Churr-churring" note is frequently heard at night; they nest during September and October, laying four, or, very rarely, five eggs. Usually the eggs are pure white, but sometimes possess indistinct spots or markings, which in some form a zone at the larger end. A small colony of the Purple-backed Wren (*Malurus assimilis*) was disturbed searching for smaller insect forms among the undergrowth along the creek bank. In a hollow tree nearly opposite the camp a Bare-eyed Cockatoo's nest contained four eggs. The usual clutch is three. In another tree a Kestrel had just completed laying her clutch of five eggs, which I find to be the normal clutch, though six eggs are sometimes laid. Kestrels usually choose a large, open hollow, and

lay their eggs on the bare earthy material natural to such places.

We returned to camp, had an early lunch, and made a start, crossing the creek on the main Euriowie road; for about five miles this led us through hilly country, bearing evidences of the tin and copper prospector. All these hills, really the foot-hills of the Barrier Range, were just now gay with golden yellow "billy buttons" and everlastings of several kinds, yellow and white, and every watercourse was lined with great bunches of blue-bells. We watered the horses at a rapidly-drying waterhole a quarter of a mile off the road; its position was sufficiently indicated by hovering and screeching flocks of Bare-eyed Cockatoos and Galahs. The birds were squabbling to find room at the water's edge. Grain-eating birds cannot go long in a dry land like this without water. A mile further on we crossed a creek and pulled up to examine a Whistling Eagle's nest, newly lined and ready for eggs. A Red-tipped Pardalote (*Pardalotus ornatus*) had a nestful of young in a small hole in a tree, and near by five young Mallee Parrakeets were approaching the time when they would be able to leave the warm shelter of the hollow to find the use of their wings. A few miles further along the road we crossed the Caloola Creek. At the crossing a Raven's (*Corone australis*) nest was examined; it contained four newly-hatched young and one chipping egg. Five eggs is a normal clutch for this species, and, as incubation commences when the first egg is laid, the young are of different sizes. When hatched they are blind; skin yellowish, mostly bare, but with dirty-grey down on humeral, femoral, and dorsal feather-tracts; the eyes open on the fifth or sixth day, and are pale grey, which colour gets darker as the bird grows, but does not turn white until the birds are 1½ months old. The skin of the nestling gradually darkens to a greenish-yellow, and there is then a gradual change to blackish-brown. This change takes place first on the feather-tracts. The gape is bright pink, and bill of a leaden hue at first, darkening with age. The young are fed on caterpillars, young grasshoppers, and other insects. During one drought season, when dead sheep were plentiful, the young Ravens apparently were fed upon dipterous larvæ, and the stench which assailed our nostrils when the crops were opened did not tempt us to pursue our investigations further in that direction.

It was part of my plan to follow this creek up from this point. The road along the bank, however, was not one on which to trust our damaged trap, so we drove on to Euriowie township, picked up the White Cliffs coach road, which ran in our direction, and followed it to within 3 miles of Sturt's Meadows Station, where we camped for the night. Before tea M'Lennan and I followed the creek back until darkness forced us to return.

However, we found a Kestrel, Boobook Owl, and Galah nesting in hollows in the old gum. Five fresh eggs of the Mallee Parrakeet were found in another hollow—the only fresh full clutch of this species found during the trip. Two nests (each with two eggs) of the Bare-eyed Cockatoo were located in separate trees, and as it grew dark we disturbed a Kestrel and another Cockatoo from the same tree, but did not trouble to climb.

Next morning, 15th September, M'Lennan and I started before the trap to follow the creek to the station. The flats all along it were in splendid condition. Annual salt-bush, milk-thistles, spinach, and wild oats were luxuriant, but out from the creek, where the grass should grow, there was little of anything permanent. A few hot northerlies will soon put an end to the succulent herbage. This is a result of winter rains; earlier autumn rains would have brought on a more permanent herbage. The birds seemed to know that it was to be a short season, and were all nesting in a hurry, the grain-eaters to hatch out when the seeds ripened, the insect-eaters when they could be sure of a plentiful supply of food for their nestlings. The proportion of full clutches and clutches of more than what may be regarded as the normal number was greater this year than when conditions were not so favourable. The loud and pleasing sound of the Rufous Song-Lark was heard all along the creek; they were only mating, and the male bird sang when making his short flight from the ground with rapidly vibrating wings, either to curve downwards again on to the top of a bush or to perch high up on a gum and there continue his song. We often flushed these birds from thick undergrowth, where they were feeding mostly on insects. The other species (*cruralis*) is a bird of the open country, never being found along the creek flats or in scrub.

We found nests of two species of Cockatoo and of the Many-coloured Parrakeet (*Psephotus multicolor*), containing fully fledged young. These Parrakeets frequent the creeksides, and also the box flats in the scrub country throughout the district; they are usually seen in pairs, or families after the breeding season; they never flock like the Red-rumped Grass-Parrakeet (*P. hamatonotus*), which is not found nearer than Menindie, on the Darling, apparently its northern limit in this direction. Nearing the station we found that the trees had been cut out, and the growing saplings do not encourage bird-life. A Spotted Harrier flew from them, however, and a nest, lined and ready for eggs, was located in a small gum. Rejoining the trap, we drove up to the station, which was uninhabited, the overseer being away attending the shearing at another station belonging to the same owners. Some 20 years or more ago this station carried 40,000 sheep, now 10,000 hardly find a living on its bare

plains ; the rabbits and drought on an overstocked run brought about this result, and this applies to every part of the district.

After replenishing our water-bag with rain water, we took the wrong track, going off at an angle to the right through hilly country, which became stony and gravelly and more open as we got away from the creek. The wild-flowers won our admiration. Many peas grew alongside the track; yellow, violet, and brownish-yellow flowers were gathered. Some areas were golden and sweet-scented with the yellow everlasting; other parts looked as though covered with a mantle of snow, so thickly did a brilliantly white everlasting bloom. Where a watercourse ran to the creek was a flat on which the old man salt-bush grew. We noted many Tricoloured and Orange-fronted Chats and Purple-backed Wrens (*Malurus assimilis*). On the ironstone gravel a pair of Dottrels (*Peltolyas australis*) used all their wiles to lead us away from three chicks in hiding among the stones and scant herbage. Fourteen miles from the station we came to an old coach change, consisting of two fine dams and an old shed. The horses were watered and the billy was boiling when the coach came rattling along. After lunch M'Lennan and I went off to inspect a black oak (*Casuarina*) creek which runs parallel with the road and half a mile from it. A Babbler's (*P. superciliosus*) nest with one young bird was our first find. Then came a Bell-Bird's (*Oreoica cristata*) nest with three chipping eggs, and many old nests of Babblers and of a Wood-Swallow (*Artamus melanops*) were noted. Tricoloured Chats and Singing and Spiny-cheeked Honey-eaters were numerous; for the vegetation was good, and there was an abundance of water in gravelly-bedded holes all along the creek. In a small gum a hollow contained a family of "Blue-Bonnets" (*Psephotus xanthorrhous*) clamouring for food. Several Spotted Harriers were searching the adjoining plain, and a pair of Grey Falcons had taken possession of an old Wedge-tailed Eagle's nest in a leopard tree (*Flindersia maculosa*), but had not yet laid. The day was windy, as are so many days here, and numbers of Masked and Black-faced Wood-Swallows and Tricoloured Chats were feeding on the insects sheltering on the lee side of every bush and shrub. In a stunted gum a Galah (*Cacatua roseicapilla*) had five eggs in an advanced stage of incubation. Four eggs I regard as a full clutch, though many nests only contain three. We tramped back to camp through the salt-bush, noting many old camp fire-places of the blacks by the way, with grinding stones and flint chippings scattered about. We flushed a Brown Song-Lark (*Cinchorhamphus cruralis*) from her nest in a depression scraped out beside a salt-bush. The nest was composed of rootlets of fine grasses, the egg cavity measuring 3 inches in diameter by 2 inches in depth. There were three eggs. In the old shed at the coach stage a Whiteface

(*Xerophila leucopsis*) was feeding a nestful of young. We started back to Sturt's Meadows, disturbing many Dottrels on the gravelly country, both adults and young in all stages. We called at the station and made use of the telephone to communicate with Broken Hill and Langawirra Station, then drove down to the creek to camp. A pair of Grey Falcons (*Falco hypoleucus*) had a nest in the first tree we came to below the house; in a hollow of the same tree were two eggs of the Bare-eyed Cockatoo. The Falcon's nest was on a thin limb at the very top of the tree. Four more Cockatoos' nests, containing eggs, were located in trees within a stone's throw of our camp, and a clutch (three) of Galah's was taken from an adjacent tree.

Early on the morning of 16th September M'Lennan climbed to the Falcon's nest; the birds sailed anxiously round, but made no attempt to defend their home. The nest was a large one, lined with wool, and contained four slightly incubated eggs. It was 80 feet from the ground. No sound was uttered by the birds. With M'Lennan I started down the creek afoot, the trap going on to camp at Stone Hut, a boundary rider's hut 16 miles further on. Two Cockatoos' nests and eggs were noted, and the burrow of the Black-and-White Swallow was dug out. A bird was found sheltering in it, the day being cold, windy, and cloudy. One very often finds three or four birds in a burrow on such a day. Nests of the Crow (*Corvus bennetti*) and Kestrel were also observed. A watercourse here runs into the creek, and had been dammed. Around this the herbage was very rank, trefoil growing 2 feet in height, with other plants of equal proportions. The wild poppies were the finest we had met with anywhere. On some of the bunches I counted more than 30 blooms, individual blooms being 2 inches in diameter; these and the yellow everlastings, growing up through the other herbage, made the whole flat like a garden, which was brightened by numbers of Tricoloured Chats and enlivened by the song of Rufous Larks. Upon the left bank of the creek a little group of acacia was searched for nests of the White-browed Babbler; many old ones were found before a bird flew from one which contained eight eggs, three fresh eggs having been laid in a nest already occupied by a full clutch of five old, dried ones. I followed a branch creek, leaving M'Lennan to pursue the main channel, and located many nests of Cockatoos. M'Lennan climbed to a Raven's nest containing young, and found a White-browed Babbler's nest, with two young ones, in an "old man" salt-bush. On a rocky face forming one bank of the creek a colony of Fairy Martins (*Petrochelidon ariel*) were busily engaged in constructing their retort-shaped nests, most of which were unfinished. An old Black-and-White Swallow's nesting-hole, where the bank had broken away to the nesting cavity, was in possession of a pair of Whitefaces. In another burrow two

Black-and-White Swallows were sheltering from the wind. A Kingfisher had just finished its tunnel and nesting chamber. The tunnel is rarely more than a foot in length, and slopes slightly upwards; the nesting chamber is commodious, and the eggs, usually five, are placed on the soft earth of the floor. Eggs are usually laid from the middle of September until the end of October, rarely earlier, but later if spring rains ensure a sufficiency of food for the young. These birds feed on all kinds of insects, lizards, and small snakes; these are more plentiful during a good season, but never scarce. Many Ravens' nests were passed by; most contained young.

We tramped wearily along the creek, where the timber had all been cut out, and came to a good waterhole, where we lunched. The timber now improved. A Cockatoo's nest (three eggs) was found, then another 25 feet up (four eggs). Two feet from this hollow, in the same tree, three young Mallee Parrakeets were snugly ensconced. A Boobook Owl flushed from an empty hollow of the same tree, on the top of which a Whistling Eagle was renewing an old nest. One Cockatoo's egg was found in a spout, and a Tree-Swallow (*Petrochelidon nigricans*) in another spout had three eggs. Jim M'Lennan here met us, having ridden back from camp with two horses. We scorned the proffered assistance, and tramped on, to find a Cockatoo's nest in the next tree and to flush a Goshawk (*Astur fasciatus*) from a nest which she was just completing. Soon after we met the other members of the party, who reported having found nests of the Grallina, Cockatoo, Miner, Magpie, and Kestrel. M'Lennan and I had some tea, rode on in the trap for about 2 miles, then took to the creek again, accompanied by Dr. Dobbyn. Cockatoos were here in large flocks; Rufous Song-Larks and Chats were also plentiful. A Whistling Eagle's nest contained two rather small eggs. We came to a part of the creek which had been visited by the hail and wind storm whose effects were so marked on Yalcowinna Creek. Here, though the bed of the creek and the bank on the lee side were strewn with branches and limbs, and many trees only stood as bare trunks, the marks of the hail were not so deep on the bark. A tragedy of the storm was revealed to us; a large limb had fallen across another, and firmly wedged between them were all the tail feathers of a Kestrel. Many Cockatoos' nests were noted after we had passed the path of the storm, and we soon arrived at Stone Hut. The occupant was away at the shearing. We found the team unyoked. A nest of the Little Falcon (*Falco lunulatus*) was shown us in a tall tree directly below the hut. It was on the topmost branch. After a short rest M'Lennan and I followed the creek until darkness turned us back to camp.

Next morning M'Lennan climbed to the Falcon's nest, only to find that it was just ready for eggs. Breakfast over, we made

a quick march to where we left off the night before. Kingfishers were seen and heard, and the beginnings of many burrows found whenever the banks were favourable. A Whistling Eagle was resting on her nest (ready for eggs), and a foot away, in a hollow, a Cockatoo was incubating. Several other Cockatoos' nests were located in stunted gums out from the creek; none was more than 10 or 12 feet from the ground, and in some the eggs were hatching. We came to an old masonry dam, beside which were the remains of a well and a horse-whim all overgrown with tobacco-bush (*Nicotiana glauca*) and an acacia. Down the well were numbers of old Fairy Martins' nests. A Raven had her nest of nearly fully fledged young in a tall gum at the dam, and a Little Eagle was disturbed from a newly finished nest. A few yards further on three Cockatoos flew from separate hollows in the one tree, at the foot of which, in a small bush, a Black-and-White Fantail (*Rhipidura tricolor*) was sitting peacefully on three eggs. Along this part of the creek were many more Cockatoos' nests, containing eggs in various stages of incubation; Mallee Parrakeets' with young birds and unfinished Kingfishers' burrows were also noted. Kestrels had just commenced laying. I went out to a patch of dead saplings on the plain, amongst which were many Masked Wood-Swallows and Tricoloured Chats, with an occasional family of Purple-backed Wrens. These Wrens usually frequent scrub or undergrowth, and are never found in open salt-bush country such as the White-winged species favours. A large Wedge-tailed Eagle's (*Uroaëtes audax*) nest, 12 feet up in a stunted gum, showed signs of earlier occupation. A long tramp across a bare plain, on which were seen occasional evidences of old aboriginal camp-fires, and I struck the creek to search the sand for M'Lennan's tracks. Not finding them, I turned back, and soon met him. We went very little further, as the creek was without water, and birds in this country do not wander far from water. We took a short cut back across flats covered with annual salt-bush and stunted wild oats. The crab-holes were still moist, and we admired a very fine purple pea growing around them in the moist soil. A similar pea, but with harder leafage, grows on the dry, stony hills. The little white everlasting was also here in large patches, and there were other daisy-like flowers about the crab-holes. After lunch and a short rest, we all went across the horse paddock to a broad gully in which marsh-mallow, trefoil, and spinach was growing very rankly. Tricoloured Chats, Rufous Song-Larks, and Purple-backed Wrens were abundant, the latter in the old man salt-bush, with which the gully was freely dotted. A solitary White-eyed Duck (*Nyroca australis*) on a dam flew off on our approach, and two Wedgebills (*Sphenostoma cristatum*) were dislodged from a bushy acacia. These birds usually frequent small bushy trees in the gullies or watercourses,

or clumps which grow off the main creeks, along which they are never found. In their habits, situations they frequent, and mode of flying they are readily distinguished from the Oreoica, the only other crested bird of about the same size in this district. In flying, the Wedgebill, like the Babbler, makes a few wing-strokes and then sails along on extended pinions, the flight not being sustained for any distance. They do not feed on the ground like the Oreoica, nor are they ever found in the mulga scrub. The song is loud, pleasing, and continued; it is often given forth while the bird is perched on the top of a low bush.

After an early breakfast, on 18th September, we struck camp, and, crossing the creek, cut across the flats in a north-easterly direction for Fowler's Gap. Several pairs of Black-breasted Plovers (*Zonifer tricolor*) were passed, and one pair of Dottrels (*Peltolyas australis*), on ironstone gravel, as usual. One old man kangaroo (*Macropus rufus*) was seen. The season for this marsupial has wisely been closed for two years, for they were getting very scarce. It seems a pity that the dainty little yellow-footed rock wallaby, one of the most ornamental of our native animals, is not protected for all time, as it has been so wantonly shot by "sports" that one has to go far back into the hills to find it. When about to cross the creek, some 3 miles above Fowler's Gap Hotel, a male Little Falcon flew round, leading us to imagine a nest at hand. The horses were unharnessed and watered, and the Falcon's nest was at length found, on the topmost bough of the tallest tree on the creek. After a risky climb, three eggs were taken from the nest, which was exactly 90 feet from the ground. The two birds hovered round the tree, the male uttering his shrill cry and making occasional swoops towards the climber. The nest was loosely constructed of sticks and lined with fine, soft bark. After lunch we struck the main road, just ahead of a camel "train" going in our direction. Another "train," coming in with wool, was met soon afterwards. At Sandy Creek Bore we stopped to water the horses at the well, just in time to avoid delay, as two large mobs of Queensland horses were approaching on their way to a southern sale-yard. We now entered upon sandy country, more scrubby in character, but the scrub was very open; it consisted of turpentine-bush, blue- and salt-bush. White-winged Wrens and Tricoloured Chats were plentiful, and a few Orange-fronted Chats, the "Salt-bush Canary" of bushmen, were seen. The sand proved to be heavy pulling, and all but the boys walked through the scrubby country on either side of the road. Many White-winged Wrens and Red-capped Robins (*Petraca goodenovii*) were disturbed. Dr. Dobbyn found a nest (three eggs) of the Tricoloured Chat, built into the top of a blue-bush. The nest was built of fine rootlets and

twigs, and lined with soft, woolly grasses, the egg cavity measuring $1\frac{3}{4}$ inches in diameter by $1\frac{1}{2}$ inches in depth. Another nest contained three young. Kingfishers were seen several times. Crows (mostly the Short-billed species) had their nests in the *Casuarinæ*.

We made our camp near a large, open swamp, on which were a few Ducks. The country we had walked through has been a deep, loose sandy soil, drifted into hillocks and ridges in places, and supporting a perennial vegetation of salt-bush, blue-bush, and turpentine. The herbage was very good, and comprised a number of flowering annuals; the deep sandy soil seems to suit them. Scorpions and ground-dwelling spiders were numerous, and lizard tracks were everywhere on the soft sand. There were many Tricoloured and Orange-fronted Chats and Brown Song-Larks. The Orange-fronted Chat keeps more to the open salt-bush country than does the Tricoloured, which is often met with along the watercourses, where the herbage is taller and grows more closely, and amongst the rank growth and scrub on the creek flats. This year the Tricoloured Chat was everywhere more numerous than its congener. The White-fronted Chat usually winters here when the other two species have gone north, but goes south before the spring months.

In the evening M'Lennan and I walked across the end of the open swamp, through some prickly bushes, over a sand-ridge on the other side, to another swamp. This was surrounded by box, in which were many Miners, Grallinas, White-plumed Honey-eaters, Magpies, and other birds. Crossing a larger sand-ridge, evidently, from the stone remains, an old camping-place of the aborigines, we came to a deep, box-encircled swamp, on which Ducks were numerous. On the return journey we flushed a Brown Song-Lark from the spinach, to find a nest with three young. On reaching camp a nest and two eggs of the Orange-fronted Chat (*E. aurifrons*) were reported in a blue-bush near by.

We were about early next morning. M'Lennan, going through the sandy country back from the camp, found a White-winged Wren's nest built in a blue-bush, and composed of fine grasses and wool; it contained four eggs, at an advanced stage of incubation. A nest of the Tricoloured Chat with three eggs, and one of *E. aurifrons* with three young birds, were found. The feathers were just sprouting on the nestlings of *E. aurifrons*—colour brown; eyes not open; gape orange, with two black spots on either side of the tongue, like the young of *E. tricolor*.

We made an early start for Bancannia, where we received our mail at the hotel and posted some letters on the coach. Our way from here led us across the lake, dry at the present time, through some stunted box scrub, in which were many

"Budgerigars" (*Melopsittacus undulatus*) prospecting for hollows in which to nest. We skirted a sand-hill for a few miles, and came to Wyalla Lake, a large sheet of water surrounded by box trees, with many dead and living trees in the water and a fair growth of "lignum" where the watercourses ran into it. There were a few Ducks and Swans on the water, but no shore birds. Hundreds of Native-Hens (*Microtribonyx*) ran among the lignum. M'Lennan and I walked round the lake, to get an idea of the place for a permanent camp and collecting ground. We found many White-browed Babblers and Miners, and flushed a Pink Cockatoo or Wee-juggler (*Cacatua leadbeateri*) from an old dead box not 50 yards from the margin of the lake; three eggs were in the hollow. The box was in flower, and had attracted numbers of White-plumed Honey-eaters (*Ptilotis penicillata*) and Miners to the feast of insects and honey. Cockatoo-Parrakeets (*Calopsittacus novæ-hollandiæ*), in small flocks and pairs, and "Budgerigars" were chattering and squabbling among the trees. The Cockatoo-Parrakeets we had been meeting since leaving Gardiner's Creek, flying south in small flocks and pairs. A few White-rumped Wood-Swallows (*Artamus leucogaster*) had mated, but were not nesting; and although some of the Ducks were in pairs there was no general nesting of these birds—they seemed to be waiting for a good rain and flooded condition of the country. This year the aquatic birds seemed to be fewer than usual throughout the district; it is probable that the heavy rains and flooded country along the Murray are responsible for this. Wading through an arm of the lake, we came to a fencers' camp, over which several Kites and Whistling Eagles were hovering. In the afternoon we returned to this arm and waded among the lignum and dead timber growing in the water. No birds were breeding in the lignum, except an occasional Pigeon (*Ocyphaps*), although the loud song of the Reed-Warbler (*Acrocephalus australis*) and the plaintive pipings of the little Grass-Bird (*Megalurus gramineus*) came from many of the bushes. In the dead timber standing in the water two nests of the Galah were found, and several of the Cockatoo-Parrakeet. None of the latter had complete clutches, nesting having only just commenced. Many of the nests were situated in small stumps and often at water-level. The Pied Honey-eater (*Certhionyx variagatus*) was noted here, feeding in the blossoming box and lignum, but occasionally flying out to the surrounding sand-ridges to visit the flowering turpentine and honeysuckle trees (*Eremophila longifolia*). This Honey-eater is very shy, and we had great difficulty in getting near enough to procure specimens. It is also very quick on the wing. It flies, singing, into the air from the top of a tree, and suddenly drops, always turning over backward in its descent. M'Lennan and I, after arranging with the others to camp near

our old spot on the open swamp, walked across country in that direction.

At the end of the lake we disturbed several large flocks of Cockatoos from the ground, where they were feeding on the seeds of the annual salt-bush, just ripening at the time on the plants. Our way took us at first over loose, sandy country, in which there was little bird-life, save for a few Chats, Brown Song-Larks, and Whitefaces, and an occasional Swift-flying Turnix (*Turnix velox*). A box channel running to the lake was followed for some distance, but yielded little of interest, as there was no water. "Budgerigars" were, however, numerous in the box, and seemed to be preparing nesting-hollows. Leaving the creek, we crossed bare, open country, and came to a large lake, on the shore of which were numbers of Black-tailed Native-Hens (*Microtribonyx ventralis*), and a few Ducks on the water. On reaching camp in time for lunch, Dr. Dobbyn reported having found a nest of *Ephthianura tricolor*, with three eggs, and a family of young White-winged Wrens near by. M'Lennan and I started out again in the afternoon, making our way through the blue-bush to the south. Wrens (*Malurus leucopterus*) were numerous; one family of *M. assimilis* was observed. A nest of the former species in a blue-bush was not quite finished; it was composed of sheep's wool. I climbed to the nest of a Short-billed Crow (*Corvus bennetti*) in a black oak; it was small, not much larger than a Magpie's nest, built of sticks and lined with fine bark, feathers, and a little sheep's wool. There were two eggs and a newly-hatched nestling. The eyes were not open; skin yellow, with a little down along the ulnar borders of the wing, the femoral and dorsal pteryllæ; the gape was pink. M'Lennan meanwhile examined another nest in an adjacent tree, finding three young birds and two addled eggs. Fossicking among the box bordering a swamp, M'Lennan found, in a hollow stump, a nest of *Acanthisa uropygialis* containing four eggs—a larger clutch and larger eggs than we had previously taken. The nest was made of fine bark and lined with rabbit fur and feathers. Two more Crows' nests were observed. We got back to camp just ahead of the others, who brought a nest and three eggs of *E. aurifrons*, taken from a small prickly bush. After dark, boughs were cut for bedding from a few box-trees near by. A nest of the Singing Honey-eater (*Ptilotis sonora*) was found as the boughs were being stripped. It was composed of rootlets, silk from the cocoons of larvæ of the butterfly *Belenois flava*, which were in all the trees, and horse-hair. The lining material was camel-hair. Next morning four of us made an early start across the lower end of the open swamp to a sand-ridge, beyond which was a large swamp with prickly bushes growing to the water's edge. On the way a female Brown Song-Lark was flushed from a nest in spinach-covered ground (three fresh

eggs). On the big swamp thousands of *Microtribonyx* were running in all directions. They were not nesting, and many seemed to be moulting. A few Black-throated Grebes (*Podiceps novæ-hollandiæ*) and Pink-eared Ducks (*Malacorhynchus membranaceus*) were on the swamp. All the surrounding sand-hills were littered with traces of aboriginal camps—circles of stones and burned earth and charcoal, flints and grinders.

Several Whistling Eagles were sailing over and around the swamp, and also a pair of Harriers (*C. gouldi*), the first that I have noted up this way. I went off to the right over a sand-hill into country covered with scattered shrubby bushes. A nest of the Black-faced Wood-Swallow (*A. melanops*) was found about 4 feet from the ground, in a small, stunted tree; it contained three eggs. Later I met our camp-keeper out after the horses; he told me that he had found two Tricoloured Chats' nests, each containing three young birds, and a nest of the Brown Song-Lark with three eggs. M'Lennan turned up with a seven clutch of Short-billed Crow's eggs; he also brought the lining of the nest, which consisted of the silk of the trap-door spider, which I kept for Dr. Pulleine, of Adelaide, who is interested in such things.

We packed up and went on past Fowler's Gap to the old dam and well on Caloola Creek, where we camped. Searching the scrubby flat along the creek we found Black Honey-eaters (*Myzomela nigra*) and Pied Honey-eaters (*Certhionyx variagatus*) busy feeding on the blossoms of the honeysuckle-tree (*Eremophila longifolia*) and of the tobacco-bush (*Nicotiana glauca*), in company with "Greenies" and Miners. Tricoloured Chats were dodging about the herbage and fallen, dead acacias, and every now and then a Rufous Song-Lark would rise, singing, from the ground, to some more commanding perch, where the alarm note would be given to the brooding female to steal away.

Description of a New Crow-Shrike.

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

PLUMAGE uniform dusky-brown or brownish-black, somewhat darker on the wings and tail. Four outer feathers on each side of tail broadly tipped with white, while on the two centre feathers the white is all but absent; under tail coverts white.

Wings.—Basal portion of inner web of primaries white, showing a large patch of white when the wing is extended; the outer web of primaries black, edged with greyish-white, the primaries and secondaries being slightly tipped with white.

Irides bright yellow. Legs, feet, and bill black.

Total length, 20 inches; tarsi, 3 inches; bill, $3\frac{3}{4}$ inches in length by 1 inch deep, forming a strong instrument for securing food, which consists chiefly of insects.

The female is so similar in colouration that dissection is necessary to determine the sex.

On account of the general dusky-brown appearance of the plumage, I propose the name of Brown Crow-Shrike (*Strepera fusca*), as suggested by the South Australian Ornithological Association at a meeting held on 12th May, 1905.

The descriptions are taken from birds collected by me on Eyre Peninsula during a trip in October, 1899, and again while conducting the scientific expedition during the ninth congress of the Australasian Ornithologists' Union, at Warunda Creek, Central Eyre Peninsula, in October, 1909. On both occasions I was accompanied by Capt. S. A. White, of the Reedbeds, near Adelaide, who also secured specimens. The birds on both occasions were seen principally in the timbered country, where their notes rang out clearly in the frosty mornings.

The birds resemble mostly *Strepera plumbea* of Western Australia, but are more dusky-coloured in general appearance, and show a greater amount of white in the wing.

Locality.—Eyre Peninsula, South Australia.

The nest is similar to the general class of *Strepera* nests, composed of sticks, lined inside with finer fibrous substance, which makes a neat cup-shaped hollow.

The eggs are three in number. A clutch taken at "Kapinka," Stokes, in the Koppio Ranges, in Central Eyre Peninsula, on 15th September, 1898 (now in my collection), may be described as follows:—General ground colour light creamy-brown, much lighter in appearance than the eggs in general of the *Strepera* family; the markings are fine spots of light brown and purplish-brown, the latter spots appearing as if beneath the surface of the shell, the markings being more numerous at the larger end. Eggs elongated in shape, and tapering gradually towards the smaller end. Texture of the shell moderately fine, with a somewhat glossy surface. Dimensions in inches:—(1) 1.70 x 1.18, (2) 1.62 x 1.12, (3) 1.52 x 1.12.

Victorian Sericornes.

BY A. G. CAMPBELL, POMONAL, VICTORIA.

(Read before the Bird Observers' Club, 14th April, 1910.)

MR. Gregory M. Mathews, in a recent letter to me, wished for some reliable observations on two Victorian species of Sericornes—*S. frontalis* and *S. osculans*.

The Australian Museum authorities, it appears, have recently stated that the two species are but one, and represent, one the mature, and the other the immature stage. With this I cannot agree. There has to my mind always been an obscurity in the genus, and for this reason I have been collecting data and material for some years and from various parts of the State. I will now state this much, however—that is, that I believe that there are two

species—one of browner plumage, inhabiting only the mountainous portions of the State; and the other a common species, being found throughout in the more open country.

When specimens are examined they tally exactly with those described by John Gould as *S. frontalis* and *S. osculans* respectively. That illustrious naturalist had eyes for a specific difference which others of later day have been dull to see. It is this—*S. osculans*, he states, has an obscure dark subterminal band to the outer feathers of the tail. Note the adjective “obscure,” for the word exactly describes the character. On spreading out the tail feathers between the fingers the dark band may be distinguished, particularly on the inner webs of the outer feathers. Now there is one specimen of *Sericornis* that never shows this character, and it is the bird obtained from what constitutes the Lyre-Bird country—the deep mountain recesses of Dandenong and Healesville Ranges, of Macedon, Upper Yarra, and Baw Baw, and of like localities in the Alps and in Gippsland. This is, I take it, *S. frontalis* of Gould. The difference in the two species is a nice one, but reliable. I may add that the following simple key is also to be relied upon:—

Head and back rich brown colour, similar to rump and tail.

S. frontalis.

Head and back olive colour, not like rump, which is brown.

S. osculans.

The following is the key to the whole of the genus in Australia*:—

I.—General colour grey; lores white; throat rufous in male.

S. brunnea.

II.—General colour brownish; lores black, slaty, or tawny.

A.—Shoulder feathers edged white; lores black (male), or slaty (female).

1. White tips to outer tail feathers and dark subterminal band.

(a.) Forehead black; throat white, barely spotted.

S. lævigastra.

(b.) Forehead brown, like crown; throat thickly spotted.

S. maculata.

2. No white to outer tail feathers; tail band obscure or absent.

(a.) Obscure subterminal band on outer tail feathers; head and back olive, dissimilar to rump.

Upper throat white; abdomen whitish; flanks brown; legs light brown.

S. osculans.

Upper throat speckled like lower; abdomen and flanks olive; legs dark brown,

S. humilis.

(b.) No dark subterminal band on tail.

Broad black crescent on lower throat; wing, 2.4 inches.

S. gutturalis.†

* For localities see Mathews' "Handlist," Suppl. *Emu*, vol. vii.

† = *Oreoscopus gutturalis*.

No black crescent; head and back rich brown,
like rump.

Wing, 2.35 inches. *S. frontalis.*

Wing more than 2.4 inches. *S. minimus.*

B.—No white on wing feathers.

(a.) Throat yellow; lores black (male), or slaty (female);
wing 2.7 inches. *S. citreogularis.*

(b.) Throat brownish; lores tawny; wing 2.2 inches.
S. magnirostris.

The Helmeted Honey-eater (*Ptilotis cassidix*).

BY F. E. WILSON AND L. G. CHANDLER.

(Read before the Bird Observers' Club, 27th January, 1910.)

AS so little is known concerning the habits of the rare and beautiful Helmeted Honey-eater (*Ptilotis cassidix*), the following notes, collected during the past two seasons, may be of interest. The habitat of this species is the eastern portion of Victoria, possibly extending into the southernmost corner of New South Wales. Our notes have been gathered in the Beaconsfield district, 30 miles east of Melbourne, where several pairs of birds have taken up their quarters. The locality has many creeks, and dense scrubs of tea-tree, sword-grass, prickly acacia, &c., with tall white gums (*Eucalyptus*) spreading their branches above.

The Helmeted Honey-eater somewhat resembles the Yellow-tufted Honey-eater (*Ptilotis melanops*), but is about half an inch longer, and may be easily distinguished by the line of upright, bristling, golden feathers which adorn the head. It has a variety of notes, two of which are monosyllabic. After using the monosyllabic notes, the head is jerked upwards and the tail slightly raised. One of the notes, generally uttered when the bird is flying from tree to tree, closely resembles the familiar note of the White-naped Honey-eater (*Melithreptus atricapillus*)*. Another may be translated as "Churl, churl, churl, churl;" while the nesting note, which is the most beautiful of all, and which is usually uttered when the bird is sitting at the side of the nest, may be rendered thus—"Jor, jor, jor, jor, jor, jiree, jiree, jiree, jiree," the "jiree" portion being a semitone higher. During the nesting season these Honey-eaters are extremely savage, and vigorously attack other birds that come near them. Harmonious Shrike-Thrushes (*Collyriocichla harmonica*), White-shouldered Caterpillar-catchers (*Lalage tricolor*), and Coachwhip-Birds (*Psophodes crepitans*) all find it safer to keep at a respectful distance from *P. cassidix*. Helmeted

* Scientific names according to Mathews' "Handlist."

Honey-eaters are gregarious; two or three pairs inhabit each locality, and usually all nest in an area of a few hundred square yards.

On one occasion when engaged making observations on the Helmeted Honey-eaters, a native bear or koala, with a young one on its back, was seen in the lower limbs of a big gum-tree. The old bear, not liking the look of us, ascended to a thin limb near the top of the tree. The young one set up a dismal howling, and at once five Helmeted Honey-eaters hurried to the scene and commenced darting round the marsupials and calling out excitedly—a proceeding which they kept up till the baby koala became quiet.

During the breeding season these Honey-eaters keep almost exclusively to an insectivorous diet; only once, in the depth of winter, have we seen them gathering nectar. Beetles, flies, caterpillars, small spiders, &c., all form part of the larder; occasionally small moths are eaten. We have been fortunate in finding nests containing young in different stages, as follows:—One day old: Blind and naked, the flesh being a peculiar shade of orange pink, gape creamy-yellow, small white dots marking where wing and tail quills would shortly appear. Six days old: Gape creamy-yellow, irides pale brown. The quills on the top of the head were not yet broken. A line of feathers down the centre of the back dusky-greyish colour; thighs were sparsely covered at the base with long unbroken quills, others just broken forming a dusky-greyish patch behind the shoulders; on each side of the rump a small clump of yellowish feathers. Tail quills short and just breaking, the upper ones being black and the lower yellow. The primaries and secondaries, protruding about $\frac{1}{4}$ -inch, of a dusky-greyish colour, with faint olive-green edgings. Lines of feathers starting from a patch under the throat, and continuing down each side of the chest and abdomen, of a rich sulphur-yellow colour. Legs and feet bluish-grey.

The favourite nesting site is a low bush growing from the bank of a creek and hanging over the water. One nest was observed in the centre of a dense patch of scrub, 80 yards from the nearest water. Sometimes the nest is suspended near the margin of a little billabong, and in nine cases out of ten it is placed either in the common prickly tea-tree (*Leptospermum scoparium*) or the bottle-brush (*Callistemon ptyoides*). Other plants which are occasionally selected as nesting sites are the native aster (*Olearia* (*Aster*) *stellulata*, var. *lyrata*), the dog-wood (*Helichrysum ferrugineum*) the prickly acacia (*Acacia verticillata*), and the native hop (*Goodenia ovata*). The nest is usually placed at a height varying from 4 to 6 feet from the ground or water as the case may be, but one or two

instances have been noted in which the elevation was 15 feet. The nest is commenced with two or three spider cocoons ; pieces of dry grass and fine bark, or possibly rootlets, are added gradually. A nest was observed just started, only three spider cocoons having been placed in position. On being visited exactly a week later the nest was found to be complete and to contain two eggs. The bird was sitting. The materials used in the construction of the outer portion of the nest are many and varied, but the general base consists of dry grass, fine rootlets, and shreds of bark. Sometimes the bark is placed very loosely around the outside, being fastened in position with spiders' web. Skeleton gum-leaves, dead gum-leaves, feathers, pieces of newspaper, green moss, fine twigs, &c., are also used, and the exterior of the nest is always decorated with spiders' cocoons of various tints—white, green, and gold. The material used for lining also varies. In one locality the seeding heads of a species of grass (*Gramineæ*) are commonly present, mixed with rabbit fur or a few feathers. One nest was found lined wholly with fowls' feathers, which must have been brought from some considerable distance. The lining may consist solely of very fine red bark, collected from the frayed trunks of the gums (*Eucalyptus obliqua*). In another locality nests are very often lined with a thick pad of the fur of the koala (*Phascolarctus cinereus*). The leaf-buds of the tea-tree (*Leptospermum scoparium*) and the hairy seeds of the clematis (*Clematis aristata*) are also used. One pair of birds under observation always used as lining material the green leaves of the native raspberry (*Rubus parvifolius*), which, on drying, curl up, and make a far from comfortable interior. The nest may be bulky or of medium size, the larger ones being generally those constructed earlier in the season, when the weather is colder. The egg cavities of some are deeper than others, a difference of one inch having been noticed.

The bulk of the building work is done after sundown, and, presumably, in the early morning (although we have not had an opportunity to verify this), when the materials used are as a rule most pliable. One mild summer evening early in December, at half-past seven, a bird was seen hard at work on the construction of her nest. She first stripped spiders' cocoons from the green leaves of a gum-tree close by. When this material had been added to the structure, the bird flew off to a dead tree and collected some spider web from one of the top limbs, returning almost immediately. Between each load she found time to refresh herself with some insect, usually caught on the wing. The male, perched in a neighbouring gum-tree, kept his eye open for enemies, and from time to time made short sallies in different directions. The breeding season was found to extend from the middle of September to the end of December, but most of the nests observed were built during

October and November. In all cases observed by us two eggs have constituted the clutch. They vary much both in size and markings, the smallest clutch noted measuring (a) 0.84 x 0.63 inch, (b) 0.84 x 0.63 inch, and the largest (with which there was a Cuckoo's egg) (a) 0.98 x 0.68, (b) 0.96 x 0.66. Some eggs are almost devoid of markings, others are beautifully zoned with large reddish-brown blotches, and others again sparsely blotched all over. On five occasions this season (1909) we have found an egg of the Pallid Cuckoo (*Cuculus inornatus*) placed with the Honey-eater's eggs, and once a young Pallid Cuckoo was observed being fed by a pair of *P. cassidix*. The Cuckoos' eggs are deposited in the nest before the foster-parent has laid. We were greatly surprised one afternoon to find two nests which had been deserted. One nest contained two fresh eggs and the other one. An examination disclosed in one of the pair of eggs two dents and a small hole, and in the single egg two dents, one at each end. A heavy wind, during which the birds would have to cling very tightly to the nest, may have caused the damage.

When sitting the Helmeted Honey-eater is very tame. Frequently we have stood a couple of feet away, and even touched them, without the birds betraying the slightest trace of fear.

In the case of the first pair of birds observed with young, the male took no part whatever in feeding the nestlings, but always accompanied the female on her trips to and from the nest. The female, after having delivered her beakful of food, would fly to a limb near by and preen herself before setting out on her insect-hunting again. After the first visit eleven minutes elapsed before her return, and the following trip occupied eleven and a half minutes. Many visits were made during our stay by the nest, but the intervals were practically the same. On New Year's Day, 1910, when the weather was exceptionally hot, a nest was found with a bird sitting. On 8th January another nest was discovered containing two chicks about six days old. We were attracted to the nest by the actions of the parent birds, and by a squeaking noise, which at first we thought to be that of a young Pallid Cuckoo, as it was almost an exact representation of the familiar note of this species. On her arrival at the nest the female fed the young with a fly. Both parent birds then flew away, but in five minutes the female returned with a fresh supply of food. After feeding the young she remained at the nest, holding her head close down to the young ones, for six minutes. Then the male arrived, and his mate immediately left. He also departed after having fed the young. The nest was observed for over an hour, and this procedure was not varied.

Notes on the Crested Penguin (*Catarrhactes chrysocome*).

BY E. BROOKE NICHOLLS, MELBOURNE.

(Read before the Bird Observers' Club, 18th May, 1910.)

IN the April (1910) issue of *The Emu*, Mr. H. Stuart Dove described "How the Penguin Fishes." He notes "the deliberate movements of the wings when the bird is under water," and also the way in which the legs and feet are used as a helm or rudder. Again he mentions how "the light blue of the back shows up in the sunlight" when the bird is on the water. I have made similar observations in regard to the Crested Penguin (*Catarrhactes chrysocome*). This bird, although a stranger to Australian waters, has been seen occasionally on our shores. Last year Mr. Conigrave recorded it from Rottneest Island, Western Australia. In February, 1910, a specimen made its appearance on the beach at Lorne. When first seen by the members of a cray-fishing party it was on the rocks at the water's edge. It was in a plump and thriving condition, and evidently none the worse for its long journey from New Zealand. After watching it for some time, the members of the party decided to let the Penguin remain where it was. On returning to camp, where the billy was boiling for afternoon tea, they found that the bird had followed them over some hundreds of yards of rocks and sand, so they promptly put it in a "tucker" bag, and carried it home to "Erskine House." The Penguin was domiciled in a large sea-bath, about 20 yards square, and there it lived for six weeks.

For the first fortnight the captive was very savage, and spent most of its time in the dark recesses of a bathing-box, where it underwent a complete moult. During this period it would not enter the water, and when thrown in quickly came out again. The moult finished with the head, and some of the discarded crest feathers measured as much as 4 inches in length. After the moult the Penguin looked a handsome bird, and the colour of the new crest was bright sulphur-yellow. The bird had no power of erecting this crest, but at times, when teased, the feathers of the head showed up slightly. When seen in the bright sunlight the plumage on the upper surface appeared of a dull leaden colour, but immediately upon the bird entering the water the feathers began to glisten, and assumed a rich royal blue tint, as observed by Mr. Dove in the case of the Little Penguin (*Eudyptula minor*). This change in colour is due to an iridescence reflected by the oil which the skin begins to secrete upon the bird entering the water. The oil-glands of Penguins are, I believe, far larger than in any other class of birds. In the Little Penguin they are shaped like a "jelly bean" lolly, and measure about three-quarters of an inch in length. After our Penguin had been swimming for some time, I noticed

an oily track left in the water. On the surface the legs and feet of the bird only are used for paddling; under the water they are stretched out straight behind, and act as a rudder for side to side, sinking, and rising movements. The skin on the under surface of the feet is dark coloured. When the bird is swimming beneath the water, with feet outstretched, this dark under surface is uppermost, and so matches with the rest of the dark dorsal plumage. While in the water the white breast and abdomen of the bird are seldom seen, being only exposed when the Penguin lays over on one side and leisurely scratches its head with its foot, as it quietly floats on the surface.

The Penguin at Lorne soon became a favourite with the visitors, and was christened "Billy." He became so tame that the children used to take him up in their arms and carry him from place to place. He would eat raw meat, but was mostly fed upon fishes. Sometimes these were the little mountain minnows (*Galaxias*), caught in the streams of Lorne. But more often sea fish were given. On several occasions the local fishermen drew their nets on the beach, and live fish were secured and liberated in the sea-bath. Then "Billy" and the onlookers had an exciting time. The turns and twists of the bird were wonderful, but, as Mr. Dove has remarked, there was no appearance of violent action. The rate of speed was very rapid, but the movements of the wing-flappers gave no true indication of this. They were used in a leisurely, deliberate manner, and at times, as the bird sped onwards, were poised and held motionless for a few seconds, exactly in the same way as those of a swiftly-flying Mutton-Bird. In fact, the whole action of the bird whilst swimming is best described as flying under water. Some of the fish liberated in the bath were sea salmon-trout, 10 to 14 inches in length. These "Billy" did not attempt to touch, but he pursued them round and round in a curious, half-frightened manner. Two smaller fish, however, each about 6 inches long, he drove at with his beak, striking them on the body and stunning them; afterwards they were promptly swallowed. We were disappointed in the swallowing capacity of the bird. A 6-inch fish was the most he was able to manage at one gulp. From "Billy's" size and appearance we fully expected to see a 12-inch salmon-trout taken with ease; but these larger fish had to be cut in pieces. A curious fact is that Penguins can see small objects floating on the surface only when beneath them, and, when searching for the food we threw him, "Billy" always dived, and, seeing the morsel floating on the water, shot up to the surface and secured it. A piece of fish might be thrown to him, and although he heard it splash within a foot or two of his body, and searched about, he never once saw the food until he had dived and got beneath it.

When coming out of the bath, "Billy" made use of some

steps, but he had to get up about 12 inches on to a landing, and this he accomplished by a spring. I never saw him breach out of the water and land upright, as is the practice of the King and Emperor Penguins. At times I assisted him with a straw broom. The end was placed in the water, and "Billy" would scramble on to it to be lifted high and dry. This performance was always greeted with cheers from the visitors, and a more laughable spectacle than the Penguin perched serenely on the broom it would be hard to imagine. "Billy's" fondness for fresh water was curious. For hours at a time he would stand under a running tap, but his greatest delight was to accompany the bathers to the shower-bath. He soon got to know the sound of the falling water, and no matter how many times a day the bath was used "Billy" was always there. The greater the force of the shower the better he liked it, and from time to time he would stretch himself full length on the floor, shuffling and "squawking" with pleasure as the water splashed upon him. When taken down to the sea "Billy," contrary to expectation, refused to enter the water, but made off "home" across the sands as fast as his little pattering feet would carry him. He usually walked one foot after another, but when wishing to quicken his pace would hop along. Eventually he became so tame that he would follow like a dog, and his quaint mode of progression and method of jumping up and down flights of steps and stairs were a source of much amusement.

One morning "Billy" followed some bathers to the beach, a distance of about half a mile from the house. He made strenuous efforts to keep up with the party going across the loose sand, but, finding himself being left behind, uttered such loud "squawks" of distress that he had to be carried. On reaching the bathing site the members of the party donned their bathing attire and made for the open ocean, with "Billy" following. A heavy surf was running, and as we entered the water "Billy" paused. Wading further and further out we called to him, and he made an attempt to follow, but was swept off his feet and washed ashore by the foaming water, which was not more than 8 or 9 inches deep. At length, after being knocked down and buffeted by several successive waves he managed to struggle into water about a foot deep, and then, swimming swiftly, shot like an arrow towards us. Once in the breakers the bird had all the best of it, and we dived and chased after him through the waves as one might romp with a dog ashore. Tiring of the sport, "Billy" commenced to dive and hunt for fish, and gradually went out to sea. We called to him by name, and, turning his head, he answered once or twice with a loud "squawk," but kept paddling oceanwards all the time. He had suddenly realized that he was once again in the open ocean, and not confined by the four cemented walls of a bath. Late in the

afternoon I went down to the beach to see if, by any chance, he had returned, but the sea had called to him and he had obeyed. No doubt upon some lonely rock-bound island of Bass Strait he has found a home.

Notes on the Regent-Bird (*Sericulus melinus*).

BY P. A. GILBERT, SYDNEY.

AT Ourimbah, during October and November, 1909, in the company of Mr. H. Keane, a few observations were recorded, during our days in the scrub, on the habits of Regent-Birds (*Sericulus melinus*) found breeding.

3rd October, 1909.—Several pairs of Regent-Birds were seen flying to and fro in search of food, and probably on the look-out for a nesting site. They were observed feeding peacefully upon the berries of vines. The brilliant orange-yellow and sheeny black plumage of the male was in marked contrast to the sombre verdure of the undergrowth, as the sun's rays fell upon him whenever the foliage above permitted. The female, being more secretive in her movements, invariably kept well within the undergrowth.

4th October, 1909.—The birds were again seen, the males, owing to their conspicuous plumage, most frequently.

Our next visit to the same locality was on 13th November, 1909. I watched a female Regent-Bird fly into a thick clump of vine, and saw the leaves moving awhile as she hopped through. I decided to clamber into the vines above and investigate, while my friend, Mr. H. Keane, kept watch on the outskirts. My efforts were rewarded by a nest containing two incubated eggs. The nest was built in a tree densely covered with vines (*Vitis*), at an altitude of from 40 to 50 feet. The nest was constructed of fine dry sticks placed on a scanty foundation of coarser ones, the whole structure being secreted in a mass of the tangled vine, which afforded ample support.

14th November.—One male bird was seen on the wing, but not in proximity to the brooding female.

15th November.—Several female birds were observed, but, owing to the density of the vegetation, it was not ascertainable whether they were nesting. No males. I found another nest, placed much higher than the one containing eggs, but in growth less dense: height took the place of seclusion. This nest was the temporary habitation of two nestlings, apparently about eight or nine days old, and covered with a dull greyish down. I noted that they sat in the nest with their heads pointing south, and, as I had watched the parent bird fly in several times from

a southern peripheral point, I concluded that they were wont to look for their guardian in that direction.

Previous to nidification, Regent-Birds are to be seen in pairs around Ourimbah, but once incubation has commenced the male seems to retreat, leaving that function entirely to the female. Neither does the male seem to participate in nurturing the young. His brilliant plumage would, no doubt, betray the whereabouts of the female and her nestlings, whereas the female's plumage harmonizes with her surroundings, and that, together with her shy habits, enables her to move about obscurely.

Although I have no evidence myself, nor have I seen it stated elsewhere, still I have reasons for believing that the female Regent-Bird alone constructs the nest. On the Cambe-warra Mountain I had under observation two female Satin Bower-Birds (*Ptilonorhynchus violaceus*) which were building. One was closely watched for several days, and in no instance did I see the male assisting in the construction of the nest, or even observe him in the immediate vicinity until the work was finished. It seems reasonable to suppose that the nidificating habits of the Satin Bower-Bird are similar to those of the Regent-Bird as regards the female alone building the nest.

Destruction of Birds.

BY J. W. MELLOR, A.O.U., FULHAM, S.A.

I HAVE received from Mr. Edward Millen, of Rosemount, Dawlish, South Devon, and once a resident of Echunga and Port Elliot, a letter relative to the destruction of birds for plumage and ornamental purposes, and also a copy of an issue of *The Journal of the Royal Society of Arts* containing a report of a lecture delivered by Mr. James Buckland on the same subject.

Mr. Millen writes :—

“From long residence in South Australia I know (who there does not?) that you are the friend and protector of birds. But I should not have sent the *Journal* had it only referred to that which is going on in the West Indies, Venezuela, United States of America, &c. Australia does not escape the destroyer, and before long, perhaps—no one can say—some ‘undesirable immigrants’ will land in South Australia bent on the destruction of as many of its plumage birds as possible. M. Rostand’s play, ‘Chantecler,’ has given an impetus to the wearing of feathers in women’s hats, which are now more than ever ‘decorated’ (?) or trimmed with large masses of them of all lengths and colours. It is not uncommon to see whole birds stuffed and doing service as hat ‘ornaments’ (?). What a shock it would be to a South Australian to see the wings of the Magpie used for mourning wear, or the pretty wing of the ‘Jack’ for gayer occasions! And what a gem-like ornament the stuffed skin of the Blue Wren would be, not to mention numerous other useful birds found in the Sunny South.

These, I know, are on the protected list ; but Mr. Buckland shows in his address that destroyers have no regard for protective law. I therefore venture to send the *Journal*, on the principle of 'forwarned forearmed.'

Mr. Buckland, the promoter of the Plumage Bill, in his address before the Royal Society of Arts, gives some astonishing facts and figures, all of which have been compiled from diplomatic, consular, and other official records. *Inter alia*, he says that, if birds are undisturbed in their wild state, a sufficient number of young are reared to balance the decrease caused by old age, epidemics, storms, famine, predatory foes, and other natural causes, and maintain the species in strength and efficiency. If, on the contrary, the birds are prevented from breeding for one season alone, the species is weakened, and, if this continues, the extermination of that species is only a matter of time. Now, the majority of the feathers used in millinery, and certainly all the high-priced ones, are taken from the body of the bird during the breeding season. There are two reasons why this must needs be so. In the first place ornamental feathers are profitable goods only when rich in the brilliancy and abundance begotten of sexual selection—in other words, when the bird has mated, or when it is about to mate. At all other times the feathers lack lustre, smoothness, and elasticity, and are moulted in that condition, and are, therefore, of little value for trade purposes. In the second place, with the majority of species it is when the birds are breeding that the one favourable opportunity of killing them arises, as they then return from abroad, and annually journey to an ancestral breeding-ground, and this is the plume-hunter's opportunity. It is doubly his opportunity, for then most of a bird's natural fear of man disappears under the stress of providing for and protecting its young. This is why the annual gathering of plumes is immeasurably the most destructive of all destructive agencies now operating against bird-life. It is a harvest of death, because it is reaped at the sowing of life.

Regarding "aigrettes" or "ospreys," it is stated that, in Venezuela alone, in 1898, no fewer than 1,538,738 White Herons were killed, and in 1908 the ranks had become so depleted that only 42,986 ozs. of feathers could be collected. As it requires six birds to produce an ounce, 257,916 were slaughtered. This does not include the young birds left to starve and die in the nests. Thirty years ago it is estimated that 3,000,000 White Herons inhabited Florida, and to-day these birds are said to be comparatively rare. In Venezuela the majestic Jabiru or Giant Stork is falling a victim to fashion, as there is a growing demand during the last ten years for the large quills of the wing and tail. In the London plume sale alone there were catalogued 28,250 of these quills, which would need a very large number of birds to produce. Venezuela does a large export business in

plumes, and is one of the greatest bird destruction countries, where firms are located that do nothing else but equip parties to go out hunting, and purchase plumes and feathers for the market. The "Consular Report" for 1908 shows that from one place alone, Ciudad Bolívar, there were exported 10,612 lbs. of feathers and plumes, in addition to the plumes of the White Heron, being nearly 5 tons of feathers from one port in one year, for the whims of woman's fashion.

Until recent years nothing was known of the domestic affairs of the American Flamingo, which is the most brilliant in plumage of all large birds, until their nesting haunts were discovered in 1904 by Mr. F. M. Chapman, in one of the outer Bahama Islands, where the birds were in large masses. But no sooner did Mr. Chapman let the world know of his find than the plume-hunters were there, and nearly exterminated the birds for their brilliant feathers, but, happily, before they were quite swept off the face of the earth Mr. Chapman secured protection for the Flamingoes.

No better instance of the destruction of species for the millinery market can be given, says Mr. Buckland, than the massacre of the shore-birds of the Atlantic coast of the United States of America. Twenty-five years ago the shore-birds swarmed all down this coast in incredible numbers, but to-day only a few scattered colonies survive, being rigidly guarded by wardens. A few years ago immense flocks of water-fowl populated the lake region of Southern Oregon, and teemed along the Pacific Coast, but to-day these waters are almost depopulated, as hundreds of tons of Ducks have been killed each year merely for the green wing feathers; the bodies are thrown away. White Herons, Swans, Geese, Pelicans, Ibises, and hosts of other species were slaughtered for fashion. The largest breeding-grounds of the Grebe, whose silvery breast feathers are prized by women for ornamentation, were on Lakes Klamath and Tule, and during the last six or seven years there were between 20 and 30 camps of professional killers and skinners stationed along the lakes; men were engaged solely in killing Grebes; the skins were collected in waggons three times a week. This continued until the Government, at the instance of the Oregon Audubon Society, in the spring of 1908, had Lakes Klamath, Harney, and Malheur set aside as bird reservations. On 31st May, 1909, the State Warden of Lake Malheur Reservation reported that "very few Grebes are nesting in the reserve this year—mute testimony of the inroads of previous market hunting."

Mr. Bryan, in his report to the United States Government regarding the destruction of birds carried on among the low coral islands in the North Pacific by Japanese plume-hunters, says that in the short space of six years they had exterminated

one of the largest Albatross colonies in these waters. During Mr. Bryan's inspection the hunters had only secured 13 specimens of the Albatross, but he estimated that they had then 40,000 Terns' skins ready for shipment, that being the second shipment for the season. A Tokio firm fitted out a ship at Yokohama and dispatched her to Lisiansky Island. There were 87 killers, skimmers, &c., on board, and before they could be stopped by the American Revenue Service steamer *Thetis* they had collected 335 cases of plumage, representing 300,000 birds. In 1908 the skins of about 50,000 Terns were sent from this locality to the London market, and the United States Government at last made overtures of a pressing nature to the Japanese Government, which stated that it would do its best to prevent the depredations, but the work being carried on largely by lawless marauders rendered the task a hard one.

The extermination of Birds-of-Paradise of all species within a comparatively brief period may be regarded as certain. Messrs. Walter Goodfellow and Chas. B. Horsburgh journeyed lately to New Guinea, and give some valuable notes. No fewer than 20,000 skins, Mr. Goodfellow estimates, are exported from North and West Dutch New Guinea annually. The once fairly numerous Jobi Bird-of-Paradise is now so scarce that only 90 skins were obtained in 1906. The gorgeous Red Bird-of-Paradise, whose habitat is the Island of Waigiou, has now become very rare, young males and females being shot, in addition to the full-plumaged males. The Great Bird-of-Paradise, found only in the Aru Islands, is also being rapidly exterminated. For some years previous to 1907 two Chinese plumage-hunters at Humboldt's Bay, in north-west New Guinea, exported every three months 12,000 bird skins, chiefly of the Lesser Bird-of-Paradise, whose habitat is in those regions. Mr. Horsburgh found Prince Rudolph's Bird-of-Paradise everywhere extremely rare, only three specimens being seen during weeks of searching.

Mr. Buckland shows that the eye of the plume-hunter is on our native Australian birds. The Emu is doomed. Recently 490 of these birds were killed in Queensland in a single "drive," and of these 419 were smuggled out of Australia and sold in the London commercial sale-rooms, on 4th August, 1909. The Lyre-Bird (*Menura*) is fast disappearing. In 1907 180 tails were sold at the London feather sales. The handsome black and gold Regent-Bird (*Sericulus melinus*) is, next to the Rifle-Bird (*Ptilorhis*), the most sought after for its feathers of any bird in Australia. It was once found within a short distance of Port Jackson, but one has to go very far afield now to see one.

Stray Feathers.

A CURIOUS CLUTCH.—Mr. H. L. White, Belltrees, N.S.W., reports the finding of a Spotted Pardalote's (*Pardalotus punctatus*) nest containing three eggs, together with two eggs of the Narrow-billed Bronze-Cuckoo (*Chalcococcyx basalis*) and one egg of the Bronze-Cuckoo (*C. plagosus*).

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THE PUGNACITY OF "MAGPIES" (GYMNORHINA).—As regards the pugnacity of the common Magpies (*G. leuconota*) when nesting, I rather think such is a natural propensity with these birds. I settled at Jackson's Creek 27th January, 1846. Any time between that date and 1850 Magpies "pegged" youngsters for climbing to a nest. The old birds also attacked me. We did not molest nests, and there were no children on the three stations that adjoined us. On skinning a bird, on one occasion, nothing was found in the stomach, thereby indicating it had come a good distance without feeding. A bird came back in search of its mate, and hung about some little time.—ISAAC BATEY. Drouin, 21/4/10.

* * *

WHITE-EARED HONEY-EATER (PTILOTIS LEUCOTIS).—Mr. F. E. Wilson, A.O.U., recently wrote me on the above, which appeared in my list of Drouin birds in the last issue of *The Emu* under the name of *P. auricomis*. Previously, in the same magazine (vol. vii., page 9), in "Sunbury Birds of Sixty Years Ago," this bird was referred to as *P. auricomis*, so Mr. Wilson asked me to forward a specimen in the flesh. Having a stuffed one, it was sent, when in due course a reply came to the effect that instead of being *P. auricomis* or *P. cassidix* it was really *P. leucotis*. The manuscript was roughly written, and unfortunately Mr. Campbell's volumes were lent, thus I was not in a position to supply technical nomenclature. I take this opportunity of correcting a mistake.—ISAAC BATEY. Drouin, 6/5/10.

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EGGS OF PACHYCEPHALA MERIDIONALIS.—Although these eggs have been previously described,* the description of the first set taken in Victoria may not be out of place:—Clutch two, roundish-oval in shape; texture of shell fine, surface glossy; colour yellowish-white in specimen (a), but much darker in (b), speckled all over, more particularly about the larger end, with spots of dark umber or brown, and dark-grey spots and blotches, which appear as if beneath the surface of the shell; approaching nearest to those of *P. pectoralis*. Dimensions in

* North, "Nests and Eggs of Birds," vol. ii., p. 25.

inches :—(a) .88 x .65, (b) .87 x .66. Taken by J. A. Ross, A. H. E. Mattingley, F. E. Howe, and C. M'Lennan, at Pine Plains, Victoria, 16th September, 1907.

Nest.—Very like that of *P. pectoralis*, and built in a small Murray pine on a sand-ridge, about 5½ feet from ground.—F. E. HOWE. Canterbury, Victoria.

* * *

FLAME-BREASTED ROBIN.—As regards the Flame-breasted Robin (*Petræca phænicea*), this bird seems to arrive here (the Monaro highlands) when the snow is on the ground—i.e., in winter; and it nests with us about October. In the adjacent coastal districts I have never seen it, but the Scarlet-breasted Robin (*P. leggei*) is common in both. I think the Flame-breasted never appears to greater advantage than when perched on a dead thistle or twig standing up above the snow. The brilliant colouring of the breast is then thrown out in strong relief.—H. V. EDWARDS. Bibbenluke, N.S.W., 8/2/09.

P.S.—The Pied Robin (*P. picata*) is now nesting in this vicinity. It appears to place its nest at a much greater elevation than most Robins.—H. V. E.

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THE SATIN BOWER-BIRD.—Mr. C. F. Cole, in his interesting "Notes on the Satin Bower-Bird (*Ptilonorhynchus violaceus*),"* states that the change from the green to blue-black plumage takes place in the male birds only. I know of one exception to this rule, having found one "Black Satin-Bird" to be a female. This was at Cape Otway, over 40 years ago. We had shot a few Satin-Birds, all in green plumage but one, in which were found eggs. I have not handled Satin Bower-Birds since then. In the spring hundreds of Satin Bower-Birds used to come from forest country at the back of Cape Otway to flats among the sand-dunes to feed on native spinach. In a flock of perhaps a hundred there would be only three or four birds with the black-blue plumage. The birds were very destructive to peas and cabbage plants in the garden.—H. W. FORD. Fitzroy (Vic.), 20/4/10.

* * *

WHITE-RUMPED SWIFT (*MICROPUS PACIFICUS*).—I have to record an appearance of this rare visitor to Tasmania. At about 5.30 p.m. on 17th February, the sky being very overcast, with a light south-east breeze blowing, I noticed a Swift flying from the south. In a few minutes a fair-sized flock of the birds was circling over Launceston. Owing to the fact that many of

* *Emu*, vol. ix., p. 237.

the birds were flying low and not fast, I was able to bring my glass to bear with good results. The first bird to come within easy range was a *Micropus pacificus*. Up to the time the birds disappeared to the north-west, 6.30 p.m., I identified positively at least 20 as being of this species out of a flock of perhaps 100 birds. In all probability the bulk of the birds were Spine-tailed Swifts (*Chaetura caudacuta*). I was fortunate enough to witness the apparent return southwards of a portion of the flock, as previously recorded from Tasmania by Messrs. H. C. Thompson and H. Stuart Dove. I say apparent, because I was able to watch the return of these birds to join the rest after having made an enormous ellipse. The vantage ground on which I was standing afforded a very extensive view in all directions.—FRANK M. LITTLER. Launceston, 25/2/10.

* * *

A BIRD DRAMA.—The other day I, with two companions, witnessed a pretty drama in bird life. We were on a half-completed wheat-stack, standing between two others already finished, at about 3.30 p.m., when suddenly a flock of 8 or 10 Spur-winged Plovers (*Lobivanellus lobatus*) came sailing round the end of the stacks. They wheeled sharp round and down past one of the outer stacks on our flank, coming quickly into view again and settling in some long, dry grass, about 60 yards away. No sooner were they down than, ducking, all crept into the long grass, disappearing as though by magic. "Whissssh!" a Black-cheeked Falcon went, not directly over where the Plovers were concealed, but a little to one side, about 6 or 8 feet above ground. Following the Falcon's flight, we saw it perch about 300 yards away on a tall, dry tree. Up stood one of the Plovers on "sentry go," and was immobile for fully three minutes until the Falcon left his perch and sailed away. Then the sentry moved. All was quiet for a minute, when, one by one, the Plovers rose, and were soon on the wing clamouring to announce their victory, or, rather, their craft in evading the enemy. I have been a close observer of birds all my life, yet have never before seen so interesting an incident as this.—R. W. LEGGE. Cullenswood (Tas.), 22/2/10.

* * *

SHARP-TAILED STINT IN TASMANIA.—One day last February, while wandering, gun in hand, over the great Apsley Marsh, which lies at the northern extremity of the Moulting Lagoon, on the East Coast, I surprised a small flock of wading birds. After a short flight, during which they uttered faint twittering, chipping notes, the birds settled, and I killed several. On examination they appeared to be Sharp-tailed Stints (*Hetero-*

pygia acuminata). They were in shape and marking like an immature Snipe, the bill being about 1 inch or $1\frac{1}{8}$ inches long, slightly depressed at the end; the legs and feet light green, extremely delicate, the former measuring about 4 inches; head, neck, back, and wings soft grey, the wing coverts and tail having the faintest olive tinge; the tail delicate and pointed and prominent in flight. The birds were frequenting shallow grass-grown pools on the marshy wastes, and they did not run like a Dottrel, but seemed to stand about and pick here and there. I noticed the white breast and front or belly had delicate streaks of black, more especially about the thighs and vent; the thighs were white, under tail coverts white, and the wings underneath delicate black and white, like a Snipe. The local residents regarded these birds as rare.—ROBT. W. LEGGE. Cullenswood, Tas.

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MELIPHAGIDÆ AND MELITOSE.—On 19th December Dr. J. Burton Cleland and myself observed a number of birds feeding upon "manna" which was exuding from a large wound in a grey gum (*Eucalyptus punctata*) at Milson Island, Hawkesbury River. Among them my colleague identified *Ptilotis auricomis* (Yellow-tufted Honey-eater), *P. chrysops* (Yellow-faced Honey-eater), *P. leucotis* (White-eared Honey-eater), *Melithreptus lunulatus* (White-naped Honey-eater), *M. brevirostris* (Brown-headed Honey-eater), and *Meliphaga phrygia* (Warty-faced Honey-eater). The birds flew down from the uppermost branches of the neighbouring trees, and, clinging to the large trunk of the grey gum, licked the yellowish exudation with the greatest relish. So eager were they that, as we stood near the tree, numbers of them, while looking for a foothold upon the tree trunk, fluttered round our heads. A photograph of the birds clinging to the tree was taken, but they did not show up well against the dark background. A small branch was therefore thrust into a portion of the wound in the tree, and a very good photograph of seven specimens of *Ptilotis auricomis*, in various positions, was obtained. (See plate VI.) The exudation from the tree had a very sweet taste, and such exudations are apparently used as a supplementary food by Honey-eaters when they have located a tree where a supply is to be obtained. The "manna" from the grey gum has been proved by Mr. H. G. Smith, F.C.S., of the Sydney Technological Museum, to contain as its principal constituent the sugar known as raffinose or melitose.—G. P. DARNELL-SMITH. Sydney, 28/4/10.

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THE BLUE WREN OF TASMANIA: ADDITIONAL NOTES.—The curious tactics adopted by the female *Malurus* in her



Tufted Honey-eaters (*Ptilotis auricomis*) feeding upon "Manna" exuded by Grey Gum (*Eucalypt*), Nelson Island, Hawkesbury River.

endeavours to lure an intruder away from her nest were described by me in a paper in *The Emu*.^{*} The same device is occasionally resorted to by the male. In the Launceston district one November day a Wren's nest was discovered, placed about 3 feet from the ground, in a *Lepidosperma* tussock, and containing four young, whose eyes were beginning to open, and upon whose bodies could be seen the lines of sprouting feathers. The nest was of grasses, lined with rabbit fur, and shaped like a big egg with the end sliced off. It was tilted slightly upwards, the usual *Malurus* type of architecture. When we examined the young, the male parent, near by, went through some curious antics to lure us away, running low along the ground with shoulders hunched up and wings trailing, tail bent down like a puppy about to be whipped, instead of carried aloft in the usual jaunty fashion. The appearance of the little actor when hunched up on the ground in this fashion is curiously mouse-like.

Pugnacity.—Although the male Blue Wren displays much persistence in attacking and driving away others of his sex from the neighbourhood of the breeding-ground, yet it is the females which exhibit a surprising depth of hatred towards each other. When approaching Gould's country, Eastern Tasmania, one summer afternoon, we discerned a small brown ball rolling about in the dust by the wayside, and squeaking vociferously. My friend, Mr. H. C. Thompson, succeeded in capturing the curiosity, which resolved itself, on close inspection, into two female *Maluri*, locked together in an embrace by no means affectionate, and digging with their beaks at each other. So absorbed were they in their quarrel that they had heard nothing of our approach, and two very scared Wrens shook out their ruffled plumage and left my friend's hand hurriedly as soon as separated. During the past spring, in a Devonport garden, I witnessed a similar spectacle.—H. STUART DOVE, F.Z.S. West Devonport.

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BIRDS NEW TO TASMANIA.—Of the two following species I can find no record of their having been previously found in Tasmania :—

Strix delicatula, Gld., may or may not be a sub-species of the European *S. flammea*, Linn. Being a dimorphic form, and without being able to satisfy ourselves on the matter of their geographical plumages, there is no certainty of its true position. Recently it has been raised to the position of a species.† As a species its distribution has been known to be Australia and New Guinea.‡ On 6th May, 1910, Mr. P. J.

* *The Emu*, vol. ix., pp. 151–155.

† Brit. Mus. H. Birds, i., p. 300.

‡ Mathews, H. Birds, p. 44.

Nicholls brought a specimen in the flesh into the Tasmanian Museum. He found it dead near the back door of the home-stand of his property at Richmond, some 16 miles north-east of Hobart. For years past it, or its like, had frequented his out-houses. It appears to me to be a dark race of the mainland *Strix delicatula*, the vermiculations of the dorsal surface being scarcely visible. The tail is pure white, with only a faint tinge of pale orange on one portion of the upper surface. Although one specimen is alone available for record, the white of the under surface of it is so very clear, and the deep brownish-grey of the upper surface so devoid of tawny or pale orange, that it appeals to me as being an insular form of the mainland species. The characteristic feature of this specimen is that it is deep brownish-grey, with scarcely any orange upon it, causing it to appear sooty on the whole of the upper surface rather than tawny or orange. The colour of the legs is creamy and not yellow.

Calopsittacus novæ-hollandiæ, Gm., is the second species. It was forwarded to the Tasmanian Museum by Mr. Charles Eaton, and collected on the Russell River, North Huon, 9th March, 1910. Thinking it possible the bird had escaped from captivity, I wrote to Mr. Eaton for particulars. In reply I learn that the residents have not seen this species, it being quite unfamiliar to them. It was shot while upon a dry eucalypt, and is in autumn plumage. The Cockatoo-Parrot is migratory in both eastern and western Australia. It is possible it overflowed its normal southern range, and may have been one of a scattered flock. I scarcely think that Tasmania was at any time the southern portion of its home.

It is on record* that a flock of Lorikeets (*Trichoglossus novæ-hollandiæ*) has been seen in a district after an absence of 25 years; while a flock of Galah Cockatoos (*Cacatua roseicapilla*) has been seen after 30 years' absence. Even so, this record, I consider, is simply that of an errant bird rather than of one that has escaped from its cage.—ROBERT HALL. Hobart, 6/6/10.

A Defence of Oology.

THE following is an abridged account of an article by Milton S. Ray, California, which appeared in *The Condor*, January, 1910:—

"The first point I wish to take up is: Is oology scientific or popular ornithology?"

"In the opinion of some, perhaps many, the structure and

* *Emu*, October, 1903.

classification of birds is considered the more scientific ; in fact a division has been made, terming this 'scientific ornithology' and relegating the study of eggs, young, nests and all else to another division termed 'popular ornithology.' It would seem to me that inasmuch as the eggs are produced by the bird's anatomy and hold new life, they are in a sense a part of the bird's anatomy, and that, if any such separate classification is to be made that birds and eggs should come together rather than eggs and nests. As further proof, I feel quite sure if some bird, a Thrush for instance, of one section produced *invariably* plain bluish-white eggs and that of another section produced *invariably* entirely different eggs, say green heavily blotched with brown, I doubt not that the two birds would soon be separated even if *no* apparent difference could be found in the birds themselves. However, it is not my opinion that any such separation of the study of eggs, birds, or nests is necessary, as the gathering of all *facts* in the study of them, in my idea, is scientific and is ornithology. Nature has drawn no clear cut lines that I can see, and I consider it as *important* to note that the Cliff Swallow constructs its nest of mud as that a hundred specimens of the bird show some slight variation in wing measurement.

"A prominent ornithologist some time ago informed me that he did not consider the geographical variation of species as important as most have deemed it, and that all Song Sparrows in his collection were simply labelled such, accompanied with the usual data. Personally I do not endorse this method, believing all differences discernible should be recognized. I also believe variation in eggs, or any other scientific fact concerning them, important as well, for to me all appear to be but links in a great chain. It seems to be the desire of some, however, to disconnect these 'links,' claiming that the so-called scientific ornithology is the more important, as it is a component part of the science of life. To me it would seem that equally as much of the science of *life* can be learned by a close study of the birds' habits, their eggs and nests, as by the study of their structure and their classification.

"The second point is : Have eggs been scientifically studied or described ?

"I maintain that truly scientific descriptions of eggs, treating of their texture, size, shape, and colouration is a part of ornithology that has been neglected and offers material for a monumental work. Take the eggs of the Brewer Blackbird (*Euphagus cyanocephalus*) for instance. I wish to ask any collector familiar with a series, if there are not many specimens that one unfamiliar with the species would have difficulty in identifying if he depended solely on the written descriptions of a writer like Davie for instance, who states that the eggs are marked 'with dark brown . . . and some with a lighter

shade.' Could anything be more indefinite? Why, this season, which I spent at Lake Tahoe, I examined perhaps as many as a hundred nests of this bird, mostly with eggs, and I can say instead of Davie's two shades of brown, there are nearer twenty! In fact with the exception of the California Murre (*Uria troile californica*) I know of no Californian eggs subject to wider variation in colour. The markings run through various shades of brown, from light grayish, yellowish, and reddish, to a blackish-brown that is almost if not quite black. On some the light purplish-gray markings, which are usually sparse and obscure, predominate and form another type. I noted several sets unmarked except for scrawls and blotches of blackish-brown and purplish-gray around the larger end, being not greatly unlike some specimens of the Redwing Blackbird I have seen. Others again were uniform chocolate-brown with sometimes a blackish scrawl or so on them. The ground colour, almost white in some, was usually greenish-white, though sometimes a pure light green. In shape they varied from almost globular to elongate-ovate.

"My third point is: Why is the study of eggs given such a prominent place in bird magazines, and yet so neglected in our scientific institutions? (Of the latter I can only speak of those on the coast.) I remember that the Californian Academy of Sciences, before the fire, had, in connection with the magnificent collection of mounted birds and bird-skins, but one lonely little case of eggs containing not more perhaps than would be taken by the average collector in a season; and at the present time, in a prominent museum across the bay, I have been informed that eggs are deemed of little importance: in other words, are considered a mere 'side-show' to the collection of birds. To me, the fact that two classes of people, the small boy and the commercial collector, have brought odium on egg-collecting, can in no way detract from its importance; and neither does the fact that eggs are more or less dependent on the birds, inasmuch as often the identity of the parents must be determined before that of the eggs can be established. I believe it time to sound a note of warning, for some time in the future eggs will be given their proper place in bird study, and the coast museums should have adequate space reserved for their accommodation. In fact, I think a Californian museum, equipped with proper cabinets, would soon accumulate quite an extensive collection through the donations of club members and others, and some day, should the interest that has been taken in geographical variation extend to eggs, we will not have to send east of the Rockies to borrow specimens; for it is a well-known fact that the finest collections of Californian eggs are not where they should be, here in California."

Additions to the "Handlist of the Birds of Australasia."

(Continued from vol. IX., p. 92.)

BY GREGORY M. MATHEWS, F.L.S., F.Z.S., M.B.O.U.

- 45A *Lophophaps leucogaster*, Gould (*cf.*
Math., Bull. B.O.C., xxv., p. 34,
1910) ... Central Australia.
- 376A *Podargus brachypterus*, Gould (*cf.*
North, Spec. Cat. Aust. Mus., No.
12, vol. ii., p. 340) ... Western Australia.
- 369A *Psephotus cucullatus*, North, *Vict.*
Nat., xxv., p. 176 (1909) ... Northern Territory.
- 536A *Calamanthus howei*, Math., Bull.
B.O.C., xxv., p. 24 (1909) ... Kow Plains, Vict.
- 559A *Acanthiza mathewsi*, Hartert, Bull.
B.O.C., xxv., p. 82 (1910) ... Victoria.
- 566A *Acanthiza whitlocki*, North, *Vict. Nat.*,
xxvi., p. 55 ... Lake Way, W.A.
- 574B *Acanthiza flaviventris*, Ashby, *Emu*,
ix., p. 137 (1910) ... Lake Frome, S.A.
- 575A *Acanthiza australis*, Math. (*cf.*
Math., Bull. B.O.C., xxv., p. 34,
1910) ... South Australia.
- 620A *Amytornis whitei*, Math., Bull. B.O.C., }
xxv., p. 34 (1910) ... } Coongan River,
N.-W. Australia
- 701A *Climacteris wellsi*, Grant, *Ibis*, p. 664, }
(1909) ... } Clifton Downs,
W.A.
- 709A *Zosterops shortridgei*, Grant, *Ibis*, p. }
663 (1909) ... } Rabbit Island,
W.A.
- 711A *Zosterops balstoni*, Grant, *Ibis*, p. 663,
(1909) ... Carnarvon, W.A.
- 734A *Melithreptus whitlocki*, Math., Bull. }
B.O.C., xxv., p. 24 (1909) ... } Wilson's Inlet,
W.A.
- 744A *Melithreptus alisteri*, Math., Bull.
B.O.C., xxv., p. 85 (1910) ... King Island.
- 760A *Lacustroica whitei*, North, *Vict. Nat.*,
xxvi., p. 138 (1910) ... Lake Way, W.A.
- 763A *Certhionyx occidentalis*, Grant, *Ibis*,
p. 658 (1909) ... Carnarvon, W.A.
- 799A *Meliornis diemenensis*, Math., Bull.
B.O.C., xxv. (1910) ... Tasmania.

HANDLIST.—A useful handlist of "Birds Inhabiting New Zealand and those Birds from other Countries that have been Observed in New Zealand as Occasional Visitors" has been issued by the Dominion Museum, Wellington.

From Magazines, &c.

WESTERN AUSTRALIAN BIRDS.—Mr. W. R. Ogilvie-Grant is well known by repute to students of ornithology, and his first critical notes on Australian birds are welcomed.

These notes appear in *The Ibis* (October, 1909) under the title "On a Collection of Birds from Western Australia, with Field Notes by Mr. G. C. Shortridge." The collection is representative, having been made in the South-Western, Central, and Western divisions of the State, and was presented to the British Museum by Mr. W. E. Balston. Mr. Ogilvie-Grant has "discovered" several novelties in the "Balston collection," which he has named respectively *Certhionyx occidentalis*, *Zosterops shortridgei*, *Z. balstoni*, *Climacteris wellsi*, *Malurus bernieri*, and *Sericornis balstoni*, a beautiful coloured plate being devoted to the two last-mentioned species.

Some of Mr. Ogilvie-Grant's novelties—notably *Certhionyx* and the two *Zosterops*—have passed through Australian hands, but not sufficient difference was detected to warrant separation from the accepted species. However, it is anticipated that Mr. Gregory M. Mathews will carefully weigh all possible evidence before he admits climatic or other variations in form as distinct species into his new standard work on "The Coloured Figures of the Birds of Australia."

Mr. Ogilvie-Grant has suggested an amalgamation himself regarding a common species, one of the "Magpies" or Crow-Shrikes. Mr. Shortridge's field note (p. 670) states that "The Long-billed Magpie (*Gymnorhina longirostris*, Milligan) is not uncommon on the Gascoyne River, where it takes the place of the *G. dorsalis*, Campbell, of the South-Western and Central divisions." Mr. Ogilvie-Grant proceeds to treat the latter species as synonymous with *G. leuconota*, Gray, of Eastern Australia, notwithstanding his critical description of the Western skins does not apply to those of the Eastern form. Mr. Ogilvie-Grant also does not think it possible to distinguish the Eastern from the Western form of the Scarlet-breasted Robins—*Petraca leggei* and *P. campbelli*.

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THE BIRDS OF LORD HOWE AND NORFOLK ISLANDS.—In *The Proceedings of the Linnean Society of New South Wales*, vol. xxxiv., part 4, 27th October, 1909, Mr. A. F. Basset Hull, Sydney, has published an interesting and valuable treatise under the foregoing sub-heading.

There have been many fragments published of the birds of Lord Howe and Norfolk Islands, but nothing so completely written as the treatise under review, which has the advantage of being interwoven with the author's own observations. Mr. Basset Hull visited Lord Howe Island from the 3rd to the 17th

October, 1907, and Norfolk Island from 8th October to 15th November, 1908, his primary object being to see the immense flocks of Terns and other sea-birds during their breeding season, and at the same time to glean some information respecting land-birds.

About 80 species, the majority Australian, are dealt with systematically, with references to previous literature, habitat, and field observations, while the descriptions and dimensions of eggs enhance the oological value of the article. Particularly interesting are the remarks written under the heading of the "Big Hill Mutton-Bird" of Norfolk Island, whether it is *Æstre-lata neglecta*, Schlegel, or *Æ. phillipii*, Grey.

"With every possible deference to the authorities who have merged *Æ. phillipii* into *Æ. neglecta*," writes Mr. Basset Hull, "I am of opinion that the birds represent two distinct species. Further information as to the description and habitat of *Æ. neglecta* may be anticipated from the investigations of Messrs. T. Iredale and party, who spent nearly the whole year 1908 on the Kermadecs."*

The following table of Mr. Basset Hull shows a marked dissimilarity of the four kinds of birds, their habits, and their breeding seasons :—

Species.	Bird.	Nest.	Egg.	Breeding Season.
Lord Howe Petrel.	Uniform in colour.	At end of a burrow.	...	July-August.
Norfolk Island Petrel.	"	"	2.14 × 1.62	January.
<i>Æ. neglecta</i> (Sunday Island).	Very variable in colour.	In the open.	2.44-2.6 × 1.67-1.85.	October-November.
<i>Æ. neglecta</i> , var. (Meyer Island).	"	"	2.47 × 1.62-1.86.	April-May.

There certainly appears to be at least two species or varieties of birds—those uniform in colour of Lord Howe and Norfolk Islands, which lay in burrows, and those variable in colour of the more southerly Kermadecs, which lay in the open, except it be that in the case of the birds nesting in the open—the only Petrel known to do so, consequently differing from other Petrels, that breed in darkness underground—their environment may cause the particoloured offspring, similar to the Biblical statement of the patriarch of old and the "ring-straked, speckled, and spotted" cattle.

Mr. Basset Hull's remarks on the familiar Mutton-Bird

* The result of Mr. Iredale's investigations appears in this issue of *The Emu*, pp. 13-15.—EDS.

(*Puffinus tenuirostris*) are also exceedingly interesting, and the reader can contrast a "rookery" on Lord Howe Island in a beautiful palm-glade, where the interlacing foliage excludes the sun's rays, with a "rookery" in the open on some grassy island in Bass Strait. Of interest, too, is his chapter on the snow-white Tern (*Gygis alba*), that lays its single egg on the bare bark or knot-hole of the limb of a tree.

Six excellent photo-reproductions of nests and eggs accompany the article.

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NEW ZEALAND BIRD NOTES.—Interesting notes on New Zealand bird-life may always be looked for in the Nature Study column which Mr. James Drummond, F.L.S., F.Z.S., conducts for the *Lyttelton Times*. In a recent issue Mr. Drummond quotes extensively from a letter written by Mr. P. J. O'Regan regarding a visit to the Inangahua Valley, West Coast. "It is absolutely certain," writes Mr. O'Regan, "that our ground birds will disappear in a few years unless we have them placed in sanctuaries, preferably some islands adjacent to New Zealand. Once, when I was a member of Parliament, I tried to have a clause inserted in the *Animals Protection Act*, making it a punishable offence to introduce cats, weasels, and similar animals on to any island near the New Zealand coast, but my attempt failed, I don't know why. It is certain that something should be done in earnest before it is too late. I do not know if there are any ground birds on the Auckland and other southern islands; if not, you ought to get up an agitation to have Wekas, Kiwis, and other birds placed there."

"On this occasion," says Mr. Drummond, "Mr. O'Regan spent three weeks in the Inangahua Valley. He heard a Kiwi only three times, and he did not either see or hear a Weka once. Yet these birds, until quite recently, were as plentiful as in the days of the first settlers. Everybody with whom he discussed the position told him that the Weka had disappeared as completely as if the countryside had been swept by fire. There is no doubt in his mind as to the cause of this extermination. He blames the stoats and weasels, which are plentiful in all places, from proximity of settlement to the virgin bush, and which destroy the eggs and young birds. Rivers are not often insuperable obstacles to the pests, and no locality seems to be safe from their ravages. A settler told him that two years ago a weasel's nest, found in the Motupiko Valley, contained no fewer than 30 young birds—Tuis, Robins, Sparrows, Tomtits, Parrakeets, and others. Things that Mr. O'Regan saw and heard of during his holiday lead him to dissent from Mr. Mackenzie's statement that the Weka is able to fight the stoat and weasel; he believes that no native bird is immune from the danger the presence of these creatures implies.

"In recent years, in all parts of the West Coast, there has been a notable decrease in the numbers of the Pigeons and the Kakas, and Mr. O'Regan is more firmly convinced than ever that this has

resulted mainly from the presence of vast flocks of berry-eating Starlings, Thrushes, and Blackbirds, which eat the berries even before they are ripe, and leave little for the luckless native birds. He makes stoats and weasels share the blame in regard to the Pigeons and the Kakas, as several bushmen told him that the vermin attack the nests of all birds, whether they are in trees or on the ground. His observations show that the general decrease in numbers does not apply to the 'Morepork' Owl, the Kingfisher, and the Fantail. The Fantail, indeed, is probably more plentiful now than it ever was before. The Tui is holding its own fairly well. He saw no Blue Ducks during his visit. He was told that this native is still seen in remote mountain streams, but he cannot understand how it can combat an enemy which has defeated the Weka. He admits that there may be cases in which a Weka, which is a game and powerful fighter, and is accustomed to dealing with rats, has successfully fought a weasel, but he points out that there is no doubt that, during the past five years, the Weka has disappeared from forests where it had flourished for years. 'To anyone who is acquainted with the West Coast as I am,' he says, in concluding this part of his letter, 'it was a painful experience to spend three weeks in the bush without hearing a Weka.' "

In another issue are some excellent notes on the Huia, as follow :—" Mr. Gregor M'Gregor, of Wanganui, knew the Huia in the early days of settlement, when this bird was fairly plentiful in parts of the Rimutaka, Tararua, and Ruahine Ranges, and was found, in fact, over the whole of the country drained by the Manawatu, Rangitikei, and Hautapu Rivers. He has seen dozens of Huias on occasions when he made his way through the forests. He states that they come readily when their whistle is imitated by a human being. They have a very acute sense of hearing, and will come from a distance of over 100 yards. They do not usually fly down, but run or hop along the ground, usually coming down the open slope of a hill. He has never seen Huias singly; they have always been in pairs. They are snared, but always on the ground, and never on a tree. They are more in evidence on foggy or wet days. In the summer time they go high up the ranges; in the winter the snow on the mountain-tops drives them down to lower altitudes. There is usually a great deal of rimu, maitai, and birch timber in their forest haunts. Many large rimu trees fall to the ground and decay, and offer homes to huhu grubs, for which the Huias have a marked weakness. At one time, Mr. M'Gregor adds, Huias were very plentiful near Taihape. He feels strongly that determined efforts should be made to catch some for liberation on the bird sanctuaries. The female lays up to three, four, or five eggs in a season, four being quite common, and he is convinced that the birds would thrive well on the sanctuaries, where they would be protected from all natural enemies, including man—the most relentless of all."

A note on the White-eye (*Zosterops caerulescens*):—" The White-

eyes, apparently, made their appearance on the Chatham Islands about the same time as they came from Australia to New Zealand. Mr. A. Shand, who has lived on the islands for 55 years, states that he saw these birds for the first time about a year after his arrival. They were strangers to the Chatham Islands Maoris, who were greatly interested in the new arrivals. The Hauhau prisoners from Poverty Bay, who were placed in custody on the islands in 1868, caught large numbers of White-eyes for food. The favourite method was by the use of eel baskets. These baskets are made with a very narrow opening, arranged half-way down the length of the basket, the reeds sloping up from one end to the entrance. The birds, like the eels, entered the baskets to get the bait, but could not find the end of the entrance again, and were captured."

* * *

A COLLECTION OF SUB-FOSSIL BIRD AND ANIMAL REMAINS FROM KING ISLAND, BASS STRAIT.—In the *Memoirs of the National Museum*, Melbourne, No. 3 (February, 1910), Prof. Baldwin Spencer, C.M.G., and Mr. J. A. Kershaw, F.E.S., have collated some interesting material concerning the species of Emu once inhabiting King Island, but now extinct. With the assistance of a local resident, Mr. Kershaw, in November, 1908, and again in January, 1909, collected a large number of vertebrate remains among the sand-dunes of South Point. These included many Emu bones. The writers are further indebted to the Tasmanian Museum authorities for specimens, and the whole collection under notice comprises:—

1. Sixty-four femora.
2. Forty-one tibio-tarsi.
3. Seventy tarso-metatarsi.
4. Four pelves of which the total length can be measured, and parts of sixteen others.
5. Parts of six skulls.
6. One pectoral arch.
7. Portions of three sterna.
8. Fourteen fibulæ.
9. Ribs.
10. Vertebral bodies.
11. Toe bones.

These remains were chiefly distributed over the sand-dunes on the extreme southern portion of the island. The area covers some 300 acres in extent, and the sand is constantly moving and sifting out the bones, which then are to be picked up in the troughs. Wallaby remains are the most numerous, but mixed up with them are parts of Emus, wombats, and dasyures, in a fair state of preservation, with here and there portions of skeletons of both seals and sheep (these latter are apparently later additions).

The first Emu remains from King Island were procured by Mr. A. G. Campbell, in November, 1902 [see *The Emu*, vol. iii., (1903), p. 113], and were presented to the National Museum. They were a thigh-bone and a pelvis, and were found on the margin of the Martha Lavinia Lagoon, near the north end of the island. They were taken to be small specimens of the Australian mainland species (*Dromæus novæ-hollandiæ*). The more complete series of bones obtained later by the Tasmanian Museum enabled Prof. Spencer to definitely describe a new species, to which the name of *Dromæus minor* was given [see *Victorian Naturalist*, vol. xxiii. (1906), p. 140].

In the following table are given the measurements of bones of six specimens of *Dromæus novæ-hollandiæ*, of the large series of the King Island form (*D. minor*), and the measurements of the one skeleton extant of *D. peroni*,* the extinct Kangaroo Island Emu. In the case of the King Island form three series of measurements are given—the minimum, the maximum, and those between which lie the great majority of the measurements :—

—	<i>D. novæ-hollandiæ.</i>	<i>D. minor.</i>	<i>D. peroni.</i>
	mm.	mm.	mm.
Skull, length	90-91	58-62	80
„ width	75-76	54-56	66
Femur	217-243	140, 150-180, 186	180
Tibio-tarsus	415-446	265, 270-320, 363	342
Tarso-metatarsus	335-411	216, 220-280, 292	290
Pelvis, length	440-442	249-292	340
„ width in front	80-105	64	75
„ width behind	105-113	78-84	92

It is not, therefore, a matter for surprise, judging by what has taken place in insular differentiation of Ratite birds in New Guinea and the islands adjacent to the north of Australia, that King and Kangaroo Islands, and Tasmania† as well, should each possess its own species of Emu.

From the large series of remains a diagnosis is then given :—

DROMÆUS MINOR.

Size varying considerably, but always much smaller than that of *D. novæ-hollandiæ*; not exceeding that of *D. peroni*, but of more robust build. Tibio-tarsus rarely exceeding 330 mm., most usually from 270 to 320 mm., in greatest length. Tarso-metatarsus rarely exceeding 280 mm., most usually from 220 to 280 mm., in greatest length. Frontal region of skull decidedly

* In Paris Museum.

† See *The Emu*, vol. vi. (1907), p. 116.

dome-shaped. Length of skull from frontal suture to occiput not or only slightly exceeding 60 mm. Greatest width of skull not or only slightly exceeding 55 mm.

Habitat.—King Island, Bass Strait. Now extinct.

It is very interesting to know that the remains of eggs were frequently met with, either in small fragments in the loose sand or in patches embedded in the firmer soil beneath. In one or two instances fully half the shell was found completely flattened out and fractured into small fragments, with the surface more or less removed by the action of the driving sand.

The original discovery of an Emu on the islands of Bass Strait was made in 1802. In December of that year Baudin, in his exploring ships, *Géographe*, *Naturaliste*, and *Casuarina*, visited Kangaroo Island, from which they carried three Emus alive to Paris. A little later four naturalists of the expedition were left stranded at Sea Elephant Bay, King Island, while the ships stood out to sea, owing to bad weather. They were fortunate in reaching a sealers' camp, the chief man among whom, Cowper by name, entertaining the Frenchmen in his quarters. An account is published of the naturalists seeing two "Casoars" hanging in the larder, and closely questioning Cowper, who said he had killed over 300 birds, his dog being specially trained for the purpose. It is singular that the naturalists did not procure any specimens of the bird, though the descriptions accurately fit an Emu. They may have considered it identical with the Kangaroo Island bird. It is a matter of great regret that in the early days of Australian exploration so few specimens of the fauna of these islands were preserved.

This "Memoir" is well illustrated with eight large photo-plates.

Reviews.

[“Ornithologists at Warunda Creek.”]

CAPTAIN S. H. White, of South Australia, has issued, under the above title, a neat little *brochure*, which is a pleasantly written “Record of the A.O.U.’s Expedition to Eyre Peninsula, October, 1909, with Notes on Ornithology, Botany, and Entomology.” The “Record” may be taken as supplementary to the official report of Mr. Robert Hall, C.M.Z.S., which appeared in *The Emu*, vol. ix., p. 123, and contains an interesting narrative and independent bird observations. Capt. White has added the Chough (*Corcorax melanorhamphus*) and the familiar Blue Wren (*Malurus cyaneus*)—its most westerly recorded range—to the list of birds, while he holds that the *Strepera* observed was not *melanopectera*. Mr. J. W. Mellor has since described the bird as *fusca* (see present issue of *The Emu*, p. 34).

The only thing that offends the artistic eye in the production of this little work—a circumstance over which the author had apparently no control—is its typographical errors, which are too numerous to be excused. Liberties have also been taken with technical terms. Why insert hyphens between the generic and specific names? If master printers place important matter in the hands of their juniors, they (the printers) can only expect to receive adverse criticism. The publication was also worthy of better paper, which would have been an advantage to the excellent photographs that were freely interspersed throughout its pages. A few copies still remain, which may be had at half price—3s. 6d.—on application to the author.

[“A History of the Birds of Kent,” by Norman F. Ticehurst. Witherby and Co., London. 21s. net.]

THE author of this handsome volume, which to a British ornithologist should prove of much interest, undertook its preparation sixteen years ago. His stated reasons for adding to the great library of books on British bird-life are the importance of Kent from an ornithological point of view and the fact that no history of its avifauna as a whole has ever before been produced. Two other works of a similar nature have appeared since Mr. Ticehurst commenced the task he has now so successfully accomplished, but his book is far from being superfluous on that account.

The history, status, distribution, and migratory movements of each species are dealt with in a concise and lucid manner, and, reading some of the chapters, one longs for such a history of the birds of Victoria or any other State of the Commonwealth.

The area of Kent is about 1,554 square miles; there is a great length of coast-line, and “nearly all parts of the country are enriched by extensive woodland tracts and coppices and by park-like lands surrounding ancient country seats.” “Besides being one of the most beautiful counties in England, Kent is essentially an agricultural county, and is in parts highly cultivated.” Nearly half of the total area of 995,014 acres consists of permanent pasture. Yet Kent is one of the finest parts of England for the bird observer. Of the 107 species of birds which breed regularly in the county, 37 are purely summer visitors, and 70 may be found throughout the year.

The book is excellently printed and bound, but the half-tone illustrations, of which there are twenty-four, leave something to be desired. The frontispiece, for instance, representing a pair of Kentish Plover at their nest, is evidently from a beautiful and interesting photograph, to which the reproduction has not done full justice.

["A Handbook of the Birds of Tasmania and its Dependencies," by Frank Mervyn Littler, F.E.S. (Member of the Australasian Ornithologists' Union). Launceston, Tasmania. Published by the author. 1910.]

THIS handbook is well timed, and will be welcomed by all nature students, especially Tasmanians and ornithologists.

It is royal 8vo size, contains 235 pages, and is a marvel for neatness, while its arrangement is excellent. The name of each species is given in the vernacular, with the scientific name and authority in brackets; then follow, succinctly written, a description of the "Male," "Female," "Young," "Nest," "Eggs," "Breeding Season," "Geographical Distribution," and last, but not least from a popular point of view, "Observations." Thus 214 birds, including accidental and casual visitors, have been dealt with, in a manner calculated to make the book a useful and scientific reference, and members of the A.O.U. will congratulate their fellow-member accordingly.

While the author frequently quotes predecessors and contemporaries, which are freely acknowledged, his own store of knowledge of Tasmanian birds makes the work more valuable, and very little remains for the reviewer to criticise adversely. The author drops the Boobook Owl of the mainland out of the Tasmanian list, recording only the little Spotted Owl (*Ninox maculata*). Under the head of the Raven (*Corone australis*) Mr. Littler states:—"After an investigation extending over some years, and examination of specimens" of Crows so called "from nearly every district in Tasmania, I am forced to the conclusion that the Crow (*Corvus coronoides*) is non-existent in this island." Another bird off the Tasmanian list! Although the White-shouldered Caterpillar-catcher (*Lalage tricolor*) has found its way on to the Tasmanian list, Mr. Littler has been unable to discover how and when it was recorded. A good place is not given to a second yellow-breasted Thickhead (*Pachycephala gutturalis*), notwithstanding two records by field observers. Mr. Littler is of opinion that they may have been *P. glaucura* only. It would be interesting were a Tree-creeper (*Climacteris*) found in Tasmania. "Although no specimens have been secured, I have seen it in the big forests in the north-east of the island," writes Mr. Littler. Whether it be *leucophæa* or *scandens*, better to obtain a specimen for complete identification. The scepticism of a person trained in his own subject is not to be condemned. Notwithstanding two good field observers reported records of the Fairy Martin (*Petrochelidon ariel*) for Tasmania, Mr. Littler affirms:—"I have no personal knowledge of this species in Tasmania, nor have Messrs. Arthur Butler, H. C. Thompson, H. Stuart Dove, or several other observers from whom I inquired." The list of foster-parents given for the various Cuckoos is exceedingly interesting, and includes one or two new records. Mr. Littler is again sceptical about the New Zealand Bronze-

Cuckoo (*Chalcococcyx lucidus*) being accidental. If it can get down to Macquarie Island it can surely reach Tasmania. Mr. Littler recognizes two species of Brown or Swamp Quail for the island—namely, *Synacus australis* and *S. diemenensis*. As only one Albatross, the White-capped (*Thalassogeron cautus*) breeds in Australia, and that in Tasmanian waters (Albatross Island), it is remarkable that Mr. Littler has dismissed this fine species with such sparse remarks. Regarding the Musk-Duck (*Biziura lobata*), Mr. Littler confirms the clutch of eggs as “two or three,” a statement that will be a slight shock to some oologists, who affirm that this curious Duck lays double these numbers.

The omissions of the “Handbook” are indeed few, if any. The White-naped Honey-eater (*Melithreptus lunulatus*) was secured on the Kent Group by the expedition of the Field Naturalists’ Club of Victoria, 1890, also a variety of *Sericornis frontalis*. Mention also might have been made of the recently extinct Emus of Tasmania and King Island.

The handbook is adorned with 50 beautiful half-tone photo. blocks of birds, nests, &c., many of which have, as acknowledged, been previously reproduced in *The Emu*. At the end of the volume, in the form of an appendix, is an “Extract from the *Tasmanian Game Protection Act 1907*.” Even ornithologists should know enough of the law to keep them out of trouble.

In conclusion, as the little work has been classically treated by the author, so have the printers, Messrs. Walker, May and Co., Melbourne, ably done their share. The setting and arrangement of the type and printing are artistic, while typographical errors are practically *nil*. The book is worth double its published price, 4s.

[“The Subantarctic Islands of New Zealand.”]

THE library of the A.O.U. has been enriched by two handsomely got up volumes, quarto size, which have been presented by the Philosophical Institute of Canterbury, on “The Subantarctic Islands of New Zealand.”

The volumes, which are edited by Dr. Chas. Chilton, are mainly the reports on the geo-physics, geology, zoology, and botany of the islands lying to the south of New Zealand, based chiefly on the observations and collections made during an expedition in the Government steamer *Hinemoa* (Capt. J. Bollons), in November, 1907.

The scientific members of the expedition numbered 26, and were divided—one party landing on Auckland Islands and the other party on Campbell Island; arrangements as to camp-life—tents, cook, &c.—being somewhat similar to those carried on during the Union’s own insular working camp-out expeditions. The *Hinemoa* reached Auckland Islands on the 16th November,

coincidentally well timed, because castaway sailors—survivors of the wreck of the *Dundonald*—were found there.

The scientific articles are preceded by the "Narrative of the Expedition," "The Discovery of the Islands," and "The History of their Scientific Investigation," all of which are most interesting reading even from a popular point of view, not to mention their historical importance.

It being beyond the limits of space and the range of the reviewers to notice all the valuable and technical articles which comprise the two volumes, they will, however, venture some remarks on that portion of Mr. E. R. Waite's article (xxv.) dealing with "Aves." According to Mr. Waite's statement, the ornithological work was inadequately performed for such an important expedition, for the following principal causes:—(1) Most of the subjects to be studied had been allotted to different specialists of the expedition, whilst arrangements in respect of ornithology had fallen through; (2) it was not until after the return to New Zealand that Mr. Waite was deputed to write up the birds; and (3) it was a rule of the expedition that "neither birds nor their eggs were to be taken." Bird protection done to the death (of scientific knowledge)! However, Mr. Waite has compiled a very able and instructive chapter, consisting of an enumeration of species recorded from these southern islands, together with his own notes, some of these notes being made in February, 1907, when he accompanied His Excellency the Governor on his tour, which touched the Snares, Aucklands, Campbell, Antipodes, and Chathams. The following Australian species may be mentioned:—

Zosterops cerulescens (White-eye).—This self-introduced bird from Australia to New Zealand now extends its range to Auckland, Campbell, and Chatham Islands.

Catharacta (Megalestris) antarctica (Skua).—This well-known marine marauder was found on many of the islands, and through the courtesy of the "Institute" (per favour of Dr. C. Chilton), the illustration is reproduced of "Skua Gulls at a carcass of a seal" (Plate VII.)

Æstrelata lessoni (White-headed Petrel).—Mr. Waite found this rare Petrel breeding on Disappointment Island, Auckland group.

Majaqueus æquinoctialis (White-chinned Petrel).—This other Petrel of Kerguelen fame also appears to nest on Disappointment Island, because a decayed specimen was taken from a burrow, while several dead birds were observed lying about.

Daption capensis (Cape Petrel).—Voyagers assert that the beautiful "Cape Pigeon" is becoming scarce on the route between the Cape and Australia. This bird is said to breed on the Western Snares, but Mr. Waite had no opportunity of verifying the statement. It was only recently (1904) that the



Skuas (*Megalestris antarctica*) at Carcass of Seal.

Scottish expedition discovered the eggs of the Cape Petrel on the South Orkneys.

Prion banksii (Banks Dove-Petrel).—Mr. Waite writes :—" On the evening of the day on which we pitched our camp on the Auckland Islands, we noticed some pale-coloured birds flying close to us in the moonlight, but as silently as Owls. Next morning we discovered that the whole of the peat along the coast-line was riddled with holes, whence proceeded a crooning kind of sound."

Diomedea exulans (Wandering Albatross).

D. regia (Royal Albatross).

D. melanophrys (Black-browed Albatross).—Most descriptive accounts are given of these splendid creatures, together with fine plates of brooding birds on their nests.

Phaethria fuliginosa * (Sooty Albatross).—This fine species was noticed nesting on the ledges of cliffs on the Aucklands. It is also known to breed on the Antipodes and Campbell Islands, where Mr. Waite obtained eggs in February. Macquarie Island should also be added to the breeding localities in sub-antarctic islands. †

Aptenodytes patagonica (King Penguin).—This large and handsome Penguin is of peculiar interest to Australians, as a straggler, apparently from Macquarie Island, where immense rookeries exist, has been found off the Tasmanian Coast. ‡ A splendid photo. half-tone illustration is given of a remarkable Penguin rookery (*Catarrhactes pachyrhynchus*)—a New Zealand species—on the Snares.

It is astonishing how far south some of the introduced European birds were found—Thrushes and Blackbirds on the Snares; nests and eggs of the latter observed on the Aucklands; while House-Sparrows and Starlings are reported as having been seen on Campbell Island.

A useful coloured map of the Antarctic and Subantarctic Regions, cleverly drawn by Mr. E. N. D'Oyly, accompanies the work. But why did that cartographer insert "Royal Company's Islands," seeing they have been officially expunged from the charts by the authorities of the Navy, § an action confirmed by Sir E. Shackleton, when he caused the *Discovery* to explore the locality on her last homeward voyage?

The whole work—much of it extremely laborious—reflects the greatest credit on all concerned, from an enlightened Government, which authorized the expenditure, to the Government Printer who published it. Thus a scientific national

* Should this species not be *P. cornicoides*, Hutton?—EDS.

† Vide "Nests and Eggs" (Campbell), p. 938.—EDS.

‡ Robert Hall, *Emu*, vol. ix., p. 250.

§ This was done at the instance of the Council of the A.O.U.—vide *Emu*, iv., p. 32 (1904).—EDS.

monument has been left—a reference for all time. No doubt the Government of the day will extend the same courtesy to the Australasian Ornithologists' Union, as it hopes to organize an expedition (composed of Australian and New Zealand members) to explore more ornithologically the romantic southern islands of New Zealand, of the avifauna of which, as Mr. Waite has informed us, our knowledge is yet "very inadequate."

Correspondence.

BIRDS OF THE EAST MURCHISON, W.A.

To the Editors of "The Emu."

SIRS,—In the April issue of *The Emu*, Mr. Whitlock, in his East Murchison notes, mentions my name in a way which calls for some comment on my part.

With regard to Mr. North's "record,"* to some particulars in which Mr. Whitlock takes exception, this certainly needs a little explanation from me. As to the dates, these, probably owing in the first place to carelessness on my part, have got somewhat mixed. On 13th June, 1908, I took nest and eggs of *Cinclosoma marginatum* at Wiluna; the nests taken on 30th August and 1st September of same year were those of *C. castanonotum*, and were taken about 80 miles east of Kalgoorlie, while on the Transcontinental Railway survey, as Mr. Whitlock points out; how I came to mix these up with *C. marginatum* I don't know. The "record" also mentions another set of *C. marginatum* taken by me on 19th August, 1906. This is correct, but the locality given is wrong. "Lake Way, W.A.," should read "Mt. Ida, W.A."

The delay in the publication of this "record" was practically all my fault, as Mr. North had repeatedly written to me for the particulars about the skin and also for the eggs for description. What I take exception to in Mr. Whitlock's article is his direct assumption that I am incapable of taking off a skin well enough for descriptive purposes, and that the skin sent by me to Mr. North from Wiluna was too mutilated for description. I quite agree with Mr. Whitlock in his remarks about the tenderness of the skin, but I maintain that the skin I sent was good enough for the purpose for which it was intended. However, Mr. Whitlock's statements are, in my opinion, more excusable than those of the editors of *The Emu*, contained in a footnote to the article under discussion; in this footnote the editors not only directly support the assumption that my skin was too mutilated for description, but also, without justification, directly accuse Mr. North of injustice to another collector.

* "Records of the Australian Museum," vol. vii. (1909), pp. 322-324.—EDS.

In his notes on *Anytornis gigantura*, Mr. Whitlock refers to my classing this species with *A. macrurus*, and says—"There is no reason for this." Mr. Whitlock has written me that "no" is a misprint for "more." As this puts a very different complexion on things, there is no need for comment.

As to the soundness of *A. gigantura* as a species there seems to be some doubt; several specimens from widely different localities have been obtained by myself and forwarded to Mr. North, with the verdict "*macrurus*." The matter, however, is *sub judice*, and I hope during the coming season to assist in the final settlement of this point.—I am, &c.,

CHAS. G. GIBSON.

Geological Survey, Kalgoorlie, W.A., 29/5/10.

[The editors have pleasure in publishing Mr. Gibson's letter. They have no desire to do injustice to anyone, but seek to record the scientific facts and history only of Australian birds, and in this connection any further notes on *Anytornis gigantura* or any other species by such a good field observer as Mr. Gibson will always be welcome.—EDS.]

To the Editors of "The Emu."

SIRS,—In the account of my recent collecting trip to the East Murchison, I find a misprint has crept in. Referring to *Anytornis gigantura*, on p. 203—ninth line from the bottom (excluding footnote)—should read "There is *more* reason for this." This error is unlucky, as I wished to convey the impression that my mind was an open one on the question of the identity or otherwise of *A. gigantura* and *A. macrurus*. Also, after re-reading my notes on *Cinclosoma marginatum*, in connection with the female skin collected by Mr. C. G. Gibson and forwarded to Mr. A. J. North, I fear I may have conveyed the impression that in my opinion Mr. Gibson had not the ability to make a good skin. It was simply lack of the necessary leisure on his part that was in my mind when I wrote. Having had some experience of the amount of work to be accomplished by the officers of our Geological Survey Department when examining our vast mineral belts, I know how little spare time there remains of the short winter's day when the field-work is done. When I have a *Cinclosoma* to skin I approach the task with a mind resigned to a tedious and discouraging operation. Despite the most delicate handling, the feathers of the rump and flanks will fall out. A *Cinclosoma* rivals a Dove in this respect. But, whatever the condition of Mr. Gibson's specimen may have been, I question if it afforded Mr. North sufficient evidence, unaccompanied as it was by a skin of the male, to enable him to determine its identity with absolute certainty.

Dr. Sharpe founded this species on a single male specimen, procured in the north-west of our State (W.A.) *C. cinnamomeum* is an interior bird, and, moreover, a species likely to be met with around Lake Way. The female of the latter is not strikingly distinct from that of *C. marginatum*. It seems to me, therefore, quite a natural thing for Mr. North to take advantage of the opportunity presented by the presence in his hands of the two males and one female of *C. marginatum* collected by myself to aid him in his description and identification of the female skin sent by Mr. Gibson. I do not blame him for doing so, but I think at the same time that an acknowledgment of the fact was due either to Mr. H. L. White or myself.

I take this opportunity, too, of stating that it is rather painful to me to have my sexing of the type specimen of *Lacustroica whitei* questioned by Mr. North, even if indirectly.* After skinning and sexing birds for upwards of 30 years, I think I may be trusted to distinguish the male from the female, especially during the height of the breeding season.—I am, &c.,

F. LAWSON WHITLOCK.

Young's Siding, D.R., W.A., 6/6/10.

Bird Observers' Club.

THE quarterly dinner and ordinary meeting of the club were held at the Strand Tea Rooms, Collins-street, Melbourne, on 14th April, 1910. There was a good attendance. At the conclusion of the dinner, Dr. H. W. Bryant was voted to the chair. A report from the Chief Inspector of Vermin, Mr. F. E. Allan, regarding the use of poisoned baits in orchards (forwarded by the Secretary for Agriculture) was read. Mr. Allan contended that the statement that thousands of birds were destroyed annually by means of baits was exaggerated, if not entirely without foundation. Mr. D. Le Souëf, C.M.Z.S., said the shooting in orchards did more damage than poison. Mr. G. E. Shepherd remarked that only Parrots and other birds provided with crops were liable to poisoning. Mr. C. F. Cole expressed the same opinion. The resignation of Mr. E. J. Christian, of the Kamarooka Estate, was received with regret, and it was resolved that he be placed on the list of country members. A paper by Mr. A. G. Campbell (Pomonal), dealing with the Victorian *Sericornis*, was read by Mr. A. J. Campbell. The author's contention was that *Sericornis frontalis* and *S. osculans* are really distinct species. Several members stated that two distinct types of nest were of general occurrence, one type being covered with moss externally, the other with bark. Mr. L. G. Chandler exhibited skins of *S. frontalis*, and Mr. J. A. Ross eggs of *S. frontalis* and other species of *Sericornis*. In the general discussion of the evening, reference was made to recent flocking of migratory birds, and to White-bearded Honey-eaters (*Meliornis nova-hollandiae*) nesting, as a result of protracted warm weather. Mr. J. A. Leach, M.Sc., reported that a dead specimen of *Oceanites oceanicus* had been picked up 9 miles from the sea-coast, at Geelong. Instances of Mutton-Birds (Short-tailed Petrel) and White-faced Storm-Petrels having been

* *Vict. Nat.*, xxvi., p. 138.

found several miles inland were cited by members. During the evening presentations were made to Mr. E. Brooke Nicholls and Mr. A. H. E. Mattingley on the occasions of their respective marriages. Mr. J. A. Ross made the presentations. In returning thanks, both Mr. Mattingley and Mr. Nicholls expressed great pleasure at the manifestation of esteem by fellow-members.

ANNUAL MEETING.

The annual meeting of the Club were held at the residence of Dr. H. W. Bryant, "Tarella," Toorak, on 18th May, 1910. Dr. Bryant presided, and there was a full attendance of members. The hon. treasurer, Mr. E. Brooke Nicholls, presented the balance-sheet for the past 12 months. It showed that, despite a fairly heavy expenditure for the period, there was a satisfactory credit balance with which to start the new year. The balance-sheet was adopted, the Chairman congratulating the hon. treasurer on the manner in which he had handled the Club's finances. The hon. secretary, Mr. Chas. Barrett, gave a verbal report. He said the Club had now been established five years, and its record was one of steady progress. Every member was a working ornithologist, and to the credit of the Club stood a good deal of valuable field work. He suggested, however, that some specially qualified members should direct their attention to the study of plumage phases, migration, parallelism, and other branches of ornithology which are much neglected in Australia. In the discussion which followed, Mr. D. Le Souëf, C.M.Z.S., said the study of plumage phases and the food of birds was of great importance. Mr. J. A. Ross said that some work was now being carried on in regard to plumage phases. Members of the Club had no time for serious scientific work. Mr. J. A. Leach, M.Sc., expressed the opinion that osteology and other subjects mentioned presented great difficulties to the untrained student. Something might be done, however, in regard to economic ornithology, which was almost entirely neglected in the Commonwealth. Mr. A. H. E. Mattingley, C.M.Z.S., said that the most important thing to study was the relation of birds to man. The Chairman remarked that specialization in some form was a very desirable thing. Mr. E. Brooke Nicholls said the study of ornithology had made great advances in Australia of recent years. The energies of young students should be diverted from mere collecting, and to the study of migration and similar subjects.

Mr. H. W. Wilson reported that matters in connection with the Gould League of Bird Lovers were proceeding satisfactorily, a large number of certificates having been sent out. On the motion of Mr. E. Brooke Nicholls, seconded by Mr. J. A. Leach, Mr. Donald Macdonald was unanimously elected an honorary life member of the Club, in recognition of the services he has rendered to the cause of popular bird study. Messrs. C. Wilson, O. W. Rosenhain, and J. S. Kitson, and Dr. C. S. Sutton, were elected as ordinary members. Mr. Chas. Barrett was re-elected hon. secretary, Mr. E. Brooke Nicholls hon. treasurer, and Mr. A. H. E. Mattingley member of committee (with the hon. secretary and hon. treasurer). The Chairman congratulated members on the continued success of the Club. The work done by members, he considered, had not only advanced our knowledge of the Australian avifauna, but had been of value to the community. Dr. H. W. Bryant read a paper entitled "A Trip to the Mouth of the Snowy River." The nature of the country in the vicinity was described and a list of birds observed, with field notes of interest, given. Mr. E. B. Nicholls read some notes on the Crested Penguin (*Catarrhactes chrysocome*), and Mr. C. F. Cole contributed a paper on "The External Structure of Birds." Messrs. A. W. Milligan, J. A. Leach, and others took part in a discussion regarding the sense of smell in birds. It was the general opinion that birds do possess the sense in question to a certain degree. The meeting closed with a hearty vote of thanks to the host and Mrs. Bryant.

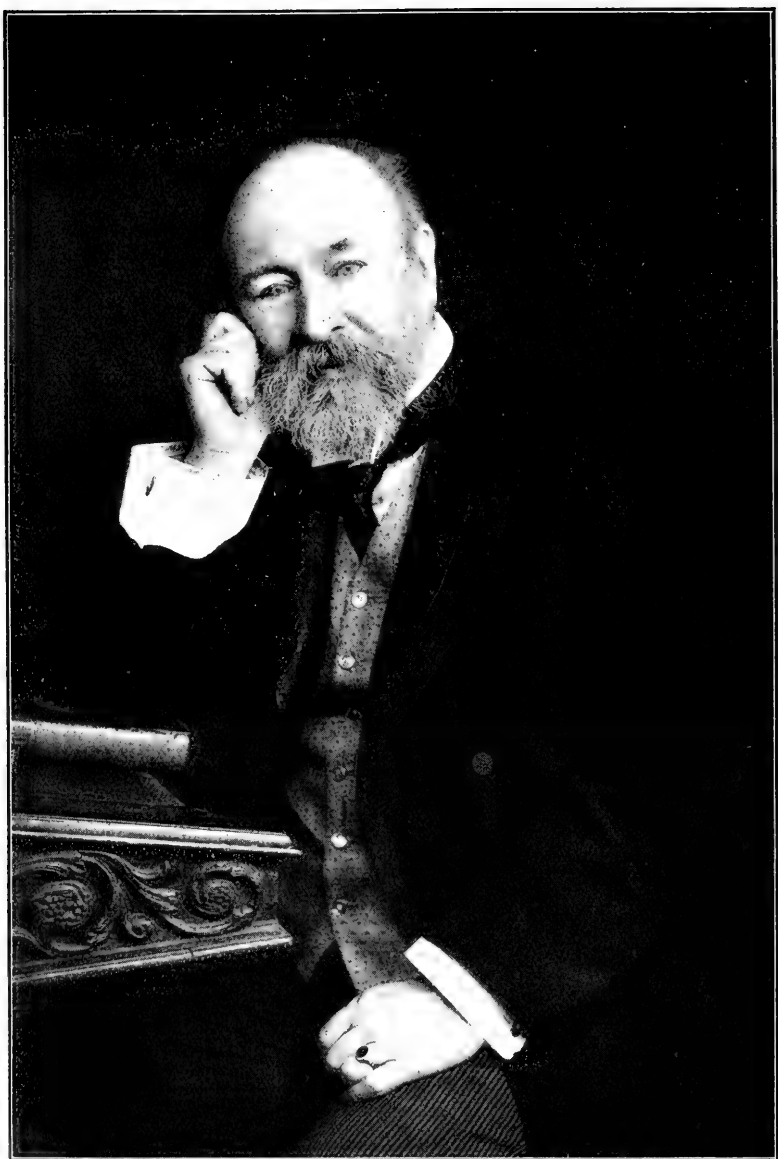
South Australian Ornithological Association.

THE last meeting of the above-mentioned Association was held at Dr. Pulleine's rooms, North-terrace, Dr. Pulleine presiding. The hon. secretary (Mr. J. W. Mellor) directed attention to a copy of the *Royal Society of Arts Journal*, which contained a report of an extensive lecture delivered by Mr. J. Buckland before the society in London recently. The pith of the subject was the appalling destruction of bird life throughout the world for decorative millinery, and the necessity of passing on the warning note to the colonies, lest an invasion should take place of these fell plume-hunters. It pointed out that the new play, "Chantecler," which is having such a run in London is tending to a revival in feather head-dressing for women—in fact, to the wearing of entire birds—which was to be deplored. A letter from the Commissioner of Police was read, stating that action had been taken regarding the catching of Seagulls at Port Adelaide. M.C. Wells, of Murray Bridge, was highly commended for his zeal in enforcing the *Birds Protection Act* which was splendidly illustrated by the recent case in his district. Capt. White directed attention to a letter received from a resident of Kangaroo Island, stating that the writer was watching with much interest the attempt to introduce the Mallee-Fowl on the island to save this quaint bird from extinction, and also stating that in his opinion the birds in question would, with protection, thrive well on Kangaroo Island. He was sure too much could not be done to protect the native birds and animals. Mr. J. H. Clark, a visitor, exhibited several sets of eggs of unusual colouration, taken at Bendigo (Vic.) and Broken Hill (N.S.W.) Some of these specimens completely puzzled oologists. Mr. J. W. Mellor recounted interesting observations made during a recent trip on the Murray River, when 32 species of birds were identified. Mr. A. Crompton stated that he had seen Black Cockatoos (*Calyptorhynchus funereus*) in unusual numbers feeding on burnt ground, evidently in search of partly roasted banksia nuts. These observations had been taken in the Innian Valley district, where he had spent his vacation. Capt. White gave interesting observations of bird life gathered at the Reedbeds during the month, among which were notes on the little Pied Cormorant, its great liking for a small species of crayfish which inhabited all fresh-water rivers, creeks, and dams, and did a great amount of damage to all canal and water embankments, as well as destroying the spawn of fishes, on which they mainly subsist. It was shown that by the destruction of these crustacea the Cormorants were doing the agriculturist and the fishing industry much good. Several interesting specimens were exhibited

Notes and Notices.

THE GREAT AUK.—There are a few remaining volumes of Mr. Symington Grieve's excellent work on the "History, Archæology, and Remains" of the recently extinct Great Auk or Garefowl (*Alca impennis*), to be had on application to Mr. James Thin, 54-56 South Bridge, Edinburgh. Price, 10s. 6d.

"HANDBOOK OF THE BIRDS OF TASMANIA."—Attention is directed to a review of this book, page 66. Copies may be had on application to the author, Mr. Frank M. Littler, F.E.S., Box 114, Post-Office, Launceston, Tasmania. Price 4s., with postage extra (postage—Commonwealth 4d., New Zealand 7d., elsewhere 1s. 3d.)



Yours sincerely
Abner Shaper.

ANOTHER COUNTY BIRD BOOK.—An important work on the birds of Dumfriesshire, by Mr. Hugh S. Gladstone, will shortly be published by Messrs. Witherby and Co., of High Holborn, London. The book will give an exhaustive account of the present day status and past history of all the birds of the county, and will be illustrated by photographic plates and a map. It will be published by subscription, and in a strictly limited edition.

THE GOULD BIRD LEAGUE.—Attention is directed to the inset certificate of the Gould Bird League, which was inaugurated by the Bird Observers' Club, Victoria. The certificate speaks for itself, and can be obtained by any citizen of the Commonwealth of Australia or of the Dominion of New Zealand, on payment of *one penny, with postage added* (postage, 1½d. within or 3d. beyond Victoria). Hon. secretary's address: Mr. J. A. Leach, M.Sc., Education Department, Melbourne.

ROYAL THANKS.—On the death of His Majesty King Edward VII., and the consequent accession of His Majesty King George V. (who, with Queen Mary, is a patron of the Australasian Ornithologists' Union), the Council of the Union forwarded a congratulatory message to King George on the occasion of his accession. The following reply has been received from the Private Secretary to Lord Dudley:—"The Governor-General has been commanded by His Majesty King George the Fifth to convey to you his sincere thanks for the loyal and congratulatory message which you were good enough to send in connection with His Majesty's accession."

THE LATE DR. R. B. SHARPE.—The excellent and characteristic likeness (Plate VIII.) of this ornithological *savant* was received too late to accompany the obituary notice which appeared in *The Emu*, vol. ix., p. 178. It is now quite opportune, if taken in conjunction with the following practical suggestion made by Mr. W. R. Ogilvie-Grant in *The Bulletin of the B.O.C.* (No. clvii.):—"It is sad to think that, after 38 years of the most faithful and unselfish service to the nation, Dr. Sharpe should not have been spared for a few years to enjoy his thoroughly well earned pension. As it is, his wife and children are left insufficiently provided for, and it is greatly to be hoped that some special means may be found of obtaining a pension for the family of so valuable a public servant."

BIRDS OF THE TANAMI GOLDFIELDS.—Mr. M. Symonds Clark, Adelaide, has kindly supplied the following information:—

"I have reviewed a letter, dated 31st March, 1910, from Mr.

Lionel C. E. Gee, warden of goldfields at Tanami, in the Northern Territory, who says :—‘I came across a very interesting collector, a bird-catcher by business, and whose partner is now in England with a consignment of birds. . . . I had a long conversation with him about the birds in this remote part of the world. He kindly made out for me the enclosed list of the birds he had noticed as occurring in this district, and I send it to you, as I am sure your friends of the ornithological society will be interested in it.’

“I think many of the readers of *The Emu* will be glad to see this list, which I send on to you for publication. On it you will see is a note* by Mr. Gee, who takes a great interest in birds, and has had opportunities of observing them in many distant parts of South Australia and in the Northern Territory. When at Arltunga, in the M'Donnell Ranges, he obtained, with great trouble, some living specimens of the Alexandra Parrakeet, which he brought to Adelaide and kept until shortly before his departure for Tanami.”

Dromæus novæ-hollandiæ

Synæcus australis

Turnix velox

Geopelia cuneata

Ægialitis melanops

Ochthodromus veredus

Eupodotis australis

Malacorhynchus membranaceus

Circus assimilis

Uroæetus audax

Milvus affinis

Falco lunulatus

Hieracidea berigora

Cerchneis cenchroides

Cacatua leadbeateri *

Calopsittacus novæ-hollandiæ

Melopsittacus undulatus

Ægotheles novæ-hollandiæ

Halcyon pyrrhopygius

Eurostopus argus

Cuculus inornatus

Chalcococcyx (sp. ?)

Petrochelidon ariel

Micræca pallida

Petræca picata

Smicrornis flavescens

Rhipidura tricolor

Coracina robusta

Lalage tricolor

Pomatostomus superciliosus

Cinclothrhamphus cruralis

Ephthianura tricolor

Acanthiza (sp. ?)

Malurus cruentatus

M. cyanotus

M. assimilis

Amytornis striatus (?)

Artamus personatus

A. minor

A. cinereus

Collyriocichla brunnea

Grallina picata

Cracticus picatus

Pachycephala falcata

Aphelocephala nigrincincta

Sphenostoma cristatum

Neositta leucoptera

Dicæum hirundinaceum

Pardalotus rubricatus

Melithreptus lator

Myzomela nigra

Ptilotis heartlandi

Mirafra secunda

Emblema picta

Tæniopygia castanotis

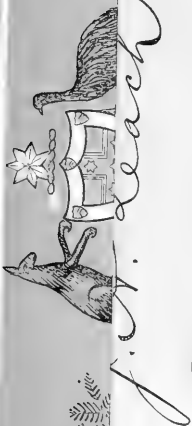
Corvus coronoides

Oreoica cristata

Certhionyx leucomelas

OBITUARY.—At the Adelaide session of the A.O.U., Mr George R. Marriner, F.R.M.S., Curator Public Museum, Wan-

* The salmon colour pervades this bird all over very strongly, and I think it is a different variety to that seen in the south.—L. C. E. G.



Hon Secretary

BIRD LOVER'S PLEDGE.

1. I hereby promise that I will protect native birds and will not collect their eggs.
2. I also promise that I will endeavour to prevent others from injuring native birds and destroying their eggs.

Signed

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ganui, N.Z., was elected a member of the Council to represent New Zealand. Unfortunately, Mr. Marriner has since died. He was apparently a strong and healthy young man, with every prospect of a long and useful career. He was confined to his bed for a month, and during that period had three operations for appendicitis and other troubles, and ultimately succumbed on 25th February to septic poisoning. The loss of one so young and strong has been a great sorrow to his relations, to whom the Council, on behalf of the members of the A.O.U., desires to offer its sincere condolence. A recent work of Mr. Marriner, "The Kea : a New Zealand Problem," was favourably noticed in *The Emu* (*vide* vol. viii., pp. 229-231).

FROM THE MINUTES OF THE B.O.C., 15/12/09:—

Mr. G. M. MATHEWS remarked that the two following names should be added to his work "Handlist to the Birds of Australasia," 1908:—

On p. 11 add :

LOPHOPHAPS LEUCOGASTER, Gould.

On comparing the white-breasted *Lophophaps* from Central Australia with examples from other parts of Australia, it will be found that the former have a much larger bill and thicker tarsi.

On p. 76 add :

ACANTHIZA AUSTRALIS, North.

Mr. North, in his book "Nest and Eggs of the Birds found breeding in Australia and Tasmania," pointed out the differences between this bird and *A. reguloides*, Vig. & Horsf., from New South Wales. Skins in Mr. Mathews' collection, proved that the characters pointed out by Mr. North were reliable.

Mr. MATHEWS added that on p. 5 the following alteration should be made:—*Dromæus peroni*, Roths., must stand as *D. parvulus*, Gould [Penny Cyclop., xxiii., p. 145 (1842)].

Mr. MATHEWS also described and exhibited an example of a new sub-species of Grass-Wren, which he proposed to call

AMYTORNIS WHITEI, sub-sp. n.

Differs from *A. striatus*, Gould, in being larger in all its measurements, the bill being especially large. It is also redder on the back and underparts.

Hab.—Coongan R., North-western Australia. This form is named in honour of Mr. H. L. White.—*Bulletin B.O.C.*, No. clvi.

FROM THE MINUTES OF THE B.O.C., 16/3/10:—

DR. E. HARTERT exhibited examples of a new form of *Acanthiza*, and made the following remarks:—

"When arranging the specimens of *Acanthiza* in the Tring Museum I was struck by the different colouration in a series which had been named *Acanthiza nana*, and it soon became evident that two different sub-species were represented. One form is characterized by having the upper surface olive-green and the under side bright yellow. This bird inhabits New South Wales, and has been described by Vigors and Horsfield as *Acanthiza nana*. I have examined skins from Sydney and Parramatta.

"In the other form the upper parts are less green, rather less bright, and of a more brownish tint, and the under surface is paler and of a more buffy yellow, contrasting with the pale rufous-buff throat. This form inhabits Victoria, and I have examined skins from Box Hill, Castlemaine, Mulgrave, and Springvale in the Tring Museum, and from Saddleworth in Mr. Mathews' collection. I propose to call this new form

ACANTHIZA NANA MATHEWSI, sub-sp. n.,

in honour of Mr. G. M. Mathews, the author of the most recent list of Australian birds.

"Type in the Tring Museum. ♂. No. 76A. Springvale, 23/10/97, A. G. Campbell coll.

"It may be added that the specimens of *Acanthiza* in the British Museum said to have been collected in Queensland (*cf.* Cat. Birds B. M., vii., p. 293) were certainly not procured in that locality. They were purchased from Cockerell, and the particulars on his specimens are always untrustworthy."—*Bulletin B.O.C.*, No. clix.

Important Announcement.

THE next annual session of the Australasian Ornithologists Union will be held at Brisbane during the first week in October. Thereafter the usual working expedition (for about 10 days) will be made to one or two of the islands of the Great Barrier Reef, with Gladstone as a base. The Government of Queensland, through the Under-Secretary, have been good enough to intimate that a suitable steamer will be placed at the disposal of the expedition. Applications from members intending to join the expedition must reach the hon. secretary A.O.U., Mr. H. W. Wilson, 105 Drummond-street, Carlton, Victoria, not later than 31st August.

IN MEMORIAM.

King Edward the Seventh.

BORN 9TH NOV., 1841. DIED 6TH MAY, 1910.

WITH KING EDWARD VII. has ended a memorable reign. Our "Peacemaker" had the welfare of all at heart. We, in the Australian Commonwealth, have regrets as deep as any from "Dominions beyond the Seas," or from the heart of the Empire itself, that he has passed away.

That his collections as Sportsman and Naturalist have enriched the Empire's National Museum is a great gain to students; but that among his last official acts was a reception of Queensland and New Zealand representatives makes his memory still more dear to dwellers by the Southern Seas.

To the "Queen Mother" our deep sympathy is due. As "leading lady of the Empire" she discouraged the cruelty involved in the use of plumes, thus directly aiding the bird-lover's cause. With her son as Patron of the Australasian Ornithologists' Union may we not expect equal help, and (through our sorrow) say

"God Save the King!"



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 THE objects of the Society are the advancement and popularization of the Science of Ornithology, the protection of useful and ornamental avifauna, and the publication of a magazine called

The business of the Society shall be conducted by a Council, consisting of two Vice-Presidents, Secretary, Treasurer, Librarian, and six members; each office-bearer and member of the Society shall retire at the end of each financial year, but shall be eligible for re-election.

The Annual Meeting shall be held in one or other of the principal towns of the different Colonies, and the place to be decided at the previous Annual Meeting.

Every member shall be liable for the annual subscription of fifteen shillings, due on the first of January. The usual exchange to be added to Foreign, Interstate and Colonial postage (freights, &c.)

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ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.

The Emu

Official Organ of the Australasian Ornithologists' Union.

"Birds of a feather."

VOL. X.]

1ST OCTOBER, 1910.

[PART 2.

Additional Notes on the Tooth-billed Bower-Bird (*Scenopæetes dentirostris*)* of North Queensland.

BY SIDNEY WM. JACKSON, A.O.U., CHATSWOOD, N.S.W.

TURNING to the living habits of the Tooth-bill, that of feeding naturally presents itself for first consideration. Now, the diet of the Tooth-bill is both mixed and rich, and he levies on the varied resources of his dense scrub haunts with dainty discrimination. Molluscs, insects, scrub fruits and berries furnish his sylvan fare, as evidenced by the *débris* in his feeding grounds, and (to the careful observer) by the component parts of his excreta or the examination of his digestive organs. Probably we may regard his most nutritious and favourite food as being the one most common to the lush moisture of the northern scrubs—namely, scrub molluscs or snails.

There are not many people who know how great is the variety of our scrub snails. The Tooth-bill knows, and fares generously. Within and around the borders of many of his leaf-strewn play-grounds I found and collected both old and freshly broken remnants of the following land-shells, viz.:—*Helix franklandiensis*, *H. semicastanea*, *H. sheridani*, *H. villaris*, *H. bellenden-kerensis*, *H. macgillivrayi*, and those of four other species, which have proved to be new to science. *Helix macgillivrayi* seems to be an especial favourite with the bird, as much from its richness as from the fact that its rather delicate shell is more easily broken. It is found both on the ground and in the trees, and twice at least I saw a Tooth-bill holding one in his beak. The shells, evidently broken to furnish the bird's food, were found in great numbers in various parts of the scrub (*vide* Plate I., *Emu*, vol. ix., July, 1909)—a fact which not only proves the bird's taste for these morsels, but also shows that he often goes to one place to prepare his food, and sometimes strictly localizes his rubbish-heap of broken shells. His cousin, the Spotted Cat-Bird (*Elurædus maculosus*), and the Noisy Pitta (*Pitta simillima*), who are also snail-feeders, help to increase the pile. Not only is the shell of this mollusc soft and easily broken, but, being also of small

* See special issue of *The Emu*, June, 1909.

size, it is easier for the bird to carry; hence its prevalence among the "middens" of this scrub aristocrat. Sometimes there is a stone on which the Tooth-bill cracks his shells (*vide Emu*, June, 1909, Plate XXIII.), but not infrequently he makes the limb of the tree or stick on which he perches serve his purpose. The habits of *H. macgillivrayi* make it a fairly easy victim. It is a tree-climber, and sometimes may be found in the moist heart of the fern growths, such as the big *Asplenium nidus*, in the trees. This fact was amply proved by Mr. Frizelle and myself when breaking our way through the dense foliage in search of the Tooth-bills' nests. During dull or wet weather, therefore, the bird can make an easy capture of his favourite prey, as they then move about—though as a rule these molluscs do most of their travelling by night. On the other hand, I have recorded instances of finding them on the move during the day. In company with Mr. E. J. Banfield, in the beautiful scrub fringing Mount Cootahl, on Dunk Island, Rockingham Bay, I found one at a height of 20 feet from the ground on a large parasitical scrub fig-tree (*Ficus*, sp.); and on several occasions, in the very rich scrub country then being cleared and burnt off for settlement at Atherton, I have found as many as 20 dead and charred in the heart of a large half-burnt fern growth which had originally been growing in a tree at a height of 60 feet or more from the ground. It is likely that, whilst many other species hibernate in the ground, these molluscs choose the moist recesses of these fern-clumps for that purpose; anyhow, their habit costs them dear, for I have several times found them dented on both sides as if they had been dropped from the bill of their feathered enemies, who carefully fossick them out from their hiding-places.

Scrub Fruit and Berries.—These also "contribute to the feast" for our scrub epicures, and of one, known as the scrub apple (*Elæodendron*, sp.), they are particularly fond. But the tit-bit of their vegetarian diet is a berry on which, without exception, the birds seemed to feed consistently. These belong to a tree known as *Nephelium*, and are carried in a shamrock-shaped or trilobed pod containing three seeds, one to each of the divisions. The seeds are coffee-coloured when dry, but black when freshly found and damp from the pod, and they are covered with a red skin (*vide Emu*, June, 1909, p. 258). This skin is, at first bursting of the ripened pod, of a yellow colour, which changes to red a little later, and it is when they reach that stage that the Tooth-bill considers them ripe enough for his meal. The seeds are oval in shape, with an average measurement of 0.37 x 0.25 inch.

In the special number of *The Emu* published in June, 1909, I mentioned the "singing-stick" (very often a vine or branch), close to each play-ground, upon which the Tooth-bill perched himself and delivered his choice selections of mimicry of the sounds and bird-notes of the scrub. On the ground under these sticks I mostly found these seeds in great numbers,

but hardly ever within the play-ground itself, for the bird has a great idea of tidiness, and usually keeps his little parlour scrupulously clear of litter. I think the conclusion is fair that these seeds are cast or vomited when the red skin has been digested, rather than passed in the excreta, as they were very clean and unmixed with stain or *débris*, though one must remember that if they were passed the heavy rains might have washed them clean; still, in this case I favour the theory of the vomit or cast common to many birds with the hard portions of their food, rather than the passing as excrement. Parallels between the habits of bird and beast are of great interest and value when engaged in their study, and a very instructive parallel in this connection is available in the case of the White Nutmeg-Pigeon (*Myristicivora spilorrhoea*) of the North Queensland coast, which feeds on the wild nutmegs (*Myristica insipida*), and then ejects them after the red mace-flavoured outer skin has been digested (*vide Emu*, June, 1909, p. 244). In the crops of the two Tooth-bills shot for dissection a number of these black seeds, together with the remains of beetles, &c., were found. In one particular locality—a scrub-covered hill across the Barron River, and not far from our camp—in the numerous play-grounds located in the earlier part of November, 1908, I found the black seeds littering the ground under the “singing-sticks” in great numbers, and in company with Mr. Frizelle I examined over twenty of the actual play-grounds in that locality, with the result that we found them, as in other cases, remarkably clear of the seeds, which were only to be found *under the “singing-sticks.”*

Insect Food.—As seen by his predilection for snails, the Tooth-bill is not a vegetarian, and he adds variety to his menu by something more than an occasional *entrée* of beetles. In contributing the facts which go to make up the life-story of any bird or beast, the investigator has necessarily to be minutely careful if he wishes to be faithful to his task, and its food is a factor which has no small influence in localization, anatomical structure, and general characteristics. Hence, to close observation of the actual feeding habits and haunts of the Tooth-bill I added careful investigation of the crop and excreta. The first two specimens of excreta obtained from the first young bird I had at my camp I preserved carefully for examination as valuable indications in this direction. It was not until lately that I had the necessary leisure for analytical examination, but therefrom I have made it clear that many forms of *Coleoptera*, some of which must have run to an inch and a half in length, helped to make up the dainty fare of the bird; of this fact the size of the remaining portions of the thoraces of the beetles give the best indication. It must in this connection be remembered that, as the bird was a nestling, its food had been given to it in broken and macerated form; still, in addition to the very small seeds of the large parasitical fig-trees (*Ficus*, sp., *vide special Emu*, June, 1909, Plate XXXVI.), there were present portions of elytra, thoraces, antennæ, legs, wings, &c., of various

insects, amongst which the larger remains of the following ten families of *Coleoptera* were distinguishable on careful analysis of the excreta:—*Chrysomelidæ* (thorax, elytron, legs); *Elateridæ* (one large thorax, legs); *Carabidæ* (thorax, legs, wings); *Staphylinidæ* (portion of body); *Cleridæ* (three thoraces and elytra); *Cerambycidæ* (part of body, elytra); *Scarabæidæ* (portion of elytron, legs); *Curculionidæ* (thorax, elytra, legs); *Forficulidæ* (tail end of body); *Malacodermidæ* (portion of elytron). In addition to these, there were also broken antennæ and numerous small portions impossible to identify. The Tooth-bill, therefore, as an insect, snail, seed, and fruit eater, has a wide and liberal taste.

Leaves used in Play-ground Decorations.—Turning from the subject of food to the strikingly marked decorative habit of the bird, I wish to place on record some further details as to the singular consistency which he displays, not only in the choice of the leaves with which he decorates his play-ground, but in his method of using them. The play-grounds on the scrub-covered hill across the Barron River from our camp were especially typical. They were usually very neatly laid out under arching masses of the exasperating lawyer-palm vines (*Calamus moti* and *C. australis*), and consequently not too easy to examine. Just one word about these vines. Most people know the lawyer-vine, but a lawyer-palm vine may be an unfamiliar name. Nevertheless, the term is a correct one—the vine is both vine and palm, and is classified as belonging to the family *Palmæ*. Being a *Calamus*, it has very long, sharply-hooked tendrils, and also carries long, palm-like leaves (especially *Calamus moti*), which are studded on the under side with formidable spines or thorns. Possibly the Tooth-bill's frequent choice of this thorny retreat follows an instinct for secluded security. The leaves chiefly used by these birds here were those of *Cryptocarya mackinnoniana*, and another known as *Litsea dealbata*, already referred to in my previous article (*vide Emu*, June, 1909, pp. 236, 237, 250, 258, 260, 266, and 282). Since writing the first general article on the subject of the Tooth-bill, I have been able to devote attention to the large collection of leaves gathered by myself from the numerous play-grounds examined. An old play-ground, or one that had been in use for some weeks, was easily distinguished by the great number of curled and dried leaves outside its area, which the bird had replaced by fresh ones of the same species in his zeal for perfect decoration. This was his daily practice, and, of course, the absence of the rejected "furnishing" meant that the tenancy of the play-ground had only just begun. Outside these *new* play-grounds I very seldom found the broken remains of snail-shells. During my stay in this district I found and examined no fewer than 193 play-grounds kept in absolutely perfect order. If the number were to include all that were found, good, bad, or indifferent, it would be somewhere nearer 250.

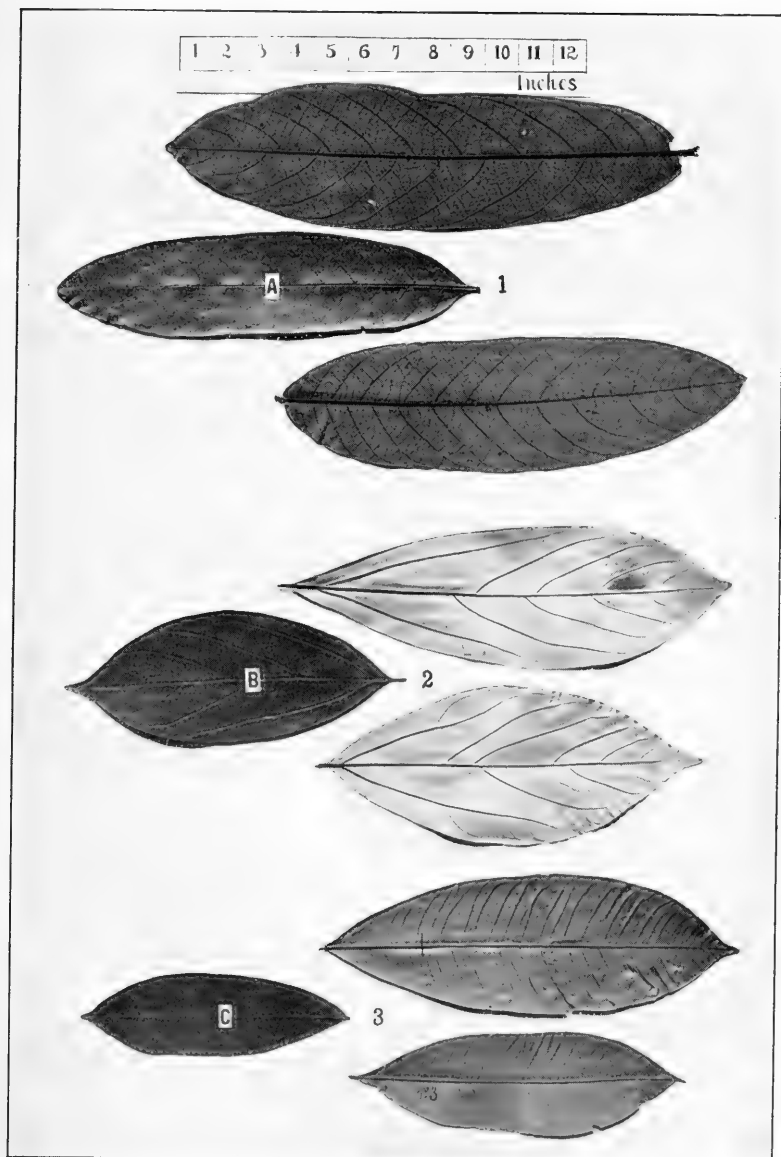
I think that some information is needed as to the particular

formation of the bill which gives to the Tooth-billed Bower-Bird its right to that name. The accompanying life-size photograph of the head of one of these birds gives a clear illustration of the three saw-like indentations which are present on each side in the bird's lower mandible, together with the corresponding serrations which match them in the upper one. It



must be understood that the serrations in the lower mandible are actually in that mandible itself, but in the case of the upper one they are really recessed on the sides of the hard palate or roof of the bill. The points of the lower serrations fit into the recesses of the upper, thus giving the bird a gripping hold and cutting edges. Were it not for this fact, a bird so comparatively small would not be able to sever the tough and thick stems of the larger leaves which he chooses for his bower ornamentation. In the plate the serrations of the upper mandible are not shown, because in actual fact they are not visible in profile; it is only when a specimen is handled that one is able to turn the head into such a position that they become visible.

In dealing with the specimens of the leaves collected I have to acknowledge the kind help accorded to me by Mr. J. H. Maiden, F.L.S., Government Botanist of New South Wales, to whose help in classification and naming I am deeply indebted. The collection made has more than mere specimen value—it gives some idea of the big task which the industrious apprentice in home decoration undertook every day in the period immediately prior to nesting. Some of the larger and more thickly-stemmed leaves show how tough a job the bird had (in spite of its serrated bill) to sever the leaf. This is especially noticeable in the case of some of the large leaves of the tree *Cryptocarya mackinnoniana* (No. 1 in plate), the stems of which are exceptionally thick and tough: the stem of one of my specimens measures 0.20 inch in diameter at the point of severance. From the collection made I have selected a set comprising the 14 species I found used, which will be seen in the two accompanying photographs, one of which shows the natural under sides of the leaves, and the other the upper sides of three and the under sides of six leaves. It will be noticed that the leaves are mostly braced on the under side with strong ribs. There is, however, one exception to this rule of selection by the bird of strongly-ribbed leaves. This occurred in localities where the wild ginger plant (*Elettaria scottiana*, No. 12) was a feature of the scrub growth. The only rib in these long, narrow leaves was the central one, extending the whole length, and consequently where these leaves were used to carpet the play-grounds they were often found considerably curled. Of course, in the fierce northern heat all leaves, of whatever sort, would eventually curl, but the majority of those chosen would meet the bird's evident craze for tidiness for, at any rate, one day, and I only come to the obvious conclusion that his invariable practice of choosing leaves that would not curl readily, so placing them upside down that the curling tendency was counteracted, and finally rejecting them when they did curl, was the result of an instinctive sense of and craving for a well-ordered ornamentation. In other words, I consider the bird has a marked æsthetic sense, and adduce these facts in support of the theory (*vide Emu*, June, 1909, pp. 236, 237, and Plate XXIII.) To complete the account of my observations on this subject I give illustrations in Plate IX. herewith. Thereon will be found, in sets of three, the three species of leaves most commonly found in the play-grounds which I examined. No. 1 is *Cryptocarya mackinnoniana*, F. v. M.; No. 2 is *Litsea dealbata*, Nees.; and No. 3 is *Tarrietia argyrodendron*, Benth. The illustrations marked A, B, and C show the upper sides of these three species, and the other two illustrations of each set display their lower surfaces or under sides. The remaining 11 of the 14 species will be found illustrated in Plate X., the under sides only being shown. They are as follows:—No. 4, *Aleurites triloba*, Font.; 5, *Phaleria neumanni*; 6, *Cryptocarya* (sp.); 7, *Sterculiaceæ* (sp.); 8, *Castanospora alphanthi*, F. v. M.; 9, *Cocculus moorei*, F. v. M. (two leaves); 10, *Rubiaceæ* (sp.);

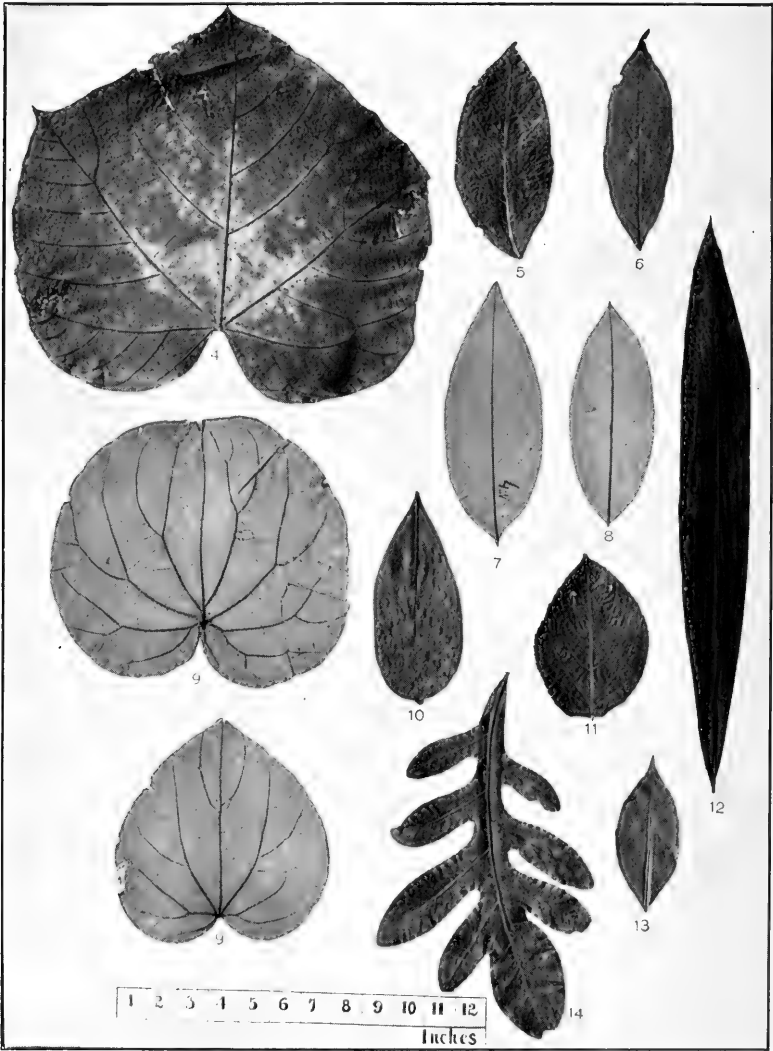


Three Species of Leaves most frequently used by the Tooth-billed Bower-Bird
in Play-grounds.

FROM A PHOTO. BY S. W. JACKSON.

THE END

PLATE X.



Eleven other Species of Leaves used by the Tooth-billed Bower-Bird in Play-grounds.

FROM A PHOTO. BY S. W. JACKSON.

11, *Ficus* (sp.); 12, *Elettaria scottiana*, F. v. M.; 13, *Croton insularis*, Bail.; 14, *Stenocarpus sinuatus*, Endl. It is to be noted that Nos. 4, 9, and 14 were found in use only on two or three occasions.

I should like to add here that, as Mr. Maiden has pointed out to me, it is extremely difficult to name trees from leaves only. I may also mention that the choice by the bird of leaves of a certain structural characteristic is by no means a feature of only one locality. My visit to the much more elevated Evelyn scrub on the Herberton Range in November, 1908, was necessarily a hurried one, but I there found the play-grounds very numerous and the Tooth-bills using precisely the same species of leaves as at a lower elevation in the Tinaroo—in fact, I there collected specimens of the leaves of *Cryptocarya mackinnoniana* and *Castanospora alphandi*, which are also among those used by the birds in the latter locality. From the part I visited at Evelyn scrub to my Tinaroo camp would be, as the Crow flies, about 25 miles, over a dense intervening scrub or tropical jungle. It would, therefore, appear that the natural instinct of the birds to choose a certain class of leaf for play-ground ornamentation is not a thing which in any sense is dictated by purely local conditions. My predictions, as recorded in the special *Emu* of June, 1909, that the females would not visit the play-grounds during their close breeding season, and that only the males (and few at that) would do so, was borne out when I was ranging the scrub in mid-December of 1908. The comparative silence of the scrub then, after the noisy babble of mimicry and call of the previous six weeks, was very striking. During that former period the scrub-covered hill not far from the camp, and the dense glades surrounding it, re-echoed with the characteristic “chuck” and mimicry of these quaint vocalists as each sat in isolated pride on his or her “singing-stick.” Yet later, at the time above-named (mid-December), when Mr. Frizelle and I again explored the area of about five or six acres in the scrub in which, during November, we had found over 20 occupied play-grounds, we found the latter practically deserted, save by an occasional belated male. The birds were no longer low-perched and noisy; they had betaken themselves to high tree-tops and silence, and were consequently hard to discover. When nesting they are especially shy, and their swift flight, interweaving the dense foliage, gives little chance to the observer of sighting them, still less of following them up, save where the scrub opens out a little.

On 8th December, 1908, the silence of the Tooth-bills throughout the day had been unusually marked; but at sunset one of them, high-perched and at a distance of about 70 yards from the camp, started to give a most spirited selection of mimicry. Finally he perched himself in a scrub chestnut or bean tree (*Castanospermum australe*), where he was joined by his mate; then one of them swooped downwards and away into the dense scrub at the back. The remaining one was probably the male, and he certainly gave

us a full programme—Dollar-Bird (*Eurystomus pacificus*), Channel-bill (*Scythrops novæ-hollandiæ*), and several other birds, &c., were imitated, and but for watching the performer's bill move to each note one could hardly believe that the calls were not natural instead of imitation. It was almost dark before he brought the performance to an end, finishing with a life-like mimicry of the piercing and pulsating noise made by a cicada or locust when captured by a bird; finally he flitted off in the dim light to his night haunt in a tree actually overhanging our tent, where he frequently afterwards went to roost (*vide special Emu*, June, 1909, pp. 275 and 277). In the mornings he had me awake at the first peep of day-break in rendering his early morning serenade of mimicry in the tree over our tent. We later discovered the nest of this bird at the rear of our camp (*vide Emu*, June, 1909, pp. 276, 277, and 279, and also Plates XXXIII., right side photo., and XXXVIII.)

The net result of my observations in this direction, and on all occasions, is fairly definite proof that the Tooth-bills (with very few exceptions) do not, during the height of the breeding season, visit their play-grounds or indulge in mimic vocalization during the day, but that after sunset and before sunrise they do so in the tree-tops. Once only, on the 27th November, 1908, did I find the exception which proves the rule, when I noticed numbers of the birds gathered in the tops of the tall dead Johnstone River hardwoods (a scrub tree), in a partly cleared patch adjoining the scrub; this was on a hill near Atherton (*vide special Emu*, June, 1909, p. 269). Probably it was a final chorus before starting to nest. Apart from the absence of song, the adjacent play-grounds here revealed that the nesting time had begun—they were silent, unoccupied, and, most significant of all, untidy; and when a Tooth-bill lets his play-ground go you may be sure that he has something very much more important to attend to.

The Region of the Barrier Range.

AN OOLOGIST'S HOLIDAY.

BY (DR.) W. MACGILLIVRAY, BROKEN HILL, N.S.W.

PART II.

At daylight next morning the loud notes of the Rufous Song-Larks formed our *reveillé*, and we were soon all astir, busy with breakfast and packing for the last stage to our permanent camp at Langa-wirra. M'Lennan and I made a quick march down to Stone Hut to examine the Little Falcon's nest. The male bird became very excited as M'Lennan ascended the tree. Both birds were sailing excitedly round the top of the tree, and when the climber was half-way up the male darted past his head, to wheel gracefully back again with half-closed wings and a shrill chittering cry. The performance was repeated, and, as the nest was approached, some

of the bird's dives were near enough to just brush the climber. M'Lennan told me—what I could not see from below—that the Falcon's claws were extended when near him. The female flew round, but made no attempt to attack. Only one egg was in the nest.

On our way back a wild black cat was put up from the undergrowth, and went bounding away through a waving mass of yellow and white everlasting and scarlet poppies. These cats were met on all our rambles. They grow to a larger size than the ordinary domestic "Tom," and kill many birds.

The road from this point to Langawirra lay for the most part over a wide, open plain. For the first few miles the vegetation consisted of typical saltbush, intermixed with yellow buttons, annual saltbush, and wild oats. The crab-holes were still moist. Brown Song-Larks now took the place of the Rufous species, and Orange-fronted Chats began to replace the Tricolours. Odd Pipits (*Anthus australis*) were met with, and towards the centre and drier part of the plain, where the herbage was scant, bird life was reduced to a minimum. A few Pratincoles (*Stiltia isabella*) favoured this area, their fawn-coloured, trim little figures assimilating with their surroundings. On being approached they ran; hard pressed, they rose easily, and flapped away on long, swallow-like wings, to alight again at no great distance, bob up and down, and resume their wanderings on foot in search of young grasshoppers and other insects.

After we had crossed the White Cliffs road the country became very barren, many places being bare and wind-swept. Gardiner's Creek came in here on our right, and we entered the scrub, the cultivation paddock coming in sight almost immediately. This paddock of 300 acres is irrigated naturally by the overflow of Gardiner's Creek, and grows a splendid crop. Wild-flowers were plentiful here, and the neelia (*Acacia rigens*) just coming into bloom. A few Black-faced and many Masked Wood-Swallows were either perched on the lower bushes or hawking in the air, Miners, Spiny-cheeked and Singing Honey-eaters were heard and seen in the mulgas. We went on, after calling at the Woolshed, to pitch our camp on the edge of the lake below the station. The lake, dry since our last visit, 12 months ago, had been replenished by the winter rain, but not to its full extent. It is, roughly, horse-shoe-shaped, with the station building on a sandy point in the concavity of the horseshoe. There is another large lake below the Woolshed, into which Gardiner's Creek empties; it was now full. These lakes are surrounded by box trees, but do not support any reeds or rushes, probably because of their frequently drying up. When filled to overflowing (which may occur once in 10 or 15 years), the lakes hold water for three or four years, and this is the case with most of the larger lakes in the district. The surrounding country is mostly sandy, and covered with mulga and neelia scrub, with an under-scrub of turpentine and cassia. The under-scrub is nearly all dead, however, as a result of overstocking

and rabbits, and much of the mulga is cut down annually, when grass is scarce, to feed starving stock. As there is no reproduction of trees or shrubs, the surface of the ground is deprived of its natural shelter, and evaporation and desiccation become greater and greater. The whole of the scrub country will, in time, be converted into a desert waste of drifting sand. In many parts this has already occurred. Going down with the "billy" for water, two Sharp-tailed Stints (*Heteropygia acuminata*) were seen on the mud, with a number of Red-capped Dottrels (*Ægialitis ruficapilla*). About half a dozen Silver Gulls (*Larus novæ-hollandiæ*) were also flying over the surface of the water or perched on the posts of a partly submerged fence. A flock of *Microtribonyx* were feeding on the margin below the station, and there were a few Ducks on the water, principally Pink-eared (*Malacorhynchus membranaceus*), White-eyed (*Nyroca australis*), and Grey Teal (*Nettion gibberifrons*).

Next day we followed up the box-bordered watercourse which fills the lake. Two Miners' (*M. flavigula*) nests—one with four eggs and the other with three young birds—were our first finds. The bag-shaped nest of the Striped Honey-eater (*Plectorhynchus lanceolatus*) hung in the leaves at the end of a long swaying branchlet of a box tree. It was constructed almost wholly of sheep's wool. There were no eggs. A Spiny-cheeked Honey-eater was putting the finishing touches to her nest. Bell-Birds (*Oreoica cristata*) were calling across the creek. The *Oreoica* is a plump, sprightly little bird, and looks his best, I think, when hopping along the ground with erect crest in search of insects and seed. The grey dress is eminently protective. A nest was located low down in a ragged old turpentine-bush. Two nests of the Masked Wood-Swallow in course of construction, and another nest of the Striped Honey-eater, with four newly-hatched young birds, were noticed. A Goshawk (*A. fasciatus*) flew from a new, but empty, nest in a box tree.

Out in the open mulga and turpentine the Black Honey-eater (*Myzomela nigra*) was seen, and several Masked Wood-Swallows' nests were found. A nest of the Wood-Swallow (*A. personatus*) contained newly-hatched young, very downy, with black skin, eyes not yet open, yellow gape. On a ridge I paused to watch the movements of a White-browed Tree-creeper (*Climacteris superciliosa*) as he flitted from tree to tree in search of food. He no sooner alighted upon a dead mulga than a pair of Chestnut-rumped Tits (*Acanthiza uropygialis*) set upon him and drove him away. In a fork of this mulga, 18 inches from the ground, was a split leading to its hollow interior, where the female *Acanthiza* could be seen sitting on her nest, which was found to contain three fresh eggs—the usual clutch. The nest was of the flimsiest description—only the slightest roofing and base, all of fine bark shreds, the eggs resting on a bedding of rabbit fur. A Red-capped Robin's (*P. goodenovii*) nest was placed in the fork of a mulga, only 2 feet from the ground. It was constructed of fine bark and

cobwebs, and lined with rabbit fur, and contained two young birds and an addled egg. The feathers of the nestlings were just sprouting, with down still adhering to the head, wings, thighs, and back, and on either side of chest and abdomen; the gape was yellow, eyes closed. A hollow stump was the site of a nest of the White-face (*Aphelocephala leucopsis*), which held four young birds just getting their feathers on the head, on the back in two pterylæ, and the same on the chest and abdomen. Their eyes were open, and the gapes were yellow. Another Tit's (*A. uropygialis*) nest contained two young birds—skin yellowish, with down on head; one dorsal tract, two on thorax and abdomen; eyes open, gape yellow. A third Tit's nest, built in a dead mulga, contained three eggs resting on a bed of rabbit fur, the nest itself being of fine bark. Three more nests of the Red-capped Robin were located in the mulga, and Black Honey-eaters were observed building. A female Honey-eater was sitting on her little nest on a low, dead branch, with head and bill pointed upwards, the colouring and posture of the whole group being wonderfully protective. On our way down the ridge still another Black Honey-eater was seen building in a small bush, and near by, in a fallen dead branch, and close to the ground, was the nest (with three eggs) of a Tricoloured Chat.

Next day, the 24th, I went out with Mr. Jackson, the general manager of the group of stations of which Langawirra is a unit, and Mr. L. Black, the overseer, to the eastern boundary of the run, about 40 miles out, where some new tanks and yards were being constructed. Mr. Jackson very kindly pulled up whenever anything of ornithological interest occurred. A Short-billed Crow's nest in a dead mulga contained young birds; another, in a tall casuarina, contained six eggs in an advanced stage of incubation. This nest was very small, and was lined with soft bark. A third nest in an adjoining tree contained one young bird, newly hatched, and four eggs chipping. In the young birds newly hatched the skin is yellow, with two dorsal tufts of down and a little on the femoral tracts; rest of the body quite naked. Returning to the trap, I discovered a nest of the White-browed Tree-creeper in a hollow of a black oak (*Casuarina*) about 10 feet from the ground. It contained three eggs. Our way led us through mulga and neelia country, in which Tricoloured Chats, Singing and Spiny-cheeked Honey-eaters seemed the commonest birds. A pair of Grey Falcons were disturbed from a lonely box in the wilderness of mulga. Many Babblers' nests were seen. An old nest of the Wedge-tailed Eagle in a small gum on a rocky hillside was found to have been occupied earlier in the year, being now used as a feeding platform. The ground round below was littered with the remains of rabbits and the skeletons of stump-tailed lizards, which are particularly numerous throughout this scrub, and of an *Amphibolurus* which is not so frequent.

We arrived about noon at the camp of some men engaged in building new cattle yards. There we had lunch, and met a trooper

engaged in collecting census returns. After visiting two new dams, we drove 7 miles through thick scrub to Grassmere station.

I was astir at daylight next morning, and went for a stroll along the gum creek that runs by the house. Many Cockatoos were feeding near the house; Kites and Whistling Eagles were disturbed from the gums. The cooing of Peaceful Doves (*Geopelia tranquilla*) and the melodious notes of the Harmonious Thrush (*Collyriocincla harmonica*) sounded at intervals along the creek. We started for Cuthawara station through more open mulga and neelia country, very poorly supplied with grass or herbage of any sort. The nest of a Tree-creeper (*C. superciliosa*) was found in a casuarina, 5 feet from the ground; it contained three young birds. Two Hooded Robins (*P. bicolor*) were dodging about in the scrub near by, and the Red-capped species was numerous all along the road. Where the thick scrub gave place to tall, scattered neelia and mulga, Ravens' nests were frequently noted in the trees. Most of the nests contained young birds. Cuthawara Lake at present is only a dry depression, but when full it forms an imposing sheet of water. On the banks were the remains of the fires of bygone generations of aborigines. After lunch we turned back towards Langawirra by a different route to inspect a mob of 7,500 sheep, which were returning after having been shifted for want of food and water last year. The scrub, mostly mulga, with occasional clumps of mallee, was here very thick, and intersected at intervals by sand-ridges, on which grew black oak (*Casuarina*) and pines. In one of the black oaks was another nest (two young) of *Climacteris superciliosa*.

Next day we walked past the station and across the water channel leading to the lake into a paddock covered with low scrub, mostly turpentine and mulga. *Malurus assimilis* was noted; Singing Honey-eaters, Babblers (*P. ruficeps*), and Spiny-cheeked Honey-eaters were frequently disturbed from tree or bush. We crossed over to the Cultivation Creek, where we found the steep bank of a waterhole taken possession of by Fairy Martins. Many of their retort-like nests, finished and unfinished, were being busily attended to. In a box was a brood of young Nightjars (*Egotheles novæ-hollandiæ*). Pied Honey-eaters were seen and heard among the mistletoe along the creek and out in the turpentine-bushes. This is the first year that we have noted their presence. A fairly good season here, or a bad one elsewhere, is the probable explanation. An Oreocica's nest was located in a mistletoe clump high up in a neelia; it contained a clutch of three eggs. Black Honey-eaters were feeding on the mistletoe flowers, and the loud and musical note of the Striped Honey-eater (*Plectorhynchus lanceolatus*) came at intervals from the box trees along the creek. M'Lennan found among the turpentine two nests of the Singing Honey-eater, one unfinished and one containing one egg, also a finished nest of the Spiny-cheeked Honey-eater. Kingfishers were commencing to burrow or examine favourable banks for a nesting site. A quandong tree (*Santalum*

acuminatum), laden with ripe fruit, was admired, and some of its fruit sampled. White-fronted Honey-eaters (*Glycyphila albifrons*) were heard in a thicker clump of neelia and black oak on the creek, and also the Red-throated Thickhead (*Pachycephala gilberti*). A nest of *G. albifrons* was built in the top of a broken stump, 2 feet from the ground, and contained one young bird, fully feathered. Many other pairs were watched, but no more nests were found. *Glycyphila albifrons* we expected to find in fair numbers this year, but were disappointed. This species feeds on insects and honey—at this time mainly the honey from the mistletoe. The nest, constructed of wool and fibrous herbs, is usually placed in a fork of a low bush, the turpentine-bush being most often favoured. We found nests, however, in all manner of situations—at the tops of high or low stumps, in the thick fork of a neelia, or in a bunch of mistletoe. I have not known the species to lay more than two eggs at a sitting. The ground colour varies as much as that of the Singing Honey-eater—from dark salmon to an almost pure white.

Circling out to the right and round towards the Woolshed, we found very little of interest. On a long march to a box flat in towards the shearing shed we disturbed a Whistling Eagle from her nest, 20 feet up in a box tree. There were two eggs resting on a bed of green leaves. We returned to camp round the other side of the lake.

On the following morning four of the party made out across the sand-hill at the back, where they were interested for a time in the tracks on its surface, and endeavoured to elucidate them. There were tracks of mammals, from the fox to the smallest marsupials; of reptiles, from the "goanna" to small lizards and slow worms; of scorpions, leading to the crescentic entrance of burrows, and of beetles, caterpillars, and spiders; and lastly, of the early morning birds over them all. Out of the sand and through some country clothed in stunted scrub. A number of "Budgerigars" were about the box, prospecting for nesting sites. A few White-shouldered Caterpillar-eaters were mating. In a hollow a nest of *Climacteris picumnus* was noted. Entering the real mulga scrub we soon came across Chestnut-rumped Tits and Black Honey-eaters (*M. nigra*). The Tits are always busy in the branches of the mulga, searching for scale and small insects, also in the dead scrub lying on the ground, and on the ground itself. The Black Honey-eaters (*M. nigra*) were either feeding on the mistletoe or occupied with nesting cares. When a turpentine-bush dies, usually from being ringbarked by rabbits in the drought, the dead branches arch over till the tips touch the ground. It is here that the Black Honey-eater usually places its little nest on the convexity of the arch, where there is a sufficient fork to fix it to. The nest is composed of fine twigs, cobwebs, and cottony plants. It has an external diameter of 3 inches and an internal of $1\frac{3}{4}$ inches, with an internal depth of 1 inch. Two eggs constitute the invariable clutch.

Having parted from the others, I strolled quietly through the

mulga. A pair of Tricoloured Chats, by fussing about, revealed their nest, containing three well-feathered young, in the end of a fallen dead bush, openly placed. A Tit (*A. uropygialis*) was busy building in a dead stump close by, and a Black Honey-eater on the end of a fallen mulga. Another pair of Tricoloured Chats were feeding three young birds that had left the nest. A Red-capped Robin's nest was seen. After an interval I found an Oreica's nest low down in an old V-shaped turpentine; it contained one egg. I then passed through some neelia and larger mulga, in which many Black Honey-eaters were feeding on the mistletoe, together with a few Singing Honey-eaters and "Greenies." M'Lennan later reported having found a Tit's (*A. uropygialis*) nest containing three eggs; a Many-coloured Parrakeet's nest, with six young birds, sprouting feathers; a nest of the Blue-Bonnet (*P. xanthorrhous*), containing six nearly fledged young ones—both nests placed in a hollow box tree. We went through a box flat, to find an Owlet Nightjar's (*Egotheles novæ-hollandiæ*) nest, containing downy young, in a leaf-lined hollow. These little birds present a curious appearance, as the white down that clothes them when they emerge from the shell still adheres to the feather tips until they are nearly fledged. In a bracket-shaped hollow of a box, low down, an Oreica had placed her nest. It was occupied by three young birds; feathers just sprouting, eyes open, down persisting on the forehead and nape and on the single dorsal feather tract, also on the humeral and femoral. The anterior cervical tract had no down, and divided on the chest and abdomen.

We made for home, our way leading out of a series of box flats on to a sandy open ridge covered with grasses and wild-flowers (mostly everlastings) and flowering shrubs. We disturbed a Brown Song-Lark (*C. cruralis*) from her nest in the grass (three eggs). A Kingfisher (*H. pyrrhopygius*) was interrupted in his efforts to knock the life out of a lizard against a dead limb. He was so alarmed at our approach that he dropped the reptile and flew to a safer perch, only to see us annex the lizard for our specimen jar. These Kingfishers are not so noisy as the Sacred species, their only call being a mournful piping note, frequently heard during the mating season.

Next day we made an early start for Coogee Lake, a large body of water, about 6 miles in a south-easterly direction from camp. We crossed a sand-hill into a large depression bordered on one side, at first, by box, and containing a number of dead box stumps along its bed. We found "Budgerigars" (*Mclopsittacus undulatus*) breeding for the first time during our trip; most of the nests contained only "commencing" clutches. Many Whitefaces' nests, with eggs or young, were inspected, and a few Pardalotes' (*P. ornatus*). The flat closed in somewhat as we neared the Coogee road, and we found a nestful of young Many-coloured Parrakeets in a hollow box. We came to a large box occupied year after year by a pair of Pink Cockatoos (*C. leadbeateri*). Last year this hollow contained a clutch of four eggs; this year there were only three.

M'Lennan returned to us after having made a detour into another flat, and reported having disturbed a pair of Bourke Parrakeets. I went back with him, leaving the others on the straight road to Coogee. We did not find the nest of the Parrakeet. These birds are so quiet in their movements, and so protectively coloured, that they are difficult to detect. Going through a box ridge we flushed a Little Quail (*Turnix velox*), and in a hollow box near at hand found a pair of White-browed Tree-creepers building. A Red-capped Robin was also finishing a nest in a box sapling.

At the lake the others were waiting. A few Ducks, mostly *Anas superciliosa*, *A. gibberifrons*, *Aythya australis*, and *Malacorhynchus membranaceus*, Maned Geese (*Chenonetta jubata*), and some Black Swan were observed on the water. Wading in the marginal water were Avocets, Black-fronted Dottrels, and an occasional Sharp-tailed Stint. In a dead stump standing in the water a Many-coloured Parrakeet (*P. multicolor*) had her brood of young. In the box round the lake were Miners, Grallinas, Striped and White-plumed Honey-eaters, Brown Tree-creepers, and Striated Pardalotes.

We tramped on to strike the Yalcowinna road by a circuitous route through box flats and mulga scrub. A nest containing young Blue-Bonnets, in a hollow black oak, interested us, as these birds showed a near approach to the more eastern *Psephotus hæmatorrhous*, in having red under tail coverts and the dark red wing patch, which, more than anything else, distinguishes *P. hæmatorrhous* from *P. xanthorrhous*. Some of these nestlings, however, were much more marked than others. On account of the favourable season, and a plentiful and varied supply of seeds, we found both *P. xanthorrhous* and the Many-coloured Parrakeet nesting more freely than on two previous visits. On our return to camp the boys had much to show and tell us, they having been round the lake and found a colony of Fairy Martins in an old shed, a Brown Hawk's nest and three eggs, and other nests.

Next day, the 30th, we followed up the water channel entering the lake behind the station, but did not find anything of note till we crossed an old dam. Here a Nightjar's nest, with its interesting nestlings, detained us for a few minutes, before going on to a patch of turpentine-bushes where we left a Purple-backed Wren building last year. The nest was located about 100 yards away from the old site, openly placed in a small dead bush lying on the ground. It was constructed of fine strips of bark and lined with finer shreds of bark and rabbit fur, and contained three eggs. In a mulga a pair of Babblers (*P. ruficeps*) had a nest containing young birds. Jim M'Lennan found the pensile nest of a Singing Honey-eater, containing two eggs, very light in colour and more spotted than usual. The nest was suspended in the small, bushy neelia (*Acacia rigens*). On a black oak ridge we rested awhile and watched the movements of a Tree-creeper (*C. superciliosa*), then went on to another ridge, where we found a nest of this species in a dead

sandalwood, the hollow being about 4 feet from the ground. The base of this nest was composed of dry grasses, a layer of horse dung, then the usual thick bed of rabbit fur, on which two eggs reposed. The eggs are a good deal smaller than those of the Brown Tree-creeper, and more richly coloured. Soon afterwards I took two eggs of the Singing Honey-eater—the usual clutch in these parts—from a nest in a turpentine-bush. Directing our steps homeward, we followed down a strip of mulga, finding a nest of *Malurus assimilis* in a fallen bush, the base of the nest just touching the ground. It contained three eggs and one newly-hatched chick.

Next morning, the 1st October, broke dull and windy, and, after the usual daylight breakfast, the two M'Lennans, Dr. Dobbyn, and myself started out through a paddock on the eastern side of the lake in open mulga country. The herbage was very good. Many Miners' nests were seen in the mulga, in mistletoe clumps, mostly containing young birds. Circling round the paddock to the right, we were watching a Tree-creeper (*A. superciliosa*) when a male Bourke Parrakeet (*N. bourkei*) rose from where it had been feeding on the ground, only to light again in the grass a little further on. I followed and waited. The bird flew again, and joined a flock of "Budgerigars" on the ground. After a considerable time it flew to a mulga, in front of which, in a dead neelia, it was joined by a ragged-looking mate from the latter tree, and the two flew off together. I went at once to the neelia, and, looking into a large crack in a fork, about 4 feet from the ground, found that it opened into a hollow about 8 inches in depth, on the earthy floor of which were four eggs and one recently hatched young bird, the egg-shell still being in the nest. Entering a large box flat, a Goshawk (*A. fasciatus*) flushed from its nest, which was small and flat, made of sticks, lined with fresh, green gum leaves, and placed, as they often are, on a horizontal fork, at a height of 30 feet from the ground. It contained a fine clutch of nearly white eggs. A dry lake surrounded by box trees next engaged our attention. All round it were traces of the aborigines' old camp fire-places, flint chippings and cores, and other stones. Several pairs of "Budgerigars" were found nesting in the dead stumps forming the inner margin to the lake bed. The entrance to the nest was usually an old knot-hole, not much exceeding $1\frac{1}{2}$ inches in diameter. The eggs, usually five in number, rested on beds of earthy material. Almost on the ground, which had a scanty covering of wild spinach, forming a border of 100 yards or more in width between the dead and the living box, were many nests of the Tricoloured Chat; nearly all contained fresh clutches (three eggs). Turning towards camp, we crossed a sand-ridge and made our way through a band of box margining another flat, and M'Lennan dug out the burrow, in the side of a little water-course, of a Pardalote (*P. rubricatus*); the nest contained three fresh eggs. The nest was cup-shaped, very compact, and constructed entirely of fine strips of bark. Its external diameter was

$3\frac{1}{2}$ inches and height $2\frac{1}{2}$ inches ; diameter of egg cavity, $2\frac{1}{4}$ inches ; depth, 2 inches. The note of the male bird is quite unlike that of any other Pardalote with which I am acquainted, consisting as it does of a loud, mellow whistle, repeated five times in quick succession. It may be heard at a distance, and was more than once mistaken by us for the call note of the Barnard Parrakeet.

Next day we took a more northerly direction, skirting the box on the margin of the lake, then out into the mulga, which is pretty open here. We saw large flocks of Masked Wood-Swallows gathering, after a night's rest, to go further south. This year this species seems to be in greater numbers than usual, there being very few of the White-browed species. The Masked Wood-Swallows, too, arrived here before we did, probably early in September, and started building everywhere ; but, although we found numbers of their nests, completed and in every stage of construction, only one contained newly-hatched young. Most of the birds seemed to have changed their minds and resumed their migratory flight to more southern parts. Our way led us through a fairly dry part of the run. Many stump-tailed lizards find a living in this country. This was the mating time, as most of them were in pairs. They subsist upon green vegetable matter, and must, during long droughts, æstivate.

On the 3rd October all except the camp-keeper went through a large dry lake lying two miles west of our camp. Before reaching it, however, we found a Nightjar's (*Egotheles novæ-hollandiæ*) nest, containing four downy young ones. These birds always hear one coming, and the little rat-like head, with round, bright eyes, looking out of a hollow, is the first intimation of a nest, which otherwise would be passed by. The birds sit more closely when incubating. This really applies to all wild birds towards the end of the incubation period. At the back of the dry lake was a strip of box, in which we heard a Thickhead's (*P. rufiventris*) loud whistling note. A male Black-capped Sittella was seen, and I disturbed the female from her nest on the upper limb of a small box tree, only 20 feet from the ground ; the nest contained two eggs.

On a ridge, known to us as the Turquoise Ridge (for it was here, 12 months earlier, that we spent many a delightful moment watching a pair of Turquoise Wrens), two more nests of the Black Honey-eater were found, both containing the usual pair of eggs, and both similarly situated—on dead, fallen timber, near the ground. Many signs of the Swallow Dicaeum were noted near their nesting place. All the limbs of the mulga trees were plastered with mistletoe seeds, singly, or in twos and threes, just as they had been passed by the birds or wiped off on to the branches.

Next day we visited the Woolshed lake, and found a Whistling Eagle's nest, containing two eggs, in a tall box tree. The Fairy Martins on the bank of the creek were still busy. A Bell-Bird (*Oreoica cristata*) had her nest in a bunch of mistletoe growing

20 feet up in a neelia—an unusually high situation for the nest of this species. Many White-fronted Honey-eaters were observed in a thick patch of black oak, one finished nest being located in a turpentine-bush. *Glycyphila albifrons* is a very active but shy bird, and one has to use the utmost caution in watching the birds to their nests either when building, incubating, or feeding the young. Our way now led through what used to be a scrub-covered paddock, across a series of large nardoo flats, about which are the old fire-places and grinding-stones, flints, &c., of the blacks. Tricoloured Chats were numerous.

Next morning we took a south-easterly route over the sand-ridge, on which we again interested ourselves for a while in elucidating the tracks of the night. The birds had been about early. The slovenly footsteps of the Raven were easily recognized. The paired footprints of the Babbler (*P. ruficeps*), whose mode of progression is by a succession of longer or shorter hops, the tiny marks left by the feet of Tricoloured Chats in their searchings round every tussock or bush, and the shorter and more slovenly hoppings of the Miner (*M. flavigula*), were recognizable on the fine sand. Tracks of insects, reptiles, and small mammals—the real night tracks—cost us more time and trouble to make out. The box strip in which we found the Red-browed Pardalote's nest was visited, and the birds were heard calling among the trees. Here we discovered the nest of the *Lalage tricolor*, with the male bird sitting on two eggs. The nest was composed of fine twigs, spiders' nests, cobwebs, and soft everlastings, and was placed in a fork of a small box tree, about 12 feet from the ground. Near it a hollow box contained a family of Blue-Bonnets and another *Lalage's* nest. A young Many-coloured Parrakeet accidentally dropped from the top of a large tree when M'Lennan was examining a nestful, and provided a subject for post-mortem examination. The crop was crammed with fine black seeds, with a few larger green ones, the black ones being no larger than gun-powder grains. M'Lennan and I visited a black oak ridge, leaving the others to return to camp. While watching a Red-browed Pardalote feeding among the sandalwood, we found a Tree-creeper's (*C. superciliosa*) nest, with young birds, in a hollow tree, about 4 feet from the ground. On the border of the box a pair of Oreocas had a nest in the end of a stump. "Budgerigars" were nesting in the dry stumps in from the green timber, and in one hollow a Barnard Parrakeet was sitting on four dried-up eggs. In captivity I have known birds to do this on many occasions, but this is the only time that I have noted it in a state of nature. Many pairs of Red-capped Robins were here, several being engaged in building operations. These little birds are local migrants, being guided, no doubt, by food supply, for on our two previous annual visits to this locality we only met with one or two pairs of birds. This year they were in every thick patch of scrub, and all intent on nesting.

In every sandy watercourse and washaway were the tracks of

the fox, and in one place a whole tragedy of the night before was written plainly on the sand. The fox tracks, proceeding cautiously up a watercourse, came to where they met, at right angles, the footprints of a Stone-Plover (*Burhinus grallarius*). The prints of the fox immediately shortened, and proceeded for some distance with steps all crowded together. Even the haltings could be made out, whilst the tracks of the "Wee-loo" wandered round to the other side of a fallen bush half-buried by the drifting sand. Here her footprints ended, and a few bunches of feathers told of a successful stalk.

After lunch M'Lennan and I looked up several places in a westerly direction, in the mulga and box, while the rest of the party, armed with spades, proceeded to unearth a fox. On our way out we disturbed a dingo, which bounded away across a dry flat and over a sand-ridge for the thicker scrub. The Sittella's nest now contained three eggs. The Tricoloured Chat was common in the open scrub all over this run, but the Orange-fronted species does not move from the wide salt-bush plains. On our return home, after a long and quick march, a swim in the lake was the best thing. On the lake we twice noted two or three Gull-billed Terns (*Gelochelidon anglica*), but they soon went elsewhere. Several Pelicans also paid a visit of short duration. There are no fish in the lake.

After dark the rest of the party returned, bringing three very young fox cubs, an echidna, and some beetles, all found in the fox earth; the vixen they did not get. Visiting this spot about a fortnight later, M'Lennan found a Kingfisher and a Black-and-White Swallow nesting in the side of the trench made in digging out the fox.

On the 5th October we struck camp and packed up, to make our way back to Broken Hill. We visited the station first, to get some nardoo stones and take leave of the manager, Mr. Black; then M'Lennan and I got away to skirt the road, and to be picked up by the trap later on. The calling of a White-browed Tree-creeper led M'Lennan to find its nest in a sandalwood, the pair of eggs resting on the usual bed of rabbit fur. Here we were picked up by the trap and driven to Sleep's Well Creek, our camping place for the time being. Birds were plentiful in the vicinity of our camp, where there is good water in the creek. Right over the camp was a nestful of young Ravens in a tall, sappy gum; and in bunches of mistletoe on separate mulgas, not 10 yards away, were two nests of the White-plumed Honey-eater, each containing one egg. These useful birds are common throughout the district, and do not differ in any way from those found in Victoria. Here they live mostly on insects, as honey-bearing flowers are not frequent, except during a good season, and are absent altogether during the long droughts which so often afflict the district. I have often watched them assiduously searching and stripping the eucalyptus leaves of scale, and they are as quick to capture an insect on the wing as any Flycatcher. We always look forward

to this camping place; the early morning birds make it one of the most delightful of many such in our wanderings. Long before dawn the Spiny-cheeked Honey-eaters commence their varied, liquid, trilling song. The "Greenies" and Miners next join in from their roosting-places, and the old Raven leaves her nest to fly off to the plain to find a breakfast for her hungry offspring. Next we hear the Striated Diamond-Bird calling from the gums, and the loud notes of the Singing Honey-eaters from the outlying mulgas. A very different note is that of the Bell-Bird, coming from across the creek, where its author has a nest in broken-down cattle-bush or stunted neelia. The creek is soon full of voices, a medley lasting until the daylight dispels the last of the shadows among the trees. The voices cease one by one as the owners busy themselves in satisfying their own cravings or those of their nestlings.

Soon after the morning meal was over we started down the creek, to flush a Goshawk (*A. fasciatus*) from her small, flat nest on a dead, leaning acacia, sheltered by a gum-tree—an unusual situation for such a bird to choose. The nest contained two eggs, and we found that it overlooked a bush in the bed of the creek in which a "Greenie" (*Ptilotis penicillata*) had her nest and eggs. A few yards further on a Spiny-cheeked Honey-eater was putting the finishing touches to her nest in a bunch of mistletoe on a mulga. In a hollow spout, 18 inches in depth, a Cockatoo-Parrakeet had five young birds, as usual of different sizes, incubation commencing with the first egg laid. The oldest had yellow down on back and wings and thighs, and the eyes just opening; the younger ones were blind and naked. A pair of young Magpies, nearly fledged, could be seen over the edge of their nest at the top of a slender gum. A Short-billed Crow's (*C. bennetti*) nest was occupied by young birds. These nestlings are hatched with greenish-yellow naked skin and eyes closed; the skin soon darkens, and the eyes open on about the fifth day. In a hollow an Owlet Nightjar (*Ægotheles novæ-hollandiæ*) was disturbed from three eggs. Through a chink low down, not 3 feet from the ground, in the bole of a dead gum, a Striated Pardalote had her nest and three eggs, and higher up in the same tree a hollow was occupied by a family of Blue-bonnets (*P. xanthorrhous*). Emu tracks were plentiful on the wet sand all along the creek. Feed for these great birds is plentiful about here, consisting mostly of green grass and herbage and the young green tops of the salt-bush. Out from the creek Jim M'Lennan climbed to a nest in a leopard tree; it contained four fully-fledged Magpies (*G. tibicen*). The feathers are brownish-black in the young birds, jet black not being assumed until the autumn moult preceding the third spring following hatching. A Little Eagle flew from a nest high up in a gum (two eggs). Nests, containing either eggs or young, of *Climacteris picumna*, *Cacatua gymnopsis*, *C. leadbeateri*, *Nisactes morphnoides*, *Barnardius barnardi*, *Astur fasciatus*, *Malurus assimilis*, *Haliastur sphenurus*, and other species mentioned above, were discovered.

We were following the creek into scrubby country ; it flows from open salt-bush plains through the mulga to the Coogee Lake.

In a sheltered portion of the creek we came to a Goshawk's nest containing three eggs. Many White-fronted Honey-eaters (*Glycyphila albigrons*) were seen and heard, and a nest in course of construction in mistletoe growing on an acacia was seen. M'Lennan found a nest of *Malurus assimilis*, containing three fresh eggs ; the nest was composed of fine bark strips and shreds and lined with 'possum fur. The scrub here on either bank was becoming thicker, and the flowering tobacco-bush amongst it furnished a good feeding-ground for a number of Honey-eaters—*Acanthogenys ruficularis*, *Ptilotis penicillata*, *Glycyphila albigrons*, and *Myzomela nigra*—whose comings and goings amongst the trees and bushes, and quarrelings and love-making, we were content to watch while resting tired limbs. Making out on to the road, we turned towards camp, intending to take a shorter route across the blue-bush. There were damp patches on the blue-bush plain, and on these Emu tracks were numerous. At one place we could see where a family had camped the night before ; the young were about two months old, judging by the size of their tracks and excreta. The rapid increase and spread of the fox throughout this country means death to numbers of young Emus. After lunch M'Lennan and I went down the creek again and out into the salt-bush to look for White-winged Wrens. Many were seen, but no nest was found. Several Wedgebills (*Sphenostoma cristatum*) were disturbed from the little clumps of acacia out on the plain, and one nest was found in an unfinished state. Crossing the creek, we came up through a saltbush flat bordering the opposite side to our camp.

Next morning we struck camp early, and made a start for Yalcowinna Creek. M'Lennan and I went on towards the road, searching the larger clumps of blue and salt-bush for Wrens (*Malurus*). Several families of the White-winged species were seen, and a nest of *M. assimilis* was found near the ground in a salt-bush, and constructed outwardly of grass instead of strips of bark, as is usual. It contained two eggs only. We rejoined the trap, and at the crossing of Sleep's Well Creek noted the usual Honey-eaters in the scrub and tobacco-bush—"Greenies," Miners, Singing, White-fronted, and Spiny-cheeked Honey-eaters. In sight of Yalcowinna Creek we watered the horses at a dam and filled the water-bag and billies, in case there should be no water in the bed of the creek. We stopped for lunch at the nearest point on the creek, and, whilst the others proceeded along the bed of the creek towards the Buzzard's nest, Jim M'Lennan and I followed the high sandy bank, which has been an old aboriginal camping-place, and is strewn with their mills, grinding stones, and flint chippings. At the Buzzard's nest we rejoined the others, who reported that the nest was re-lined and ready for occupation again. On seeing the female again we had no doubt that she was smaller than the one in possession in 1908 and 1907. Throughout our trip we noted very few Wedge-tailed Eagles compared with other years. The squatters' poison had done its work only too well.

A Grey Falcon came sailing down through the trees, menacing a thieving Raven. So vigorous was her onslaught that the Raven beat a hasty retreat. The Falcon's nest was placed, as usual, high up on the slender limb of a eucalypt; the nest contained four hard-set eggs.

We cut across country towards where we had lunched, the camp, in the meanwhile, having been shifted further up the creek, in the direction of our first camp on the trip. Following the creek up, a Black Falcon (*F. subniger*) was disturbed from an old Wedge-tailed Eagle's nest, and went off through the trees before we could get a proper look at her in the gathering dusk. Our disappointment was great when only one egg was found in the nest. We left the egg to make sure of its identity by an early morning visit. The Goshawk's nest, found building on our outward journey, now contained three hard-set eggs. Camp was reached as darkness came.

Saturday, the 9th October, our last day out, broke fine and clear, and M'Lennan and I went off early to revisit the Black Falcon's nest. We found the female on the nest, and the male roosting in an adjacent gum-tree. Both birds flew away silently and quickly through the trees, and were soon out of sight. We left the egg, on the off chance of the clutch being completed, M'Lennan deciding to run out in a week's time, although we were fairly sure that incubation had started. This proved to be the case. The egg was probably the last one of the bird, laid on an emergency in the Eagle's nest, on account of some mishap overtaking the original nest with the other eggs.

After packing our belongings in the trap, M'Lennan and I walked past the station, leaving the others to pick us up about a mile below it. On the way down we had several interesting "finds." Two Little Eagles' (*E. morphnoides*) nests contained one and two eggs respectively. A Goshawk's nest in a more sheltered part of the creek, on the usual horizontal fork, had one egg reposing on green leaves. A Kite's nest, with three young birds, on whom the feathers were just sprouting, showed the variation in size of the young, so common amongst birds of prey. Another pair of Goshawks were building, and a Whistling Eagle's nest with one newly-hatched bird and an egg was noted. We met the rest of our party, and after an early lunch resumed the homeward journey, during which we noticed the difference that a month had wrought in the character of the vegetation. In a climate in which sharp frosts and the piercingly cold winds of winter days so suddenly give place to hot summer days, all nature seems to hurry to reproduce itself. The plants soon spring up, burst into flower, and cast their seed, to be buried by the sand, and so protected through the hot, dry period of the year, or perhaps to wait several years before conditions are again favourable for germination. In the same way the birds time the rearing of their young with the flowering or seeding of the plants.

We reached home well satisfied with our month's wanderings, and better, mentally and physically, for the communion we had had with Nature.

On the Birds of North-West Australia.

BY GREGORY M. MATHEWS, F.L.S., M.B.O.U.

With Field Notes by the Collector, J. P. ROGERS.

PART III.

SYNGECUS SORDIDUS (Sombre Brown Quail).

Math., Handl., No. 12:

♂. 24/2/09.

Eyes red; feet and tarsi yellow; culmen and genys black, balance of bill leaden-blue.

The stomach contained grass seeds.

TURNIX VELOX (Little Quail).

Math., Handl., No. 21.

♂. 30/3/09.

Eyes yellowish-white; feet and tarsi fleshy-white; culmen and tip leaden-brown, balance of bill leaden-blue.

The stomach contained grass seed.

PETROPHASSA ALBIPENNIS (Rock-Pigeon).

Math., Handl., No. 40.

♀. 2/4/09.

Iris dark brown; feet and tarsi blackish-brown; bill black.

Stomach contained fine grit and some seeds.

LOBIVANELLUS MILES (Masked Plover).

Math., Handl., No. 148.

♀ ♀. 16/2/09.

Eyes yellow; feet and tarsi purple, lower end of tibia pink-red; bill yellow, lip of culmen brown.

The stomachs contained fragments of beetles.

GLOTTIS NEBULARIUS (Greenshank).

Math., Handl., No. 175.

♀. 27/1/09.

Eyes blackish-brown; feet and legs olive-grey; bill brown, basal third leaden-grey.

The stomach contained a few small shell-fish.

HETEROPYGIA AURITA (Sharp-tailed Stint).

Math., Handl., No. 181.

♂ ♀. 19/3/09.

Eyes brown; feet and legs olive; bill brown, base of mandible olive-yellow.

The stomachs contained fragments of shell-fish.

ROSTRATULA AUSTRALIS (Painted Snipe).

Math., Handl., No. 186.

♂. 19/3/09.

Eyes brown; feet and legs brown; bill brown.

Stomach contained fragments of beetles and other insects.

GLAREOLA ORIENTALIS (Oriental Pratincole).

Math., Handl., No. 189.

♂. 20/3/09.

Eyes brown; feet and tarsi blackish-brown; bill black, tomium red.

The stomach contained a quantity of grasshoppers.

BURHINUS GRALLARIUS (Stone-Plover).

Math., Handl., No. 190.

♂ ♀. 19/10/08.

Eyes yellow, with network of brown lines on outer edge; feet brown; legs olive-grey; bill blackish-brown.

The stomachs contained a quantity of cockchafer beetles.

ANTIGONE AUSTRALASIANA (Crane).

Math., Handl., No. 193.

♂. 27/1/09.

Eyes yellow; papillæ on back of neck and sides of face red; feet and legs brown; bill and crown of head olive-green.

Stomach contained a quantity of small stones and a little vegetable matter.

IBIS MOLUCCA (White Ibis).

Math., Handl., No. 194.

Sex ? 10/2/09.

Eyes brown; feet and legs leaden-black; bill black.

Stomach contained shell-fish.

PLEGADIS FALCINELLUS (Glossy Ibis).

Math., Handl., No. 196.

♀ ♀ ♀. 16/2/09.

♀. 9/2/09.

♂. 4/4/09.

Eyes brown. Feet, ♀ ♀ ♀, leaden-grey, also legs; ♀, leaden-brown, also legs, plates of tarsi olive-brown; ♂, olive-brown, also legs. Bill—♀ ♀ ♀ ♀, olive-brown, with line across forehead and from eye to base of lower mandible blue-grey; ♂, distal $\frac{1}{3}$ of culmen brown, balance of bill olive-brown.

Stomachs contained shell-fish, beetles, fish, grit, and insects.

PLATALEA REGIA (Royal Spoonbill).

Math., Handl., No. 197.

Sex ? ♂.

? 12/2/09.

♂. 15/2/09.

Eyes brown; feet and legs black. Bill—♂, distal $\frac{1}{2}$ brown, balance of bill, lores, orbits, and forehead black, gular pouch leaden-brown; ? spoon leaden-blue, balance of bill and forehead leaden-brown, orbits and gular pouch dark leaden-blue.

Stomachs contained mud, fibrous matter, beetles, shell-fish, tadpoles, and water insects.

XENORHYNCHUS ASIATICUS (Jabiru).

Math., Handl., No. 199.

Sex? Immature. 26/10/08.

Eyes brown; feet and legs olive-brown; bill black.

Stomach contained fish-bones, prawns, beetles, and part of the intestines of a kangaroo, on which the bird was feeding when shot.

MESOPHOYX PLUMIFERA (Plumed Egret).

Math., Handl., No. 202.

♂. 4/2/09.

Eyes and eyelash yellow; feet and legs olive-brown. Bill, upper mandible and distal $\frac{1}{2}$ of lower brown; lores, base of upper and balance of lower mandible yellow.

Stomach contained fragments of insects.

HERODIAS TIMORIENSIS (White Egret).

Math., Handl., No. 203.

♂. 4/2/09.

♀. 7/11/08.

Eyes and eyelash yellow; lores and bare skin round eye yellowish-green; feet and legs black; bill yellow.

The stomachs contained one small fish, some tadpoles and water insects.

NOTOPHOYX NOVÆ-HOLLANDIÆ (White-fronted Heron).

Math., Handl., No. 204.

♂. 1/2/09.

Eyes yellowish-grey; feet and tarsi olive-yellow; bill black, lores and base of upper mandible slate colour, base of lower grey.

Stomach contained fragments of insects, one lizard, and a large quantity of grasshoppers and crickets, which were swallowed whole.

NOTOPHOYX FLAVIROSTRIS (Pied Egret or Heron).

Math., Handl., No. 206.

♂ ♂ ♂ ♀. 28/3/09.

Eyes yellow; feet and legs olive-yellow; bill yellow, lores and base of lower mandible slaty-brown.

Stomachs contained grasshoppers.

NYCTICORAX CALEDONICUS (Night-Heron).

Math., Handl., No. 210.

♂. 5/12/08.

♂. 7/11/08.

♀. 20/1/09.

Eyes yellow, lores and naked skin round eye yellowish-green; feet and tarsi olive-yellow. Bill—♂, upper and tip of lower mandible brown, basal $\frac{3}{4}$ of lower mandible greenish-yellow;

♂, upper and tip and cutting edge of lower mandible black, lower pale olive-green; ♀, tomium and culmen black, streak on side of upper and basal $\frac{3}{4}$ lower mandible greenish-grey.

Stomachs contained small fish and beetles.

DUPETOR GOULDI (Yellow-necked Mangrove-Bittern).

Math., Handl., No. 214.

♀. 20/1/09.

Eyes brown; feet and legs olive-brown; bill, culmen black, balance upper and tomium of lower mandible brown, balance of lower pale brown.

Stomach contained fragments of insects and one dragon-fly.

ANSERANAS SEMIPALMATA (Pied Goose).

Math., Handl., No. 217.

♂. 1/2/09. Parry's Creek, N.W.A.

Eyes brown; feet and legs yellow; bill, distal $\frac{1}{4}$ and distal $\frac{1}{2}$ of cutting edge leaden-grey, balance reddish-brown, which turns to dull purple near the eye.

Stomach contained a large quantity of grass seed; gullet was also packed full.

NETTOPUS PULCHELLUS (Green Goose-Teal).

Math., Handl., No. 218.

♂. 14/3/09. Parry's Creek, N.W.A.

♀. 4/2/09.

♂. 4/2/09.

Eyes brown. Feet—♂ ♂, black, and tarsi black; ♀, leaden-brown, also tarsi. Bill—♂ ♂, black, with nail of upper mandible and band across lower mandible fleshy-white; ♀, nail leaden-grey, upper mandible brown, lower pale brown.

Stomachs contained seed and grit.

DENDROCYGNA ARCUATA (Whistling-Duck).

Math., Handl., No. 222.

♂ ♂ ♂. One on 3rd February, 1909; two on 18th February, 1909.

Eyes dark brown, eyelash blackish-brown; feet and tarsi leaden-brown; bill black.

Stomachs contained native millet seed, grass seed, and grit.

DENDROCYGNA EYTONI (Plumed Whistling-Duck).

Math., Handl., No. 223.

♂ ♂ ♀ ♀. 3/2/09. Parry's Creek, N.W.A.

Eyes yellow, eyelash yellow; feet and legs flesh-colour. Bill—upper mandible black, with flesh-coloured bar near tip, and mottled same colour; lower mandible flesh colour, spotted with black, tip brown.

Stomachs contained seeds and grit.

TADORNA RUFITERGUM (White-headed Shieldrake).

Math., Handl., No. 224.

♂. 12/2/09. Parry's Creek, N.W.A.

Eyes white, eyelash yellow; feet and tarsi white, tinged with flesh-colour; bill white, with tinge of flesh-colour.

Stomach contained grass seed, shell-fish, and grit.

NETTION GIBBERIFRONS (Grey Teal).

Math., Handl., No. 228.

♂. 13/2/09. Parry's Creek, N.W.A.

Eyes reddish-brown; feet and tarsi leaden-brown; bill, nail black, upper mandible leaden-blue, lower mandible leaden-brown, with yellowish-white bar near tip.

Stomach contained a little animal matter and some grit.

AYTHYA AUSTRALIS (White-eyed Duck).

Math., Handl., No. 234.

♂. 16/1/09. Parry's Creek, N.W.A.

Eyes white; feet and tarsi grey, all joints being blackish-brown; bill, upper mandible black, with broad blue-grey band near tip, lower mandible brown.

Stomach contained fragments of shell-fish, a few seeds, and a little grit.

PHALACROCORAX SULCIROSTRIS (Little Black Cormorant).

Math., Handl., No. 235.

♂ ♀ ♀. 29/1/09.

Eyes green; feet and tarsi black; culmen black; tomium, all lower mandible, and gular pouch leaden-grey.

The stomachs contained small catfish.

PHALACROCORAX MELANOLEUCUS (Little Cormorant).

Math., Handl., No. 241.

♂ ♀. 3/2/09.

Eyes greyish-white, eyelash white; feet and tarsi black; culmen brown, balance of bill and gular pouch and lores yellow.

The stomachs of both the above were empty.

CIRCUS GOULDI (Harrier).

Math., Handl., No. 254.

♂. 22/1/09.

Eyes pale brown; feet and tarsi greyish-white; bill, distal $\frac{1}{2}$ black, balance blue-grey; cere olive-grey.

The stomach contained two young *Mirafra*.

ASTUR FASCIATUS (Goshawk).

Math., Handl., No. 258.

♂ ♂. Adult and immature. 23/1/09.

Eyes yellow; feet and tarsi yellow; bill black and blue-grey, cere dark olive-brown.

The stomachs contained several small lizards.

HALIAËTUS LEUCOGASTER (White-bellied Sea-Eagle).

Math., Handl., No. 265.

♂ ♂, adult. ♂ ♀, immature. October, 1908.

Eyes brown; feet and tarsi dirty-white; tip of lower and all upper mandible brown, cere leaden-brown, rest leaden-blue.

The stomachs contained the remains of fish.

HALIASTUR SPHENURUS (Whistling Eagle).

Math., Handl., No. 267.

♂. 29/1/09.

Eyes brown; feet and tarsi white, tinged with blue; bill brown.

GYPOICTINIA MELANOSTERNUM (Black-breasted Buzzard).

Math., Handl., No. 270.

♀. 4/2/09.

Eyes light greyish-brown; feet and tarsi greyish-white. Bill—upper and tip of lower mandible brown; cere, lores, and balance of bill leaden-grey.

The stomach contained grasshoppers.

ELANUS AXILLARIS (Black-shouldered Kite).

Math., Handl., No. 271.

♂. 27/1/09.

Eyes red; feet and tarsi yellow; bill black.

The stomach contained the fragments of a lizard.

FALCO LUNULATUS (Little Falcon).

Math., Handl., No. 277.

♀. 30/3/09.

Eyes dark-brown; feet and legs yellowish-green; bill, tip black, base blue-grey.

The stomach contained grasshoppers.

HIERACIDEA BERIGORA (Striped Brown Hawk).

Math., Handl., No. 278.

♂. 18/3/09.

Eyes brown; feet and tarsi leaden-grey; bill, tip blackish, balance blue-grey.

NINOX OCCIDENTALIS (Western Winking-Owl).

Math., Handl., No. 289.

♂ ♂ ♀. 27/10/08.

Eyes and feet yellow; bill, tip and distal $\frac{1}{2}$ of cutting edge black, balance and cere pale olive-yellow.

The stomachs contained a quantity of cockchafer and other beetles.

TRICHOGLOSSUS RUBRITORQUES (Red-collared Lorikeet).

Math., Handl., No. 303.

♀. 30/1/09.

Eyes red; feet and tarsi olive-brown; bill red.

The stomach contained fragments of flowers.

CALYPTORHYNCHUS MACRORHYNCHUS (Great-billed Cockatoo).

Math., Handl., No. 316.

♂. 15/1/09.

Eyes dark brown, eyelash black; feet and tarsi brown; bill slaty-brown.

The stomach contained kernels of fruit-stones.

CACATUA GYMNOPIIS (Bare-eyed Cockatoo).

Math., Handl., No. 322.

♂ ♀. 23/11/08.

Iris brown; bare skin round eye leaden-blue; feet and tarsi brown; bill greyish-white.

The stomachs contained seeds and grit.

PTISTES ERYTHROPTERUS (Red-winged Lory).

Math., Handl., No. 331.

♂ ♂ ♀ ♀. Immature. January, 1909.

Eyes yellow-brown; feet and tarsi olive-brown; bill red.

The stomachs contained seeds of berries.

MELOPSITTACUS UNDULATUS (Warbling Grass-Parrakeet).

Math., Handl., No. 372.

♂. 6/4/09.

Iris white; feet and tarsi leaden-blue; bill olive-grey; cere blue.

The stomach and crop contained fine grass seed.

PODARGUS PHALÆNOIDES (Freckled Frogmouth).

Math., Handl., No. 377.

♀. 2/4/09.

Eyes yellow; feet and tarsi pale olive-brown; bill pale brown.

The stomach contained fragments of grasshoppers and beetles.

EURYSTOMUS PACIFICUS (Dollar-Bird).

Math., Handl., No. 381.

♀. 25/1/09.

Eyes brown; feet and front of tarsi flesh-brown, back of tarsi red; genys and tomium red, balance of bill brown.

The stomach contained fragments of insects.

DACELO CERVINA (Fawn-breasted Kingfisher).

Math., Handl., No. 388.

♂ ♂ ♂ ♂. Immature. 23/1/09.

Eyes grey; feet and tarsi olive-grey; bill, tomium and lower mandible white, upper mandible and base of lower blackish-brown.

The stomachs contained a quantity of grasshoppers.

CUCULUS SATURATUS (Oriental Cuckoo).

Math., Handl., No. 404.

♂. 26/1/09.

Eyes dark yellow, eyelash yellow; feet and tarsi yellow; bill, upper mandible and distal $\frac{1}{2}$ of tomium of lower black, balance of lower and base of upper olive-grey.

The stomach contained some hairy caterpillars.

CUCULUS INORNATUS (Pallid Cuckoo).

Math., Handl., No. 405.

♀. Immature. 23/1/09.

Eyes brown; feet and tarsi olive-brown; upper mandible brown, lower olive-yellow.

The stomach contained some hairy caterpillars.

SCYTHROPS NOVÆ-HOLLANDIÆ (Channelbill).

Math., Handl., No. 416.

♂. 18/12/08.

Eyes red; skin round eye, lores, ring round nostril, and line from nostril round lower mandible red; feet and tarsi leaden-grey; culmen and sides of upper mandible pale brown, balance of bill mixture of grey and brown.

The stomach contained several large grasshoppers.

CENTROPUS PHASIANUS (Coucal).

Math., Handl., No. 417.

♀ ♀ ♀. Adult. 7/11/08.

One immature. 3/3/09.

Eyes light red; feet and tarsi leaden-blue; bill black.

The stomachs contained caterpillars, grasshoppers, and cockchafer beetles.

CINCLORHAMPHUS RUFESCENS (Rufous Song-Lark).

Math., Handl., No. 539.

♂. 14/3/09.

Eyes brown; feet and tarsi very pale brown; bill, upper mandible brown, lower greyish-white.

The stomach contained fragments of grasshoppers.

ENTOMYZA ALBIPENNIS (White-quilled Honey-eater).

Math., Handl., No. 815.

♂ ♂. 23/1/09.

Eyes yellow; bare skin olive-yellow; feet and tarsi leaden-brown, tinged with olive; bill, basal $\frac{1}{2}$ olive-yellow, rest black.

The stomachs contained a quantity of fig seeds.

CHLAMYDÓDERA NUCHALIS (Great Bower-Bird).

Math., Handl., No. 863.

♂. 4/4/09.

Eyes brown; feet and tarsi olive-grey; bill brownish-black, tip brown.

The stomach contained some cocoons, which were very tough and leathery, and which contained one grub each.

Birds Seen in and around Broome, North-Western Australia.

(ADDITIONAL LIST.)*

BY ALAN F. CROSSMAN, F.L.S., F.Z.S. M.B.O.U.

EMU (*Dromæus novæ-hollandiæ*).—Though I have not seen this bird myself, I have been informed of its occurrence near Broome, not very close to the town.

BARRED-SHOULDERED DOVE (*Geopelia humeralis*).—I saw a bird of this species which had been caught in a trap at Cocoanut Well, about 2 miles from Broome.

MARSH TERN (*Hydrochelidon hybrida*).—Fairly common after the breeding season.

LITTLE QUAIL (*Turnix velox*).—I have twice seen birds apparently belonging to this species.

MASKED PLOVER (*Lobivanellus miles*).—I saw two pairs of these birds near Broome in October, 1909.

GREY PLOVER (*Squatarola helvetica*).—One shot on the beach near Broome during the October migration of 1909.

LESSER GOLDEN PLOVER (*Charadrius dominicus*).—Obtained here on migration.

LITTLE WHIMBREL (*Mesoscolopax minutus*).—Common during the spring and autumn migration.

GREENSHANK (*Glottis nebularius*).—In swampy country, about 16 miles from Broome, I saw a pair of birds which were apparently referable to this species. One was shot.

SANDERLING (*Calidris arenaria*).—One seen during the October migration.

WHITE-HEADED STILT (*Himantopus leucocephalus*).—Not uncommon around pools on the plains after a heavy rainfall.

LONG-BILLED STONE-PLOVER (*Orthorhamphus magnirostris*).—Seen on two occasions on the sea-shore.

WHITE IBIS (*Ibis molucca*).—Plentiful during the rainy season.

BLACK-NECKED STORK (*Xenorhynchus asiaticus*).—One seen near Broome in February, 1910.

REEF-HERON (*Demigretta sacra*).—Common along the coast.

NIGHT-HERON (*Nycticorax caledonicus*).—Not uncommon in the mangrove thickets.

BLACK DUCK (*Anas superciliosa*).—Common in the rainy season.

LITTLE BLACK CORMORANT (*Phalacrocorax sulcirostris*).—Common on pools and swamps during the wet season.

DARTER (*Plotus novæ-hollandiæ*).—Seen on one occasion in a mangrove swamp.

SPARROW-HAWK (*Accipiter cirrhocephalus*).—Not uncommon in the Pindan country.

LETTER-WINGED KITE (*Elanus scriptus*).—Not uncommon.

* Continued from vol. ix., page 148.

LITTLE FALCON (*Falco lunulatus*).—I have identified this species on one or two occasions.

BOOBOOK OWL (*Ninox boobook*).—I saw an old bird which had been shot, and some young birds which had been taken from a nest, in the Pindan country, a few miles from Broome.

MASKED OWL (*Strix novæ-hollandiæ*).—One seen in timber country in broad daylight.

GREAT-BILLED COCKATOO (*Calyptorhynchus macrorhynchus*).—I saw two birds apparently referable to this species about 20 miles from Broome.

RED-WINGED LORY (*Ptilistes erythropterus*).—Not uncommon at times.

ROLLER (*Eurystomus pacificus*).—Common about October, and apparently remaining to nest, as I saw a pair of young birds in a cage at Broome.

FOREST KINGFISHER (*Halcyon macleayi*).—Seen on several occasions in the Pindan country.

WHITE-RUMPED SWIFT (*Cypselus pacificus*).—Plentiful at intervals during the summer.

COUCAL (*Centropus phasianus*).—This bird, locally known as the North-west Pheasant, is not uncommon in the scrub country. It can often be seen in the early morning and just before dusk sitting on a tree uttering a sort of booming note.

HOODED ROBIN (*Petræca bicolor*).—Common.

YELLOW-TINTED TREE-TIT (*Smicrornis flavescens*).—This bird may often be heard uttering its small, but not unpleasing, song in the timbered country.

RESTLESS FLYCATCHER (*Sisura inquieta*).—Not uncommon.

BROWN SONG-LARK (*Cinclorhamphus cruralis*).—Common on the plains.

GRASS-WARBLER (*Cisticola exilis*).—I have seen a bird on several occasions on the plains apparently referable to this species.

RED-BACKED WREN (*Malurus cruentatus*).—Common.

MAGPIE-LARK (*Grallina picata*).—Not uncommon.

NORTHERN THICKHEAD (*Pachycephala falcata*).—Not uncommon in the timbered country.

BLACK-CAPPED TREE-RUNNER (*Neositta pileata*).—Common in Pindan country.

BLACK-TAILED TREE-CREEPER (*Climacteris melanura*).—Common.

BANDED HONEY-EATER (*Myzomela pectoralis*).—Identified on one occasion at least.

GOLDEN-BACKED HONEY-EATER (*Melithreptus lætior*).—Seen on several occasions in the scrub country. It utters a somewhat loud note.

RED-THROATED HONEY-EATER (*Conopophila ruficularis*).—Common.

PIPIT (*Anthus australis*).—Common.

MILLIGAN BUSH-LARK (*Mirafra milligani*).—Very common on the plains. This species sings at night, and has a peculiar soaring flight when flushed suddenly.

CHESTNUT-EARED FINCH (*Tæniopygia castanotis*).—Common.

BANDED FINCH (*Stictoptera bichenovii*).—Identified once.

LONG-TAILED FINCH (*Poephila acuticauda*).—Seen occasionally in the Pindan.

MASKED FINCH (*Poephila personata*).—Occasionally seen.

CRIMSON FINCH (*Neochmia phaeton*).—Seen in hundreds during the winter months.

GREAT BOWER-BIRD (*Chlamydodera nuchalis*).—Fairly plentiful in the scrub country. This bird has a habit of perching at the top of a tree, uttering a very harsh note, and bringing its tail right forward underneath, but in front of, the bough. I have seen but one bower, which was paved chiefly with cockle shells.

CROW (*Corvus coronoides*).—Seldom seen round Broome, but common at Streeter's station, about 18 miles out.

Notes on Pardalotes.

BY L. G. CHANDLER, MALVERN (VIC.)

(Read before the Bird Observers' Club, 24th February, 1910.)

FROM the cabinet worker's point of view, birds that undergo varying changes between immature and adult plumage have a greater interest than those that take on the garb of the mature bird while still in the nest. Pardalotes vary in their plumage to a marked degree. The Spotted Pardalote (*Pardalotus punctatus*) is a common form in the vicinity of the Dandenong Ranges (Vic.) When wandering through the bush you may hear their peculiar call at almost any time of the day. This call consists of two notes, the second note a trifle lower than the first. There are other calls. I have found the nesting-tunnel of this Pardalote in many places—in the earth, at the base of an uprooted tree; on flat ground, following the course of a decayed root; in the side of a furrow in ploughed land; again, in the bank of a creek, and lately in a tree-hollow. I think any of the Pardalotes will choose either the ground or a tree as a nesting site. Before Mr. F. E. Wilson and I noticed this unusual occurrence at Frankston on the 28th November last, I believe the nesting of *P. punctatus* in trees had not been recorded, although possibly observed. I think it probable that they choose the trees as nesting sites as often as any other members of the genus. My companion was passing a tree, and, on giving it an inquiring thump with a tomahawk, out darted a tiny bird from a hollow about 9 feet up the trunk. After some hard chopping the nest was revealed. A single glance showed us that the owners were a pair of *P. punctatus*. Two feathers from the breast of the bird were woven into the lining. The nest contained three young ones, about a day old. Presently the parent bird appeared with food in its bill, and the identity was complete.

The banks of Cardinia Creek, Beaconsfield, offer ideal nesting sites for this species. Being of a loose, sandy nature, the earth is especially suitable for them to tunnel in. The material used in building is the bark of certain gum-trees (*Eucalyptus*). Any noise in the vicinity of the nesting-tunnel will quickly bring the bird out, should it be sitting on its eggs. In many cases it would be impossible to detect the tiny burrow, which, on an average, is little more than $1\frac{1}{2}$ inches in diameter, were it not for the bird betraying it in this manner. A few nests noticed in the banks of Cardinia Creek were hidden by clustering maiden-hair fern, which formed a natural doorway. A nest observed in a sandy bank at Frankston contained a healthy young one about a week old and the dried skeletons of two others. A close examination of the nest failed to reveal the cause of the nestlings' death. Messrs. C. Barrett and E. B. Nicholls cite a similar case * :—"On opening up one of the tunnels we found five nestlings. Three of these were dead, being half-eaten by the larvæ of some species of dipterous fly of the genus *Calliphora*." These notes are interesting. That young birds of different species are sometimes attacked by dipterous larvæ in the nest has, I think, been noted by several observers.

A burrow may be used for two or more consecutive seasons, for I have found a fresh nest built on the decayed remains of an old one. It contained the unusual number of five eggs. In a bank where the earth is hard a slight ridge is often noticed in the centre of the tunnel, near the entrance. This has been raised by the bird when expelling the soil with its feet. If the birds are not in the vicinity, this sign is sufficient to show that the burrow is, or has been, tenanted by a Pardalote. Both sexes assist in the construction of the nest and the work of incubation. In the task of feeding the offspring each takes an equal share. In the month of December a number of young birds may be seen following their parents, uttering a faint, piping whistle. At the same time nests building, or containing fresh eggs, are observed.

The young of this species is born naked and blind. At a week old the gape is cream; bill horn colour; frontal quills not yet broken; crown yellowish-buff, with black tips; upper tail coverts and rump buff; tail black, with two white spots on central quills; two outer quills white, with black bases; primaries black, tipped with white; secondaries black, with white spots, and tipped with white; throat pale buff; sides of chest and abdomen very pale buff; feet bluish-grey; irides brown. I have been unsuccessful in finding nestlings in a more advanced stage than the latter.

Pardalotus assimilis.—This is a common form in the Frankston district, and it is there principally that the following notes have been collected. In open forest country *P. assimilis* is certain to be in evidence, and often in the thickly-timbered localities; but the birds show a preference for open gum (*Eucalyptus*) country. One

* *Victorian Naturalist*, vol. xxi., p. 164.

observer writes * :—"The bird does not stay to winter in its breeding haunt, and is away long before sure signs of the coming fall are generally noticeable." My observations have been the reverse of this. During the winter months I have seen flocks of a dozen or more of this species at various times and in different localities. Like many other so-called migratory birds, this species leads a nomadic existence, future movements, after the termination of the breeding season, depending entirely on the food supply. At Bayswater, in March, 1909, I saw a flock composed of many dozens. Two specimens that I secured were immature birds, just assuming the adult plumage. They would probably be about five months old. They were noisy, and were giving a trisyllabic note resembling "Wit-e-lu." I think it is the immature birds that give this call. In April I have seen small companies at Frankston, and on two occasions a pair of birds was observed. On 7th June, at Olinda (Vic.), a noisy flock of *P. assimilis* was seen traversing the tree-tops. In the Frankston district, on 10th July, 1909, I saw a partial albino in company with half-a-dozen birds of normal plumage. The centre of the head was pure white, and the lores and eyebrow of a fawn colour. The shoulders were a dirty white, and the remainder of the plumage much paler than usual. The wing markings appeared identical with the ordinary plumage of *P. assimilis*.

Like many birds that are habitually noisy throughout the breeding season, this species is remarkably quiet during the colder months of the year. This habit would make them easily overlooked by those who infer that the birds are migratory. In July and August I have not heard them give other than a sweet "trill" note, which, however, can be heard a fair distance away. I consider this call to be the one used when a mate is being sought. On one occasion I blocked the entrance to a nest containing young, and retired a short distance to watch. The parent birds presently appeared with food in their bills. One of them flew to the nest entrance, and, finding it blocked, fluttered in front for a few seconds, then quickly returned to its former position. The other flew down, with the same result. Both commenced calling persistently "Will-ju, will-ju." Occasionally one would fly down; but some time elapsed before they ventured to perch for a few seconds at the nest entrance. It was distinctly noticeable that when the birds were hovering or settled near the nest they emitted the "trill" call, and while away from it they gave the usual double-syllabic note. I judge from my observation that this note is the one generally used as a call note.

This species apparently congregates about February or March, and in July and August commences to pair off for the breeding season. Working actively from bough to bough in search of provender, they do not stay long in the one tree, but when two or three birds fly further afield the remainder quickly follow. They

* *Victorian Naturalist*, vol. xvii., p. 21.

appear to live on the scale-insects that infest eucalypt leaves, and on a still, calm day, if feeding in sapling growth, the "tap, tap" of their bills on the leaves can be plainly heard. In July numbers of solitary birds were seen. They were flying in a lost manner, and occasionally settled on a dead limb of a high tree and emitted the "trill" note. This note is often heard while the bird is on the wing. About the end of July the birds are frequently seen in pairs, but it is well towards the end of October before they commence serious building preparations. At times I have noticed three birds in company—the third, apparently, the vanquished male. The wing-beats of this bird are rapid. At irregular intervals it describes a short quadrant in its flight; sometimes this quadrant is a little more extended on a downward grade. This characteristic flight, together with certain notes that are uttered, render the species easily recognizable on the wing. Both sexes attend to the wants of the young ones. The nest may be placed in a tree-hollow or in a tunnel in the ground. Before the site for the nest has been chosen, and while building operations are in progress, both sexes are very noisy, and thus help to betray the whereabouts of their nesting-tunnel. Both sexes assist in the work of excavation, but I have only seen one bird (presumably the female) carrying in rootlets for the nest. On one occasion the two birds were seen to enter the tunnel—one with nesting material, the other without. They remained out of sight several minutes. I have no doubt that both sexes assist in collecting the material and building the nest. At one place, where I saw a pair of birds about a bank, I made a few excavations with a stick, and on a subsequent visit found that one of my clumsily made tunnels had been neatly extended. My friend, Mr. F. E. Wilson, saw a bird on one occasion building its nest in a hollow log lying on the ground. The favoured situation is in a perpendicular sandy bank. Where a road has been cut through a sandy ridge, and the Pardalotes are noisy during the breeding season, one is certain to find the nesting-tunnel. They prefer a place where the sand has been freshly disturbed, for only on rare occasions have I noticed a nest in an old, discoloured bank. There are several of these cuttings around Frankston where this species breeds every year. In one small bank four or five pairs of birds had their nests. The burrows had been tunnelled with a slight upward tendency, and the nests were found about 15 to 18 inches from the opening; the latter would be about $1\frac{1}{2}$ to $1\frac{3}{4}$ inches in diameter. Nests built in trees are, in the majority of cases, placed in the bole, though sometimes a convenient spout is made use of. How the birds manage to enlarge a chamber in semi-decayed wood is a mystery. In some instances they do not succeed too well, hence a nest formed in a tree is often smaller and not so symmetrical as one built in a bank. The average height of the nest from the ground appears to be from 12 to 15 feet.

A typical skin of *P. assimilis* has the third primary only edged with white, but specimens are obtained occasionally with the

third and fourth primaries showing white edges. One skin in my possession has the third and fourth primaries boldly fringed with white, the fifth primary is faintly edged for a quarter of its length, and the sixth primary shows about one-sixteenth of an inch of white. I believe this bird to be the result of interbreeding between *P. ornatus* and *P. assimilis*. A close study of these birds will probably prove that they frequently interbreed. On the 28th November, 1909, at Frankston, Mr. F. E. Wilson and myself identified these two birds cross-breeding. A Pardalote's nest was found in the earth, at the base of an uprooted tree. This tree was growing on the side of a bank, so the nesting-tunnel was really about 10 feet above the level of the ground. The nest was fully 2 feet in the soil. The eggs looked much smaller than usual, and two feathers were woven into the lining of the nest, which was composed principally of strips of red stringy-bark (*Eucalyptus*) and a few dried grasses. As this was the first occasion on which we had noticed feathers in a nest of *P. assimilis*, and knowing that *P. ornatus* is said to use feathers in the lining of its nest, we were anxious to examine the birds closely before we quitted the spot. An opportunity soon occurred, for both birds settled on some exposed tree-roots a few feet away. One was, without doubt, *P. ornatus*, from the broad, white patch on the primaries, and the other *P. assimilis*, with the third primary only edged white. I visited the locality a fortnight later, in the hope of finding the birds nesting again, but they had deserted the spot, probably to nest in the trees. The material used in the construction of nests varies to a large extent. Nests in trees are constructed generally of grasses and bark, while those in the earth are usually composed of rootlets and root fibre. One nest I found in sheoak (*Casuarina*) country was composed almost entirely of the "needles" of that tree, with a few grasses and bits of bark added. I have examined a fresh nest built on the remains of an old one, so that, like *P. punctatus*, this species sometimes uses the same tunnel for two or more seasons. The average clutch of eggs is four, but I have occasionally noticed five. When fresh the eggs have very little gloss on them, and are a beautiful pink in colour. As incubation advances the shell gets smooth and glossy, and darker in appearance. The birds sit closely, and often will allow one to excavate the tunnel right up to the nest before they leave the eggs. I believe this is due to their timorous nature.

The young of this species is born naked and blind, and the body is then of a delicate pink in colour, wings and feet pale cream, gape sulphur-yellow. When two or three days old the head is covered with a grey down, and on the back and flanks a mixture of grey and white, gape pale yellow, mouth saffron. When about a week old the primary quills were nearly an inch in length, with the feathers just unfurling; primary coverts showing red feathers at tips through blue quills; middle of back and head, brownish feathers just breaking; tail half an inch long; throat yellow; flanks tawny; a row of feathers on sides of abdomen

cream; irides dark brown; bill greenish-black; gape cream; mouth orange.

Three immature skins in my possession show the following phases of plumage:—(a, about six weeks old) head pale yellow, narrowly centred with creamy-white on crown; base of feathers dusky-grey; lores light orange; brows creamy; throat pale yellow; first primary faintly edged with white; third and fourth primaries boldly edged with white; speculum orange-red; bill blackish; legs and feet neutral tint; gape pale yellow; irides dark brown. (b) This specimen is just changing from immature to adult plumage. Two black feathers, centred with white, have appeared among the yellowish feathers on the head. Lores pale yellow; eyebrows creamy-yellow; first primary faintly edged with dirty white; third primary white; speculum orange-red. (c) This specimen is evidently a little older than the preceding one. The head is assuming the black of the adult bird, and a number of the striated feathers have appeared. The lores are yellow and the eyebrows white; very faint fringe of light buff on first primary; third primary white; speculum orange-red. This skin is of special value, for an examination of the head reveals the fact that the change of plumage is brought about by an alteration of colour in the feathers as well as by moult. The yellow feathers on the head of the younger specimen are here superseded by grey ones. Some of the feathers on the forehead have reached the black hue of the mature bird, while others are in intermediate stages of dusky-grey. It is interesting to notice that, although the feathers on the forehead and eyebrows reach the adult stage of plumage by a change in colour, the striated feathers on the crown are produced by moult. This is obvious from a few young quills showing beneath the feathers in specimen (b). The yellow feathers on the throat are moulting, but their successors are pale when compared with the rich colour of the adult bird.

Bird-Life on Sandy Creek, Riverina, New South Wales.

BY CHARLES GUBANYI.

PART I.—AUTUMN AND WINTER.

ALONG the main Southern railway line of New South Wales, between the Murrumbidgee and the Upper Murray Rivers, stretches a slightly undulating, rich agricultural country—the Riverina. In its original state the eastern part of the district was fairly heavily timbered, grey box, red gum, and cypress-pines being the principal trees on the plains, while the hillsides and granitic ridges supported ironbarks, red and white stringybarks, and other eucalypts. The advent of wheat-growing on a large scale, and the general change from grazing to intensive cultivation, caused on great areas the disappearance of the timber. The transformation of the

general aspect of the country is remarkable, but far from being completed. As a matter of fact, only recently hundreds of thousands of acres of more or less heavily timbered Riverina land were subdivided and opened up for closer settlement, cut into small farms, and cleared for wheat-growing.

The country round Sandy Creek is one part of those newly subdivided territories, lying about 15 miles to the south of the Murrumbidgee, near Wagga Wagga. On and round here (Sandy Creek) ringbarking, clearing, burning-off, and general preparation of the soil for intensive cultivation is still going on. It is certain that the new conditions will in many ways influence the bird-life, and very probably some interesting changes may be expected.

The following list is of the birds observed between 1st March and 1st July, 1910 :—

YELLOW-RUMPED TIT (*Acanthiza chrysorrhoa*).—This useful little bird keeps company with us all the year round, destroying a great quantity of insects in the garden or round the farm-yard.

PIPIT (*Anthus australis*).—Fairly plentiful in this district, and spends autumn and winter in or near the garden. As soon as the soil is worked the Pipits are following the cultivators, looking for grubs and larvæ exposed.

WOOD-SWALLOW (*Artamus sordidus*).—This bird is very common in our district, frequenting the timbered belt of the creek all the summer round ; but during March and April small flocks are paying frequent visits to the orchards, feeding on insects, especially locusts. These Wood-Swallows leave the district at or about the end of May, but August brings them back again.

SPARROW-HAWK (*Accipiter cirrhocephalus*).—Very often seen at all seasons. Not considered an enemy by the farmers.

MAGPIE-LARK (*Grallina picata*).—Seen all over the country at all seasons ; but during autumn the farm-yard and the garden are its favourite hunting-grounds. It feeds chiefly on insects, but occasionally picks up seeds and grains. The poisoned wheat laid out in the garden for the destruction of Sparrows frequently brings about the death of this useful and graceful bird.

BLUE WREN (*Malurus cyaneus*).—A rare visitor. Sometimes in April or May it puts in its appearance for a sunny afternoon, chasing the insects from the garden fence ; then it is clad in grey.

BLACK-AND-WHITE FANTAIL (*Rhipidura tricolor*).—This graceful little bird is our most faithful companion all the year round. After the breeding season they keep constantly busy near the house and garden, uttering their various gay little notes from early morning till sunset.

RESTLESS FLYCATCHER (*Sisura inquieta*).—Invariably seen round the garden in autumn.

SCARLET-BREASTED ROBIN (*Petræca leggei*).—This species is only a welcome visitor on the cultivated plains. During May and June it is frequently seen in small flocks.

RED-CAPPED ROBIN (*Petræca goodenovii*).—This species is much smaller than *P. leggei*, and it is only occasionally seen during the late autumn days.

HOODED ROBIN (*Petræca bicolor*).—Frequently seen with the flock of *P. leggei*.

FAIRY MARTIN (*Petrochelidon ariel*).—The Martins' mud nests are numerous along the clay-banks of the creek. The birds leave our district about the end of April, but the early spring brings them back again.

HOUSE-SWALLOW (*Hirundo neoxena*).—Our Swallows are faithful to us all the year round. In June and July they have rather a quiet time, frequently spending 15 hours a day under the verandah roof.

BROWN TREE-CREEPER (*Climacteris scandens*).—The shrill and piping cry of *C. scandens* is heard at all seasons along the timbered line of the creek. A fairly common species.

WHITE-WINGED CHOUGH (*Corcorax melanorhamphus*).—Often seen in small flocks—up to 12 birds. In the present state of the country these birds are rather useful; but the settlers who plant look upon them with a certain amount of suspicion.

CROW (*Corvus coronoides*).—The loud cry of the Crow is to be heard here all the year round. The sheep-owner regards the species as his worst enemy.

RAVEN (*Corvus australis*).—Note on previous species applies to the Raven.

BUTCHER-BIRD (*Cracticus destructor*).—The gay and musical note of the Butcher-Bird is heard during autumn and winter.

GREAT BROWN KINGFISHER (*Dacelo gigas*).—This useful bird is very well distributed all over the country; frequents the large eucalypts along the creek.

BLACK-BACKED MAGPIE (*Gymnorhina tibicen*).—Very common, and well protected by the law and by the sympathy of the farmers.

WHISTLING EAGLE (*Haliastur sphenurus*).—A frequent visitor during autumn and winter, circling in pairs above the open country.

BROWN HAWK (*Hieracidea orientalis*).—Frequently seen perching on the highest dry branches of the ringbarked trees.

NOISY MINER (*Myzantha garrula*).—A very common bird in this district, keeping near the high eucalypts along the creek and the main roads.

WHITE-BROWED BABBLER (*Pomatorhinus superciliosus*).—These agile birds are with us at all seasons. They wholly enjoy the farmers' and orchardists' goodwill and protection.

GREY JUMPER (*Struthidea cinerea*).—Common.

MUSK-LORIKEET (*Glossopsittacus concinnus*), LITTLE LORIKEET (*Glossopsittacus pusillus*), ROSELLA (*Platycercus eximius*), YELLOW-BELLIED PARRAKEET (*Platycercus flaviventris*).—All these species are fairly abundant.

BOOBOO OWL (*Ninox boobook*).—Apparently well distributed all over the country.

TAWNY FROGMOUTH (*Podargus strigoides*).—Call often heard.

BLACK-FRONTED DOTTREL (*Ægialitis melanops*).—From March till July we have invariably a small flock of this Dottrel on fields, fallowed lands, and cultivation paddocks.

WHITE COCKATOO (*Cacatua galerita*).—These Cockatoos are only seen in the open country during June and July, when they arrive in great flocks, numbering many thousand birds. They frequent the fallowed lands in search of ants' eggs and the cultivated paddocks in search of wheat.

ROSE-BREASTED COCKATOO (*Cacatua roseicapilla*).—Unlike the White Cockatoos, these birds are to be seen all the year round. They prefer to keep and look for food in pairs, but in autumn they are frequently seen in considerable flocks. The Galah is not looked upon as a harmful bird.

STRAW-NECKED IBIS (*Carphibis spinicollis*).—In early autumn the Ibises are frequently seen on our fields looking for insects, especially grasshoppers. They enjoy absolute protection in New South Wales, as far as the law goes; but, in spite of the protection, the pot-hunters shoot them.

WATTLE-BIRD (*Acanthochæra carunculata*).—These interesting birds are only occasionally seen here for a few hours, in flocks numbering up to 20. This year the last flock was observed on 1st June.

SPINE-TAILED SWIFT (*Chætura caudacuta*).—On 15th March, about 4 p.m., after a heavy rain, I saw some Swifts flying north. The main flock was followed by a somewhat scattered rear-guard, and it took about five minutes for the whole body to pass over.

Notes on the Birds Seen around Ingleenook, Merriman's Creek, South Gippsland.*

BY ARTHUR P. INGLE, A.O.U.

WEDGE-TAILED EAGLE (*Uroæëtus audax*, Lath.).—This noble bird was numerous until three years ago, since when they have almost entirely disappeared. This disappearance is almost entirely due to the poisoning of carcasses of sheep, and to vandal sportsmen (?). Personally, I think that within a very short space of time the species will become extinct.

WHISTLING EAGLE (*Haliastur sphenurus*, Vigors).—This Eagle is only a visitor. It generally appears in very dry autumns; sometimes as many as 11 birds have been seen circling over a dead beast.

LITTLE FALCON (*Falco lunulatus*, Lath.).—Only on one occasion have I seen this Falcon; the bird was being worried by a pair of Kestrels (*C. cenchroides*).

KESTREL (*Cerchneis cenchroides*, Vig. and Hors.).—Generally returns to this district in August. The female lays sometimes as many as five eggs to the clutch. The birds leave before the end of March.

GOULD'S HARRIER (*Circus gouldi*, Bonaparte).—This Hawk is frequently seen about here. It breeds in the neighbouring swamps, and occasionally raids the poultry yard.

WHITE GOSHAWK (*Astur novæ-hollandiæ*, Gmelin).—A single specimen was seen, which proved to be an immature male.

* Nomenclature according to Hall's "Key."

GOSHAWK (*Astur approximans*, Vig. and Hors.)—This is the most familiar Hawk of the district. I have frequently found nests, containing sometimes four eggs, but three seems to be the usual clutch.

SPARROW-HAWK (*Accipiter cirrhocephalus*, Vieill.)—Occasionally seen. One nest was noted some four years ago ; it contained three eggs, which were taken. Since then I have not known them to breed here.

BOOBOOK OWL (*Ninox boobook*, Lath.)—Frequently heard calling at night, and often flushed from cover. Several nests have been seen ; one, from which I secured a clutch of three eggs, was in a gum on the steep side of a hill, and overhanging Merriman's Creek. The height from the ground was 80 feet.

GREY CROW-SHRIKE (*Strepera cuneicaudata*, Vieill.)—These birds are very plentiful at times, but generally all disappear at the approach of the breeding season. Only one nest has been seen in this district.

WHITE-WINGED CHOUGH (*Corcorax melanorhamphus*, Vieill.)—Frequently seen in flocks of from 6 to 12 ; they breed freely. One nest I noted was composed of cattle droppings ; this was owing to the scarcity of mud.

ORIOLE (*Oriolus viridis*, Lath.)—Plentiful. Usually appear late in August, breed till the close of January, and leave before the end of April.

MAGPIE-LARK (*Grallina picata*, Lath.)—Very plentiful. Flocks are often seen after the breeding season, when some individuals fall an easy prey to the Goshawk (*A. approximans*).

GREY SHRIKE-THRUSH (*Collyriocincla harmonica*, Lath.)—This Thrush is the most common in the district.

BLACK-FACED CUCKOO-SHRIKE (*Graucalus melanops*, Lath.)—Very plentiful, arriving in August, breeding from October to January, and leaving before the end of April.

CATERPILLAR-EATER (*Edoliisoma tenuirostre*, Jardine.)—This species arrives in the beginning of October. It is fairly plentiful. Several nests noted on 29th of November and the 9th and 10th of December, 1909. The birds leave before the end of March.

WHITE-SHOULDERED CATERPILLAR-EATER (*Lalage tricolor*, Swainson).—During the spring of 1908 two pairs arrived here. The nest of one pair was discovered, and contained three fresh eggs, on the 6th of January. This is the only instance in which I have known *L. tricolor* to come so far south.

BROWN FLYCATCHER (*Micræca fascinans*, Lath.)—Extremely plentiful, and is found breeding everywhere. I have found the nest placed 3 feet from the ground and as high as 40 feet.

SCARLET-BREASTED ROBIN (*Petræca leggei*, Sharpe).—This species is numerous, and found breeding in the heavily-timbered lands.

FLAME-BREASTED ROBIN (*Petræca phænicea*, Gould).—This Robin arrives about the middle of March, the females coming a few weeks before the males. I have never known any to stay later than the 30th of September.

HOODED ROBIN (*Petræca bicolor*, Vig. and Hors.)—Not very plentiful ; odd pairs scattered over the open country, where they breed in old stumps.

BLUE WREN (*Malurus cyaneus*, Ellis).—Very plentiful everywhere, and breeds in great numbers. Frequently victimized by *Chalcococcyx basalis*, Hors.

WHITE-SHAFTED FANTAIL (*Rhipidura albiscapa*, Gould).—Common along all creeks and gullies ; many nests are noted every season.

RUFIOUS FANTAIL (*Rhipidura rufifrons*, Lath.).—This species is only an occasional visitor, arriving usually in the autumn.

BLACK-AND-WHITE FANTAIL (*Rhipidura tricolor*, Vieill.).—Very plentiful, and breeds freely.

RESTLESS FLYCATCHER (*Sisura inquieta*, Lath.).—A few pairs arrive here in the beginning of October ; they breed and leave before the 10th of January.

REED-WARBLER (*Acrocephalus australis*, Gould).—Plentiful in the reeds growing in Merriman's Creek. One nest I noticed placed in a tea-tree contained fresh eggs and was 4 feet from the ground.

MOUNTAIN-THRUSH (*Geocichla lunulata*, Lath.).—Not very plentiful, owing to their breeding grounds being almost all cleared and burnt off.

SATIN BOWER-BIRD (*Ptilonorhynchus violaceus*, Vieill.).—Not plentiful ; only one nest has been seen, in a thick patch of gums growing on a main road, and placed 35 feet from the ground.

EMU-WREN (*Stipiturus malachurus*, Lath.).—This Wren is becoming rare. Some years ago I knew of scrubs that were alive with them ; now only a pair or two remain.

GRASS-WARBLER (*Cisticola exilis*, Vig. and Hors.).—Only twice have I known this bird to arrive here. In both cases nests were built on a rough grassy flat.

LITTLE TIT (*Acanthiza nana*, Vig. and Hors.).—Found only in limited numbers. It remains the whole winter, and frequents the open country studded with casuarinas and odd peppermint gums.

BROWN TIT (*Acanthiza pusilla*, Lath.).—This *Acanthiza* is numerous, and nests along every creek and gully.

STRIATED TIT (*Acanthiza lineata*, Gould).—Very common. Numbers of nests are seen every year. Sometimes found fostering the young of *Chalcococcyx plagosus*.

BUFF-RUMPED TIT (*Acanthiza reguloides*, Vig. and Hors.).—Nearly as common as *A. chrysorrhoa*. I have in my possession a clutch of eggs with an egg of *Chalcococcyx basalis*.

YELLOW-RUMPED TIT (*Acanthiza chrysorrhoa*, Quoy and Gaim.).—The common *Acanthiza* of this district. Hundreds of nests are seen every year ; some contain the egg of *Chalcococcyx plagosus*.

WHITE-BROWED SCRUB-WREN (*Sericornis frontalis*, Vig. and Hors.).—Common. Numbers of nests containing eggs are found each season ; sometimes an egg of *Cacomantis flabelliformis* is found with those of the Scrub-Wrens.

SPOTTED BABBLING-THRUSH (*Cinclosoma punctatum*, Lath.).—Not common. A few pairs are known to frequent the rough country, but the species is gradually becoming rarer.

CHESTNUT-RUMPED GROUND-WREN (*Hylacola pyrrhopygia*, Vig. and Hors.).—Rarely seen now. During the spring of 1909 I searched, but only succeeded in seeing a single specimen.

COACHWHIP-BIRD (*Psophodes crepitans*, Vig. and Hors.)—Only two pairs of this bird are known to me. They bred in their usual haunt during the spring of 1909.

WHITE-FRONTED CHAT (*Ephthianura albifrons*, Jard. and Selby).—Common in the open country, where they breed freely.

WHITE-BACKED MAGPIE (*Gymnorhina leuconota*, Gould).—Far from uncommon. Large flocks patrol the open country.

BUTCHER-BIRD (*Cracticus destructor*, Temm.)—Common, and breeds freely; as many as five eggs to the clutch.

YELLOW-BELLIED SHRIKE-TIT (*Falcunculus frontatus*, Lath.)—Rather scarce. A few pairs were found nesting in eucalypts, at the summits of the trees.

WHITE-THROATED THICKHEAD (*Pachycephala gutturalis*, Lath.)—Fairly plentiful in the scrubs. Many nests are seen each season. 124

RUFIOUS-BREASTED THICKHEAD (*Pachycephala ruficularis*, Gould).—Arrives here in numbers during September, breeds freely, and departs about the middle of March.

WHITE-THROATED TREE-CREEPER (*Climacteris leucophæa*, Lath.)—Breeds freely.

ORANGE-WINGED TREE-RUNNER (*Sittella chrysoptera*, Lath.)—Not common. In winter small flocks, generally numbering 10, frequent the open country where casuarinas are abundant.

SPINE-BILLED HONEY-EATER (*Acanthorhynchus tenuirostris*, Lath.)—Common, although nests are not often seen, probably owing to the birds' habit of placing it in the top of a dense tea-tree. The clutch seems to be composed invariably of two eggs.

SILVER-EYE (*Zosterops cerulescens*, Lath.)—Very common, especially during the autumn months. Only a few breed in the district.

LUNULATED HONEY-EATER (*Melithreptus lunulatus*, Shaw).—Plentiful along the creeks or round swamps, providing there is a good supply of eucalypts.

BROWN-HEADED HONEY-EATER (*Melithreptus brevirostris*, Vig. and Hors.)—Seen mostly during midwinter. I have known odd individuals to stay through the breeding season, but have seen no nests or young.

WARTY-FACED HONEY-EATER (*Meliphaga phrygia*, Lath.)—An occasional visitor.

YELLOW-FACED HONEY-EATER (*Philotis chrysops*, Lath.)—The common Honey-eater of the district. Arrives during August, starts to breed early in October, and is gone by the middle of May.

WHITE-EARED HONEY-EATER (*Philotis leucotis*, Lath.)—Fairly numerous, though not nearly so many now as there were about three years ago.

CRESCENT HONEY-EATER (*Meliornis australasiana*, Shaw).—Common. Breeds early in August and September, and disappears before December, returning about March.

NEW HOLLAND HONEY-EATER (*Meliornis novæ-hollandiæ*, Lath.)—This species only visits the district occasionally. One season a pair remained, and I found their nest, containing eggs.

BELL MINER (*Manorhina melanophrys*, Lath.)—Several colonies of

these birds are known to me. They breed freely during September and October.

NOISY MINER (*Manorhina garrula*, Lath.)—Very plentiful. Breeds in great numbers.

RED WATTLE-BIRD (*Acanthochæra carunculata*, Lath.)—Common everywhere.

BRUSH WATTLE-BIRD (*Acanthochæra mellivora*, Lath.)—A few pairs visit us during the breeding season; two nests have been noted. On 13th of January, 1910, I saw a pair feeding a young Pallid Cuckoo, which they had evidently hatched.

FRIAR-BIRD (*Philemon corniculatus*, Lath.)—Numbers arrive during September, and breed; they all disappear before the end of March.

MISTLETOE-BIRD (*Dicæum hirundinaceum*, Shaw).—Breeds in numbers during November and December.

ALLIED PARDALOTE (*Pardalotus assimilis*, Ramsay).—Plentiful. In the winter months great flocks are seen searching the eucalypts for scale-insects.

SPOTTED PARDALOTE (*Pardalotus punctatus*, Temm.)—Common, and nests freely. As many as five eggs to the clutch noted. I have found the nest in a hollow log and in the heart of a green peppermint gum.

HOUSE-SWALLOW (*Hirundo neoxena*, Gould).—Very common.

TREE-MARTIN (*Petrochelidon nigricans*, Vieill.)—Great numbers arrive in August; they breed freely, and leave during March.

PIPIP (*Anthus australis*, Vig. and Hors.)—Very plentiful in the open country.

WHITE-BROWED WOOD-SWALLOW (*Artamus superciliosus*, Gould).—Seen in numbers during some seasons; other years none appear.

WOOD-SWALLOW (*Artamus sordidus*, Lath.)—Breeds in numbers every spring.

RED-BROWED FINCH (*Ægitha temporalis*, Lath.)—Plentiful, nesting along the creeks.

VICTORIA LYRE-BIRD (*Menura victoriæ*, Gould).—A few odd birds stray down from their breeding grounds among the hills of Carrajung, some 30 miles away.

SPINE-TAILED SWIFT (*Chætura caudacuta*, Lath.)—Immense flocks pass over every summer.

WHITE-THROATED NIGHTJAR (*Eurostopus albigularis*, Vig. and Hors.)—This bird arrives about January, and is then seen hawking up and down the creek after nocturnal insects.

TAWNY FROGMOUTH (*Podargus strigoides*, Lath.)—Plentiful, and breeds freely in the timbered country.

OWLET NIGHTJAR (*Ægotheles novæ-hollandiæ*, Lath.)—Not common. I have noted two nests, containing clutches of three and four eggs respectively.

DOLLAR-BIRD (*Eurystomus australis*, Swainson).—Only a visitor, and does not breed here.

AZURE KINGFISHER (*Alcyon azurea*, Lath.)—Rare, only one or two being seen during the last year or two.

BROWN KINGFISHER (*Dacelo gigas*, Bodd.)—Plentiful everywhere.

SACRED KINGFISHER (*Halcyon sanctus*, Vig. and Hors.)—Arrives here early in September, breeds freely, and goes north early in February.

PALLID CUCKOO (*Cuculus pallidus*, Lath.)—Arrives in great numbers—the vanguard towards the end of August; leaves in February.

FAN-TAILED CUCKOO (*Cacomantis flabelliformis*, Lath.)—These birds do not come in such numbers as the former species. They arrive about the middle of August, and leave during March.

SQUARE-TAILED CUCKOO (*Cacomantis variolosus*, Hors.)—A few arrive generally towards the end of October, breed, and go north before the end of January.

NARROW-BILLED BRONZE-CUCKOO (*Chalcococcyx basalis*, Hors.)—Seen in numbers between the 6th of September and the 16th of February.

BRONZE-CUCKOO (*Chalcococcyx plagosus*, Lath.)—Plentiful. Arrives late in August, and leaves early in February.

BLUE-BELLIED LORIKEET (*Trichoglossus novæ-hollandiæ*, Gmelin.)—This Lorikeet comes when there are plenty of flowering gums, but does not breed in the locality.

MUSK-LORIKEET (*Glossopsittacus concinnus*, Shaw).—Plentiful during winter months, but very few stay and breed.

BLACK COCKATOO (*Calyptorhynchus funereus*, Shaw).—Some always about during the winter, but all leave to breed in other parts.

GANG-GANG COCKATOO (*Callocephalon galeatum*, Lath.)—Great flocks are seen during the winter months; they leave in September, going north-west to breed.

WHITE COCKATOO (*Cacatua galerita*, Lath.)—Not very plentiful. A few pairs are known to breed here.

KING LORY (*Aprosmictus cyanopygius*, Vieill.)—A single specimen seen (a female).

ROSELLA (*Platycercus eximius*, Gmelin).—Plentiful, and nests in open country.

CRIMSON PARRAKEET (*Platycercus elegans*, Gmelin).—Plentiful, and breeds in great numbers.

BRONZE-WING PIGEON (*Phaps chalcoptera*, Lath.)—Plentiful in timbered country, where their nests are often noted.

BRUSH BRONZE-WING PIGEON (*Phaps elegans*, Temm.)—A few sometimes seen, but they do not breed in this district.

STUBBLE QUAIL (*Coturnix pectoralis*, Gould).—Only a few seen occasionally. Odd nests are found when harvesting crops.

BROWN QUAIL (*Synæcus australis*, Temm.)—Very few seen; one nest, with eggs.

PAINTED QUAIL (*Turnix varia*, Lath.)—Very rare. A few seen in rough, heathy country.

PECTORAL RAIL (*Hypotaenidia philippinensis*, Linn.)—Rare, odd nests being seen during wet winters, but none has been noted for the last three years.

BALD-COOT (*Porphyrio melanonotus*, Temm.)—Very few now seen, though a year or two ago they nested freely in the district.

COOT (*Fulica australis*, Gould).—Common everywhere; nests plentiful along the creeks.

SPUR-WINGED PLOVER (*Lobivanellus lobatus*, Lath.)—Numerous in the open country, where nests are frequently found.

BLACK-BREASTED PLOVER (*Zonifer tricolor*, Vieill.)—An occasional visitor.

SNIPE (*Gallinago australis*, Lath.)—Very few visit the district.

STRAW-NECKED IBIS (*Carphibis spinicollis*, Jameson).—Only a visitor. In January, 1910, 40 birds arrived, stayed for a few days, and then disappeared.

WHITE-FRONTED HERON (*Notophoxyx novæ-hollandiæ*, Lath.)—Common. Breeds freely. Clutches of five eggs found.

NIGHT-HERON (*Nycticorax caledonicus*, Gmelin).—A few arrive here. Usually seen first about the end of January. Do not breed in the district.

BLACK CORMORANT (*Phalacrocorax carbo*, Linn.)—An odd specimen occasionally seen.

WHITE-BREASTED CORMORANT (*Phalacrocorax gouldi*, Salvad.)—Common along the creeks, but does not breed here.

BLACK-THROATED GREBE (*Podicipes novæ-hollandiæ*, Steph.)—A few pairs breeding in local swamps.

BLACK SWAN (*Chenopsis atrata*, Lath.)—Odd specimens noted, but the birds do not breed here.

WOOD-DUCK (*Chenonetta jubata*, Lath.)—An occasional flock seen, but none are known to breed in this locality.

BLACK DUCK (*Anas superciliosa*, Gmelin).—Common, and breeds freely.

MUSK-DUCK (*Bizura lobata*, Shaw).—Only a few pairs are known; they breed in the swamps.

EMU (*Dromæus novæ-hollandiæ*, Lath.)—Becoming rare, although "protected," owing to their being hunted down with dogs.

The Dusky Robin (*Petroeca vittata*).

BY H. STUART DOVE, F.Z.S.

THE vision of this familiar bird calls up memories of my first acquaintance with the bush, when, a good many years ago now, my brother and I selected land on the North-West Coast of Tasmania and settled down to "colonial experience." While picking up and throwing together the branches and *débris* after the burn-off, we had good opportunities for making acquaintance with some of the birds. One of the earliest species to pay us a visit was the Dusky Robin—although we did not know it by that name, nor, indeed, by any other, for some time. One of the hardest tasks in this comparatively new and unpeopled country was to find out what the birds were. There was practically no literature on the subject. "Native Sparrow" was the name we got from the bush folk for the species now under consideration, and not an inapt one either, as regards size and soberness of colouring.

When a small store of knowledge had accumulated, I began to

write some articles on bush life for an English magazine, from the first of which the following is a quotation :—" Perched upon a stump near is a ' Native Sparrow,' not much unlike the British Hedge-Sparrow, but of a thicker, heavier build ; very grave and judge-like is he, with his head feathers ruffled up, and a generally thoughtful appearance, as if revolving some important scheme. Self-contained as he appears, however, his weather eye is wide open. With a sudden dart he is on the ground, tugging away at a large worm, the other end of which is still anchored in earth. A few vigorous jerks loosen the lower part considerably, and the worm is now three-quarters out. Slacking his grip for a moment, the aggressor seems to draw breath for a supreme effort. It is made, and triumphantly he flies off to the bush to devour the dainty, or perhaps offer it to his mate, who is busy nest-building."

The Dusky Robin is not in the least afraid of the human form, but seems rather to enjoy its proximity. Wherever a settler makes a bit of a clearing in the bush, and erects his slab or paling hut, there will this friend of man be seen sitting about upon stumps or on the rough dead-wood fences which are the first attempts at property enclosure, watching his opportunity to help the new-comer by ridding the earth of some of the chafer-grubs and other industrious workers among the roots of vegetation.

The Dusky Robin starts nesting in August in sheltered localities. In the Table Cape district I found young which were flying during the first week of September. The sweetly plaintive double call note was heard before the middle of July ; it is one of the very first sounds to greet the ear when one opens one's eyes in the grey dawn. During a wet, rough winter I found, so early as 5th August, a nest containing two eggs, built in the end of a prostrate hollow tree. Various are the sites selected for a home, and, as Gould very truly remarks, the character of the nest depends a good deal upon its position. Sometimes it is neat and compact, sometimes more spread out and untidy. An example near Table Cape was found on 26th October with three eggs. It was placed on a small ledge in a hollow gum-tree, and was neatly built of small strips of stringybark on a base of rootlets, and lined with fine rootlets. The eggs were of a bluish-green tint, with an indistinct brown ring near the apex, and a few blotches of that colour also at the same end. A few miles from Launceston, Northern Tasmania, on 22nd September, a Dusky Robin was building a similar nest of bark strips and rootlets on a ledge just inside the hollow butt of a burnt-out gum, at about 4 feet from the ground. Another was noticed the same day just inside the opening of a tall stump which had been hollowed out by bush fires. It was about 5 feet from the ground, and was composed of rootlets bound with bark strips, with a large quantity of sheep's wool round the outside and under side, as well as inside. This was in sheep country, and the little architect naturally used material which was so abundantly to hand. This nest contained an olive-green egg, with a brownish zone near the apex. Other positions often favoured are stumps, or

the flat, spreading part of a bush, on which a good foundation can be laid. The nest is seldom more than 4 or 5 feet from the ground, sometimes less; but my friend, Mr. H. C. Thompson, discovered one, near Launceston, at the unusual height of 10 feet. Concerning it I append an extract from my note-book:—"This plain-coloured Robin usually selects a niche in a hollow gum-tree, or a site amid the broken roots projecting from the butt of a prostrate giant; but it had in this instance chosen the horizontal limb of a dogwood (*Pomaderris apetala*), about 10 feet from the earth, and had placed the structure amid thick foliage, so as to be practically invisible. Mounting on my friend's shoulders, I was enabled to make a close inspection, and found the principal material to be, as so frequently happens, fine rootlets. The rim was of twigs bound with cobwebs, while the lining was of grass, rootlets, and fine bark." Another nest was placed on top of a peppermint (*Eucalyptus amygdalina*) stump, at 4 feet from the ground, and was partly concealed by shoots which had sprung from the side of the stump. Still another instance was found on 17th November, in Launceston district, where the Robin had built in a V-shaped niche caused by a slab of bark falling partly away from the trunk of a large peppermint. The nest was of fine grass and bits of bark, with cobwebby patches on the outside to assist concealment. There were two blind, naked young, one just out of the egg, the other still struggling to free its head from half the egg-shell, which was closely adhering—an endeavour in which we assisted. The other shell had been removed by the parent bird.

This *Petræca* has the curious habit of sometimes returning to the same site and rebuilding on the old nest. Instances of this are mentioned in Campbell's "Nests and Eggs." Mr. E. D. Atkinson found no fewer than five, and in another case six, nests piled one on top of another! Mr. Thompson told me, some years ago, that he found a Dusky Robin at Russell's Plains, in Northern Tasmania, using the same nest for a second brood during the season. This is very unusual, as a new nest is generally constructed for this purpose. During the spring of 1909, near Devonport, I found that a "Dusky" had built its nest on the flat part of a "native currant" bush (*Coprosma microphylla*), at 4 feet from the ground, and sheltered by young gum-trees. The bird had constructed a small circular platform of twigs on the bush, which is a dense, fine-leaved thing, and had placed on this the nest of coarse rootlets and bark fragments. The rim was woven of much finer rootlets, dry grass stems, and wool, and the lining was exceedingly fine rootlets, with a little wool. The contents when found on 11th September were one egg and two recently hatched young, about a day old. The nestlings were kept under pretty constant observation. They had their eyes open on 17th September, and were covered with brownish feathers, each of which had a central white streak, giving the young a peculiar striped appearance; reddish-brown bands also showed across the wings. The young flew early on the morning of 24th September, 14 days after hatching.

What I believe to have been the same pair of Robins built again, only a few yards distant, on the broad fork of a prickly mimosa (*Acacia verticillata*), 3 feet from the ground, on a twig foundation as before; nest composed of rootlets, dry grass, quantity of spider-web round rim, into which was woven a piece of string. Several pieces of *thick string*, much weathered, which had evidently been lying on the ground a long time, *had been put in as lining*. This nest was found complete on 20th October. On visiting it again on 23rd, the *string lining had been removed by the birds*, but the nest was otherwise intact. On 25th October it contained two eggs, reposing on a fine rootlet lining—one of the usual olive-green tint, the other inclined more towards blue. The dimensions were about the same—.87 x .68. Both eggs were faintly marked, the green one most distinctly, with brownish blotches, principally about the apex. Next day a third egg was present, of the olive-green tint, marked faintly with brown about the larger end. The eggs are thus laid on successive days. The sitting bird allowed me to approach very closely to her low, exposed position. On 4th November I went again, and found the female very trustful and confiding; she allowed me to almost place my hand on her before she would leave the eggs. When I visited the spot at 6 a.m. on 10th November one of the young had just hatched out—a blind, naked, palpitating atom, lying on its side, the skin of a reddish tint, but dark on the thighs and across the hinder part. It was hatched from one of the green eggs. Next morning I was there before 6 o'clock, and found three young, the other green and the bluish egg having apparently hatched later on the previous day. It was noticeable that the red tint of birth soon gave way to a dark appearance, as if caused by the feathers preparing to push through. When I placed my hand close over the parent, she tumbled off the nest with feigned disablement, while the male, near by in the scrub, whistled a warning "Twee-tu." On 13th November the young had a dark, scaly appearance along the spine, where its feathers were beginning to sprout. The wing-quills were also sprouting, while the heads and rest of the bodies had a blackish look; the bills were greyish, with yellow at sides. Next day the plumage was sprouting well on wings and spine, while the head had a scaly appearance. On 17th November my visit was at 6.30 a.m., when all the chicks had their eyes open; the spine, wings, and head well covered with a light brown plumage, the wing-quills partly blackish, reddish-brown bars across wings (these bars are white in the adult), tails just beginning to sprout, bills dark grey with yellow sides. All the nestlings looked sleepy and contented, as if they had already been well fed that morning; they did not open their mouths or make any sound. My next visit, at early morn on 19th of the month, was saddened by the discovery that some midnight prowler (perhaps a tiger-cat, for the nest was not far from a dense swampy thicket) had been before me, and all that was left of the happy home was an overturned nest and a few feathers. This was the more annoying as the young were within a few days of flying.

These combined observations seem to show that incubation lasts 15 days, that the eyes open in from 6 to 7 days, and that the young fly about 14 days after hatching.

In Robert Hall's "Key to the Birds of Australia" the plumage of the adult Dusky Robin is described as "brownish-olive above; throat dusky-brown; only outer tail feather white at base and for the whole extent of outer web; under surface brown." The wings are crossed by two oblique whitish bars, and there is no white frontal spot as in our other two familiar Robins. The sexes are alike in plumage. The tip of the upper mandible is slightly hooked. In the young birds, on leaving the nest, the colouring is very different, and one would take them to be another species. The head, back, breast, and wing coverts are heavily streaked and mottled with light and dark brown, giving the birds the appearance of young Thrushes. Those fledglings which left the nest on 24th September were about the scrub at the beginning of October with their parents; the latter kept giving a warning whistle on my approach, and fluttered about in a state of excitement to lure me away, while the young made an almost continuous plaintive little whistling noise, to keep in touch with their parents, uttering also an occasional "tweet." In November this family still haunted the same scrub. One of the young (which had left the nest on 24th September) was seen on the 11th, and looked a fine bird, in its lighter plumage appearing larger than the adults. It was much splashed on the breast with a darker colour, and the front of the head had a mottled look. The wing-bars were still reddish-brown.

The Dusky Robin—which, by the way, is frequently called "Stump Robin," from its predilection for sitting about the stumps of a clearing, and sometimes building in a similar situation—has no song like its congeners, the Flame and Scarlet-breasted Robins, but its love-call is sweetly plaintive—a double whistling note, which is one of the most familiar sounds in winter and spring about a settler's home. An interesting trait of this bird, which is not as well known as it is in the case of the Dottrel or the familiar little White-fronted Chat, is its habit of pretending to be wounded to lure away the intruder. Allusion has already been made to the female's guile when disturbed on the nest; but a much more striking example was afforded us one November, when climbing the slopes of Mount Arthur. My companions were Mr. H. C. Thompson and Mr. Robt. M'Gowan, and we had found in a dry, hollow tree the nest of a "Dusky," from which the young had flown. Shortly afterwards the female was sighted clinging to the side of a dead tree. As we approached she dropped to the ground backwards, and lay there fluttering, as though suffering the agonies of death after being shot. When we went up to investigate she fluttered painfully away in an opposite direction to where the young were concealed.

This species nests from August to December, two broods, and probably three in some cases, being reared.

Description of two New Nests and Eggs from North-West Australia.

By H. L. WHITE, SCONE, N.S.W.

With Field Notes by the Collector, G. F. HILL.

WHITE-TAILED ROBIN (*Pæcilodryas pulverulentus*).

Nest.—Rather a compact and open cup-shaped structure, resembling some of the smaller forms of those constructed by the *Eopsaltria*. It is placed in the fork of a small horizontal branch of a mangrove tree (*Avicennia*), and is constructed principally of strips of bark, wound round and fastened with cobwebs, and long strips of dry bark hang perpendicularly all around outside, some pieces being almost 3 inches in length. The nest is lined inside with fine dry roots and grass.

Eggs.—Clutch of two eggs, roundish ovals in shape, texture of shell fine, surface glossy, and minutely pitted all over, this feature becoming conspicuous under the lens; ground colour of a dull greenish-stone, marked with small round spots of reddish-brown, of different shades, and lilac, the latter appearing as if beneath the surface of the shell. In specimen *a* the markings are well distributed over the shell, while in specimen *b* they are chiefly confined to the larger end, where they form a rather regular zone, and the ground colour over which this zone of markings passes is of a light salmon-brown. In general appearance the eggs approach those of *Pæcilodryas cerviniventris*, rather more than those of the *Eopsaltria* genus. The pair measure in inches:—(*a*) 0.76 x 0.62, (*b*) 0.77 x 0.62. Another pair of these eggs, which are the co-types, were taken in the same locality, and measure:—(*a*) 0.76 x 0.61, (*b*) 0.74 x 0.59. They are roundish ovals in shape, ground colour of a dull greenish-stone, fading into a light-brown, which gradually darkens towards the larger end, and this is specially noticeable in specimen *a*. This graduation in the ground colouring is after the manner of that shown in some eggs of *Petræca bicolor*. Both eggs are spotted with small dull markings of reddish-brown, intermingled with a few very indistinct spots of pale lilac. Specimen *a* is much darker at the larger end than specimen *b*.

[I saw the birds amongst the mangrove roots and low branches in a few places on the eastern side of Napier Broome Bay, where they were fairly numerous. In a few of the more open patches of mangrove I was able to watch the birds building, but only in one case, where I was able to get away unobserved, did they complete and lay in the nests. In most instances I was observed, and the nest was at once abandoned. The first note of their nesting was recorded on 31st January, 1910, when, after several days' watching, a nest ready for eggs was found. Subsequent visits proved, however, that the nest had been deserted. With this knowledge of their habits to work upon, renewed efforts were made, and on 20th February, 1910, after a long wait in the mosquito-infested mangroves, the female bird was seen flying

towards an isolated mangrove bush some 60 yards away. The water was too deep to wade to the nest, so I decided to return on the following morning, when the tide would be out. A photograph of the eggs and nest (*in situ*) was taken on the following day, and the eggs secured, but to my disgust they were already chipped on my arrival at camp. Similar methods were employed in locating the nest of the next pair of birds until the attacks of mosquitoes and sand-flies became unbearable, and then abandoned in favour of a tree to tree search as the tide permitted, and on 2nd March, 1910, after examining a considerable area in this fashion, the nest was found in a dense mangrove bush, 3 feet above spring tide level, and two eggs in a somewhat advanced state of incubation were taken. A second nest commenced on this date was abandoned. Another pair of birds were heard in a thick, stunted patch of mangroves, where it was impossible to watch their movements. Dividing the surrounding area into rough blocks, a careful search was made of every tree until the nest, containing two fresh eggs, was found (26th March, 1910). This nest was built in a small dead mangrove bush 3 feet above water level, and almost hidden by leaves of neighbouring bushes.

Dimensions of nests in inches:—(a) Outside—length 3, breadth $2\frac{3}{5}$, depth $2\frac{1}{10}$; inside—length, $2\frac{1}{10}$, breadth $1\frac{3}{5}$, depth $1\frac{1}{10}$. (b) Outside—length $2\frac{1}{2}$, breadth $2\frac{1}{5}$, depth $2\frac{4}{5}$; inside—length $2\frac{1}{5}$, breadth $1\frac{4}{5}$, depth 1.

The food consists entirely of minute crabs, shell-fish, crustaceans, and a species of small black ant, which is plentiful on the mangroves.]

LAVENDER-FLANKED WREN (*Malurus dulcis*).

Nest.—Dome-shaped, and similar to those of the other members of the genus.

Eggs.—Three in number, and closely resemble those of *M. cyanochlamys*. Ground colour of a very delicate pinkish-white. Shell fine, but with very little gloss. Specimens *b* and *c* are marked all over, and particularly at the larger end, with small spots and minute specks of dull reddish-brown, while specimen *a*, which is covered with small spots of the same colour, is heavily blotched at the larger apex with markings of a much darker reddish-brown than is the case with the other two specimens. The eggs are stout ovals in shape, and measure as follows:—(a) 0.62×0.51 , (b) 0.62×0.49 , (c) 0.63×0.50 inch.

[The habitat of this species, so far as my observations went, is restricted to the rocky sandstone country near the eastern side of Napier Broome Bay. September and the early part of October appears to be the general nesting season. One set of three eggs was the only result of many careful searches during the latter part of October, November, and December, 1909. After the nesting season these birds are generally seen in parties of from 6 to 10 birds, the latter number being somewhat unusual. One party of 10 birds contained 5 adult males, one moulting and 4 dull-

plumaged birds (5th March, 1910), while another of 6 birds contained 2 adult males and 4 dull-plumaged birds.

The nest from which the eggs (type set) were taken (14th December, 1909) was placed in a dead branch lying amongst the rocks, and built of acacia leaves on the outside and grass on the inside. The eggs rested on a layer of rootlets, while the upper part of the egg chamber was thickly lined with kangaroo fur. Many old nests were found in similar positions and built of the same materials.]

Stray Feathers.

A LONG WAY FROM HIS BEAT.—On the 17th instant an opossum-hunter brought to my camp for identification a magnificent White-bellied Sea-Eagle (*Haliastur leucogaster*), which he had shot while it was making a meal, in company with some Wedge-tailed Eagles (*Uroaetus audax*), at a heap of skinned opossum carcasses. My camp on the Burnett River—a small stream here—is 90 miles from the nearest point of the coast. I carefully measured the span from wing-tip to wing-tip, and found it to be 6 feet 10 inches.—F. B. C. FORD. Survey Camp, *viâ* Bayswater (Q.), 22/5/10.

* * *

CUCKOO NOTES.—Cuckoos have visited us in large numbers this season. They are especially plentiful around Frankston and Ringwood at present. In company with Messrs. F. E. Wilson and H. Cowderoy recently I found a nest of the White-eared Honey-eater (*Ptilotis leucotis*), containing an egg of the Pallid Cuckoo (*Cuculus inornatus*), and in a nest of the White-throated Thickhead (*Pachycephala pectoralis*) a Fan-tailed Cuckoo (*Cacomantis rufulus*) had deposited her egg. The nest also held an egg of the Thickhead. The latter is probably a new record of a foster-parent.—L. G. CHANDLER. Malvern, 12/9/10.

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WOOD-SWALLOW AND CUCKOO.—On 10th December, 1909, I discovered, on a branchlet of a tall red gum overhanging the Namoi River at Manilla, a nest of *Artamus superciliosus*. My attention was attracted by the squeaking and fluttering of a young Cuckoo (*Cuculus inornatus*). I saw the Wood-Swallow (female) leave the nest, fly from the tree, and return again to the young bird and feed it. After satisfying the fledgling's wants she returned to her nest. As soon as the Wood-Swallow was nicely settled the Cuckoo would again commence calling and fluttering its wings. The foster-mother once more satisfied the voracious appetite. These trips were repeated six times within about 40 minutes. The male Wood-Swallow kept well away from the nest, calling and flying from bough to bough.—H. BURRELL. Manilla, N.S.W., 17/5/10.



Wild Lorikeets (*Trichoglossus novæ-hollandiæ*) being fed on Syrup.

SWAMP-HAWKS (*CIRCUS GOULDI*).—On 14th December, 1909, I found and photographed, in a wheat-field at Manilla, a nest of the Swamp-Hawk (*C. gouldi*). The nest was composed of twigs, which measured from $\frac{1}{8}$ inch to 1 inch in circumference. It was placed in the centre of a 100-acre paddock, situated 2 miles from the town and about 1 mile from the nearest water. The farmer stripped the grain with a harvester without injury to the fledglings, and was unaware of their presence until he had driven the machine over their heads, when he discovered them huddled together on the twigs in the standing stubble, the nest being only slightly disarranged.—H. BURRELL. Manilla, N.S.W., 17/5/10.

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MOVEMENT OF WOOD-SWALLOWS.—A great spring migration of Wood-Swallows (*Artamus leucorhynchus*) is taking place to-day, from about E.N.E. to W.S.W.; light breeze off the sea (south) during morning. I first noticed them shortly after 9 o'clock this morning, and at mid-day they are still passing, in small parties, at varying heights, the lowest apparently about 150 feet; others at double that altitude; some higher yet, so as to be almost invisible. They are not steering a direct course, but sailing about in deliberate circles, perhaps capturing some winged prey as they go; nevertheless there is a general drift in the direction stated above, and eventually the parties disappear in that quarter, apparently following the coast-line, by which route many will by-and-by pass over Melbourne, and so to the interior of Victoria. This agrees with an observation made at Essendon about three years ago, and recorded at the time, where this species appeared to be coming in numbers from the south at springtime. This was explained by their having followed the coast-line from New South Wales along East and South Gippsland until they approached Port Phillip, and then steered north-west, passing over Essendon on their way.—H. STUART DOVE. Cunninghame (Vic.), 5/9/10.

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WILD PARROT PETS.—The picture (Plate XI.) shows a lady (Mrs. Alex. Innes, of Pratolino, Louisa Creek, Mackay) engaged in her daily pleasurable task of feeding a number of Blue-bellied Lorikeets (*Trichoglossus novæ-hollandiæ*). The birds are all absolutely wild—none of them have ever been confined in any way—but they have learned that no harm can happen to them at this house, and when the lady calls they come by the dozen for the food she offers them, and settle all over her shoulders, head, hands, &c., and on the table, which is placed on the verandah for their special benefit. Needless to say, Mrs. Innes loves the birds, and they have learned to trust her implicitly. They nest in the trees in the vicinity of the homestead, and it is intensely interesting to note that the very first flight of the young birds is to the bountiful table supplied by the gentle lady who loves them so. Mrs. Innes delights to see the young birds come; they are a bit shy at first, but soon become

acquainted with their new friend, and thereafter come regularly at the dining hours. When I went to take the photograph I arrived about 8 o'clock on a most beautiful morning. The birds were there in scores, all clamouring for their breakfast, which had been delayed until I arrived. Mrs. Innes feeds them on a syrup made of milk and sugar.—E. M. CORNWALL. Mackay (Q.), 2/6/10.

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PROLIFIC PODICIPES.—On 21st November, 1909, while on a visit to Mr. Hill, of Caermarthen station, Upper Manilla, I went to a dam close to the homestead, where I discovered a Grebe's (*Podicipes novæ-hollandiæ*) nest floating on the surface of the water about 20 feet from the land. I waded out to the nest, removed the covering, and found it contained a clutch of four eggs. I then returned, and mentioned the fact to Mr. Hill, who quietly informed me that it would not remain there very long, as he was starting to plough the following day, and the horses when coming to drink would soon trample it down, so I at once decided to go back and photograph and collect the clutch of eggs. After securing and successfully blowing them I found that they were partly incubated. I made another visit to the dam a fortnight later and found the nest still intact and a Grebe sitting close thereon. When I got within about 100 feet from the spot the bird stood up, covered the nest, and dived into the water and disappeared from view while I walked a dozen paces. (Plate XII.) I examined the nest again, and discovered, to my surprise, a second clutch of eggs (five). On making inquiries later, I was informed that the birds were holding their own against the horses. On the Sunday following I went out again to examine the nest for the third time, but found it deserted by the birds; only one egg remained, the nest was very dilapidated, and the covering was nowhere to be found.—HARRY BURRELL. Manilla (N.S.W.), 17/5/10.

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BIRD NOTES FROM CUNNINGHAME.—Swift Lorikeet.—Several times during my stay here this autumn (1910) I have noticed companies of the Swift Lorikeet (*Euphonia discolor*) dashing by overhead, and going to the north. One afternoon, the wind being north-west, light, and the day fine and sunny, many parties passed over at a considerable height, my attention being attracted to them by the sharp chattering notes they utter while on their flight. All came from the south, apparently from the sea, which is about half a mile distant, and went away northward. It is possible that they are migrating from Tasmania, where for many weeks past the weather had been rough and stormy. Shrike-Thrush.—A Shrike-Thrush (*Collyriocincla harmonica*) was observed to capture a large hairy caterpillar, which he battered considerably on a log, taking care that all the life was out of it before he swallowed the tit-bit. Hairy larvæ are usually said to be the Cuckoos' perquisites, and



Nest and Eggs (covered and uncovered) of *Podiceps novae-hollandiae*.

to be avoided by other bush-dwellers; but the Thrush certainly relished this one, which was red on the under surface and legs, covered with black hair on the upper surface and with grey along the sides. Coachwhip-Bird (*Psophodes crepitans*).—Several times during my stay I have heard the fine note of this species resounding through the bush. On one occasion a friend and myself managed to creep between the male and his consort when calling, so that the whip-crack was distinct on one hand and the soft immediate response on the other.—H. STUART DOVE.

* * *

THE LITTLE PENGUIN (*Eudyptula minor*).—I have some photographs of this species, showing the manner in which the tail is bent at a sharp angle, acting as a rudder, when the bird wishes to change its course in the water. The action is very quick, and Mrs. Carter (who took the photographs) had some trouble to snap the birds making the movement, and the tails were frequently bent at a much sharper angle than appears. I have not read of this peculiarity, and I notice that Mr. Ogilvie Grant, in the "Guide to the Gallery of Birds, British Museum, 1905," states that the "legs are used as a rudder." Although the tail of this species appears very small and short externally, yet when skinning the birds in question I was much struck by the way in which the caudal vertebræ were extended and lengthened, resembling those of some mammals. The pair of birds (both males) were sent to me from the South Coast, and for some time they were kept (except when having an occasional walk in the garden) in a circular boiler. Although adult birds, they resolutely refused to eat, refusing pieces of meat and live frogs regularly offered to them. I was obliged to feed them by force as long as I had them, usually getting well bitten while doing so. They began to pine away after two weeks' confinement, and as we were leaving home for twelve months, and it would have been, of course, subjecting them to certain death to turn them out inland, in the height of summer, I reluctantly made specimens of them.—TOM CARTER. Broome Hill (Western Australia), 30/7/10.

* * *

CLEVELAND (TAS.) NOTES.—Fulvous-fronted Honey-eater (*Glycyphila fulvivrons*).—This bird is an inhabitant of the banksia and bracken fern-covered tracts round about here. I have found its nest on two occasions, and each time built in a banksia. The second nest found had been partly destroyed by some enemy, but the eggs (two) had not been touched, though the nest was torn about. Evidently the sitting bird had been attacked.

18/8/10.—Spring is later this season when compared with last year, and the birds seem correspondingly later. For instance, compare:—7/7/09, male Wren in full plumage. This year the date for first notice of same is 7/8/10.

For the first time since this district has been under my observa-

tion, a flock of 20 White-fronted Chats (*Ephthianura albifrons*) has spent the winter around the slopes of the lagoon. They camp in the shelter of the gorse bushes.

14/8/10.—Black-breasted Plovers (*Zonijer tricolor*) with young ones following them.

16/8/10.—Spur-winged Plover's (*Lobivanellus lobatus*) nest and eggs destroyed by sheep.

17/8/10.—Black Duck (*Anas superciliosa*) disturbed from her nest in rushes. The nest contained eight young ones.

17/8/10.—Swallows (*Hirundo neoxena*) have returned.

The Ground-Parrakeet (*Pezoporus formosus*) was observed last December in a paddock 3 miles from here.—J. A. FLETCHER.
18/8/10.

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THE SOUTHERN LIMIT OF *ROSTRATULA AUSTRALIS*, GLD.—The Painted Snipe may now be recorded as found in Tasmania. Mr. W. Richardson (per favour Mr. W. L. May) sent a specimen in the flesh to the Museum at Hobart, obtained at Sandford, south of Hobart, on 23rd July, 1910. Mr. Richardson believes he has previously seen this species in the midlands, Lake Woods, in the spring of 1909. It is a young male of last year's breeding, having the superciliary mark and line behind the eye slightly rufous, the hind-neck and mantle being faintly fasciated; the legs and feet bluish-grey, nails deep brown; bill blackish-brown on proximal half and tip, the remainder being pale brown. Gould* colours these parts yellow on the bill, and with a flush of pale greenish-yellow on the legs and feet.

Mr. A. J. Campbell† speaks of our want of knowledge of the movements of this rare bird, saying "it is probable that after rearing their young in the south they retire into more interior quarters during the year." With our limited knowledge, this holds good, the present species being probably a southern wanderer. If it were usual for the Painted Snipe to annually or periodically come so far south, I am not surprised at its choosing so early a date this year, because the signs of early spring were heard and seen on the 23rd July. The voice of the Pallid Cuckoo I heard in the Botanical Gardens, Hobart, while *Malurus cyaneus* (gouldi), *Myzantha garrula*, and at least one of the *Acanthizæ* were nesting 15 miles south of Hobart. This in July in Southern Tasmania! It is a winter month under ordinary conditions.—ROBERT HALL. Hobart, 10/8/10.

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TASMANIAN NOTES ON THE COOT.—During some of my rambles last season I was fortunate enough to come across several clutches of the eggs of the Coot (*Fulica australis*). The lagoon in which they were found is a small one close to the Cleveland township.

* "Birds of Australia," folio, vol. vi.

† "Nests and Eggs of Australian Birds," p. 827 (1900).

About half the surface is open water, and all round the edges grow tall dark brown rushes. Out in the centre these give place to smooth, round, green reeds, which grow only a few inches above the water. They are inter-tangled one with another, and occasionally the Bald-Coots (*Porphyrio melanonotus*) build their nests upon them. Before deciding on a particular spot, the Coot, like the Bald-Coot, makes a great number of starts or commencements, treading down the rushes and partly building nests. The nest itself is neater and more basket-like in shape than the Bald-Coot's, from which it can be readily distinguished. All the nests found by me last year were made of the coarse rushes, bitten into lengths, and were without any lining. They were built in reeds standing in from 1 to 2 feet of water, and about 6 inches above the surface of the water. Generally, the clumps containing the nests were close to open sheets of water, and the birds, when disturbed, slipped quickly through the rushes and disappeared. In one instance a platform was constructed to a nest. My experience last year showed that these birds are particularly sensitive, and immediately desert their partly-made nests if they have been startled whilst at work upon them. Several nests from whose vicinity a bird was flushed were never finished or used, the owners evidently resenting the intrusion.

Of the many nests discovered, five only contained eggs. The following is the data respecting them:—

26/9/09.—Last year the season was earlier than usual, and on the above date I took two clutches of five eggs each of the Coot. The first nest found was built in reeds standing in 1 foot of water. The bird slipped off her nest when she heard the intruder coming. These eggs were about four days incubated. The second nest was found on the opposite side of the lagoon in clumps of tall reeds bordering open water. The eggs had the vein system just commenced.

11/10/09.—One of my scholars, while riding through the lagoon after cows, came on a Coot's nest with three eggs. The bird was sitting. This nest was a neat basket-shaped one. The eggs were a nicely-marked set.

30/10/09.—The same boy discovered a nest with one egg in. This was left for several days, but only two eggs altogether were laid, and then the bird commenced to sit.

17/11/09.—I came across a Coot's nest containing two eggs. This was not looked at for five days, when the bird was disturbed from her nest and was found to be sitting on the two eggs. The nest had a platform, and quite a long track leading to it. This pair of eggs was smaller than the others. Measurements in inches of a pair sent to the Hobart Museum:—(1) 1.9 x 1.4 inches, (2) 1.8 x 1.3 inches.—J. A. FLETCHER. Cleveland, Tasmania, 18/8/10.

ERRATUM.—Vol. x., p. 69, *Emu*, sixth last line, read "*Nimrod*" for "*Discovery*."

From Magazines, &c.

AVICULTURAL SOCIETY'S AWARDS.—The April, 1910, number of *The Avicultural Magazine* contains a list of awards of the Society's medal to members for having bred foreign birds in captivity. The list of medal winners includes Mr. W. A. Fasey, for the Blue-winged Grass-Parrakeet (*Neophema venusta*), and Mr. H. D. Astley, for the Pileated Parrakeet (*Porphyrocephalus spurius*).

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INCUBATION AND FLEDGING PERIODS IN BIRDS.—An interesting note on these subjects is contributed to the March, 1910, issue of *The Zoologist* by Mr. S. E. Brock. He gives records for the Mistle-Thrush, Song-Thrush, Blackbird, and other familiar European species. In the Blackbird he has found the period of incubation to extend over 13–14 days; fledging period, 13–14 days. Starling.—Incubation, 12–13 days; fledging period, 21–22 days. Sparrow-Hawk.—Incubation, 30–32 days; fledging period, 28–30 days. Swallows and Starlings are stated to be “notable exceptions to the average small bird in the period required by their young to fledge.” It would be interesting to have similar records regarding some of our native birds.

* * *

FOR AGRICULTURISTS.—A series of articles on insectivorous birds is being published in *The Agricultural Gazette* of New South Wales. The series promises to be of value to agriculturists, who are too often ignorant of the services done by birds in keeping injurious insects in check. In the opening article of the series under notice, which appears in the April issue of the *Gazette*, reference is made to the value of insectivorous birds as “the farmers' friends.” The Hooded Robin (*Melanodryas bicolor*) and the Yellow-breasted Shrike-Robin (*Eopsaltria australis*) are the two species dealt with. A description of the bird is followed by notes on habits, &c., and the kind of food on which it chiefly subsists. The coloured plates accompanying the article are reproduced from Gould's “Birds of Australia.” They are excellently printed by the three-colour process.

* * *

BRITISH ORNITHOLOGIST IN AUSTRALIA.—In the March, 1910, issue of *The Avicultural Magazine*, Mr. D. Seth-Smith, F.Z.S., continues his pleasant “Notes on my Visit to Australia.” He describes a visit to Stanwell Park, New South Wales, in company with Mr. S. Le Souëf. The two bird-lovers had interesting experiences among the Waxbills (*Egitha temporalis*), Rock-Warblers (*Origma rubricata*), and other species. Mr. Seth-Smith heard the notes of the Butcher-Bird (*Cracticus destructor*), and he thought the song the finest he had heard since his arrival in Australia. “The loud, flute-like notes, answered in the distance by a rival bird, gave a special charm to the whole countryside.”

In the May number of the *Journal* Mr. Seth-Smith describes his visit to Brisbane. He deals with the railway journey from Sydney, and speaks enthusiastically of the beauty of the Darling Downs. In the Botanic Gardens at Brisbane the visitor "watched with much delight a lovely Blood-red Honey-eater (*Myzomela sanguinolenta*) sucking at the flowers (of a scarlet hibiscus) and flying from one to another, almost putting the brilliant flowers themselves in the shade by his brilliance." He visited the Museum, and was not well pleased with the arrangement of some of the cases.

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ARBOR AND BIRD DAY IN SOUTH AUSTRALIA. — A supplement to *The Education Gazette* of South Australia, August, 1910, deals with Bird and Arbor Day. Reference is made to school bird protection clubs, the plume sales in London, the action taken in England by the Royal Society for the Protection of Birds, &c. Dr. A. M. Morgan contributes an interesting lesson on "The Bird's Egg," Mr. Robert Crompton writes on "Where to Find Birds' Nests," and Mr. A. G. Edquist deals with "The Destruction of Birds." The articles are brightly written, and calculated to interest children in bird-life and lead them to a right attitude in relation to the species that should be protected. A number of half-tone illustrations, from photos. by Mr. Edquist, enhance the attractiveness of the publication. A copy of the *Birds Protection Act* 1900 is also included as a supplement to *The Education Gazette* for 10th August, 1910.

The July issues of *The Children's Hour* (a school paper) contain special Bird and Arbor Day matter. Mr. J. W. Mellor, A.O.U., contributes an illustrated article, entitled "Our Native Birds and their Food." "Much," he writes, "has still to be learnt about the feeding habits of Australian birds before we know all the good or harm our birds do in seeking their food." A lesson on "The Mallee-Hen or Native Pheasant" appears in the *Hour* for Class II., also simple stories about a Swallow and a Dove. Capt. S. A. White, A.O.U., in the issue for Classes IV. and V., writes about the Pelican and its ways. He expresses the hope that "Australia will not allow the Pelicans that are left in our land to be destroyed, but that it will act soon, or, as in America, it may be almost too late to save these noble and quaint birds from being exterminated." The birds of South Australia have good friends, who are concerning themselves for their preservation. Mr. A. G. Edquist contributes to the same number of *The Children's Hour* an open letter to boys and girls on the Children's Bird Protection Club.

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NOTES ON BIRDS-OF-PARADISE.—Mr. Walter Goodfellow, who has had enviable experiences among New Guinea birds, commences in the July, 1910, number of *The Avicultural Magazine* a series of articles which promises to be of great interest and value. He has succeeded in bringing living specimens of several species of these

beautiful birds to England. He states that he has constantly read remarks about the Birds-of-Paradise which are altogether wrong, and some purely imaginative and needing correction. The cult for the birds commenced in 1904, when Mr. Goodfellow brought over a consignment for Mrs. Johnstone, consisting of one Greater Bird, two Lesser Birds, two Kings, and a pair of Black Manucodes. The importations have proved conclusively that the Birds-of-Paradise are "by no means so delicate as they were at one time supposed to be"—in fact, it may safely be said, Mr. Goodfellow thinks, that they are generally hardy birds. So far, none have bred in captivity.

Mr. Goodfellow intends to confine his notes to those species which he has imported alive, with the Gardener Bower-Bird—a total of 20. He deals in the present paper with the Greater Bird-of-Paradise (*Paradisea apoda*), whose chief home is the Aru Islands, off the south-west coast of New Guinea; but it also inhabits "the mainland in the interior, south of the Charles Louis and the Snow Mountains, which form the dividing line, north and south, between the Greater and Lesser Birds." The Greater Bird-of-Paradise, the author states, is by no means distributed equally over the islands of the Aru group. It is confined to the deepest jungle of the extreme interior, where the trees are tallest. Mr. Goodfellow first visited the Arus in December, 1903, and was at the time the only European in the country. The natives looked upon the birds absolutely as their own property, and the white bird-hunter had to come to an understanding with them before he could make any collections. His description of the first hunting party is interesting, and his field notes on the habits of the Birds-of-Paradise extremely valuable. The nesting season apparently commences in December. The males start to assemble irregularly in the dancing-trees before the moulting season is completely over. Occasionally a recognized dancing-tree is tabooed by the birds for a whole season, or even longer. The Malay trade name for the Apoda is "burong mate"—dead bird.

Bird Protection.

DEPUTATION OF THE COUNCIL, A.O.U., TO FEDERAL MINISTER OF CUSTOMS.

THE MINISTER SYMPATHETIC.

A DEPUTATION from the Council of the Australasian Ornithologists' Union waited on the Minister for Customs to-day to ask for the introduction of a bill to prohibit the importation and exportation of the plumage and skins of certain birds, framed on lines similar to the bill now before the House of Commons.

Mr. A. J. Campbell, Col. M. B.O.U., president of the Union, said that a deputation had waited on Mr. Deakin when he was Prime Minister in regard to the subject. Bird protection and other societies in all the States were represented. It was desired that a bill to prohibit the sale or exchange of the plumage and skins of certain wild birds and the importation and exportation of plumes and skins of

species scheduled be introduced in the Federal Legislature: He gave some particulars of the measure desired.

Mr. A. H. E. Mattingley, C.M.Z.S., spoke regarding the value of birds to the community. Flocks were interfered with by liver flukes; the intermediate host of the fluke was a species of snail, and this snail was part of the dietary of Herons, Magpie-Larks (*Grallina*), and other kinds of birds. So the birds, by destroying the flukes in the snails, were valuable servants of man. Again, the Ibis was a great enemy of the grasshopper. A single Ibis would destroy 2,000 immature grasshoppers in a single day.

Mr. D. Le Souëf, C.M.Z.S., produced four catalogues of one plume sale held in London in December, 1909. They showed that 3,915 skins of Birds-of-Paradise, and hundreds of skins of Australian Rifle-Birds, Emus, &c., had been disposed of.

Mr. H. W. Wilson, hon. secretary of the Union, explained recent legislation for bird protection in New York State.

Mr. Charles Barrett said that there was urgent necessity for action. What was done must be done quickly, as some birds were rapidly nearing extinction. The plume-wearing custom was an abominable one, and there should be some law whereby women who wore the plumes of protected birds could be punished for an offence.

Mr. Tudor, in reply, said that he was absolutely sympathetic with the objects of the deputation, and would be pleased to do all in his power to help the birds, who could not help themselves. At the present time the powers of the department were doubtful, but there were provisions in the *Customs Act Amendment Bill* regarding the necessary power. He referred to Mr. Mattingley's remarkable photographs of Egrets, and the slaughter of birds in the United States. He had no sympathy with persons who decorated themselves with bird plumes; it had been said that women were beautiful enough without borrowing beauty. He deprecated the wholesale murder of birds, and assured the deputation that, not only would its request receive sympathetic consideration, but that he was at one with it.

The deputation thanked the Minister and withdrew. — The *Melbourne Herald*, 29/8/10.

Reviews.

[“A Monograph of the Petrels (Order Tubinares),” by F. Du Cane Godman, D.C.L., F.R.S., &c.]

THIS magnificent work on an exceedingly difficult class of Aves to deal with has been completed by the publication of Part V. The whole sets a high standard in Nature book work, and incidentally Dr. Du Cane Godman has erected to himself, with the assistance of friends (foremost among whom were the late Osbert Salvin and the late Dr. Bowdler Sharpe), a monument which will celebrate for all time his term of office as president of the British Ornithologists' Union. He is congratulated accordingly by his ornithological brethren in these “British dominions beyond the seas.”

Part V. opens with the puzzling Prions and the Diving-Petrels (*Pelecanoides*), peculiar to Southern seas, the latter resembling in habit the Little Auk of Northern latitudes. But the bulk of Part

V. is occupied by the Albatrosses, of which 19 species are enumerated, no fewer than 16 being figured. However, it is possible that future research may prove the Carter Albatross (*Thalassogeron carteri*), found washed ashore dead off North-West Australia by our Australian member, to be an immature bird of another species, possibly *T. chlororhynchus*, the dark bill especially pointing to a sign of immaturity.

One Albatross (*T. cautus*) breeds in Australian waters, in Bass Strait. Mr. H. Hamilton, of the Dominion Museum, has kindly furnished some remarks on the species of Albatrosses frequenting New Zealand, namely:—

DIOMEDEA EXULANS, Linn. (Wandering Albatross), Pl. 89.—A good summary of the history of this difficult species is given. It is our Antipodes Island bird, and its only known nesting-place is on that island.

DIOMEDEA REGIA, Buller (Royal Albatross), Pl. 90.—Both the figure of this and the previous species appear to me to be capable of improvement.

DIOMEDEA MELANOPHRYS, Boie (Black-eyebrowed Albatross), Pl. 97.—This very widely ranging species is well figured.

DIOMEDEA BULLERI, Rothschild (Buller Albatross), Pl. 98.—The description and figure are taken from the type specimen in the Tring Museum, obtained from the Snares.

THALASSOGERON CAUTUS, Gould (Shy Mollymauk), Pl. 99.

THALASSOGERON SALVINI, Rothschild (Salvin Albatross), Pl. 100.—Breeds on Bounty Island.

THALASSOGERON CULMINATUS, Gould (Grey-headed Albatross), Pl. 101.—Mainly in the seas to the south of New Zealand, although stragglers have been recorded from widely separated localities.

THALASSOGERON CHLORORHYNCHUS, Gm. (Yellow-nosed Albatross), Pl. 102.—The figure makes it easy to separate this from the preceding species.

PHÆBETRIA FULIGINOSA, Gm. (Sooty Albatross), Pl. 103.—This species breeds on the Auckland and the Antipodes Islands.

PHÆBETRIA CORNICOIDES, Hutton (Hutton Sooty Albatross).—The author erects this bird into a species, separating it from *fuliginosa*. It appears to have a more southern range than the darker form. The adult is described as being similar.

Messrs. Witherby and Co., 326 High Holborn, London, W.C., the enterprising publishers of books on ornithology, &c., and of this notable "Monograph" in particular, notify that the complete work can now be obtained, beautifully bound, for fifteen guineas. Those subscribers who already possess the five parts may have a handsome and suitable cover on application to the firm.

[“The Fauna of Cheshire : Vol. i. —Mammals and Birds,” by T. A. Coward, F.Z.S. Witherby and Co., London.]

THE full title of this handsome and interesting work is “The Vertebrate Fauna of Cheshire and Liverpool Bay.” The volume under notice contains nearly 500 pages, and is liberally illustrated with half-tone reproductions of photographs by Thos. Baddeley.

The book is finely printed, and is creditable alike to author and publishers. It is one of the best examples of a class of work which is becoming increasingly popular in Great Britain.

The author states in his preface that the work represents an attempt to give an historical and distributional account of the vertebrate inhabitants of Cheshire. The natural boundary of the county encloses many square miles of marsh land politically belonging to another county, and the sea area is extended beyond the actual territorial waters. The author has wisely chosen geographical rather than political boundaries. Cheshire is a maritime county in the north-west of England, comprising about 1,028 square miles; and four-fifths of the total surface is occupied by a fertile plain, of a slightly undulating character. There is a tract of high land, however, and the country is blessed with pleasant streams and small lakes or meres. Evidently a good observing ground for the ornithologist.

About two-thirds of the volume is devoted to bird-life. Two hundred and thirty-one species are said to occur, which, compared with other English counties, is poor. Of special interest are the author's remarks on bird protection. Despite the fact that the existing regulations are violated by game preservers and game-keepers, the acts and orders are fortunately contributing to an increase in the numbers of certain species. The section dealing with migration makes interesting reading, even for an Australian ornithologist. To the British student of bird-life the whole work should prove invaluable.

Bird Observers' Club.

THE June meeting of the Club was held at the residence of Mr. D. Le Souëf, C.M.Z.S., Royal Park. Dr. Chas. Ryan and Mr. Le Souëf were joint hosts, and at their invitation about 15 members assembled for dinner. At the meeting Mr. Le Souëf presided. Mr. H. W. Wilson reported that matters in connection with the Gould League of Bird Lovers were progressing favourably. The hon. secretary called attention to the action taken in England regarding bird protection and the plume trade. Messrs. Le Souëf, Mattingley, and Nicholls and Dr. Bryant took part in the discussion which followed. It was suggested that one way of checking the plume trade would be by making it an offence to wear the plumes of protected birds. Dr. Bryant said that the Game Association of Victoria was in sympathy with the bird protection movement, and that sportsmen who offended against the game laws were made to regret it if discovered. It was resolved that Messrs. A. H. E. Mattingley, A. J. Campbell, and the hon. secretary form a sub-committee to deal with the matter and consult with Major Semmens. The hon. secretary was instructed to inform the Prime Minister (Mr. Fisher) that the club supported the action being taken by the British authorities. After the formal business had been disposed of, the remainder of the evening was devoted to inspecting photographs of Australian birds exhibited by members. Nearly 200 prints were displayed, the majority by Mr. A. H. E. Mattingley. Other exhibitors were Messrs. D. Le Souëf, A. J. Camp-

bell, T. H. Tregellas, E. B. Nicholls, and the hon. secretary. A vote of thanks for their hospitality was accorded Dr. Ryan and Mr. Le Souëf.

The July meeting of the Club was held at the residence of Surgeon-General Williams, Prahran, the host presiding. Mr. A. H. E. Mattingley reported, in regard to the action taken in England to afford fuller protection to bird-life and place checks on the plume trade, that Major Semmens had been consulted and had promised the support of his department in any efforts made by the club. The hon. secretary read a communication from the Secretary of the Department of External Affairs, received in reply to a letter sent to the Prime Minister asking that the Federal Government support the action of the British authorities in the matter of bird protection. Mr. Atlee Hunt stated, *inter alia*, that the destruction in the Territory of Papua of Birds-of-Paradise, Goura Pigeons, Ospreys, and White or Lesser Herons had been prohibited by a proclamation published in the *Government Gazette* on 31st October, 1908. As regarded the prevention of the destruction of birds in Australia, that was a matter for the various State Governments. The letter was received. Mr. H. W. Wilson reported that the Gould League of Bird Lovers was progressing satisfactorily. About 18,000 certificates had been distributed, and the finances were in a sound state. It was decided that efforts be made to promote branches of the League in other States. Mr. Wilson was thanked for his valuable services to the League. It was decided that Bird Day be celebrated in Victoria on 28th October, 1910.

The chairman related some interesting observations of the behaviour of the Indian Minah in his garden. Mr. T. H. Tregellas read a paper on Australian song birds. He compared several familiar species with the European Skylark, Blackbird, Thrush, and Goldfinch, and praised the native songsters highly. The chairman and Messrs. A. J. Campbell, A. H. E. Mattingley, Dr. Bryant, and others took part in the discussion. It was mentioned that the Skylark had become a nuisance as a seed-eater in New Zealand. Dr. Bryant gave some reminiscences of early days in Gippsland, and spoke of the medley of bird song he had been wont to hear in the incult bush. Mr. J. A. Leach quoted John Gould and Alfred Russel Wallace in praise of the Magpie's minstrelsy. Interesting bird notes were contributed by Messrs. F. E. Wilson (*re* Emu eggs being broken by stock-riders), C. F. Cole, L. G. Chandler, and the hon. secretary (dates of arrival of the Fan-tailed Cuckoo, *C. flabelliformis*), and A. H. E. Mattingley (Starlings, Minahs, and Java Doves eating larvæ of the cockchafer beetle). Exhibits.—Mr. L. G. Chandler, skin of Mountain-Thrush (*G. lunulata*); Mr. A. J. Campbell, skins of *Climacteris melanura* and other species from North-West Australia, exhibited on behalf of Mr. H. L. White, Belltrees (N.S.W.); Surgeon-General Williams, mounted specimens of the Rifle-Bird and Birds-of-Paradise (? sp.) from German New Guinea.

South Australian Ornithological Association.

THE monthly meeting of this Association was held at the rooms of Dr. R. H. Pülleine, Adelaide, on the 3rd August, Dr. Pülleine presiding. The hon. secretary reported upon the progress of the movement to place the Mallee-Fowl on the National Reserve on Kangaroo Island, and having received the donation from the Government of

£10 towards defraying the expenses. Financial support was also forthcoming from Sir S. J. Way and Mr. Michael Hawker, in addition to names previously mentioned. Dr. A. M. Morgan read a letter from Dr. J. B. Cleland, of Sydney, with reference to parasites in and upon birds, and requesting that specimens should be sent to him for examination and classification. Mr. M. Symonds Clark brought before the members a copy of a letter received by the Commissioner of Crown Lands from the secretary of the Victorian Gun Clubs Association, asking that South Australia should come into line with the other States in connection with the close season for Ducks and other game, which does not end until the last day of January. It was resolved to support the request. Captain S. A. White reported that the next congress of the Australasian Ornithologists' Union would be held this year in Brisbane, the delegates leaving this State on 29th September. Following the general business meetings, a working excursion was to be conducted amongst some of the islands in the Great Barrier Reef in the Government steamer *Fitzroy*.

SAVE THE PELICAN.—The subject of the evening was the protection of the Pelican, which has lately been placed on the unprotected list. Captain White read a paper in support of the protection of this most peculiar native bird, which, if not soon given a close season, may become extinct. He pointed out a precedent in America, where they erroneously thought that this bird was responsible for the decrease in fish supplies, and when the birds were all but exterminated. Mr. J. W. Mellor supported the protective policy, and gave evidence of the large flocks of these birds seen on the Coorong and on Lakes Alexandrina and Albert in the seventies, and upon visiting these localities about twenty years later they had been reduced to a few birds, and were now getting more scarce in these localities. The hon. secretary read a number of letters from experts in the other States who had sent in notes upon the Pelicans, and the majority were in favour of protecting the bird, pointing out that, although it did eat fish, it was not through this source that the scarcity arose. A weighty letter was read from Mr. Frank Farnell, the chairman of the New South Wales National Park Trust, who has made the breeding of fish a lifelong study, and gone to great expense in hatching fish to supply the inland waters with fresh inhabitants. He stated that the Pelican was totally protected in New South Wales for fear that the species would become extinct, and in his opinion the destruction worked by the birds amongst fish was infinitesimal compared with other sources of destruction.

Notes and Notices.

A NEW AUSTRALIAN PARROT.—Dr. Van Oort, in *Notes Leyd. Mus.*, xxxii., p. 71, has described a sub-species of *Psephotus chrysoterygius* as *P. blaauw* from living birds in Mr. Blaauw's aviaries. They were originally from Northern Australia.

A BLACK SWAN'S NEST.—Mr. H. V. Edwards, Bega (N.S.W.), found and photographed an autumnal Black Swan's nest in a salt lake on 10th May last. It was about 3 feet in diameter and about 18 inches above water, and contained seven eggs, fairly well incubated.

FIFTH INTERNATIONAL ORNITHOLOGICAL CONGRESS.—Mr. Gregory M. Mathews, F.L.S., M.B.O.U., &c., official representative of the Australasian Ornithologists' Union at the Berlin Congress, 1910, reports that he and other delegates received every attention, and left the German capital with regret. The papers, &c., read at the Congress will be published in one volume.

AN EXPLANATION.—In reference to the finding of a Bronze-Cuckoo's egg with a clutch of Pardalote's, mentioned in *Emu*, vol. x., p. 49, Mr. H. L. White explains that Mr. H. Keane, of Supper-street, Marrickville, Sydney, sent him the clutch, and to Mr. Keane belongs the credit of finding the "curious clutch," which was taken at Flemington, near Sydney, on the 23rd October, 1908.

COLOURED FIGURE FUND.—The hon. treasurer wishes to acknowledge receipt of contributions to the Coloured Figure Fund made during the year which ended 30th June last, as follow:—E. D. Barnard (Q.), 4s.; F. L. Bernie (Q.), 5s.; E. J. Christian (V.), 4s. 6d.; H. W. Ford (V.), 2s. 6d.; G. Graham (V.), 5s.; W. Lawford (V.), 10s.; Col. Legge (T.), 5s.; A. Mattingley (V.), £1; S. Morrison (V.), £1 10s.; A. W. Swindells (T.), 5s.; Thos. Tindall (V.), 5s. In addition to these amounts, Mr. H. L. White contributed £16 18s. 1d. for some of the illustrations in Parts 2 and 3 and all the illustrations in Part 4 of Vol. IX.

TRINOMIALS *v.* BINOMIALS.—In the late Dr. R. Bowdler Sharpe's last work, "Handlist of Birds," vol. v., he pronounces this prophetic warning:—"Some exception has been taken to my recognition as species of all the forms described as sub-species or races with trinomial names. My views on this subject have often been stated, and as for trinomials I look upon the system as destructive. I consider that the burden imposed upon zoologists who follow this method for the naming of their specimens will become too heavy, and that the system will fall by its own weight. That races or sub-species of birds exist in nature no one can deny; but, to my mind, a binomial title answers every purpose."

A DEATH TRAP.—We are indebted to Mr. A. S. Le Souëf, of Sydney, for the following note:—"Mr. H. K. Anderson gives some interesting notes on a death trap for Swans and Pelicans in the Northern Territory. This is Lake Buchannon, 80 miles from Pentland. During the wet season the lake fills up, and thousands of water birds resort there for breeding purposes, including immense numbers of Black Swans and Pelicans; but it is only in exceptional seasons that any of the latter get away alive, for the lake gradually dries up as the summer comes on, and, as there is no outlet, becomes very salt, and all the Cygnets and young Pelicans, and all the fish which have come down from the creeks, die, and the place is a mass of decaying animal matter. Most of the old birds die too, for they will not leave the young, and gradually get weak and ill from the increasing salinity of the water, and, if they would, are unable to get away."

AUSTRALASIAN ORNITHOLOGISTS' UNION.

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OBJECTS, &c. - - -

HE objects of the Society are the advancement and popularization of the Science of Ornithology, the protection of useful and ornamental avifauna, and the publication of a magazine called *The Emu*.

The business of the Society shall be conducted by a Council, consisting of a President, two Vice-Presidents, Secretary, Treasurer, Librarian, Editors of *The Emu*, and six members; each office-bearer and member of the Council shall retire at the end of each financial year, but shall be eligible for re-election.

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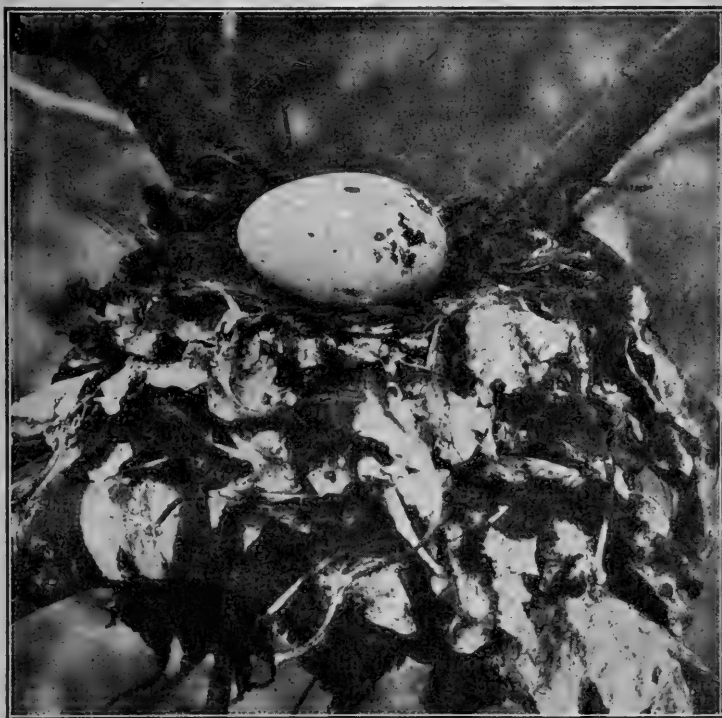
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The Emu

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

Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.



Group of White-capped Noddies' (*Micranous leucocapillus*) Nests, Capricorn Islands.

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. X.]

1ST DECEMBER, 1910.

[PART 3 (SPECIAL).

Royal Australasian Ornithologists' Union.

TENTH (BRISBANE) SESSION.

MINUTES OF THE TENTH ANNUAL SESSION OF THE ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION, HELD AT BRISBANE, FROM THE 4TH TO THE 6TH OCTOBER, 1910.

It was decided at the ninth (Adelaide) session of the Union that the next annual session should be held in Brisbane, and that the working excursion should be held on some of the islands of the Barrier Reef. As no session of the Union had been before held in Queensland, this tenth session was looked forward to by all members, and especially those who had not had the privilege of visiting the northern State.

The Council began as early as February to obtain from members and others in Queensland information which would be valuable in organizing the session. They received advice, information, and assistance from all to whom they applied, and the outcome was the largest and most successful session that has yet been held. Mention will be made in the report of the proceedings of those who, by their assistance and sympathy, helped to bring about this result.

The delegates from South Australia, Broken Hill, and Victoria arrived in Sydney on Saturday, 1st October, and were met by Mr. Launcelot Harrison, the representative for New South Wales, and Messrs. A. F. Basset Hull and G. J. Broinowski.

In the afternoon the delegates, as the guests of the New South Wales Field Naturalists' Club, were taken for a trip up Middle Harbour, and a most enjoyable afternoon was spent. Afternoon tea was presided over by Mrs. Launcelot Harrison.

Members of the party from Sydney included:—Mrs. L. Harrison, Mrs. Harrison, sen., Miss Mack, A. F. Basset Hull, R.A.O.U., Dr. Geo. Hurst, R.A.O.U., W. W. Froggatt, F.L.S., Government Entomologist; W. B. Gurney, F.E.S., president Field Naturalists' Club; Chas. Hedley, F.L.S., Assistant Curator, Australian Museum; G. J. Broinowski; E. S. Edwards, M.A., hon. secretary Field Naturalists' Club.

The Royal Zoological Society of New South Wales, through

Mr. A. S. Le Souëf, the Director of the Zoological Gardens, Sydney, very kindly invited members of the Union to visit the Gardens while in Sydney. On Sunday morning many members took advantage of the invitation, and spent a very enjoyable time.

On Sunday evening the party left Sydney by the Northern express. On arrival at Wallangarra the travellers were informed that a parlour car and a first-class car had been reserved for them through the kindness of the Minister of Railways. The delegates greatly appreciated the feeling which prompted this act of kindness and generosity. A few hours later a further token of the kindnesses of which the members of the Union were to be recipients was received, for, on arriving at Warwick, they were met by Sir Arthur Morgan and other members of the Government and members of the local Field Naturalists' Club, formally welcomed to Queensland, and invited to afternoon tea while the train waited.

At Toowoomba members of the Field Naturalists' Club also waited at the station to welcome the party, and a similar reception was accorded at Ipswich. Mr. H. Tryon (Government Entomologist), organizing secretary for the Brisbane session, had travelled to Ipswich to meet the party, and returned with members to Brisbane.

On arrival at the Central Station, Brisbane, the delegates were met by Professor Skertchly, Messrs. J. Shirley, B.Sc., J. O'Neill Brenan, C. W. Holland, G. M. Colledge, W. Beard, W. R. Parker, and Dr. Hurworth, of the Field Naturalists' Club, and a number of other ladies and gentlemen. While in Brisbane the whole of the party was accommodated at the Belle Vue Hotel, George-street, which is centrally situated.

The delegates to the session were:—Victoria.—Messrs. A. J. Campbell, Col. M.B.O.U., W. H. Dudley Le Souëf, C.M.Z.S., J. A. Leach, M.Sc., C. L. Barrett, Dr. Chenery (Sale), J. A. Kershaw F.E.S., Curator National Museum, Melbourne, Z. Gray, E. B. Nicholls, H. W. Wilson (hon. sec.), Mrs. Israel, and Misses Campbell (2). New South Wales.—Messrs. L. Harrison, C. Coles, H. Burrell, D. B. Fry (of the Australian Museum, Sydney), Mrs. Burrell, and Doctors Macgillivray and Dobbyn, from Broken Hill. Queensland.—Messrs. F. L. Berney, C. A. Barnard, E. M. Cornwall, C. W. De Vis, M.A., and H. Tryon. South Australia.—Messrs. J. W. Mellor, J. F. Mellor, S. S. Stokes, Captain S. A. White, Mesdames White and Mellor, and Miss Mellor. Apologies for inability to attend were received from Messrs. I. Batey, G. A. Dyer, Hon. F. Stuart, L. C. Cook, A. F. Linton (Victoria), E. H. Lane (N.S.W.), Sir S. Way, Dr. W. N. Hope, M. Symonds-Clark (South Australia), C. P. Conigrave (W.A.), and R. Hall (Tasmania).

The programme for the session was as follows:—

4th October.—Visit Queensland Museum to meet Messrs. C. W. De Vis and K. Broadbent and examine the collection of Australian birds and Sir Wm. Macgregor's collection of birds of New

Guinea. Lunch in Museum grounds as guests of Hon. W. T. Paget, Secretary for Agriculture and Administrator *Native Birds Protection Acts*. Address to 1,600 State school children by W. H. Dudley Le Souëf, Esq., C.M.Z.S., at Lyceum, George-street, Secretary for Public Instruction presiding. Ride over Brisbane tram lines to view the city. An "at home" at Mr. John Bell's, Highgate Hill: falconry and works relating thereto. 7 p.m.—Annual meeting, members only, at Public Library (Royal Geographical Society's rooms). 8.15 p.m.—Annual meeting continued—visitors admitted; Sir Wm. Macgregor, G.C.M.G., C.B., in the chair. The president's address, "The Union and its Work," by Mr. A. J. Campbell. Reading of papers, illustrated by lantern slides:—Captain S. A. White, "Ornithologists at Warunda"; W. H. D. Le Souëf, "Penguins"; A. H. E. Mattingley, "Production of Call of Podargus" (taken as read).

5th October.—Drag excursion to Enoggera Waterworks Reserve as guests of Field Naturalists' Club. 8 p.m.—Public lecture—Visit of Ornithologists' Union to Bass Strait. Lecturers—Messrs. J. A. Leach, A. J. Campbell, and W. H. D. Le Souëf. (Sir Arthur Morgan presided.)

6th October.—Steamer excursion to mouth of Brisbane River and islands adjacent, as guests of the Field Naturalists' Club. 6 to 8 p.m.—Adjourned annual meeting. 10.25 p.m.—Depart for Gladstone.

7th October.—Board Commonwealth trawler *Endeavour* and depart for Capricorn Group for working excursion.

18th October.—Lecture to State school teachers at Brisbane by J. A. Leach, Esq., M.Sc., Nature Study Inspector of Victoria.

19th October.—Visit Bundaberg.

21st October.—Visit Toowoomba.

23rd October.—Visit Warwick.

ANNUAL MEETING.

The president, Mr. A. J. Campbell, took the chair at 7 p.m., and declared the meeting open. All delegates attended.

Letters of apology were read.

The minutes of the ninth annual session were read, confirmed, and signed, on the motion of Mr. J. A. Leach, seconded by Capt. S. A. White.

The annual report was then read by the hon. secretary. Mr. E. B. Nicholls took exception to part of paragraph relating to formation of Gould League, and on the motion of Captain S. A. White, seconded by Mr. E. B. Nicholls, the report was referred back to the Council.

Discussion ensued with regard to a number of points mentioned in the report, and, on the motion of Mr. Mellor, seconded by Mr. L. Harrison, the adoption of the report was held over.

Hon. Treasurer's Report.—The hon. treasurer's report and balance-sheet were read by Mr. Z. Gray, in the absence of the treasurer. Mr. Z. Gray moved that the report and balance-sheet be adopted. Seconded by Mr. H. W. Wilson. Carried.

RECEIPTS AND For Year ended

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			12	4	8	Balance brought forward—General Fund
			15	9	8	Col. Figure Fund
27	14	4				
			34	17	6	Subscriptions—Arrears
			104	10	3	Current
			10	0	0	Life Membership (T. P. Austin)
			12	0	0	Advance to 30th June, 1911
161	7	9				
1	19	6				“Handlist”—Supplement to part 3, vol. vii.
18	8	3				Sales of <i>The Emu</i>
0	4	6				Covers for <i>The Emu</i>
			4	16	0	Col. Figure Fund—Donations
			16	0	0	Lecture at Adelaide
			6	0	0	Advertising in <i>The Emu</i>
26	16	0				
			15	0	0	Mr. H. L. White's Donation—Illustrating
						part 4, vol. ix.
			1	18	1	Mr. H. L. White's Donation—Parts 2 and 3
16	18	1				
1	0	0				Reprints from <i>The Emu</i>
0	2	0				Postage
0	18	11				Exchange
255	9	4				

(Signed) J. A. ROSS, *Hon. Treasurer.*

29th August, 1910.

BALANCE

At 30th

£	s.	d.	£	s.	d.	ASSETS.
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193	4	0				Library
21	0	0				Illustration Blocks
10	0	0				Arrears of Subscriptions (estimated good)
22	10	0				Cash in Bank—General Fund
			16	3	1	Coloured Figure Fund
			18	6	2	
34	9	3				
281	3	3				

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New Members.—On the motion of Mr. C. Cole, seconded by Mr. J. A. Leach, the following members were declared elected :—Victoria.—C. F. Cole, Auburn ; L. G. Chandler, Malvern ; G. A. Dyer, Fitzroy ; J. A. Kershaw, F.E.S., Melbourne (rejoined) ; J. P. M'Lennan, Ascot Vale ; E. A. Petherick, F.L.S. ; A. M. Sullivan, Jeparit ; F. E. Wilson, Melbourne ; A. C. Stone, Sale. New South Wales.—G. J. Broinowski, Mosman ; Herbert C. Charlton, Sydney ; Dr. E. C. Chisholm, Riverstone ; Max Egger, Jerilderie ; Dr. H. C. Hinder, Summerhill ; A. J. Prentice, West Maitland ; Wm. Sherrie, Wagga Wagga ; Master A. H. White, Scone ; Paul Wenz, Nannana Station ; Count Morner, Swedish Consul ; Dr. E. H. Dobbyn, Broken Hill ; Dr. E. W. Ferguson ; D. B. Fry, Queensland.—His Excellency Sir Wm. Macgregor, G.C.M.G., C.B. ; Lady Macgregor ; Hon. Anthony Musgrave, C.M.G. ; Reginald Roe, M.A., Inspector-General of Schools ; A. H. Nelson, Brisbane School of Arts (sec.) ; Henry Tryon, Brisbane. South Australia.—Albert Rake, Kalangadoo ; Dr. Pulleine, North-terrace, Adelaide ; E. Whittington, *The Register*, Adelaide ; Mrs. S. A. White, Wetunga, Fulham. Western Australia.—Patrick D. Baird, Head Light-keeper, Cape Naturaliste ; C. H. von der Hordten, E. Ex. A. and China Tel. Co. Ltd., Broome ; C. E. Orton, Petworth Park, Moora. Tasmania.—Geo. S. Russell, Cressy. Great Britain and Europe.—Deighton, Bell and Co., publishers, Cambridge ; Felix L. Dames, natural history bookseller, Berlin.

Exchanges.—(1) Director of Education, Education Department, Melbourne ; (2) Secretary Agricultural Department, New South Wales, while coloured plates of birds are being published in *The Agricultural Journal* ; (3) Natural History and Royal Society of Western Australia ; (4) German *Ornithological Monthly Journal*.

Increase in Members of Council.—On motion of Mr. J. A. Leach, seconded by Mr. Nicholls, the action of the Council in increasing the number of the Council by four members during the past year was endorsed.

Alterations to Rules 1, 3, and 4.—Alteration of rule 1 :—"The name of the society shall be 'The Australasian Ornithologists' Union' to 'The Royal Australasian Ornithologists' Union.'" Alteration to rule 3 :—"The society shall consist of members and honorary members. Members shall be elected in the manner hereafter mentioned. Honorary members shall be prominent ornithologists residing out of Australasia, and shall not exceed ten in number." Introduce "honorary associate members" after "honorary members." There are six at present—Dr. J. A. Allen, Prof. Ridgway, Count Salvadori, Dr. P. L. Sclater, H. Kendall, and Donald Macdonald. Alteration of rule 4 :—"The business of the society shall be conducted by a Council consisting of a president, two vice-presidents, secretary, treasurer, two editors of *The Emu*, and four members," to read "fourteen members."

Voting papers had been sent to all members, but many did not

take advantage of the privilege of voting; but by an absolute majority, though a narrow one, the alterations were agreed to. The hon. secretary had tabulated the votes.

Rule 1 now reads:—"The name of the society shall be 'The Royal Australasian Ornithologists' Union.'" Rule 3 now reads:—"The society shall consist of members, honorary members, and honorary associate members. Members shall be elected in the manner hereinafter mentioned. Honorary members shall be prominent ornithologists residing out of Australasia. Honorary associate members shall be prominent ornithologists residing in Australia and New Zealand. Honorary and honorary associate members shall not together exceed ten in number." Rule 4 now reads:—"The business of the society shall be conducted by a Council, consisting of a president, two vice-presidents, secretary, treasurer, two editors of *The Emu*, librarian, press correspondent, and fourteen members," &c.

Alteration to Rule 4.—The scope and influence of the Union is steadily increasing, and it was considered necessary to increase the number of members of the Council, so that the interests of the Union would be more fully represented in the different States. It was also agreed that one representative in each State should act as local hon. secretary, so that the business on the Council could be more expeditiously placed before members in different States.

Election of Office-bearers.—The following office-bearers were elected for the ensuing year:—President, A. J. Campbell; vice-presidents, J. W. Mellor and Robert Hall; hon. secretary, H. W. Wilson; hon. treasurer, J. A. Ross; co-editors, A. J. Campbell and C. L. Barrett; press correspondent, E. Brooke Nicholls; librarian, W. H. D. Le Souëf (by vote). Members of the Council.—New South Wales—A. F. Basset Hull (local secretary), Dr. Macgillivray, and L. Harrison (by vote); Victoria—A. H. E. Mattingley, Dr. C. Ryan, J. A. Leach, Dr. G. Horne; Queensland—H. Tryon (local hon. secretary), Wm. M'Ilwraith; South Australia—Captain S. A. White (local hon. secretary), Dr. Morgan; Western Australia—C. P. Conigrave (local hon. secretary); Tasmania—A. L. Butler (local hon. secretary); New Zealand—H. Hamilton (local hon. secretary).

The meeting then adjourned to an adjoining room to receive His Excellency the Governor, Sir Wm. Macgregor, G.C.M.G., C.B., who had kindly consented to preside, and other visitors, among whom were:—Sir Arthur and Lady Morgan, Hon. A. Musgrave, C.M.G., Lieut.-Colonel and Mrs. Moore, Major and Mrs. Sankey, Mr. and Mrs. Scriven, Dr. and Mrs. Guy L'Estrange, Dr. Lilian Cooper, Miss Bedford, Dr. Elkington, Mr. Edward C. Barton, Mr. John Bell, Mr. and Mrs. L'Estrange Love, Mr. and Mrs. J. Shirley, Mr. Bousfield, Mr. W. V. Ralston, Mr. Donald Gunn, Mr. Henry Donkin, Mr. G. J. Bourne, Mr. R. H. Relton, Mr. and Mrs. Wedd, Mr. P. Roberts, Mr. Anthony Alder, Mr. Wild, Mr. Broadbent, Mr. Edmund Jarvis, Mr. A. A. Spowers, Mr. and Mrs. Philip MacMahon, Miss Beattie, and Dr. W. M. Turner.

The adjourned general meeting was held at the Belle Vue Hotel on 6th October, at 7.30 p.m., the president in the chair.

On the motion of Captain White, seconded by Mr. Nicholls, the annual report was referred to the Council for reconsideration.

On the motion of Mr. Leach, seconded by Mr. Cornwall, the amended annual report was adopted.

On the motion of Captain S. A. White and Mr. Mellor, Mr. D. B. Fry and Mr. S. Stokes were elected members. The names had been omitted from list through typographical error.

Check-List.—Mr. A. J. Campbell reported that the list was not ready, as the committee appointed to deal with it had been too busy; but they hoped to have it ready for the next meeting.

Colour Chart.—A letter was read from Mr. R. Ridgway, U.S.A. The printing had been delayed.

Place of Next Meeting.—On the motion of Mr. W. H. D. Le Souëf, seconded by Mr. J. A. Leach, it was decided that the next annual session be held in Sydney.

Report on Ornithological Court at A.N.A. Exhibition, Melbourne.—Mr. Barrett, and other members who assisted, stated that the experiment had not been a success, and that it would be well to wait for some time before making another attempt.

Bird Day and Education Departments.—Mr. Nicholls moved that a vote of thanks be conveyed to the Directors of the Education Departments of Victoria, South Australia, Queensland, and Tasmania, in appreciation of the valuable work done in furthering the cause of bird protection and spreading a knowledge of the work performed by birds, and their value to the country, by publishing special numbers of *School Papers* dealing with phases of bird-life, and by instituting a Bird Day in schools.

Mr. H. W. Wilson and Captain S. A. White supported the motion, which was seconded by Mr. H. Tryon, and carried unanimously.

The Education Departments of Victoria and Tasmania were eulogized for the interest they had taken and the support given to the Gould League of Bird Lovers which had been instituted in these States.

Bird Sanctuaries and Protection of Birds.—The question of introducing and liberating ferrets in the Commonwealth for the purpose of destroying rabbits was discussed. The hon. secretary quoted the report of Mr. E. Stead on stoats and weasels in New Zealand. Mr. D. Le Souëf mentioned the harm done by introducing the mongoose in some parts of the world for the purpose of destroying rabbits and other pests. Captain White and Mr. J. A. Kershaw also spoke strongly on the damage that would be done by the introduction of the ferrets, as proved by the harm done by those that escaped from custody. The hon. secretary stated that the Minister of Customs had the matter in hand, and it was receiving his careful consideration. (A proclamation has since been issued prohibiting the importation of ferrets into the Commonwealth.)

Penguins. — Mr. R. Hall, Curator of the National Museum, Hobart, had written to the Council *re* the destruction of Penguins on the Macquarie Islands, asking the Union to support other scientific bodies in endeavouring to have the Penguins protected.

On the motion of Mr. J. A. Leach, seconded by Captain S. A. White, it was decided to ask the Government of Tasmania to take action for the protection of the Penguins.

On the motion of the president, seconded by Captain S. A. White, the following votes of thanks were passed and carried by acclamation :—

To Sir Wm. Macgregor, G.C.M.G., C.B., for presiding at annual meeting on 4th October, and for the sympathetic interest taken by him in the work of the Union and in the cause of bird protection.

To Sir Arthur Morgan, for presiding at popular lecture, and for his kindness to members and support to the work of the session.

To the Field Naturalists' Club of Brisbane, coupled with the names of Mr. W. R. Colledge, president, and Mr. C. W. Holland, secretary. The members of the Field Naturalists' Club had spared neither time, trouble, nor expense to make the session of the R.A.O.U. a notable one, and they had succeeded beyond all expectations of the visiting delegates, who felt indeed a deep debt of gratitude to them for the assistance, kindness, and generosity shown to delegates, both collectively and individually.

To the Hon. W. T. Paget, Minister of Railways, for his thoughtfulness in providing special accommodation for the delegates when travelling from Wallangarra to Brisbane, and also for his kindness as Minister of Agriculture and Stock and Administrator of *Native Birds Protection Acts* in inviting members to examine the type collections of birds in the Museum, and afterwards entertaining them at luncheon in the grounds of the Museum.

To the Commissioner of Railways, for his generosity in granting passes from Brisbane to Gladstone, and many other acts of courtesy relative to the comfort of the travelling delegates.

To the Hon. the Chief Secretary, for kindly placing the use of rooms in the Public Library at the disposal of the Union for its annual meeting.

To the Royal Geographical Society for considerably allowing the use of its room for the second part of the annual meeting.

To the Hon. the Treasurer for offering to place the s.s. *Fitzroy* at the disposal of the Union.

To Mr. C. W. De Vis, M.A., for his efforts to make the visit to the Museum a profitable one.

To the Acting-Director of the Museum, Mr. C. J. Wild, for his courtesy in assisting the delegates to obtain full benefit

- of the opportunity of examining the specimens in the Museum.
- To Mr. Kendall Broadbent for placing his extensive field knowledge of the birds at the disposal of the party.
 - To Mr. and Mrs. J. Bell, for their hospitality in entertaining the delegates at their home at Highgate Hill, and to Mr. J. Bell for his interesting and instructive talk on the training and management of Falcons, and for allowing the members to view his unique collection of books on falconry.
 - To Mr. Ivan Bond, for so generously placing his steam launch *Teal* at the disposal of members on 6th October, to allow them to land on the islands at the mouth of the river to obtain photographs of birds.
 - To Mr. Chas. E. King, proprietor Lyceum, George-street, for the generosity and public spirit shown by him in providing hall and lantern for the lecture on bird-life to 1,600 children of the Brisbane schools, delivered by Mr. W. H. D. Le Souëf on 4th October, and also for providing lantern and cinematograph apparatus for the popular lecture on 5th October in the Albert Hall.
 - To Mr. Mobsby, Government photographer, for acting as lanternist at the annual meeting.
 - To the Hon. F. Tudor, Minister of Trade and Customs, for placing the trawler *Endeavour* at the disposal of the Union to transport the expedition to the islands of the Capricorn Group, where the working camp was held.
 - To Captain Cartwright and his officers of the *Endeavour* for their care and thoughtfulness while members were under their charge.
 - To the Railway Departments of Victoria, New South Wales, South Australia, and the Silverton Tramway Co., for granting concession fares to members of the Union, and special concessions with regard to the extension of time of tickets to members who wished to continue their scientific observations beyond the time usually allowed for concession tickets.

Hon. Librarian's Report.—On the motion of Mr. J. A. Leach, seconded by Captain S. A. White, the report was adopted. The report follows:—

“Ladies and Gentlemen,—I beg to report that steady progress has been made with the library during the past year. The number of books, records, periodicals, and printers' blocks dealing with bird-life is gradually increasing. The reserve stock of back parts of *The Emu* is regularly added to each issue so as to meet future demands. Three hundred and fifty copies, which constitute the present issue of *The Emu*, are apparently sufficient to cover immediate as well as future requirements. It is a matter for regret that there is no supply available of copies of the first three volumes of *The Emu* to meet the demand for them. This is owing to those

parts being now out of print, consequent on the issue of only 250 copies of those volumes. The financial conditions of the Union during the first three years of its existence did not permit of a larger issue than 250 copies. Through the generosity of the Zoological and Acclimatisation Society of Victoria, the whole of the library is stored on its shelves. The accumulation of books is expanding, due to exchange, donation, and occasional purchase, and the space required to accommodate them is increasing. Later it will be necessary to find some other means of shelving the books in a systematic way. The funds of the Union do not as yet permit of many purchases. The Council would be glad of further donations of works on bird-life. A library fund is urgently needed, so that works too expensive for purchase by many of the members may be obtained for the benefit of all, and also to pay for the binding of many delicately covered books liable to injury during transit to members. To facilitate the members availing themselves of the literature of the Union's library, and its distribution to them, a card catalogue is about to be instituted. The Council of the Union already subscribes to the international card catalogue of the literature of the Aves of the world. The library of the Union is, therefore, a valuable and steadily increasing asset, and I would be glad of any suggestions regarding it, more especially with reference to the means of making it more available to members than at present.

Parts of The Emu in Stock, 26/9/10.

	Part 1.	Part 2.	Part 3.	Part 4.	Part 5.	Supple- ments.
Vol. I. ..	—	—	—	—	—	—
„ II. ..	—	3	9	3	—	—
„ III. ..	—	17	12	—	—	—
„ IV. ..	106	103	100	95	—	—
„ V. ..	82	87	86	97	—	106
„ VI. ..	86	83	78	83	—	—
„ VII. ..	70	68	87	98	—	65
„ VIII. ..	82	67	64	59	34	—
„ IX. ..	57	52	38	36	—	—
„ X. ..	58	36	—	—	—	—
Total ..	541	516	474	471	34	171

—A. H. E. MATTINGLEY, hon. librarian. Melbourne, 24th September, 1910.”

A letter forwarded by Mr. F. M. Littler, Tasmania, was read by the hon. secretary. This communication had been sent by a resident who had lived on islands in Bass Strait for 40 years. It stated that Flinders and Barren Islands had always been resorts and breeding-places for a great many wild-fowl, but that Flinders Island had been thrown open to selection, and it was rumoured that Barren Island would also be thrown open for the same pur-

pose. If both islands were given over for selection, and the swamps were drained, it would practically cause the annihilation, in a few years, of the birds which came there to breed.

It was decided to ask the Tasmanian Government to reserve Barren Island as a national park for the preservation of the native fauna; for, though there were a number of smaller islands which had not been thrown open to selection, these were not so suitable for breeding-places for the birds.

Common Vernacular Names of Birds.—Mr. J. A. Leach asked that some action be taken to change some of the common vernacular names of birds, many of which were vulgar, discordant, and unsuitable, and especially so when bird study was being introduced into schools in all States of the Commonwealth.

On the motion of Mr. Leach, seconded by Mr. E. B. Nicholls, it was decided to form a sub-committee to deal with the matter. Messrs. Campbell, Le Souëf, Kershaw, and Leach were appointed as a sub-committee.

Close Seasons for Waders.—Mr. E. M. Cornwall (Q.) said that at present the close seasons for many birds were at the wrong time of the year, and so afforded no protection. Waders did not nest till after the wet weather set in, so that the close season should be regulated to suit local conditions.

Mr. Cornwall moved that the Queensland members form a committee to report on the *Native Birds Preservation Acts* of Queensland, and to make suggestions to the Government *re* the arranging of close seasons to suit local conditions.

Mr. Tryon and Dr. Macgillivray spoke to the motion, which was seconded by Mr. C. A. Barnard and carried.

Reprinting Volumes I., II., and III. of "The Emu."—Many societies and private individuals were desirous of obtaining these volumes, many parts of which were out of print, and it was considered by some that it was advisable to reprint them. The editors had obtained prices for the work, but they were considered to be too expensive. On the motion of Mr. J. A. Leach, seconded by Mr. Cornwall, it was decided that no action be taken in the matter at present.

The meeting then closed, to allow the members to catch the train for Gladstone.

TENTH ANNUAL REPORT, ENDING 30TH JUNE, 1910.

Your Excellency, Ladies and Gentlemen,—Your Council have much pleasure in presenting to you the tenth annual report of the Australasian Ornithologists' Union for the year ending 30th June, 1910.

Thirty-seven new members have been enrolled since the last annual meeting. Sixteen members were struck off the roll on account of being three years behind with subscriptions.

Your Council greatly regrets the deaths of the following members of the Union :—Dr. Bowdler Sharpe, one of the honorary members; Mr. F. R. Godfrey, Victoria, one of the original members; and Mr. G. R. Marriner, New Zealand. Mr. G. R. Marriner was the

representative of the Union in New Zealand, and the thanks of the Union are due to Mr. H. Hamilton, of the Dominion Museum, Wellington, who kindly transacted the business of the Union after the decease of Mr. Marriner.

During the past year distinctions have been conferred on the following members of the R.A.O.U., mainly for work done in connection with ornithology :—Mr. A. H. E. Mattingley, Victoria—Gold medal, Germany, for nature photographs ; Mr. F. E. Howe, Victoria, received the distinction of C.M.Z.S. ; Mr. Chas. Barrett, Victoria—The Smithsonian Institute asked permission to publish article on Cuckoos, printed in vol. vi. of *Emu*, in the annual report of the Institute to Congress.

During the year five meetings of the Council were held, the attendance being—5, 6, 5, 6, 7. Since June four meetings have been held, the attendance being—7, 6, 4, 5. As only seven members of the Council could attend, the attendance was very good. The Council desires to thank Col. Chas. Ryan for his continued kindness in placing his rooms in Collins-street at their disposal for holding meetings.

Through the lamented death of the late King Edward VII., our royal patrons (the Prince and Princess of Wales) have become our gracious King and Queen. It was considered that, such being the case, a royal charter might be granted to the Union. New Zealand is not under the jurisdiction of the Governor-General of the Commonwealth, so the New Zealand Government was asked, through our representative in that State, if it would be agreeable to the change of title of the Union if a royal charter were granted. The reply stated that they were in entire sympathy with the matter.

During the past year a wave of interest in bird-life has passed over the whole world. This is greatly due to the movement being made in almost all countries for the protection of bird-life, especially of birds which are slaughtered for the sake of their plumes. But the value of birds to the agriculturist, and hence to the well-being of any State, is becoming more appreciated. The study of ornithology is spreading. It is interesting and fascinating. It takes people out of doors and gives them more pleasure in life. For the enthusiast no trouble, and often no danger, is too great in his pursuit of knowledge of birds and their habits. As a member of the Union or of bird observers' clubs or associations, one is greatly helped in his work and often stimulated to greater efforts by coming in contact with those of kindred tastes. Then, again, the valuable knowledge gained by him or her in the field is given to others through the means of the publication of the Union, *The Emu*, and so others are stimulated, encouraged, and informed.

In America the movement for the protection of birds has, in the case of many species, started too late—the birds have been annihilated. It is our duty to see that such a thing does not happen in Australasia. Many of our birds are unique, and it would be a great shame if they were not preserved for the study

and benefit of posterity. To the credit of the R.A.O.U. it may be said that great strides have been made in the direction of bird protection through its influence and through the energy and active interest of the members. But there is yet a great deal to be done, both in the matter of bird protection and of obtaining a systematic knowledge of our birds and their habits. In fact, the latter field is practically untouched. The main work, then, of the Union is to endeavour to educate the people, young and old, in the knowledge of bird-life and to stimulate their interest, so that they will become active workers in the field of ornithology. We do not wish to make collectors—there are more than sufficient of them—but rather observers. It is better to shoot a bird with a camera than with a gun—better for the bird and better for the country. Certainly there must be collections, but the collectors should be rigidly restricted

On the 30th August the Hon. F. Tudor, Minister of Customs, received a deputation from the R.A.O.U. Council. The object of the deputation was to ask the Minister to take action to prevent the destruction of native bird-life in the Commonwealth. The president urged that a bill on similar lines to the one before the British Parliament should be introduced, and that the bill should prohibit the exportation of plumes and of Emus' eggs, and the importation of plumes from other countries. It should also be provided that the possession of plumage of certain birds was an offence. Messrs. A. H. E. Mattingley, Le Souëf, Barrett, and the hon. secretary also spoke on points connected with the value of birds, the sales in England, the necessity for immediate action, and the methods adopted in other countries for bird protection. Mr. Tudor, who seemed well up in the subject, expressed entire sympathy with the object of the deputation, and promised to do what he could to stop the wholesale murder of native birds. The power of the Commonwealth regarding the exportation of certain goods was doubtful, but under the amending Tariff Bill adequate powers would be taken. The British bill dealing with the subject seemed to meet requirements. It prohibited the exportation of certain birds, and provided penalties ranging from £5 to £25 for the possession of prohibited plumage. In England Mr. James Buckland has been working for years to prevent the sale of plumes. He has supplied the Union with information relative to sales, &c. People say he has bird protection on the brain. Well, it seems necessary that someone should be so afflicted, for it appears that if anything is to be done in the matter the enthusiasts must keep on persistently nagging—if you like—at the authorities till they are forced to do something. The subject of bird protection is a live one at present. It behoves us to make the most of the opportunity.

Many areas have in the past year been set aside as sanctuaries for native birds and animals. In many cases private individuals have done this, and this shows the spirit of the times. As a result of the efforts of Mr. J. W. Mellor and the South Australian Orni-

thologists' Association, the whole of the *Neophema* family have been protected in South Australia. These include the Rock and Bourke Parrakeets; also all the islands in Coffin Bay have been proclaimed reserves. In Victoria the Black-tailed Parrakeet has been placed on the list of birds already protected. It is interesting to note that the Emu and Lyre-Bird have been introduced into the National Park at Wilson's Promontory.

One of the greatest movements in connection with bird protection was instituted during the year. This was the formation of the Gould League of Bird Lovers, named after the great ornithologist, John Gould, who did so much to make the birds of Australasia known all over the world. A suitable certificate was designed, and members joining the League have to promise—(1) that they will endeavour to protect native birds and not collect their eggs; (2) that they will endeavour to prevent others from injuring native birds. Young Australia should learn to value living birds. There are plenty of collections, both of eggs and birds, for them to study. Let them start where the older ornithologists have left off, and not attempt to make a collection of the whole of the birds of Australia. We hope that the Gould League will help them to do this. The hope is not unfounded. Since the institution of the Gould League over 30,000 certificates have been issued, the greater number in Victoria, where the enthusiasts of the Bird Observers' Club of Melbourne took up the matter, with the success intimated above. This great success could not have been accomplished without the sympathy and assistance of the Education Department of Victoria. At the request of the ornithologists, the Department instituted a Bird Day in the schools. Parents, teachers, and children all united to make it a success; they were all interested. The first Bird Day was held on 29th October, 1909, and the Education Department published a Bird Day number of *The School Paper* for that month. This further helped to interest and stimulate the children. Then, again, a series of articles on the birds of Victoria, by Mr. J. A. Leach, Inspector of Nature Study, were published in *The Education Gazette*, and were widely read. On Bird Day members of the R.A.O.U., B.O.C., F.N.C., and other bird-lovers visited schools and addressed the children. Each had a splendid audience. But the influence of the Gould League is not only felt in Victoria. The R.A.O.U. intended it to be national, and it will be national—the children will make it so. Tasmania has founded a branch, but before it was formed in Tasmania applications for dozens of certificates were received, and they were forwarded. Many, too, have been sent to Western Australia, New South Wales, Queensland, and South Australia. It remains for the bird enthusiasts in the different States to form a branch of the League for their State, and, with the help of the Education Departments, to spread the League. In a few years its members will number, not 20,000, but hundreds of thousands, and its benefits will be incalculable. What has been done in Victoria and Tasmania can be done in other

States, but enthusiasts are needed to start the work and keep it going. The Union offered to supply the Education Departments of the States with material for a *Bird Day School Paper*. The Queensland Education Department has kindly consented to publish a Bird Day number in January next. This is a splendid beginning. It remains for the bird-lovers in Queensland to have Bird Day instituted and the Gould League formed. The Gould League is self-supporting. The charge of a penny for the certificate covers all expenses. Any surplus can be used to further the work of the League by giving prizes, &c. It was so arranged that the certificate could be altered to be used in any State. Mr. J. A. Leach, hon. secretary for Victoria, Mr. C. L. Barrett, hon. secretary B.O.C., or the hon. secretary of the R.A.O.U., will supply further particulars.

During the session at Adelaide last year, Mr. J. A. Leach was chosen by the R.A.O.U. to give a lecture to the teachers on bird study, and members offered the South Australian Education Department the loan of their negatives for a set of slides to be made to illustrate the lecture. The Department ordered two sets. Each set contained 117 slides, and the two sets cost £11 14s. Mr. Leach wrote the lecture which the slides illustrated. These were forwarded to the Education Department of South Australia, and as the Education Department in that State recognizes the value of the use of the lantern, and many of their schools are supplied with them, these sets of slides will be of great use in training and interesting the scholars in bird-life.

It was intended to make an album of the photographs taken on the Eyre Peninsula trip, to be kept in the R.A.O.U. library as a record of the trip. All members did not forward photographs, so the album has not been formed.

Two members of the R.A.O.U. are to be congratulated on bringing out books during the year—Captain S. A. White, on the Eyre Peninsula trip; and F. M. Littler, Tas., "*Handbook of the Birds of Tasmania*." Another well-known member, Mr. G. M. Mathews, kindly consented to represent the Union at the International Congress at Berlin.

The Emu.—The Union is to be congratulated on the production of *The Emu*, and the editors, Messrs. A. J. Campbell and C. Barrett, deserve great praise and hearty thanks for their labours, and Messrs. Walker, May and Co. and members of their staff for the interest they take in keeping the production up to such a high standard of excellence. It has increased in size and value. Two coloured plates were published; want of funds prevents one appearing with each issue. The two plates mentioned were printed by the three-colour process; but it is considered that they were not so suitable for *The Emu* as previous hand-painted lithographs. Both paintings were the artistic work of Mrs. Ellis Rowan.

The Union is indebted to Mr. H. L. White, Belltrees, Scone, for his generosity in presenting Mr. Whitlock's notes and 12 illus-

trations (one coloured), and paying for the production of the illustrations, and for many other favours.

For the information of members it may be stated that the price of extra copies of *The Emu* to members is 2s., but only of issues after the date of their election. Price to members for back numbers, before the date of election, 4s.; price of *The Emu* to non-members is 4s. Complete volumes, full price; no concessions are allowed. Vol. i. is out of print; vol. ii., parts 2, 3, 4, at 8s.; vol. iii., parts 2 and 3, at 8s.; vol. iv., four parts, at 6s. Attention is also drawn to the cover, which may be obtained from Geo. Robertson and Co. for 1s. 6d., or the volume bound for 2s. 6d.

During the year a card catalogue—Aves—was added to the library. It will be a boon to anyone writing on ornithology. The "Monograph of the Petrels" was also added. This was donated by the author, Dr. F. Du Cane Godman, president of the British Ornithologists' Union, through the publishers, Messrs. Witherby and Co., London.

In conclusion, the Council desires to thank all those who have during the past year assisted in any way to further the interests of the Union and the study of ornithology, and trust that they will continue to accord their help and support to the Union and to the Council.

Address by the State Governor.

IN continuance of the annual meeting at the Royal Geographical Society's rooms, His Excellency Sir William Macgregor arrived at 8.15 p.m. and presided. Amongst those who had accepted invitations were:—Sir Arthur and Lady Morgan, the Hon. A. Musgrave, C.M.G., Col. and Mrs. McCre, Major and Mrs. Sankey, Dr. and Mrs. Guy L'Estrange, Dr. Lilian Cooper, Dr. Ellington, Mr. and Mrs. Scriven, Mr. and Mrs. Philip MacMahon, Mr. and Mrs. Wedge, Miss Beattie, Dr. W. M. Turner, Messrs. E. C. Barton, J. Bell, N. Bousfield, W. V. Ralston, D. Gunn, M.L.A., H. Donkin, G. I. Bourne, R. H. Relton, P. Roberts, A. Alder, Wild, Broadbent, Edmund Jarvis, A. A. Spowers, and others. The hall was fairly filled, notwithstanding the stormy weather.

His Excellency, in opening the proceedings, read a letter advising that Their Majesties the King and Queen had been graciously pleased to accept from the society a specially bound copy of the ninth volume of *The Emu*, the publication of the society. His Excellency also read a letter advising that His Majesty had been pleased to approve of the charter allowing the Union the right to prefix the word "Royal" to the name of the Union.

His Excellency said his first words were those of welcome to members of the Royal Australasian Ornithologists' Union, the objects of which, he gathered, were to diffuse a wider and better knowledge in connection with matters pertaining to birds, and to afford better protection to birds generally. That raised two or three very interesting questions—(1) Is it worth while to pro-

tect birds? (2) Do they need protection? (3) If so, is it possible to give it? Personally, he would be inclined to give an emphatic affirmation to the first, but on the third he would feel rather doubtful. In his youth he had affectionate remembrance of the Cuckoo. No bird had given him more pleasure, and from that time he had begun to take an interest in birds, which he had retained all his life. He regarded birds as the most beautiful of all animals. He was not sure that they were not the most useful, and he doubted if any animals were more intelligent. For ten years in New Guinea he had had the opportunity of studying the lovely species of all the rare Birds-of-Paradise, which he found, on arrival, were rapidly being exterminated. He passed laws for their protection, but, remarkable to relate, one of the first effects on the Red Birds-of-Paradise was almost fatal. In his absence a visitor asked permission of Sir Francis Winter to obtain one or two for scientific purposes, and straightway commenced to shoot them out. On his return he was furious, and on visiting Ferguson Island he found not a fully-plumed bird left. Thus, it was very difficult to really protect birds. Emus, for instance, were protected in Australia, yet more than 1,000 skins had been sold in London last year, and, although laws had been passed prohibiting the export of skins and feathers other than Ostrich, Customs officers in London recently opened a case labelled "horse-hair," and found therein 5,000 Parrakeet skins, while 20,000 Humming-Birds had also been sold in London. As proving the remarkable intellect of birds, there was the rapidity with which they found out when they were protected. He had stopped shooting on the island of Darnley, and almost immediately the birds began to come and feed right under his house. Then he allowed no shooting at the Waterfall, and the birds there became quite tame. Unfortunately, on the arrival of a Dutch ship a party went ashore, and, without leave, asked or given, began a regular battue, from which the birds did not recover for a very long while. Immediately he heard of it he sent word to the commander that unless he instantly stopped his men he would arrest him with his native police. It had been his fortune to be in two places where two very rare birds had already become extinct—the Dodo in Mauritius and the Great Auk on the Shetlands. The latter bird had once been so numerous that ships' crews used to go ashore, and, driving herds of the Auk into yards, they would fill up their ships with them for food. Now, the whole island had so frequently been dug over for remains that he did not believe that a single particle could be obtained. Then there was Trinidad, where there had originally been 18 rare birds peculiar to the island, and where now there were but five. Nearer home again, they, of course, thought of the Moa, which must at one time have provided the Maoris with the main portion of their food. In 1903 an egg was discovered, which was now in the Museum at Dunedin, and was by far the most valuable egg in the world. Its value reminded him of many other wonderfully valuable birds—one

in London, which had cost £700, and another in Berlin, £1,000. This bird, of which there was one reconstructed specimen, was, however, knocked into the proverbial "cocked hat" by an extinct native of Madagascar 13 feet high, whose egg held about 1½ gallons! Sir William said that he mentioned these gigantic birds to demonstrate the need of protection, for, however strong they were, they could not survive without help against man, and unless cared for many valuable species would soon be extinct. He then read out a form of pledge which the Gould League of Bird Lovers was (under the auspices of the R.A.O.U.) placing in the hands of boys and girls, by which they promise to protect native birds, and to abstain from collecting their eggs, at the same time exerting their influence to prevent others from doing so. The birds were indeed worth protecting, for they could beat out of sight any human being in dancing or singing. His Excellency concluded with a humorous story of how he used, while in Fiji, to liberate the Parrakeets at Government House by opening the cage doors, until he at last converted the family to giving up keeping such pets in captivity.

Exhibits.

On behalf of Mr. Atlee Hunt, C.M.G., Melbourne, Mr. D. Le Souëf, C.M.Z.S., exhibited and explained the following New Guinea birds, namely:—The Gardener Bower-Bird (*Amblyornis inornata*); Orange-crested Bower-Bird (*Amblyornis subalaris*); Macgregor Bird-of-Paradise (*Cnemophilus macgregori*); Twelve-wired Bird-of-Paradise (*Seleucides nigricans*); Hunt Bird-of-Paradise (*Paradisornis huntii*); Grant Bird-of-Paradise (*Paradisaea granti*).

On behalf of Mr. H. L. White, of Belltrees, N.S.W., Mr. A. J. Campbell exhibited a selection of North-Western bird-skins collected by Mr. G. F. Hill, a former hon. secretary of the R.A.O.U., notably the Smutty Parrakeet (*Platycercus browni*), the rare Rainbow Pitta (*P. iris*), Buff-sided Robin (*Pæcilodryas cerviniventris*), White-tailed Robin (*Eopsaltria pulverulenta*), Grey Fly-eater (*Gerygone cinerascens*), Lavender-flanked Wren (*Malurus dulcis*), Red-headed Honey-eater (*Myzomela erythrocephala*), Rock-Pigeon (*Petrophassa albipennis*), Chestnut-backed Quail (*Turnix castanonota*), the smallest of Australian avifauna, *Smicrornis flavescens*, and several Kingfishers. In addition was a pair of Black Tree-creepers (*Climacteris melanura*), the conspicuous white feathers of the throat being edged with rufous on the female instead of black as on the male, and a male Banded Honey-eater (*Myzomela pectoralis*) in striking immature plumage—a rufescent stage even to the pectoral band, and with a large patch of yellow on either side of the neck, like a *Ptilotis*. Mr. Campbell also described the following:—

NEW SPECIES.

FALCUNCULUS WHITEI (Yellow Shrike-Tit).

Male.—Next the bill small white patch; sides of the head and

neck white, divided by a black band passing through the eye to the nape; crown of head black; throat mottled greenish, black, and grey; back, wing coverts, and upper tail coverts light olive-green; primaries and secondaries dark brown, margined with greenish-yellow and lighter colour; tail also dark brown, margined with greenish-yellow, except the two outer feathers, which are margined with dull white; all under surface, including tail coverts, lemon chrome-yellow, brightest on the chest.

Iris umber, bill black, tarsus French grey (Hill).

Length, 6; wing, $3\frac{1}{4}$; tail, $2\frac{1}{4}$; bill, $\frac{9}{16}$; tarsus, $1\frac{5}{8}$ inches.

Female.—Similar to above, but smaller in dimensions.

Habitat.—Napier Broome Bay, North-West Australia.

This very distinct new bird approaches nearest to *F. leucogaster* (Gld.), but differs in having the whole of the under surface yellow, while in general colouring it is more yellowish than either of the other two known species.

It is classically named in honour of Mr. H. L. White, who so liberally subsidized Mr. G. F. Hill in the far North-West field for a season, and may be known on the vernacular list as the Yellow Shrike-Tit.

EOPSALTRIA HILLI (Hill Shrike-Robin).

Female.—Crown of head, sides of neck, and back grey; lower back tinged with olive-green, which blends into light olive-green upper tail coverts; primaries and secondaries dark brown, margined with grey; tail feathers brownish beneath, with light olive-green wash above; throat whitish, slightly mottled with grey; chest light brownish-grey, blending into abdomen and under tail coverts, which are light lemon chrome-yellow.

Iris dark brown, bill black, tarsus slate-grey (Hill).

Length, 6; wing, $3\frac{1}{4}$; tail, $2\frac{1}{2}$; bill, $\frac{9}{16}$; tarsus, $\frac{7}{8}$ inches.

Habitat.—Hecla Island, Parry Harbour, North-West Australia.

This new Shrike-Robin most resembles *E. griseogularis* (Gld.), but has not the conspicuous bright yellow rump and upper tail coverts.

It is named after its discoverer, Mr. Gerald Freer Hill, whose father, Mr. G. R. Hill, of Malvern, Victoria, and brothers are all enthusiastic field naturalists.

PTILOTTIS PLANASI (Yellow-necked Honey-eater).

Male.—Crown of head light olive-green; back, wing coverts, and tail coverts brownish-grey; primaries and secondaries dark brownish-grey, some of the feathers externally edged with bright olive-green, so as to form a patch on the wing when closed; tail also brownish, edged with bright olive-green; behind the ears a small patch of smoky-brown or black, succeeded by a larger patch on the neck of lemon chrome-yellow; all the under surface, including tail coverts, creamy-buff or yellowish-buff, of mottled appearance on the throat, chest, and breast, each feather having a central mark of light brownish-grey.

Iris umber, bill black, tarsus grey (Hill).

Length, $5\frac{3}{4}$; wing, $3\frac{1}{16}$; tail, $2\frac{3}{8}$; bill, $\frac{9}{16}$; tarsus, $\frac{1}{16}$ inches.

Female.—Similar, but smaller.

Habitat.—Napier Broome Bay, North-West Australia.

This small and beautiful Honey-eater is closely allied to *P. plumula*, but has the back, wing coverts, and tail coverts greyish instead of greenish, has the patches of yellow on the sides of the neck larger, and the under surface more pronouncedly mottled.

I have pleasure in dedicating this bird in honour of the Very Rev. Father Planas, who, as head of the Drysdale River Mission,* Napier Broome Bay, extended the greatest courtesy and assistance to Mr. G. F. Hill during his 10 months' residence at the station collecting. In the vernacular the bird may be known as the Yellow-necked Honey-eater.

MICRÆCA BRUNNEICAUDA † (Brown-tailed Flycatcher).

The collection contained a series of two species of *Micræca* which greatly puzzled me. One I have referred to *M. assimilis* (Gld.), while the other, which has a uniform-coloured (dark brown) tail and back slightly tinged with olive, is referable, I have no doubt now, to the new *Micræca* I described from North Australia from a mutilated skin then in the possession of Mr. D. Le Souef, and which was named *brunneicauda*. This may be further distinguished by the yellowish-buff under wing coverts, which are brownish-buff in the other kinds.

Amended description :—

Male.—All the upper surface brown, with an olive wash on the back, wing coverts, and tail coverts; wings and tail dark brown, some of the feathers of both being edged with a lighter colour (ashy); all under surface white, washed with light grey on the chest and flanks; under wing coverts yellowish-buff.

Iris umber, bill dark horn, tarsus black (Hill).

Length, $5\frac{1}{4}$; wing, $2\frac{1}{8}$; tail, $2\frac{1}{8}$; bill, $\frac{7}{16}$; tarsus, $\frac{1}{2}$ inches.

Female.—Similar to above, but slightly smaller.

Habitat.—Napier Broome Bay, North-West Australia.

Outings.

QUEENSLAND MUSEUM.

THE first visit of delegates was on 4th October, to the Queensland Museum, where the visitors were received by Mr. C. J. Wild, Acting-Director.

Acquaintance was renewed with two old friends and colleagues—Messrs. C. W. De Vis, M.A., one of the original members of the Union and a former vice-president, and Mr. Kendall Broadbent, the well-known ornithologist. A very busy and profitable morning was spent under the guidance of Messrs. Broadbent and Weatherill. A critical examination was made of the several

* Since Mr. Hill's return the Mission has been twice attacked by natives, and one reverend father speared, though not seriously wounded.

† *Vide Emu*, vol. ii. (1902), p. 85.

type specimens and the general collection of Australian birds. The collection of birds of New Guinea made under the direction of Sir Wm. Macgregor when Administrator was examined. It is natural that the finest collection of the Birds-of-Paradise should be found in this museum, and the Queensland people may well be proud of their exhibit.

At 1 o'clock the visitors were the guests of the Hon. W. T. Paget, the Minister of Agriculture and Administrator of *The Native Birds Protection Acts*, at luncheon, which had been laid in a marquee in the garden, rich in flowering plants and palms, of the Museum. In addition to the delegates, several other guests had been invited, including Hon. A. Norton, M.L.C., Mr. and Mrs. E. G. E. Scriven, Major Sankey, Professor S. B. J. Skertchly, Messrs. C. W. Colledge (president F.N.C.), C. J. Wild, C. W. Holland, G. H. Barker, J. O'N. Brennan, K. Broadbent, J. R. Sankey, W. Weatherill, J. Bell, G. I. Bond, J. Shirley, W. V. Ralston, R. Illidge, H. Tryon (organizing secretary), Hon. A. Musgrave, C.M.G., and Capt. Cartwright, of F.I.S. *Endeavour*. Short speeches followed. The Minister welcomed the delegates to Queensland, and spoke of the work that had been done in the cause of bird protection in Queensland. He thought that the visit of the ornithologists would stimulate the interest of many in the study of birds, and hence lead to a greater knowledge of their beauty and value. A photograph was taken by the Poulsen Studio of the whole party, with the museum façade as a background, and this pictorial record will form a fine memento of the pleasant time spent at the museum, and of the many new friendships made.

TRAM RIDE.

After luncheon visitors and friends boarded a special tram-car, and were taken over the main routes of Brisbane—a most enjoyable method of viewing the city. Many of those who had not been to Brisbane before had an idea that it was built along river flats fringed with mangroves, instead of being on undulating ranges, with the river winding through and the higher ranges stretching back into the distance—a pleasant and agreeable prospect.

Finally, the visitors landed at Highgate Hill, and were entertained by Mr. and Mrs. J. Bell at an "at home" at "Hazelwood." Mr. Bell, who is a master of the art of falconry, explained the methods adopted in training Falcons, and placed before his interested audience the different appliances used in the art. Then his unique collection of books on falconry and ornithology was examined. A tropical thunderstorm burst over the city with a fierceness that surprised the visitors, and the air was afterwards beautifully cool. Afternoon tea was served on the spacious verandah, and, after admiring the views from several vantage points, the guests thanked their host and hostess for the interesting and happy time they had spent, and returned to the city to prepare for the business of the annual meeting.



Home of the Jacana (*Hydralactor gallinaceus*).

AT ENOGGERA RESERVE.

At the invitation of the Brisbane Field Naturalists' Club, the R.A.O.U. delegates on 5th October visited the Enoggera Waterworks Reserve, about 8 miles from the capital. Drags were provided, and the drive out was most enjoyable, for the sun was shining, and here and there along the way pleasant views opened out—rural homes surrounded by gardens and timbered paddocks, clusters of smaller houses in folds of the hills, and bits of bush land, with a panorama of the receding city when one cast looks behind. Permission to roam over the Reserve had been obtained from the Water Commissioners, and the hours passed swiftly in this employ. Before lunch the two boats available were launched and rowed leisurely about the lake, which was alight with flowers of the lotus lily. In some of the quiet reaches the water was so laden with these plants that it was a task to thrust the boats along. Broad green leaves and tangled stems and roots retarded progress, clinging to the oars and about the prows of the little craft. But, once among the lilies, there was no desire for speed; it was pleasure enough to gaze upon thousands of blue and white blossoms open to the sun, at the still water, and the hills, dotted with trees and clumps of bamboo, which rise gently around the lake.

Many species of birds were observed, notably the Comb-crested Jacana, which trips daintily over the floating lotus leaves, its bright orange shield shining like a jewel. Several pairs of Jacanas were seen during the day, and, after a careful search, two nests were discovered—flimsy structures, composed of pieces of reed, lotus stems, &c., and placed on a movable base of living vegetation. Each of the nests examined contained a full clutch of four eggs, richly marked. Mr. H. W. Wilson obtained a series of photos. of the nests, but the birds were too wary to be "snapped." It was interesting to find the Jacanas breeding in this Reserve, where they are perfectly safe from collectors and pot-hunters. They are in keeping with such a haunt of peace—part of the picture made by the lake among the hills, with its lotus flowers, and the quiet beauty of the reed-fringed banks. (See plate XIV.) Other members of the party had investigated a pocket of primeval scrub, where numerous birds were identified, notably the large Masked Owl (*Strix nova-hollandiæ*), Little Green-Pigeon (*Chalcophaps chrysochloa*), Rufous-breasted Shrike-Thrush (*Pinarolestes rufigaster*), and others, while the notes of the strange Koel Cuckoo (*Eudynamis*) were heard, and the familiar trilling songs of the Yellow-eared Honey-eater (*Ptilotis lewini*) enjoyed.

The Field Club provided a banquet for the visitors, and after the meal and complimentary speeches from guests and hosts, further excursions on the water and among the hills were enjoyed. Some of the delegates witnessed a number of Dollar-Birds (*Eurystomus australis*) hawking above an ant mound, and the lake ramblers returned with lotus blooms and a harvest of notes regarding the ways of the Jacana.

As the shadows were beginning to deepen on the hillsides, afternoon tea was served; then the drags were boarded again. The drive home in the calm of evening was as pleasant as the morning journey had been. Over the city hung a golden haze; it faded, and, as the drags approached the homes of the hill folk, lights began to glimmer through the dusk.

A RIVER TRIP.

"No day without an excursion." That was the motto upon which the kindly members of the Field Naturalists' Club acted during the stay of the R.A.O.U. delegates in Brisbane. We arose on the morning of 6th October from dreams of blue water-lilies afloat on a still lagoon, and with Jacanas pattering over the leaves, to be whirled away in electric tram-cars to landing-places on the banks of the Brisbane River. The majority of the party, including the ladies, boarded the Government steamer *Champion*, and were taken to the mouth of the river. The vessel was hove-to in a quiet reach, and at noon eight delegates who had made the excursion in Mr. Ivan Bond's motor launch *Teal*, came aboard, with the genial skipper of the little craft. A dinner, at which Prof. Skertchly, Mr. Hy. Tryon, and others made capital speeches, was the next item of the programme which the Field Club had arranged. The generous hospitality was offered without ostentation, and when the president of the Union and Mr. D. Le Souëf attempted to return thanks, it was made light of by the hosts of the day.

The party in the motor launch had excellent opportunities of observing the bird-life of the mangroves and the mud flats on the voyage down the river. A start was made at 8 o'clock, and breakfast, prepared by Mr. Bond (who proved himself a capable cook as well as a delightful host), was eaten as the *Teal* nosed her way along, close to the western bank of the river. In places the mangroves formed a dense thicket; elsewhere, wide expanses of mud, not yet overgrown by the ubiquitous plant, opened to view. The coming of the launch, albeit she made little noise save for the rippling of water about the prow, scared from their feeding-grounds flocks of Whimbrels, Curlews, White-fronted Herons, and other birds of the waterside. Sometimes a White-bellied Sea-Eagle or a White-headed Sea-Eagle would go soaring above the mangroves serenely, as if disdaining to hurry from a danger of which it was yet conscious. Cormorants were seen flying clumsily, after the manner of their kind; and at whiles, from the low, crumbling banks, a Kingfisher (*Halcyon macleayi*) would dart up, the sheen of its plumage changing from violet to blue as it passed from shadow to sunlight.

Through a pair of Zeiss field-glasses the birds feeding on the mud flats could be observed with advantage; and it was interesting to watch the stately, deliberate movements of the long-legged Waders. Curlews were fairly numerous, sifting the mud with their long curved bills, in company with White-fronted Herons.

Perched on snags or on a mangrove tree here and there were a few Darters (*Plotus novæ-hollandiæ*), silent and indifferent, or moving their snake-like necks and heads to gaze at the passing boat. But the most characteristic bird of the river banks, and one that haunted the stone training walls, was the Yellow-necked Mangrove-Bittern (*Dupetor gouldi*). At first the birds did not attract attention, sneaking silently along below the crest of the piled rocks, with which their slaty-grey plumage harmonized. But the skipper of the *Teal*, familiar with the river and its birds, pointed out a Bittern which was taking pains to be unobtrusive, and thereafter one was seen every few minutes. Rarely would the birds walk along the crest of the wall to be silhouetted against the sky. They had evidently learned the lesson of concealment well. The launch did not greatly disturb them, but at its approach they would fly a few yards, alight, and, crouched up like a whipped dog, slink away. The attitude and general behaviour of the Bitterns reminded the launch party of those undesirables among men who frequent public gatherings "after no good." It was most interesting to watch the shy, slinking birds.

At the mouth of the Brisbane the launch was anchored in the lee of an island formed of mud and shell material dredged from the bed of the river. Several of the party went ashore in the dinghy, with cameras. A large flock of Pelicans had been observed as the *Teal* came down stream, and it was decided to have some "shots" at them with the camera. Dr. W. Macgillivray, with his "Naturalist's Graflex," crept painfully over a hundred yards of mud and shells, under shelter of a low ridge formed of the same materials. The Pelicans were fishing, close inshore, upon the other side; but the big birds were wary, and after an hour's stalking the Doctor gave up the game, content with a dozen hazarded exposures. It was impossible to approach the Pelicans closely, and the flocks of Terns (several species) and Dottrels camped on the sand-spits were shy of the human form. The beach of this artificial island was strewn with the dead bodies of the *Pharsalia*, or "Portuguese men-o'-war," fleets of which had been noticed drifting down the river with the tide. The colouration of these delicate organisms is brilliant, the float-bladder being pale transparent blue, deepening to purple or violet on the crest, which is also tinged with carmine.

After dining with the main body of excursionists on the *Champion*, the launch party began the return voyage to Brisbane, stopping *en route* for a brief run ashore at a spot where the mangroves looked inviting and a jetty facilitated landing. Nothing of special interest was noted, and the mosquitoes were so abundant and aggressive that none of the ornithologists was sorry to leave the noisome spot. The run up stream was also without incident of note; but as the busy part of the river was reached, with the "black wharves and the ships" (including the fine new steamer *Levuka*, in charge of Captain W. C. Thomson, F.R.G.S., who had

kindly given sound advice concerning the Union's proposed expedition to the Capricorns) came a scene of beauty. The river, untroubled by any wind, gleamed like a broad shield, silver-grey or violet where the shadows rested; and beyond were blue hills, with white and red-roofed houses clustered about the base or climbing the slopes—a picture to remember.

BOTANIC GARDENS.

The Botanic Gardens, being contiguous to our quarters, were frequently visited. There various rare tropical plants were seen flourishing in the open instead of under glass, as they are usually seen further south, and there great Jacaranda trees were in full flower—sheets of dazzling lavender. Naturally, such a place was a perfect home for birds. Frequently could be heard the Fig-Bird's (*Sphecotheres maxillaris*) loud and noisy notes, the Canary-like song of the Plain-coloured Brown Honey-eater (*Glycyphila ocularis*), the sweet, eccentric warble of a Gerygone or Fly-eater, not to mention the better-known notes of merry Thickheads, Fantails, &c. But one poor bird—Brush-Turkey or Talegallus—claimed our pity, because caged with rats. It was all right during the day, but as evening approached the rats came out from numerous burrows and chased the frightened bird even to the rafters of its cage. For pity's as well as for health's sake the vermin should be exterminated, or at least the cage be made rat-proof.

Lectures in Brisbane.

PUBLIC.

THERE was a large gathering in the Albert Hall on the evening of 5th October, when a series of lecturettes on seals and sea-birds was delivered by Messrs. J. A. Leach, M.Sc., A. J. Campbell, C.M.B.O.U., and D. Le Souëf, C.M.Z.S. The chair was occupied by His Excellency Sir Arthur Morgan, who, in introducing the lecturers, paid a tribute to the good work of the Royal Ornithologists' Union. He welcomed the visiting members of the Union, because of their great aims and their desire to prevent the wanton destruction of the valuable bird-life of Australia, and he urged the desirableness of giving them support in their cause.

Mr. Leach, in the course of a most interesting address, gave a descriptive account of the work done by an expedition of ornithologists in Bass Strait two years ago. After briefly outlining the course which the expedition took, he told of the many wonders relating to the bird-life in that part of Australasia. The numerous species of birds were described in turn, and the audience undoubtedly found much that was not only attractive and amusing, but also educative, in the remarks of the lecturer.

Mr. Campbell, in his address, confined himself to the characteristics of the Petrel species commonly known as the "Mutton-

Bird," and thoroughly described the habits and peculiarities of this bird, of which, he said, south-eastern Australia was the true home, probably of great antiquity. On migration, however, it moved annually over the greater part of the Pacific Ocean.

Mr. Le Souëf dealt in somewhat similar manner with the Albatrosses, speaking particularly of the two species known as the White-capped Albatross and the Royal Albatross.

All three lecturettes were illustrated by fine lantern views, and at the conclusion a series of cinematograph pictures, taken by Mr. A. H. E. Mattingley, C.M.Z.S., depicting seal, bird, and animal life in the islands of Bass Strait, was projected upon the screen. A hearty vote of thanks, proposed in felicitous terms by Prof. Skertchly, terminated the proceedings.

TO CHILDREN.

On the afternoon of 4th October about 1,600 State school scholars, with their teachers, attended at King's Lyceum (the use of which, together with appurtenances, the management had generously given free of charge), to hear a lantern lecture on "Bird-Life" delivered by Mr. Dudley Le Souëf, C.M.Z.S. The executive arrangements at the hall were in charge of Mr. J. Shirley, B.Sc. (Senior Inspector of Schools), and were well carried out, all the children having been seated before the arrival of the Minister for Education (Hon. W. H. Barnes), who was attended by Mr. R. H. Roe, M.A. (Inspector-General of Schools) and Mr. J. D. Storey (Under-Secretary to the Education Department). Prior to the arrival of the lecturer, Mr. Barnes expressed pleasure at the attendance of the children, and said Mr. Le Souëf would no doubt have something educative and interesting to tell them regarding bird-life. Mr. Storey also addressed the children.

Mr. Le Souëf then delivered his interesting and instructive lecture on bird-life, which was freely illustrated by lantern views, and gave an outline of the habits and characteristics of a large number of birds, and explained the pictures as they were projected on the screen. Mr. Roe, in moving a hearty vote of thanks to Mr. Le Souëf, said the lecturer had shown them all that he had a great knowledge of the bird-life of this country, and at great trouble to himself had delivered a lecture in the hope of inducing them to have the same sort of love for the birds as he (the lecturer) had. All that was wanted was to get the boys to look at the thing in the right way, and they would then have no desire to kill birds, but would take care of them. The vote of thanks was carried with great acclamation. The schools represented at the lecture were:—Bowen Bridge, Breakfast Creek, Bulimba, Brisbane Central, Coorparoo, Dunellan, Eagle Junction, East Brisbane, Fortitude Valley, Hamilton, Ithaca Creek, Junction Park, Kangaroo Point, Leichhardt-street, Milton, Newmarket, Norman Park, Petrie-terrace, South Brisbane, Taringa, West End, Woolloongabba, Kelvin Grove, and Toowong.

TO TEACHERS.

Mr. J. A. Leach, M.Sc., Inspector of Nature Study in Victoria, delivered a lecture in the Albert Hall on the evening of the 18th October, under the auspices of the Royal Australasian Ornithologists' Union, on the subject of "Bird-Life as a Branch of Nature Study." In the unavoidable absence of the Hon. W. H. Barnes (Minister for Public Instruction), Mr. D. Storey (Under-Secretary) presided. Mr. Leach's admirable lecture was freely illustrated by lantern slides showing the different birds found in Australia, and illustrating their habits, the lecturer emphasizing the fact that Australia was singularly blessed in regard to the many different species found in this country. Prefacing the display of slides, Mr. Leach dwelt upon the objects of nature study among children of the schools in Victoria. Children were encouraged in the study so as to try and enable them to observe things about them, and to express in essays or by other means the outcome of their observations. They wished them to be able to see, think, and tell, and to attain that one lesson a week was given on some common object, such as a stone, a leaf, or a bird. That one lesson was followed by a five-minute talk each morning, and the child brought to observe something every day on his way to school. Observation for observation's sake, without thought, and without being followed up, was quite useless, and a child could not observe anything to advantage unless it knew what to look for. As far as his talk on birds was concerned, he hoped that it would have the result of showing those present that they knew far more than they thought they knew about birds, and also that it would induce them to give those five-minute talks each morning to the children about birds. Mr. Leach then took his audience through the 21 groups of birds, explaining their habits and incidentally making strong pleas for the preservation of different species. At the conclusion of the lecture a hearty vote of thanks was accorded Mr. Leach, on the motion of Inspector Kennedy. About 500 teachers and friends were present.

Provincial Visits.

BUNDABERG.

THE members who were able to join in the provincial tour were well rewarded. The first place of call was Bundaberg, where we arrived from Gladstone on the evening of Monday, 17th October. We were first taken to the Council Chambers, where the mayor (Mr. Peter Neilsen), Alderman Maynard, and others kindly welcomed us on behalf of the citizens. The next morning was mostly spent in giving short lectures on the value of bird-life to the scholars in the various State schools. In the afternoon a delightful motor drive was taken to a hill in the neighbourhood, from which a most interesting view was obtained of the extensive fields of sugar-cane.

We were then shown how the cane was propagated from cuttings, also how the trash or dead leaves were disposed of, watched the cane being cut and stripped ready for crushing, and being loaded into small trucks running into the mill. The whole process was most interesting, especially to those who had not seen the sugar industry before. We were then taken to the Millaquin refinery, where the various processes of refining the yellow sugar into the white article of commerce were fully explained and shown to us. It was a little bewildering, going through the large mill, with all the machinery working, for those unaccustomed to it. The manager, Mr. Johnston, and his wife, kindly served afternoon tea to the company at the residence, and in their garden tropical fruits were growing well, such as mangoes, pineapples, bananas, &c. In the evening Mr. D. Le Souëf gave an illustrated lecture on Australian bird-life to a large and appreciative audience at the Town Council Chambers, the mayor presiding.

Next morning Messrs. A. H. and E. Young kindly took us out by motor to their Fairymead sugar plantation and mill. It was a delightful drive in the fresh morning air. A thorough inspection of the mill was made, from seeing the cane pass under the great crushers, to the white sugar being bagged ready for market, and also watching the manufacture of "molascuit," a preparation of molasses and fibre of the cane, a well-known fodder for stock. Light refreshments were partaken of at Mr. H. A. Young's charming residence, and all too soon we had to leave to catch the southern train; but the visit was delightful, and full of interest, and one which we will long look back on with pleasure. We left the same afternoon, after bidding farewell to our kind hosts and hostesses, not forgetting Major Johnston, who had been so indefatigable in looking after our welfare.

TOOWOOMBA.

We passed through Brisbane next morning at an early hour, Mr. Tryon meeting us there, and reached Toowoomba at mid-day. We were here again kindly welcomed to the city at the Council Chambers by Mr. H. K. Alford, on behalf of the mayor, and by Mr. H. A. Longman, the president of the Field Naturalists' Club. In the afternoon a reception by the Field Naturalists' Club was held at the Botanical Gardens, in which we were interested, also in some enclosures where were a few kangaroos, wallabies, and Emus. The stock looked well, and enjoyed plenty of room. We also inspected the Museum, in which are many very interesting exhibits.

Next morning we were taken to a most striking basalt quarry, in the face of which the centres of two cones were visible, where they had in ages gone by belched out their molten lava. We were glad to hear that the council intended to leave these intact. They are well worth preserving. During the afternoon an excursion was made to the neighbouring hills, where some dense scrub was examined, both as to its bird and insect life. The

stinging-tree (*Laportea gigas*) was noticed growing here freely, with its large leaves of soft appearance. In the evening an illustrated lecture was given in the Alexandra Hall on "Bird-Life in Australia," by Mr. D. Le Souëf. Mr. H. K. Alford presided. Early next morning Dr. Price kindly took several of us in his motor cars to a very extensive view at the edge of the Darling Downs, not far from the town. In the foreground was much broken country, and in the distance the Liverpool Ranges could be seen, while behind us, stretching as far as the eye could see, were the far-famed Darling Downs. We were much struck with the fertility of this splendid portion of the Commonwealth. About mid-day we left this town, bidding farewell to Mr. Longman, Dr. Price, and others, who had given up so much of their time in showing us the places of especial note in their neighbourhood. As the line gradually descended to the lower country, on passing along the hillsides beautiful views were frequently obtained, especially of dense scrub-covered gullies. The Parry wallaroo and banded wallaby were often seen near the line from the train.

WARWICK.

We arrived early in the afternoon at Warwick, and were met by Dr. Phillips and Messrs. S. J. Harwood, C. C. Dornbusch, P. W. Pears, and others. In the evening Mr. D. Le Souëf gave an illustrated lecture in the Technical College on "Bird-Life." Mr. S. J. Harwood presided, and there was a good attendance. After the lecture we were kindly entertained at supper by the gentlemen above mentioned. Next morning Dr. Phillips drove us out to his farm, where we enjoyed an extensive view over the surrounding country, and also observed a fair number of birds in the adjacent scrubs. We left in the afternoon for Sydney, *en route* for home.

This short account of our trip cannot be closed without expressing the very great appreciation of the visiting ornithologists of the kindness received from the good people of Queensland. Everything possible was done to make our visit as enjoyable as possible. The only regret was that we could not see more of the resources of the splendid northern State, with its vast agricultural and other resources, as yet hardly touched.

President's Address.

BY A. J. CAMPBELL, COL. MEM. B.O.U.

THE UNION AND ITS WORK.

The Union.—The first mutterings of a union of ornithologists commenced in Melbourne, 1896, with a dinner and *reunion* of bird-lovers, chiefly oologists. These delightful socials, at which nothing stronger than tea and coffee was imbibed, recurred at convenient intervals till the 7th November, 1900 (10 years ago next month), when it was definitely decided to form an Austral-

asian Ornithologists' Union, and to hold the first general meeting in Adelaide the following year.

That Melbourne meeting is now historic. There were 21 persons present, and a copy of their signatures and seals is preserved in the first volume of *The Emu*, the Union's official organ. It is a remarkable coincidence that 21 was the exact number of the founders of the now famous American Ornithologists' Union, started in 1883. In order to show that the preliminary meeting was thoroughly inter-State, it may be mentioned that Mr. D. M'Alpine, Government Vegetable Pathologist, and several other members of the Field Naturalists' Club of Victoria, were present; Mr. C. F. Belcher, LL.B., represented the Field Naturalists' Club of Geelong; Mr. J. W. Mellor, the South Australian Ornithological Association; while apologies were received from the late Sir Malcolm M'Eacharn (Mayor of Melbourne), Mr. C. W. De Vis, M.A. (Queensland), Mr. S. W. Moore, M.L.A. (New South Wales), Colonel W. V. Legge (Tasmania), and others.

Among other happy circumstances at this time, their Royal Highnesses the Duke and Duchess of Cornwall and York (now their Majesties the King and Queen) were visiting the Commonwealth, and graciously bestowed their patronage—the only royal favour of the kind conferred during their Highnesses' Australian tour—on this new national Union, with its simple twin planks: the study and protection of birds.

A simple code of rules was drawn up—18 in all—which a coldly critical lawyer has described as somewhat starved; but there is the compensating balance: the fewer and simpler the rules the less the number of transgressors.

The first session of the A.O.U. (now "Royal"), Adelaide, 1901, was a thorough success; any forebodings of the promoters to the contrary melted away before the enthusiasm and warm reception they received at the hands of the good people of South Australia. The first evening, a lantern lecture, "An Evening with Australian Birds," by Mr. D. Le Souëf, C.M.Z.S., was given in the Federal Hall (a very appropriate name by way of a beginning). There was a large and representative audience, including His Excellency Lord Tennyson (then State Governor), Lord Richard Nevill, Sir Samuel Way (Chief Justice) and Lady Way, the Hon. T. H. Brooker (Minister of Agriculture and Education, who kindly occupied the chair), and others.

The following evening the session settled down to business, and Colonel Legge (Tasmania) delivered the first presidential address. Since, two other annual sessions have been held at Adelaide, and two each at Sydney, Melbourne, and Tasmania. To give details of the meetings would be merely to repeat a progression of successes, which threaten to be outshone by the splendour of this our first session in Brisbane. But I must not omit to mention one most important conference in connection with the last Melbourne session, when Government representatives of the administrators of the various inter-State *Game Acts* met to consider proposals made by

the Union for the betterment of bird protection. Some of the recommendations adopted are already bearing fruit.

Nor must I omit to mention the suggestion (*Emu*, vol. vi., p. 103) of one of my predecessors, Colonel C. S. Ryan, in his presidential address on "The Protection of Birds," delivered before the Hobart Session, 1907:—"To educate the people to love birds is better for their (birds') protection than many acts of legislation. Let us, then, educate the children. I am confident, in speaking for my own State (Victoria), that the Director for Education, Mr. Frank Tate, with his well-known love for 'nature study,' would introduce Australian ornithology into the curriculum of State Schools. Such a study would surely 'catch on' with the scholars, because birds are, perhaps, the most fascinating branch of natural history."

A "Bird-Day" has been introduced into the Victorian State schools, and has "caught on" in a marvellous manner. Time and space alone prevent me from enlarging on its wonderful success. The Education Department has also issued a remarkably cheap descriptive list of Victorian birds, which was so well received that Inspector Leach is compiling a more complete edition, plentifully illustrated, in some instances with coloured plates. This is a distinct advance in the education of the young. Other States are introducing ornithology into their school systems, notably South Australia and Tasmania, while I understand Queensland will publish her first bird articles for the children in *The School Paper* for January.

Working Excursions.—A very conspicuous feature in connection with the annual sessions has been the working camp-outs or excursions, when ornithologists from the various States met and worked together in the field. I need hardly dilate upon the pleasure and profit accruing to the participators in such excursions. The outings are eminently practical, and a good training-ground for rising ornithologists, perchance explorers. Enlightened Governments have, I think, recognized these facts; hence the assistance freely given from time to time to the Union's expeditions.

Regarding a training-ground for explorers, I fear some of the members of the present expedition to the coral islands of the Capricorn Group, off Gladstone, will enjoy a rough time, but I promise them rougher times ahead when we hope, in the near future, to ornithologically explore the very important Melville Island, North Australia, or probably some of the sub-antarctic islands of New Zealand. In this connection I am reminded of a letter I received many years ago from the late Professor Alfred Newton, of Cambridge—"You will hardly be satisfied until you have completed the islands of Antarctica." We did request the Admiralty for a loan of a gunboat to explore the Royal Company's Islands, far to the southward of Tasmania. No doubt a vessel would have been provided had the Admiralty been able to find the islands, which, since our request, have been, by order, expunged as myths from the official charts.

"*The Emu*."—Although members of the Union are scattered throughout the Commonwealth and New Zealand, and there is only one general meeting a year, how is it we remain such a successful and coherent association? Because there is elected annually a council which, amongst other details, controls a magazine—*The Emu*—the "outward and visible sign" of the Union, so to speak. The success of this magazine, which is published quarterly, has been phenomenal, and the marvel of older ornithological associations, which have endured great hardships at their beginnings. Take, for instance, the venerable and now world-spread British Ornithologists' Union. Our brethren abroad complain that our journal is hardly scientific enough, while those at home would make it more popular in substance. Our success has doubtless been the happy mean between these two extremes. During the last 10 years (we are now in the tenth volume of *The Emu*) we have never once wanted "copy." Like the food of the fine birds we all so much love, it has always been just at hand when wanted. Our last "copy" is all expended on the current (October) issue, and yet there has since been promised, by that public-spirited ornithologist, Mr. H. L. White, of Belltrees, N.S.W., a very important article, the result of a collection and field notes of a young and intellectual collector, Mr. G. F. Hill, whom Mr. White has liberally subsidized for a season in the field of far North-West Australia; and the editors have just received from Mr. J. C. M'Lean, of New Zealand, a lengthy and most valuable contribution to the field ornithology of the North Island of the Dominion, including a romance, and photographs of nests in the last retreat—there is a melancholy ring about these words, the last retreat—of the *Miro australis*—a bush bird which the late Sir Walter Buller, the eminent author of the "History of the Birds of New Zealand," supposed to be, if not altogether, well nigh extinct.

Narrative of the Expedition to the Islands of the Capricorn Group.

BY CHARLES BARRETT, MELBOURNE.

THE conditions under which the expedition to the Capricorn Islands in connection with the Brisbane session of the R.A.O.U. was made were generally favourable. Through the kindness of the Minister for Customs (Mr. Frank Tudor), the Fisheries Investigation vessel *Endeavour* was placed at the Council's disposal for a period of ten days; and, throughout, Captain Cartwright and the officers associated with him did all in their power to further the objects of the expedition by meeting the wishes of the leaders in regard to short voyages among the islands. The trawler also supplied fish on several occasions, while members of the crew helped willingly with the heavy work of trans-

porting baggage to and from the vessel and the islands on which the camps were made. The men always manned the boats with cheerful alacrity, and the best thanks of members of the expedition are due to them.

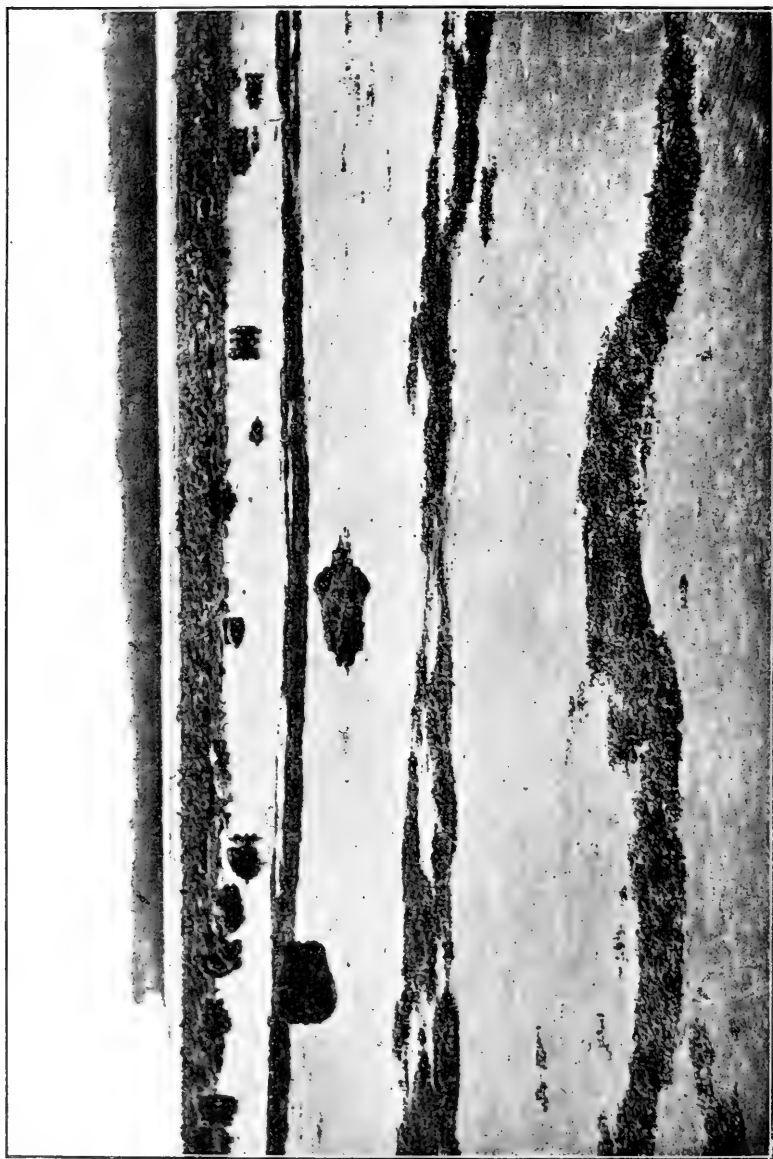
The following persons (exclusive of two cooks) took part in the expedition:—A. J. Campbell (president), D. Le Souëf, C.M.Z.S., Charles L. Barrett, J. A. Leach, M.Sc., Dr. Chenery, E. Brooke Nicholls, J. A. Kershaw, F.E.S., Z. Gray, L. Harrison, H. Burrell, C. Coles, D. B. Fry (Australian Museum), C. A. Barnard (leader No. 2 party), F. L. Berney, Capt. S. A. White (leader No. 1 party), J. F. Mellor, J. W. Mellor (vice-president), S. S. Stokes; Mesdames J. F. Mellor, J. W. Israel, H. Burrell, S. A. White, and Miss Mellor; while Mr. J. Wild (Queensland Museum) remained on board the *Endeavour*.

THE START.

We cast off from the Gladstone jetty early on the morning of 8th October, with the pilot aboard. The voyage across the blue Pacific was smooth and pleasant. No member of the expedition suffered from the motion of the boat. Dotted about the deck in groups, we talked of the future, and speculated on what our experiences would be on the islands we had travelled so far to see. There was much to interest during the hours of seafaring—things new and strange to most of us. We watched with delight the flying-fish that leaped from the blue water, to go skimming for hundreds of yards above the surface before disappearing again. Then there were the porpoises at the steamer's prow, swimming with ease and grace; they accompanied us for miles. The sea was streaked with "whale food," a yellowish substance, that caused much speculation as to its origin; but no satisfactory explanation was forthcoming. Thousands of delicate medusæ went drifting by, and sometimes a shark or other large fish was seen.

We had left port shortly after 6 o'clock, and about noon a grey shadow, that had been visible for an hour on the horizon, took form and shape. It was North-West Island, the largest of the group, and the one on which it had been decided No. 1 party, under Captain S. A. White, of South Australia, should camp.

The Capricorn Islands, lying at the southern extremity of the Great Barrier Reef (from which they are separated by Curtis Channel), are pseudo-atolls. It is not safe for a large vessel to approach closely the fringing reefs; so the *Endeavour* anchored in $8\frac{1}{2}$ fathoms, and the boats were soon bumping alongside, ready to take the members of Captain White's party, with the baggage, ashore. The five ladies went in the first boat, the men following, with the bulk of the stores, &c., in the other. It was a long pull to the shore; but Captain Cartwright had timed the steamer's arrival off the island to be at flood-tide, and the boats were able to pass over the reef and make the beach. The stores were quickly landed, and soon all members of the party were busy preparing



Coral Reef Formation, where numerous birds—Terns, Reef-Herons, Waders, &c.—feed at low tide, off Mast-Head Island.

Trees at end (the eastern) of island are Casuarinas, where Frigate-Birds roosted.

camp. The *Endeavour* blew her siren in farewell, the anchor was weighed, and she steamed away for Mast-Head Island, lying 17 miles to the westward, on which the second camp was to be formed.

It was 3 o'clock when the *Endeavour* arrived off Mast-Head Island, and twilight was falling before No. 2 party and its baggage were landed. We were too late to catch the flood-tide, and the transport of heavy boxes and portmanteaux and the big cans of fresh water across the coral reef was a long and trying task. The jagged edges of the dead coral were so sharp that those who wore shoes or light boots found the soles cut almost to pieces after the work was done.

Before the tents had been fully pitched and the camp snugged down, a tropical storm burst over the island. Rain fell drenchingly all through the night, and it was, for most of the party, a long and weary vigil before sleep came to close the eyes of care. But we smoked, and were as cheerful as the circumstances permitted; and the dawn broke so calm and bright that all discomforts were forgotten as we emerged from dripping tents into the warm and sparkling sunlight.

GEOLOGICAL AND GENERAL.

From a paper on the mollusca of Mast-Head Reef, by Mr. C. Hedley, F.L.S., published in the *Proceedings of the Linnæan Society of New South Wales*, 1906, vol. xxxi., part 3, we learned much about our island home. Mr. Hedley, with Dr. R. Pulleine and others, visited Mast-Head Island in October, 1904, for the purpose of studying the marine zoology. The party spent a week on the island, collecting on the reef and dredging in its immediate vicinity, with most important results, some of which are set out in Mr. Hedley's paper. Attention was devoted to the botany of the island, and a few bird observations were made, but we felt that we were the first to properly investigate the avifauna. Mr. Hedley, in the introduction to his paper, gives a brief account of the history of the Capricorn Group, and an outline of the geological features of Mast-Head Island, from which the following facts are gleaned.

Professor Jukes visited the Bunker and Capricorn Archipelagoes in H.M.S. *Fly* in 1843, and up to the time of Mr. Hedley's visit, in 1904, no other naturalist had worked among the islands. Mr. Hedley wrote prophetically:—"As this reef (Mast-Head) is the nearest to a trunk railway, and therefore easiest to reach from the large cities of Australia, it will probably be revisited by scientific folk."

We confined our attention to the Capricorn Group, most of the islands being visited by members of either No. 1 or No. 2 party, and were able to gain a fairly complete record of the avifauna of the archipelago. The Capricorn Islands are grouped about the tropic from which they take their name. Mast-Head Island, the most western and nearest to the Queensland coast "of a chain of reefs extending for 54 miles from North Reef to

Lady Elliott Island," is divided from North-West Island, as it were, by the imaginary line of the tropic. On clear days the blue peaks on the mainland were visible from the islands, and the smoke of steamers—grey feathers drifting along the horizon—was frequently seen by the marooned ornithologists. A quotation from Mr. Hedley's paper may be fittingly introduced :—

"Strictly speaking, this group (the Capricorns) is not part of the Great Barrier, which terminates in a coral maze, Swain Reefs, north of the Capricorns. Between Swain Reefs and the Capricorns lies the broad and deep Curtis Channel, but for zoological purposes these pseudo-atolls may conveniently be regarded as a continuation of the Great Barrier."

His description of the Mast-Head Island reef may be taken as fairly typical of what was observed at each island visited by the R.A.O.U. expedition :—

"At low tide Mast-Head is exposed as an oblong reef about 4 miles from east to west, and $1\frac{1}{2}$ from north to south, its crest 10 or 12 feet above the sea. It shrinks at high water to a small but densely vegetated sand-bank about 100 acres in extent, placed near the western end of the reef. The islet is level, raised but a few feet above the sea, and has no lagoonlet. Concentric undulations show the successive increase of beach built on beach. At the western end a clump of uprooted casuarinas indicates where a gale had inflicted temporary loss.

"On the south side a stratum of coral sand-rock is now suffering denudation. Jukes* has given an excellent description and explanation of this rock. . . . I suggest that the coral sand-rock can only form beneath a thick cover of sand, and that slow growth of the bank will provide for the increase of the rock. Briefly, the coral sand-rock is the petrified core of beach or dune. The islet was chiefly made of coarse sand. It may be laid down as a rule that *the further from the reef edge an islet is built, the finer are the materials of which it is composed*. A pit we sank in search of water passed through foraminiferal sand with lumps of coral; it was bone dry at a depth of 8 feet. There was no surface water at the date of our visit."

THE REEF.

Further on in his paper Mr. Hedley describes the reef and its wonders. The reef crest, he finely says, is "one long unbroken sepulchre of actinozoan life." There were marine biologists with No. 2 party, and the reef received close attention from them; but with the results of their work an ornithological journal is not concerned. Mr. Hedley's comparison of Mast-Head Reef with the real coral atoll is, however, pertinent in a general narrative of the expedition :—

"Mast-Head Reef, though sharing many features of the coral atolls of the Central Pacific, yet differs widely in detail—a differ-

* Jukes, "*Voy. Fly*," i. (1847), pp. 7, 9.



Scene on Mast-Head Island.

ence due to the circumstances under which each arose. Typically, the Central Pacific reefs spring from abyssmal depths, will have, have, or had a deep central lagoon, according to the stage in evolution attained. Their dry land is always greatest on the windward side, and is built close to the reef edge. Mast-Head is a tabular mass set on a platform of about 20 fathoms, common to the archipelago. Its lagoon is almost obliterated, the depth at low water being expressed in inches instead of fathoms. The dry land is massed on the leeward side, and heaped far within the margin of the reef. In the Central Pacific the dry land of the atolls seems to have originated in the spasmodic action of hurricanes, which tear masses off the reef edge and stack them above high water mark in hurricane beaches. . . . Mast-Head lies beyond the hurricane zone, but is subject to the action of tides of a range of 14 to 15 feet. These tides race over the reef at a rate of two knots an hour, are the chief agents of island building, and operate with more regularity but less violence than the hurricanes."

VEGETATION.

On all the Capricorn Islands on which members of the expedition landed the vegetation appeared to be of a similar character. The storm beaches—there were three distinct ones on Mast-Head Island—are fringed with graceful casuarina trees, whose pendulous foliage has a most pleasing effect. The boughs at flood-tide almost hang above the lapping water. The trees on the older beach are, of course, much larger than those on the most recent ridge of coral sand, and the mid-beach is crested with trees of medium size. There are the three beaches and the three stages of the casuarina—a most striking object lesson. Behind the casuarinas, which are not so closely ranked but a man may walk among them with ease, come the lusty bushes of *Sophora* and *Tournefortia*, the picturesque *Pandanus*, with its spear-shaped leaves, organ-pipe aerial roots, and great fruits. These trees and bushes are rooted in the sand among *Wedelia*, *Abutilon*, *Ipomea*, and other lesser plants, whose leaves, thickly clustering, form a miniature jungle. The undergrowth does not persist into the forest, but forms a girdle about the inner sand ridges, flowing over crests and filling hollows, creeping down on to the sea-beach, and helping to bind the restless grains of sand together. The *Pisonia* claims the centre of each island as its domain. Sentinels are sent out, and on Heron Island, for instance, the *Pisonia* forest runs down to the open beach; but, generally speaking, the trees overgrow the central portions of the islets. Many specimens noted by our party rose to a height of 60 feet, with spreading branches that cast a generous shadow, so that in the heart of the forest it was cool and twilight, the pale green leafage forming a screen so dense that even the tropic sunbeams were filtered of their fire. Our botanists made complete collections of the plants on Mast-Head, North-West, Heron, and other islands, and were pleased with their beauty and variety. A species of *Ficus*, with its tiny olive-red

fruits, and a convolvulus with immense leaves and large white blossoms, were especially interesting.

One of the merits of these coral islands is, as we discovered with keen pleasure, that they are almost entirely free of the pests so abundant on the mainland. During the nine days spent among the Capricorns, not half a score of mosquitoes was seen or felt, there being no fresh surface water for the larvæ to thrive in. Sand-flies and ordinary household tormentors also were among the missing. It made our camp life a delightful holiday, having none of these "little worries" about the dining place or in the tents at night. Those of us who took part in the last A.O.U. camp-out, on Eyre Peninsula, remembered how mosquitoes rendered the hot nights at Warunda almost unendurable, and were grateful for peace on the coral isles.

SOCIAL ASPECTS.

We had little or nothing to do with the domestic arrangements, each party being provided with a cook, and thus were able to devote all our time to scientific pursuits. Some hours, however, were wisely given over to recreation. After a quiet ramble along the beach, a row in the dinghy, or an hour's fish-spearing in the lagoon, came meal time. Then, for those who favoured it, a smoke in the shade, and a general chat for all. So the days passed with both parties swiftly and pleasantly, and the end came only too soon. For the way of our life, despite some discomforts incident to every camp that ever was or will be, conformed to the rules of healthful simplicity, and was full of "sweetness and light." No member of the expedition is likely to forget experiences that it has been the lot of few naturalists to enjoy. The spirit of the camps was good, and no jarring note was struck from the time the *Endeavour* left Gladstone, with the party aboard, until she had fulfilled her mission with the R.A.O.U.

The division of the party into two was necessitated by the size of the islands. It would not have been so comfortable had one large camp been formed on an island barely 100 acres in extent; and it was desirable to have the two principal islands of the archipelago thoroughly "worked." Captain White's party worked North-West Island, North Reef, and Tryon Island, while the party under Mr. C. A. Barnard investigated, besides Mast-Head, Erskine and Heron Islands. The *Endeavour* visited North-West Island and Mast-Head Island alternately, and was our general transport. The time allowed for work ashore on the smaller islands was necessarily brief, for it was expedient to make voyages only between dawn and sunset, owing to the dangerous nature of the reefs, which are set in a maze as a snare for ships. No inter-camp visits were made, but a member of No. 2 party spent several days with Captain White's party in order to visit the islands which were under his jurisdiction for the nonce. It will be convenient, having generalized, to give a brief separate account of each party's doings.



Pisonia Forest, Mast-Head Island.

MAST-HEAD ISLAND.

The party on Mast-Head Island, after the first uncomfortable night, settled down happily. The days were found too brief for the work to be done on the reef and ashore. There was no further trouble in store, and the variety of interests was more than sufficient to keep everyone busily and profitably employed. Mr. C. A. Barnard, the leader, wisely made few camp rules; but those that were issued, for the good of all, were cheerfully obeyed, and members lived in perfect harmony. Those who have done much camping out know how largely the success of a camp depends on harmonious social relations. Not only were the members of our party on the best of terms, but each helped the others in their special studies. Those who discovered nests did not immediately take the eggs, but notified the photographers of their finds, and allowed them to obtain pictures to their hearts' content. Again, when some rare species was fished from the lagoon by a "bird" man, he would hand it over to a marine zoologist for his collection. Mutual help and good-fellowship were of the spirit of the camp.

On the first morning the party, after a breakfast in the open air, was divided into two sections for exploration work. Taking opposite directions, the two little companies walked quietly round the beach. Side excursions into the forest were also made, and when the members gathered again at Sheoak Camp for lunch, notes were compared, and it was agreed that the island was a little Paradise. We found no reason to alter that conclusion as the days went swiftly by—indeed, the impression was deepened, and when the inevitable hour of departure arrived none was anxious to go.

Our leader was generally astir each day before the flush of dawn, and by 6 o'clock a dozen figures were splashing in the sea, or dressing, after a swim, on the white beach. Owing to the limited supply of fresh water, it was necessary to make one's ablutions on the margin of the sea. The "hard" salt water would not make friends with soap, so it was not easy to become clean; and by the end of our stay an appreciable amount of "foreign matter" was ingrained with the tan on our faces. Fortunately, the water supply was adequate, except on one occasion, for drinking and culinary purposes. Gallons of "billy" tea were consumed daily, for, after a few hours on the reef or in the scrub, one returned to camp with a thirst that could only be quenched by many brimming pannikins. Once only did the water fail, and it was then that we realized the misery of a liquid famine. It was not long, however, before the *Endeavour* appeared off the reef, and our empty cans were replenished from her tanks. Three regular meals were prepared daily by our excellent cook, but these were supplemented by "morning" and "four o'clock" tea. With pannikins and biscuits, members reclined in the shade of the she-oaks—a pleasant break in the day's work. Breakfast at 7 a.m., dinner at noon, and tea before sunset—that was the order of our "sit down" meals. Cook was kept busy, but he was a cheery fellow, and unafraid of work. Of food we had an abundant

supply, brought from the mainland; and the "shop goods" were supplemented by fresh fish, the fruits of spearing in the lagoon or gifts from the trawler, and turtle steaks, which tasted like veal. Prunes and rice or stewed apricots made delicious dessert. So we fared daintily enough to satisfy an epicure, *sans* white napery and silver tableware.

THE DAY'S WORK.

After the first long day of preliminaries, members planned out their own activities. Some worked the reef and some the beaches, while others haunted the *Pisonia* forest, where the purple shadows are laced with gold, and the foot falls softly on withered leaves. Each pursued his own branch of nature study, or two or three would join company and wander away together; and when darkness came, round the camp-fire we would review the day's work before beginning the task of preserving specimens and writing up our notes. So the days wore on, each bringing gifts that enriched us with knowledge and beauty. The days were long, although to us they seemed too brief—the hours of sunlight too few—for the harvesting. We rose at dawn, and at noon or night some were still working by light of a hurricane lamp, swung censer-wise from the ridge-pole of a tent. There was so much to be done: birds to be skinned, corals and shells to be cleaned and packed away, and the photographers had plates to change. Tedious work, truly; but after toil we slept well, on a bed of boughs, or on the clean white coral sand, with our blankets rolled around us when the nights were cool—a clean, hard, healthful life, on an isle in the midst of the sea. Our tents were pitched in a grove of casuarinas, on the verge of the open beach; and the green boughs, pendulous and beautiful, formed a soft screen from the sun. Often, at night, a hovering bird would enter one of the tents, fluttering stupidly about until it found the open air again. A species of crab made burrows under sleeping heads, while great brown moths blundered against our canvas roof-trees. Of creeping things there were not many. Turn over an old log and you might find a centipede, large and menacing, or a beetle or two; nothing more. There were no serpents in our little Eden—nothing to fear at all, by day or by night.

ISLAND NIGHTS.

Those island nights were wonderful, with the moonlight making a silver shield of the lagoon, stars shining down, and the white curving beach barred with the fleeting shadows of birds. Walking along the beach, it was interesting to try and identify the multitudinous bird notes. Thousands of dark forms kept coming and going 'twixt sea and shore, and calling all the time. The plaint of the Sooty Oyster-catcher was unmistakable, and the clicking croak of the White-capped Noddy, and one could tell when a flock of Brown-winged Terns passed over. But there were many cries that puzzled the most experienced among us—a medley of strange sounds, in tune with the mystery of the moonlit night.

A little company of Frigate-Birds came at dusk each day to camp

on Mast-Head Island. Floating out of the void, the great birds bore mystery on their wings. They would soar and hover for hours—a marvellous spectacle, of which one never tired. And ever and anon a bird would leave the flock to make a swift swoop and return, without visible motion of the wings. Like a “boomerang tacked to a star” is Mr. Hedley’s fine description of the Frigate-Bird’s flight. The outspread wings form a crescent. It was discovered, in time, that the birds had a roosting-place among the sheoaks at one corner of the island, and here they were observed at close quarters. The Brown-winged Terns also camped after dark among the bushes, and several were caught for inspection; but the Noddies never seemed to sleep. All night they flitted about, fretting the dark with their cries.

Towards the end of our stay the Mutton-Birds began to come in. Several were caught spring-cleaning in the burrows with which the crown of the island was honeycombed, and our cook captured a specimen that blundered into his tent one night. The birds were our pets for a while. Then we had the captives of a day—two young Kingfishers that had sought refuge on the *Endeavour* in a storm, and a weary, half-starved Godwit, caught on the beach, after its long flight from Asia. Mast-Head Island appears to serve as a resting-place in the line of migration of some of the shore-birds, judging from the Godwit and other specimens obtained in poor condition. The island would make a fine station for students of the great problem.

So our bird-observing was not confined to the hours of light. A fresh observation might be made at any hour; but the mystery and the wonder of night are apt to mislead, and the harvest of the quiet eye be more for poetry than science. Always that clamour of bird voices, night and day. Not musical, but pleasant to a bird-man’s ears, the medley of cries mingled with the chime of the tides in one grand symphony. The number of the birds that frequent this island must be very great. Along the beaches are thousands of Terns—Brown-winged, Caspian, Roseate, and Noddies—camped on the sand-spits or wheeling in air, with the sunlight glimmering on their wings. Of White-capped Noddies, by computation, from 30,000 to 40,000 nest on the island; and when the Mutton-Birds come in the bird population must be doubled. The Waders make up a strong company, and the screaming Silver Gulls, which nest among tussocks on the sheoak ridges. Of Reef-Herons there are, perhaps, a hundred pairs. The land-birds, including the Sacred Kingfisher, Barred-shouldered Dove, Silver-eye, Landrail, and Strepera, are far less numerous; and each of these coral islands can support but one pair of White-bellied Sea-Eagles. The nest on Mast-Head Island was built in the higher branches of a lofty *Pisonia*, and almost inaccessible to man.

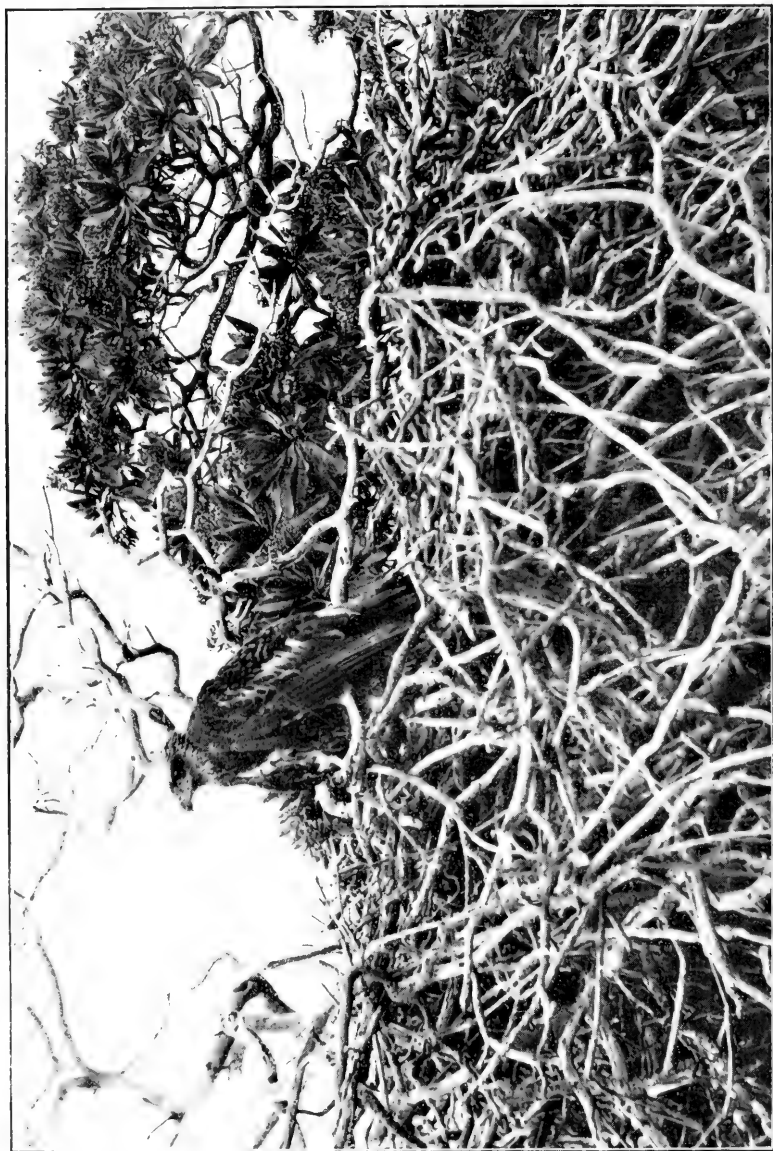
THE NODDIES.

Although hundreds of Noddies could always be seen on the wing, the birds, as a community, had regular times of sea and land

faring. It was wonderful to see them going out to forage at dawn and returning about sundown to the *Pisonia* forest—thousands of graceful birds, flying swiftly, like a legion of big butterflies, over the sea or among the trees. At noon one might see Noddies clustered like strange fruits on the *Pisonia* boughs, enjoying a dreamy rest in the sun. Disturbed, they would rise, wheel above the trees for a while, crying and calling, then settle down as before. Mast-Head and the other islets of the Capricorn Group are given over to birds in nesting time. The Noddies commenced to lay a few days after our arrival, and, before we departed, thousands of eggs had been deposited in the crude, untidy nests scattered through the forest. Almost every tree and bush bore a burden of Noddies' nests; and when one climbed into a *Pisonia* with care (for the boughs are sappy and easily broken), he could look down upon a cluster of nests, each containing an egg. The nesting birds displayed little apprehension of man. So tame were they, in fact, that often it was necessary to push a bird aside if you would see her egg. With their long black beaks the females pecked viciously at intruding hands, but could inflict no punishment with such delicate weapons.

Day after day we went among the Noddies, and never tired of watching their ways and admiring their grace and beauty. One member, reflecting, spoke of the tragedy a visit from plume-hunters would bring to the island, for the birds could be slain with such ease.

The interests of most members of the party were centred, of course, in the avifauna; but time was found for other things. The coral reef was a treasure-field in which we often gleaned. The delicate beauty of the live corals, and of shells and fishes and crustaceans they harboured, proved a constant source of delight. We became, to coin a word, "reef-combers," wading in the clear pools at ebb tide, or parading the causeways of dead coral, turning over jagged clumps, and gathering quaint objects disclosed. Our leader organized fishing parties. Armed with spears—sheoak saplings, with fire-hardened points—the fishers patrolled the shallows, and had exciting sport. The prey, accustomed to flee before the grey-finned sharks that haunt the lagoon at high tide, was not easily captured; but the spearsmen, after an hour's sport, would bring in sufficient for a meal. Brilliantly coloured fishes they were, banded and spotted with purple and crimson and gold. Often a grey eel, beautifully mottled with black, would be speared amongst the coral and kept for the specimen jar; and once or twice we saw millions of a tiny green fish swimming in company close to the shore. The millions formed a ribbon, perhaps 4 feet across and one, two, or three hundred yards in length, that, waving gently, moved through the water slowly, but with great persistence. Each unit of the vast mass seemed imbued with the spirits of unity and progression. A fragment of driftwood or coral thrown at the ribbon caused it to fray out for a moment, then the atoms came together again, and the living band moved on.



Sea-Eagle's Eyry and Eaglet (*Haliaeetus leucogaster*), Erskine Island.

TURTLES.

We had been told by Mr. Hedley, whom we met in Sydney, to expect sport with the green turtles, so abundant in these sun-warmed seas; and we were not disappointed. On the beach at Mast-Head Island, on the day after our arrival, several of the reptiles were seen basking. One was captured, but others that were hunted escaped into the lagoon. Rarely a day passed, thereafter, without turtles being observed on the beach or swimming leisurely in the lagoon; but it was on Heron Island that Party No. 2 had the most interesting experiences with Chelonians. With De Rougemont exploits in mind, some of the ornithologists clambered on to the shields of sleeping turtles and enjoyed brief but exciting rides. A turtle thus surprised, feeling the unaccustomed weight on its carapace, would scramble over the sand to the sea. Once in the water it had the best of the game, and by diving quickly unseated its rider. The sport of turning turtles was most exciting. Generally it required the united strength of three men to effect the desired result. The method was to rush upon a sleeping turtle, grasp flippers and tail and the edge of the shield, and then give a sharp, sudden heave. Success left the turtle lying on its back, with tail and flippers waving violently but helplessly. Often, however, the hunters failed to turn their turtle, and were dragged by the frightened creature into the water. One or two turtles were killed for food. Broiled steaks went well with "Johnny cake" and "billy tea."

ERSKINE ISLAND.

It has already been recorded that the members of the party visited other islands. One day the *Endeavour* took us for an island voyage. She anchored off the reefs at Erskine Island and Heron Island at flood-tide, and landings were effected from the boats.

Erskine Island, one of the smallest of the Capricorns, lying a few miles from Mast-Head, was first visited. It yielded little of special interest, save a nest of the White-bellied Sea-Eagle, built low down on the branches of a *Sophora* bush, and containing an Eaglet. The vegetation was stunted, and the *Pisonia* was not noticed in the scrub-clad ridges. Many large volute shells were lying about the beach, and several turtles made black patches on the shining white sand. An hour ashore, and the steamer's siren called us away.

HERON ISLAND.

Heron Island was reached before noon. About the same size as Mast-Head, Heron Island presents almost identical features, both as regards structure, vegetation, and animal inhabitants. Here the Reef-Herons were breeding in the *Sophora*, as on Mast-Head Island, and the Silver Gulls had nests. A nest of the Sooty Oyster-catcher, containing a newly-hatched chick and a chipping egg, was discovered and photographed. The nest was of the usual crude type—a hollow, fringed with grass and leaves, under a bush near the beach. Tall *Pisonias* occupied the centre of the

island, and in places came down to the beach. Some beautiful glades were explored, but jungle guarded the forest in many parts. It was on Heron Island that hundreds of turtles were seen asleep on the beach or gambolling in the blue waters of the lagoon. Our stay on Heron Island was brief, but it sufficed to show that nothing existed in the forest that had not been found about "Sheoak Camp." Later on, the members of No. 2 party were offered a second voyage, but so far were the interests of Mast-Head Island from being exhausted that it was decided to devote the remainder of the time to them. The Petrels were arriving in increasing numbers, the reef was yielding fresh material daily, and no one had made all the observations desired. So we were more than content to remain on what we had come to regard as *our own* island. When the *Endeavour's* lights shone out over the reef, on the last night, a dozen pairs of hands were busily engaged packing specimens and making a skeleton of the camp. Preparations for departure from a spot where so many pleasant hours had been spent proved dreary work. On the morrow, before the glory of sunrise had faded, the ship's boats were bumping on the beach, and we had to go. The members of No. 1 party were already aboard, having been taken off North-West Island on the previous afternoon. The voyage to Gladstone was uneventful; but as we walked from the jetty to our hotel, the good folk of the Queensland town eyed us curiously, and, perchance, commented on the strange appearance some of us must have presented. The sun had coloured our faces and hands a rich coffee-brown.

NORTH-WEST ISLAND.

The experiences of the party which camped on North-West Island were very similar to those of the Mast-Head Island contingent. Captain White, to whom the writer is indebted for information, had the advantage of an abundant supply of fresh water. It was stored in tanks left by the turtle-hunters,* whose silent factory, fronted by a mound of bleached bones, is still standing, with other lesser buildings, in the scrub on the fringe of the forest. Several members made use of one of these zinc-roofed buildings as a sleeping and work room, and the canning factory itself, after a vigorous cleansing, served admirably for the party's dining hall. Open at each end, the shed was a pleasant place for eating meals; and the cook had a neat little galley in which to prepare them. The ladies of the party were domiciled in tents pitched on the fringe of the jungle. The camp was bright and picturesque. A small jetty runs out from the beach, and to one of the worm-eaten piles the dinghy was tethered when not in use. Relics of former inhabitants added to the interest of this lonely island; and when, in a quiet nook, half veiled by jungle growth, the grave of a child was discovered, the note of pathos was struck. Hidden away and forgotten of men was the grave of a little girl, fenced

* Here, in the season, Capt. Thos. Owens preserves turtle flesh and soup—an industry which, under supervision, should be encouraged.

from the wild, and with a white cross guarding the dreamless head—something for pity and the pen of romance.

The bird-life of North-West Island was just as interesting as that on Mast-Head Island; but the Noddies, although their nests were everywhere in the *Pisonia* forest, had not commenced to lay when camp was struck—a strange fact, remembering that the Mast-Head birds, not a score of miles away, were nearly all brooding at the time. Captain White and his associates made, however, a most interesting collection of specimens and observations. They found plenty to occupy their time, and no minute was wasted. From dawn till dusk all were abroad, and the evenings were not long enough for the after-work of harvesting. The fascinations of the reef, with its coral flowers and other lovely sea things, wove a spell over the hearts of the ladies. At ebb-tide they went out collecting, and were loath to leave the coral causeways and sunny pools when the flood was making. The tides, according to Mr. Hedley's observation, race over the reefs at two knots an hour. The coral is so difficult to walk upon that one's progress is painfully slow; and delay, after the turn of the tide, means danger. So, although the reefs at ebb run far out, and it was possible to get 4 miles from the beach, caution was necessary.

Some of the North-Westerners devoted attention to the botany and entomology of the island, with interesting results, that will doubtless be published elsewhere. Insect life was not as luxuriant as expected, but some splendid butterflies were captured. Hunting the floating beauties with a big gauze net was the recreation of a sunny afternoon. Variety was won by this and other means. Swimming in the lagoon and boating were enjoyed; and the ladies as well as the men occasionally rode turtles into the sea. Turtles were numerous around North-West Island. On one occasion no fewer than 300 were counted along the eastern beach. It was not the time of egg-laying—we were too early by a week or two; but there was abundant evidence that every year tens of thousands of turtles are hatched from eggs buried among the sand-ridges on the Capricorn Isles. A female killed to make a museum specimen was dissected, and long strings of soft-shelled eggs were taken from her. Over 1,000 were counted.

NORTH REEF.

Twice during the camp-out members of No. 1 party made short voyages from North-West Island in the *Endeavour*. On the first occasion North Reef, with its light-house, was visited. The people of the light were hospitable, and willingly showed the visitors over their lonely home—the light-house itself. North Reef Islet is little more than a raised beach, crested with lusty bushes, and with spinifex grass and a broad-leaved convolvulus trailing over the sand. It was ebb-tide at the time of the ornithologists' visit, and scores of Reef-Herons, white-plumed and blue, were fishing among the pools. The birds are surprisingly tame, allowing one

to approach them closely before taking wing. It was learned that the people of the light treat the birds as friends. Captain White obtained some interesting notes at North Reef.

TRYON ISLAND.

Leaving North Reef, the steamer set a course for Tryon Island. The tide was at half-flood when the first boat left the steamer's side to take the leader and three ladies ashore. It was a most difficult landing. The ladies were obliged to wade through deep pools, with the knowledge that sharks were about; for several grey fins were seen cutting the water as the boat came gliding in. Captain White has kindly written the following account of the incident:—

“Mrs. Israel, Miss Mellor, Mrs. White, Mr. Mellor, sen., and myself comprised the party, and the boat was in charge of the chief mate of the *Endeavour*. A landing never having been made on the island, the mate made for the most likely-looking spot, but the boat grounded on the reef some three-quarters of a mile off shore. The landing party took to the water and essayed to wade ashore. One of the crew accompanied us to help with the provisions, water, &c. We found that the water inside the reef was much deeper, and at times it was waist high. Then the tide came rushing in, and it was not long before things looked dangerous, for the ladies were wading up to their armpits, and several times were carried off their feet. To make things worse, several large sharks had found their way inside the reef, and came unpleasantly close, despite our making much noise to scare them away. Huge turtles passed us at great speed, so closely that we barely escaped being struck by their flippers. It was with a sigh of relief that we reached the sandy beach just in time, for a minute or two later the seaman attempted to return to the boat, but, after swimming a few lengths, gave up the task. Even this little adventure was taken in good part by the ladies. The tropical sun soon dried our clothes, and we reclined in the shade of a casuarina tree, each with a pannikin of ‘billy’ tea in one hand and a piece of bread and bully-beef in the other. We had just gone far enough to make discoveries when the Captain of the *Endeavour* whistled for us to return. His commands had to be obeyed, for the delay of half an hour might mean the risk of life and property.”

On Tryon Island the Reef-Heron was found nesting, and the hours ashore there proved profitable in many ways. Two days later a second visit to the island was made by a small party under Captain White.

CONCLUSION.

The scientific results of the expedition are dealt with in separate articles in this issue of *The Emu*. It remains to say only that the Capricorn Islands have not yielded up all their interest for the ornithologist. Our expedition accomplished much. A harvest was gathered, but future gleaners at other seasons on the coral islands will not seek for fresh secrets in vain.

Birds Identified on the Capricorn Group during Expedition of R.A.O.U., 8th to 17th October, 1910.

By A. J. CAMPBELL, C.M.B.O.U., AND CAPT. S. A. WHITE.

WHITE-BELLIED SEA-EAGLE (*Haliaeetus leucogaster*).

Each island visited seemed to be the abode of a pair of Sea-Eagles. Eyries with young were observed and photographed on Mast-Head and Erskine Islands. In the former the nest was in a large *Pisonia* tree, which was about 60 feet high. The Eagles, when hovering over an island, particularly in the mornings, made Goose-like cackling notes. They did not seem to prey on the birds of the locality, but on sea-snakes and fish.

Two nests were discovered on North-West Island, both in *Pisonia* trees, at either end of the island. One was situated on the highest tree on the island—one of great girth and few limbs. The nest was a huge collection of boughs and sticks, and contained fully-fledged young, which in colour much resemble the Wedge-tailed Eagle, and could easily be mistaken for that bird. The other nest also contained young. The old birds were very quiet, and sat by the nest, and allowed one to approach the base of the tree before taking flight. At dusk every evening these fine birds visited the part of the island on which the camp was situated, and would swoop down amongst the *Pisonias*, from which the Noddy Terns would fly out in clouds; it was always too dark to make sure if the Eagles were in pursuit of the Terns, but we supposed this was the case, otherwise why should they come there at that time—*i.e.*, when the Terns had congregated from the surrounding sea.

PIED CROW-SHRIKE (*Strepera graculina*).

As in the case of the Sea-Eagles, a pair of this *Strepera* appeared to occupy one or other of the principal islands. On Mast-Head a pair occasionally approached the camp, and it was pleasant, at times, to hear their loud, familiar calls, or sometimes a clear, single whistle-like note, especially at early morn (10 minutes to 5 o'clock). On first landing at North-West Island we heard a very full liquid note coming from the dense scrub, which resembled the call of some Honey-eater, but much surprise was expressed next day to find that the call was that of the Pied Crow-Shrike. A colony, apparently, of these birds had taken up their abode on North-West Island, and had brought up young for many years. During the heat of the day these birds kept to the cool shade of the high *Pisonias*, but in the early morning and evening they frequented the coast-line. The *Strepera* family have a strong odour as a rule, but the birds inhabiting the islands had a decided musky odour, resembling that of the Mutton-Bird—a circumstance worth following up, for one reason. Birds, for instance, collected on Kangaroo Island (S.A.) did not possess this peculiar smell. Did the Crow-Shrikes obtain their Petrel perfume by some connection with their (the Mutton-Birds') burrows?

CATERPILLAR-EATER (*Edoliisoma tenuirostre*).

Several male specimens of this interesting species were observed on North-West and Tryon Islands.

PIED CATERPILLAR-EATER (*Lalage leucomelana*).

Mr. L. Harrison identified at short range, with glasses, a single specimen of this Caterpillar-eater on Mast-Head Island.

WHITE-SHOULDERED CATERPILLAR-EATER (*Lalage tricolor*).LEADEN FLYCATCHER (*Myiagra rubecula*).RUFIOUS-BREASTED THICKHEAD (*Pachycephala rufiventris*).

One or two of these birds, probably on migration only, were observed. A male of the first-mentioned was seen, and females of the others. The Thickheads were particularly merry in song on Mast-Head and Heron Islands, while on North-West Island a female was seen, singing loudly, in a group of *Pandanus* trees.

WESTERN WHITE-EYE (*Zosterops westernensis*).

Zosterops were numerous, and appeared to breed upon the islands, judging by a few old nests. As at some of our more southern camps, it was delightful to listen to the subdued chorus of the birds' sweet warbling songs at daybreak. Regularly on Mast-Head they commenced to warble from 10 to 5 minutes before 5 o'clock.

White-eyes were observed in great numbers on North-West and Tryon Islands, where, also, the nesting season had not yet commenced. Several skins were procured—the first by Mr. J. W. Mellor.

From a critical examination of these skins it is at once noticeable that they are not referable to *Z. cærulescens*, but are more in agreement with the description of Quoy and Gaimard's *Z. westernensis*.* Should further research prove them different, we venture to suggest the name *Z. chlorocephalus*, or Green-headed White-eye (on account of the "clean-cut" markings of that colour), the following being the general description:—*Male*.—Distinct ring of silvery-white round the eye, succeeded by a black line under the eye; head, mantle, upper wing coverts, and upper tail coverts bright olive-green; back grey, blending into the greenish mantle; wings and tail dark brown, the primaries and tail feathers edged with bright olive-green; chin, throat, and under tail coverts greenish-yellow; rest of the under surface greyish-blue, darkest on the chest, and approaching greyish-white on the abdomen. Bill dark brown, the basal half of the lower mandible lighter coloured; tarsus dark grey. Dimensions in inches:—Length, $4\frac{3}{4}$; wing, $2\frac{11}{16}$; bill, $\frac{7}{16}$; tail, 2; tarsus, $\frac{11}{16}$.

DOLLAR-BIRD (*Eurystomus pacificus*).

One bird noticed on Mast-Head Island, and a flock of five or six passed over North-West Island, apparently migrating.

* A skin in the Melbourne Museum, from Fiji, supposed to be *Z. flaviceps* (Peale), resembles exactly the Capricorn bird. *Z. flaviceps* = *Z. westernensis*. (See Brit. Mus. Cat. Birds, ix., p. 155.)



Strand on Mast-Head Island (typical beach of other islets of the Group), where Brown-winged Terns (*Sterna anaethetica*) land before entering undergrowth to nest, &c.



Nest of Barred-shouldered Dove (*Geopelia humeralis*).



Black Oyster-catcher's (*Hematopus unicolor*) Nest.

SACRED KINGFISHER (*Halcyon sanctus*).

Some Kingfishers were noticed about the islands similar to the ordinary Sacred species, but more brownish about the breast and flanks. Notwithstanding three struck the steamer's lights one night as she was riding at anchor off the island (proving a migratory disposition), some of these birds remain to breed on the Capricorns, because a nest containing eggs was observed on North-West Island. The nesting-place was a hollow limb of a *Pisonia* tree.

BROAD-BILLED BRONZE-CUCKOO (*Chalcococcyx lucidus*).

Several beautiful Bronze-Cuckoos, in uniform metallic-green upper plumage, were observed, and specimens secured. These birds were exceedingly tame, catching insect prey near our camps. By dress and song it is not the Bronze-Cuckoo (*C. plagosus*) of southern parts, but is nearest in description to the New Zealand Shining Cuckoo (*C. lucidus*). In this opinion Mr. A. W. Milligan and other experts share. The winter home of the New Zealand species is supposed to be Northern Queensland and New Guinea; if that be so the Capricorns would be within the fly-line,* while October is about the time these Cuckoos reach New Zealand. The finding of these birds at the Capricorns is one of the interesting features of the expedition of the R.A.O.U.

SQUARE-TAILED CUCKOO (*Cacomantis variolosus*).

One or two observed, and a skin procured for museum purposes.

KOEL (*Eudynamis cyanocephala*).

This curious Cuckoo was not observed on North-West Island, but a shining black male was observed on Tryon Island. Probably more were about, but, being alarmed, retired into the denser scrub. What appeared to be a female Koel was noticed on Heron Island.

BARRED-SHOULDERED DOVE (*Geopelia humeralis*).

Several of these Doves were observed on Mast-Head Island, where a nest and eggs were photographed in a low bush. Very few of these birds were observed on North-West Island. Evidently wild domestic cats have exterminated them several times, but a few odd birds find their way from the other islands. This bird was found on Tryon Island.

PECTORAL RAIL (*Hypotaenidia philippinensis*).

Rails with squeaking notes were frequently heard calling, and on two occasions nests with eggs were found. Several dry carcasses or remains of Pectoral Rails were seen in the scrub on Mast-Head Island. As there were no cats or other enemies likely to kill these birds in this secure retreat, it was a mystery how they came to be destroyed. None was observed on North-West Island, where the cats had destroyed the species; but on Tryon Island Rails were exceedingly plentiful—in fact, so many in such a small

* In this connection, see late Capt. Hutton's Presidential Address, *Emu*, vol. iv., p. 93.

area as to excite wonder. A specimen was prepared, and found to be an exceedingly robust form, leading the mainland type in weight by many ounces. The rufous marking was rich and pronounced. The bird was in splendid condition.

PIED OYSTER-CATCHER (*Hæmatopus longirostris*).

SOOTY OYSTER-CATCHER (*Hæmatopus unicolor*).

Both these well-known species were noted at intervals round the islands, and were breeding, fully-fledged young and eggs both being observed. The Sooty birds were scarcer and not so confiding as the Pied variety.

TURNSTONE (*Arenaria interpres*).

A fair number of these birds was seen on the sandy beaches of Mast-Head, North-West, and Tryon Islands. They appeared to have just arrived, in company with other Waders, from their Northern breeding haunts, and could have had but scant rest or nourishment on the way down, for they were very light and poor.

LESSER GOLDEN PLOVER (*Charadrius dominicus*).

A good many of these Plovers were on the beach at Mast-Head and North-West Islands when we arrived, and every day brought fresh arrivals, in an exhausted state. Several of the specimens taken had much of their black Siberian plumage remaining, and in one instance the bird was nearly in its summer dress, its breast being almost black. Plentiful also on Tryon Island.

COMMON SANDPIPER (*Tringoides hypoleucus*).

ORIENTAL DOTTREL (*Ochthodromus veredus*).

GREY-RUMPED SANDPIPER (*Heteractitis brevipes*).

These three other migratory species mingled in flocks with Turnstones and Golden Plovers, and were gathered on the reefs at low tide and on the strands at high water. A specimen of the Grey-rumped Sandpiper was taken on shore amongst the grass, evidently exhausted after a long flight. It was in good plumage, but in poor condition. Soon it revived, and was set at liberty. The Dottrel was identified beyond doubt at both camps—Mast-Head and North-West.

A grey-rumped Sandpiper was fairly numerous, which we could only refer to the above-named species, notwithstanding the legs were not so reddish in colour as some authorities describe them.

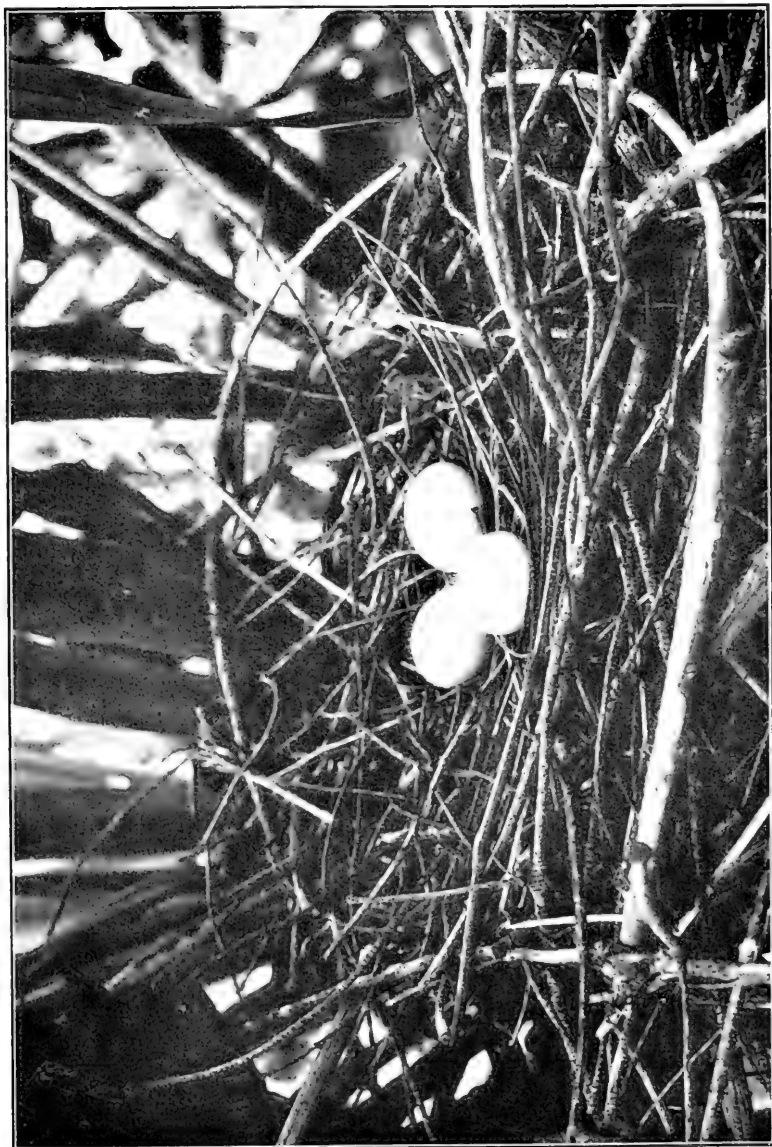
LITTLE STINT (*Limonites ruficollis*).

These small migrants are usually seen in flocks, but two only were noticed at Mast-Head Island. Drs. Macgillivray and Dobbryn observed numbers further north (see page 228).

CURLEW (*Numenius cyanopus*).

WHIMBREL (*Numenius variegatus*).

A few Curlews were noticed on the islands. On North-West Island a small flock was seen the day the expedition arrived, but, being timid birds, they departed, and were not observed again.



White Reef-Heron's (*Demigretta sacra*) Nest in Pandanus tree.



Young (white phase) of Reef-Heron (*Demiegretta sacra*).
Brown-winged Tern (*Sterna anæstheta*).

A specimen was shot at Gladstone (mainland) for museum purposes.

The few Whimbrels observed were exceedingly wild.

BLACK-TAILED GODWIT (*Limosa limosa*).

Several of these birds were seen, a specimen procured, and its identity proved beyond doubt. On North-West Island, on one occasion when the camp was deserted, some Godwits were observed walking about between the tents, almost lost in the high grass. There appears to be a variation of this form, or else the male bird is much smaller and shows a strongly defined line of white from the base of the bill to the back of the head.

BARRED-RUMPED GODWIT (*Limosa novæ-zealandiæ*).

Solitary birds or pairs of this species perambulated the beaches, and now and again were observed thrusting their long bills into the dry sand. What food could they possibly obtain there?

These Godwits, being great wanderers, interested us much. They have been found as far south as Campbell Island, one of the sub-antarctic islands of New Zealand.* They breed in the high north of Eastern Siberia. No collection yet contains the eggs of this species. The ancient Middendorff has figured an egg, but does not describe it—merely mentioning that the nest is difficult to find on the marshy meadows of the tundras.

The difference in the sizes of the sexes was very noticeable. Dimensions in inches:—*Male*.—Length, 12; culmen, 3.15; wing, 8.75; tail, 3; tarsus, 2.15. *Female*.—Length, 16; culmen, 3.75; wing, 9.2; tail, 3; tarsus, 2.25.

CRESTED TERN (*Sterna bergii*).

LESSER CRESTED TERN (*Sterna media*).

BLACK-NAPED TERN (*Sterna melanauchen*).

WHITE-SHAFTED TERNLET (*Sterna sinensis*).

“Noises of the Night” would have proved quite an article in itself were a graphic description written of all the sounds—in addition to those of wind and wave—that were heard on, say, for instance, Mast-Head Island. Added to the hundreds of voices of the White-capped Noddies and Brown-winged Terns, not to mention the incoming Mutton-Birds (Petrels), there could be heard the querulous cries—an indescribable din—of Crested, Lesser Crested, and Black-naped Terns, as they rose in crowds from the sandy corners where they congregated, especially at high tide.

During the day, when the tide was out, the Terns were more scattered over the reefs, or were away fishing. There were no signs of nesting; but it was a splendid sight to witness isolated mated pairs of the large Crested Terns in the morning, mounting in spiral form and sailing on high, sometimes mere specks against the blue sky. Every now and again a couple would simultaneously,

* “Nests and Eggs” (Campbell), p. 809.

with perfect unity of action, set their lengthened pinions at a certain angle with the wind, wheel, and descend so rapidly that the cleavage of the air caused a humming sound like that of a distant deep-toned siren of a steamer.

BROWN-WINGED TERN (*Sterna anæsthes*).

On Mast-Head, on the 11th October, the first Brown-winged or Panayan Terns were observed on shore amongst the *Pandanus* roots selecting nesting sites, and many were flushed in the evening from the ground scrub. Afterwards a few were seen flying by day, but by night they were heard by hundreds, judging by their sharp, puppy-like, barking notes and gurgling calls. These graceful Terns apparently arrive after dark to select their nesting-places—merely a hollow on the bare sand underneath vegetation, particularly under the stiff aerial roots of the pandanus palms, from which secure hiding-places queer crooning noises of devoted pairs issued. When daylight arrived all the Brown-wings were silent, and many had departed for sea. However, on Mast-Head we were too early, by a few days,* for the first of their single eggs.

Small numbers of Brown-winged Terns were observed at one end of North-West Island.

WHITE-CAPPED NODDY (*Micranous leucocapillus*).

Mast-Head Island.—Almost everywhere on land, built on bushes or in trees, singly or in clusters, placed on boughs or in forks, were the nests of the graceful little White-capped Noddy, the silvery-white crown of the head contrasting to advantage, especially in the sunlight, with the otherwise dark plumage of the bird. The nests were from 7 to 9 inches across and slightly concave, and composed of flat, broad, dead leaves, matted together when moist. The Noddies were not easily disturbed from their nests, allowing observers to pass quite close to them before flushing. It was extremely interesting to watch the process of nest-building and the courting of mated pairs, and to listen to their curious frog-like croakings and calls. But the most interesting sight of all was to watch the Noddies going out at early morn to feed in the open seas beyond the reefs. From daylight to sunrise, on easy wing, the birds flew out in continuous crowds, reminding one of the wonderful flights of "Mutton-Birds" (Petrels). Again at evening the myriads of homeward-hurrying forms appeared like swarms of gnats against the roseate-tinted sky as we stood at one end of the island facing the dying day. When we first landed on Mast-Head Island (8th October) none of the Noddies had laid, although many nests were apparently ready. On the 11th one egg was found, the following day 36 were reported, and again the next day 84. Afterwards the eggs became numerous. The Noddies lay a single egg only. Noddies were observed on Mast-Head, Heron, and North-West Islands.

* Drs. Macgillivray and Dobbyn procured eggs 9 days later (20th) at the northern end of the Barrier (see page 220).



Nest of White-capped Noddy (*Micranous leucocapillus*).

FROM A PHOTO. BY A. J. CAMPBELL.



Silver Gull's (*Larus novæ-hollandiæ*) Nest at foot of Sheoak (*Casuarina*) sapling.

FROM A PHOTO. BY CHAS. BARRETT.

North-West Island.—On our arrival at North-West Island immense numbers of Noddies had congregated on the island, and were to be found at any time during the day perched on the limbs of the *Pisonia* and fig trees. Many had little collections of dead *Pisonia* leaves in the forks, or anywhere they could get a hold. On these clumps of leaves or close by the birds sat in pairs, billing and cooing to each other, and at other times giving forth deep croaking calls, or, when alarmed, rushing off with great flapping of wings and deep screechings. Orders were given not to disturb them, in hopes they would lay before we returned. However, up to the time we left the birds still moped in pairs on the limbs, went and came from the sea beyond, and were joined by ever-increasing numbers each day, and still they showed no signs of laying. On our departure (17th October) two females, on dissection, proved the ovaries were not at all advanced. Probably these birds would not have laid for the next two or three weeks at least. This was remarkable when one knows that at this date birds of the same species were laying in hundreds on Mast-Head Island, only 15 miles away. The cats introduced on to North-West Island are responsible for great havoc amongst these birds of peaceful disposition.

SILVER GULL (*Larus novæ-hollandiæ*).

These beautiful although marauding Gulls were breeding at intervals round Mast-Head Island, where their nests were picturesquely constructed amongst the herbage or sheltered beneath a sheoak (*Casuarina*) sapling. No doubt the Gulls are very destructive to the eggs of the other kinds of birds frequenting the island. Judging by the manner they hawked over the *Pisonia* and other trees, the harmless little Noddies were probably special victims of the Gulls. Young in down, as well as eggs, of the Gulls were noted.

Several small communities of these Gulls frequented the sandy beaches of North-West and Tryon Islands, but no sign of nesting was observed there.

WEDGE-TAILED PETREL (*Puffinus sphenurus*).

Before we reached the Capricorns we were informed that the common Mutton-Bird (*Puffinus tenuirostris*) bred there. Not so; we found the species to be the Wedge-tailed Petrel (*P. sphenurus*), a more slender bird, with light-coloured feet. The first birds were discovered in the burrows on the 14th October. After that date the incoming of birds at night made observations interesting, especially if flapping forms entered our tents, while out of the darkness round about came rude and weird music—squealing cries and other uncanny noises—from the dusky-coloured Petrels. These Mutton-Birds came in to renovate their old burrow-nests of last season, which honeycombed the sandy earth everywhere throughout the island (Mast-Head), particularly under the *Pisonia* forest, where at almost every step the observer plunged his leg knee-deep in sand through the subsidence, under

his weight, of a subterranean burrow. Again we were too early for the harvest of eggs for food or for the collection. Probably these Petrels would commence to lay about the middle of November, if not sooner.

North-West Island Observations.—On our arrival at North-West Island not a Petrel was to be seen, although one was falling up to the thigh in their burrows at every second step. We were more than anxious to solve the doubt of the species which selected these islands to breed, as some persons were under the impression that it was our common Mutton-Bird (*P. tenuirostris*). Fortunately, four days before we left two partially-eaten birds (killed by cats) were brought in, and their black bills and flesh-coloured feet solved the mystery. Next day burrows were seen cleaned out, and on the following evening great numbers came in to renovate their breeding-holes, and the morning we left birds were trying to climb over our tents in their efforts to get to the sea just at the break of day. We did not see the birds on Tryon Island, but that island is honey-combed with burrows.

A critical examination of the skins of this Petrel has, we think, cleared up some important doubts. In the first place the birds, with their dark bills, agree with Gould's figures ("Birds of Australia," vol. vii., pl. 58), but it is unfortunate that the great ornithologist has allowed "bill reddish-fleshy" to creep into his accompanying letterpress. This must have been merely a slip of the pen, because Mr. A. J. Campbell obtained similar birds with dark bills on Abrolhos Islands, W.A.,* where Gilbert procured Gould's types of *Puffinus sphenurus*.

Dr. F. Du Cane Godman, in his recently published and excellent "Monograph of the Petrels,"† sinks the name *sphenurus* in favour of *chlororhynchus*, and figures the bird with a *reddish* bill, from the Seychelles Archipelago.

Puffinus chlororhynchus may, as Gould stated, frequent Australian seas,‡ but the birds which breed on the islands immediately off both the east and west coasts of Australia undoubtedly are *P. sphenurus*, according to Gould's original figures.

It is interesting to note (page 226) that on Raine Island, at the other end of the Great Barrier Reef, between 800 and 900 miles north, Drs. Macgillivray and Dobbryn procured the same species of Mutton-Bird (the dark-billed one) as was secured on the Capricorns; therefore it is reasonable to suppose that this species breeds along those leagues of sea on many islets suitable to its purpose. Specimens from the Capricorns and Raine Island are identical in measurements, namely (in inches):—Length, 16; wing, 11 $\frac{3}{4}$; bill (*i.e.*, culmen), 1 $\frac{3}{4}$; tail, 6; tarsus, 1 $\frac{7}{8}$; middle toe and claw, 2 $\frac{1}{2}$. General Description.—All upper surface dark chocolate-brown or sooty-black, lighter on the tips of feathers of wing coverts, and deepening into black on the primaries and tail; chin and throat

* "Proc. A. A. A. Science," vol. ii. (1890), p. 495.

† Part ii., p. 84, pl. 24.

‡ "Handbook Birds of Australia," vol. ii., p. 406.



Wedge-tailed Petrel (*Puffinus sphenurus*, Gld).

dark grey; rest of under surface greyish-brown; bill dark horn or bone brown; tarsus and feet (living specimens) fleshy-white or yellowish-flesh colour, with black mottlings down the whole of the outer side of the tarsus and outer toe to the base of last phalanx; toes whitish.*

REEF-HERON (*Demiagretta sacra*).

Reef-Herons in phases of plumage pure white and slate-coloured respectively were flushed frequently from their stick-constructed nests hidden in a thick bush or among the stiff frondage of pandanus palms. Occasionally a nest was situated on the ground under a bush. The nests contained either a pair or three eggs, sometimes a young one of quaint appearance. (See Plate XXII.)

One of the islands which we visited, named Heron Island, was so called by the early explorers because of the numbers of these birds found thereon.

Both blue and white Reef-Herons † were found on North-West Island, but not nesting. On Tryon Island many hundreds of both coloured kinds congregated on the south side for the purpose of rearing their young. Their nests, invariably placed in a depression in the ground, were composed of sticks amongst a mass of tangled creepers and running vegetation, or under a low and wide-spreading bush. The broad leaves and flower-heads of this bush (*Tournefortia argentea*) screened the eggs from the quick-eyed Silver Gull. In most cases the nests contained young, and at the sight of man these ungainly, almost naked birds sneaked off into the undergrowth. Several nests were seen containing two eggs, and but one with three eggs.

PIED CORMORANT (*Phalacrocorax hypoleucus*).

BLACK CORMORANT (*Phalacrocorax carbo*).

Usually at evening small numbers of the Pied Cormorant crossed our camping quarters, evidently flying to roost on some favoured islet nearer the Barrier Reef; and on North-West Island a bird of the large Black variety was disturbed from its perch on a dead tree near the water.

BROWN GANNET (*Sula leucogaster*).

A carcass of this inter-tropical species of wide range was found on Mast-Head Island, while at North-West Island a bird answering

* The specimen I brought from Western Australia, which is in the National Museum, Melbourne, is similar, but slightly lighter coloured in plumage, no doubt due to being exposed in the case for 20 years. Dimensions:—Wing, $11\frac{1}{4}$; bill, $1\frac{1}{2}$; tail, $5\frac{1}{2}$; tarsus, $1\frac{3}{4}$; middle toe and claw, 2 inches. Regarding the range of habitat eastward of *P. sphenurus*, I have received specimens of bird and eggs taken on Surprise Island, in the region of New Caledonia.—A. J. C.

† I made close observation of these birds, and in my mind there is no doubt whatever that the white birds are a distinct species from the blue. I dissected mature males and females, white and blue. I flushed white birds from their nests with white young, and blue birds from large young of a darker colour. No one during the expedition observed a bird of mixed colour.—S. A. W.

to the description of this Gannet was seen flying low over the water one evening.

LESSER FRIGATE-BIRD (*Fregata ariel*).

Every evening about dusk a small flock of these fine birds, well known for their trait of robbing other birds,* used to circle over our island, allowing us to admire the inimitable grace and ease of their movements. We succeeded in discovering their roosting-place—tall casuarinas at the other (east) end of the island, where, on more than one occasion, we distinctly saw their lengthened forms silhouetted against a brilliant moon.

Frigate-Birds were not observed on North-West Island, but a dead bird was examined on Tryon Island.

Concluding Note.—Having enumerated the 40 species of birds identified during a brief visit to these islands, we venture to believe that the observations recorded concerning the White-eye,† New Zealand Bronze-Cuckoo, and the Wedge-tailed Petrel are, in the interests of ornithology, alone well worth the trouble and expense of the members who formed the R.A.O.U. Expedition to the Capricorns.

Description of a New Queensland Lorikeet.

By D. LE SOUËF, R.A.O.U., MELBOURNE.

TRICHOGLOSSUS COLESI, *n. sp.*

The head, sides of the face, and throat dull blue, with a lighter stripe down the centre of each feather; bill reddish-brown, lighter at the tip and with a short longitudinal yellow line at the curve; lower mandible lighter than the upper one; eyes light yellow, and the bare space round them blackish; a narrow yellowish-green band across the occiput, with some of the feathers finely tipped with dark blue; all the upper surface green, but most of the feathers crossed with a dark band, edged with a narrow one, giving the back a mottled appearance; upper secondaries marked in the same way, and show a distinct dark band; the slightly spatulate tips of the lower secondaries marked with blue, as well as the tips of some of the feathers on the shoulder; the green of the outer edging of the primaries also has darker shadings; their inner webs are black, crossed by a broad band of bright yellow; upper tail coverts mostly tipped with blue; the four centre tail feathers green throughout, and the four feathers on each side of them have their outer web green and with a portion of their inner web bright yellow, and edged to the tip; these eight feathers are also spatulate. Under tail coverts reddish at their base, then yellow, fol-

* See Dr. Macgillivray's remarks, page 228.

† Notwithstanding so sound an authority as Mr. A. J. North states that "*Zosterops westernensis* is only the spring and summer livery of *Z. lateralis (caerulea)*."—"Nests and Eggs of Birds," vol. ii., p. 210.

lowed by green and tipped with blue ; feathers of the abdomen grey at their base, then crossed by a reddish band, and the end blue : the scarlet feathers of the breast mostly tipped with blue, and some with a narrow band across them, giving them a slightly scaly appearance ; sides under the shoulder of the wing are also similar. but the scarlet feathers on the upper portion of the under surface of the wing have no markings on them ; a very few feathers on the upper breast are broadly tipped with yellow ; feet and toes blackish ; flesh pink, not dark red, as in *T. novæ-hollandiæ* ; the breast-bone $\frac{1}{2}$ inch shorter than in that bird.

Total length, 11 ; wing, $5\frac{3}{4}$; tail, $4\frac{1}{2}$; tarsus, $\frac{1}{2}$; culmen, $\frac{3}{4}$ inches.

This interesting bird is one of the results of the visit to Queensland of the Royal Australasian Ornithologists' Union for their annual meeting and working camp outing. One of its members, Mr. Clifford Coles, of Sydney, shot the new bird at Gladstone on 8th November, and it is with pleasure that I name it after him, who, with his father and brothers, has been well known to Australian ornithologists for many years.

This bird probably ranges over the greater portion of Eastern Queensland, and its nearest ally is *T. novæ-hollandiæ*.

Birds of the Blackalls.

By J. W. MELLOR, R.A.O.U., ADELAIDE.

AFTER members of the Royal Australasian Ornithologists' Union had investigated bird-life on the Capricorn Islands, off the coast of Queensland, during the tenth session, it was thought a good opportunity, while returning to Brisbane, to study the habits of tropical land-birds by visiting the Blackall Ranges ; and, accordingly, several members left the main party on the southward journey from Gladstone, and spent an exceedingly pleasant and profitable fortnight at the northern extremity of these wild ranges, where no less than 75 species of birds were identified by myself, while a number of others were recognized by the settlers as being present at one or other time of the year, but were not seen during the all too brief time at our disposal.

Cooroy, the more recently opened up country, was our objective, it being on the main railway line between Brisbane and Rockhampton, about 80 miles north of the northern capital, and situated at the highest point above sea-level that this line attains. The weather was crisp and clear, and a bright moon was shining, when, between 2 and 3 o'clock in the morning of 20th October, the express train, by special request, pulled up at Cooroy station, and we were roused from our snug sleeping berths, which the Queensland Government had so thoughtfully provided for us, in addition to passes over their northern lines. Our baggage and effects, which were not inconsiderable, were quickly hauled on to the

siding, and the train sent on its way again, in less time than one can relate it, and we were left cold and shivering in a strange land; but Mr. G. E. McDonald was on the platform to meet us, and we were soon tramping along the line, loaded with our small luggage, and, after covering a mile, we arrived at his hospitable home and selection, "Levenholme," where Mrs. McDonald had thoughtfully prepared us a cup of hot tea and "cookies" before we retired to cosy beds. Cooroy, from what can be seen, will soon be the headquarters of a profitable and rising dairying industry, as the land is being cleared and sown with grass, upon which the cattle thrive exceedingly well. The only regret one has is the thought that all the beautiful timber should be cut down and burned, which otherwise might be used for commercial purposes—fine forest monarchs some 300 feet high going down before the selector's axe to produce the pastoral land.

Next morning we were up betimes and making our acquaintance with the birds, the hearty voices of the Laughing Jackasses (*Dacelo gigas*) greeting us from the dry trees of the "clearing" near, where, high up, in a large hollow, they were seeking their nesting quarters. The pretty Forest Kingfisher (*Halcyon macleayi*) also had its home in a hole burrowed out of a large white ants' nest, many of which hung on the trees scores of feet from the ground. The nests of these birds, therefore, are extremely hard to reach, and are generally safe, except from the ravages of the iguana. Many of the reptiles were seen from time to time climbing up the high trees in search of the eggs and young birds for food. The tree-snakes are also the enemies of the smaller kinds of birds, the snakes being able to climb and descend the trees with the greatest of ease. Whenever one is on his errand the birds make a great noise, and attack it with all their might. The Laughing Jackass, with its powerful beak, is generally able to make an effectual onslaught, but the smaller birds only worry feebly, and endeavour to irritate the snake or iguana.

Our heavier luggage having arrived, thanks to the generous assistance of Mr. J. L. Boden, the local storekeeper, we were able to get into our old clothes, and ready for the thick scrub, where tangled masses of lawyer vines made progress in places impossible, and beneath, in the dark thickets, millions of land-leeches were ever ready to attack intruders, with bloodthirsty intent. Sores thus produced itch unbearably even weeks after. Another pest in these regions is a tick, which thrusts its barbed proboscis into one's flesh. Some force is needed to induce the insect to let go its hold. Sometimes its head will be left behind, and so produce a nasty fester. These insects often prove fatal to dogs, and even calves and foals fall victims to the ravages of this little pest.

Our general time for bird study was first thing in the morning, when the surrounding scrub seemed full of melodious notes. The Rifle-Bird (*Ptilorhis paradisea*) was present, but not plentiful. Its presence is generally made known by the peculiar note that the male bird utters, being something between a harsh screech

and the whirring noise of a strong clock spring suddenly unwinding, the note being extremely difficult to imitate, and generally made in the thick scrub. At times the mature males, in all their glory of velvety-black and burnished steel-blue, will come out on some extremely high dead tree, and there "perform." On one occasion I was entertained for over an hour in watching the antics of a fine male bird in his endeavours to fascinate the female. He would bow and scrape, proceeding and receding at times with his wings thrown right up over his head until the tips met, and with the bright morning sun shining on his burnished breast-plate and helmet. At one time a fine male Regent-Bird came within his reach, and the Rifle-Bird also "performed" to it, the pair making a picture that will long remain in my memory. I left the birds unmolested. The Regent-Bird (*Sericulus melinurus*) was fairly plentiful, but the well-plumaged males were very shy and wary, and it was only with difficulty that I got a couple of specimens for museum purposes by "planting" near a feeding-tree and waiting until the birds arrived. I saw several females carrying sticks for nesting, but did not succeed in finding a nest, as the scrub is extensive and dense. Wishing to secure a pair of the Purple-breasted Fruit-Pigeons (*Megaloprepia magnifica*), commonly known as the "Whampoo," on account of their deep note, we set out one morning for a thick patch of scrub about 3 miles from Cooroy, and it was not long before we came upon these splendid Pigeons, with their bright green backs, with royal purple and rich yellow beneath, their presence being made known by the "whampoo" note uttered at long intervals; and but for this the birds would go almost unseen, on account of their keeping to the topmost branches of the highest forest trees, about 200 feet up, and their colour harmonizing so well with the green of the foliage. They feed on the fruit of the gigantic parasitic fig-tree, which they swallow whole. In this locality the large Topknot-Pigeon (*Lopholæmus antarcticus*) was noted flying high in little flocks of about half a dozen. These birds do not lay here, but go further north when the breeding season arrives.

The most plentiful Pigeon in the jungle was the beautifully coloured Pink-crowned Fruit-Pigeon (*Ptilinopus swainsoni*). The comparatively loud "cooing" note of this bird was heard on every hand, but it was seldom seen, except when it flew from one tree to another in search of food; the beautiful shade of green of its plumage acted as a perfect protective colouration in the high trees which it inhabited. The Pheasant-tailed Pigeon (*Macropygia phasianella*) was seen on more than one occasion, its note being peculiar, and resembling the words "Too-hoot, too-hoot." The Little Green-Pigeon (*Chalcophaps chrysochloris*) was more ground-loving in its habits, often coming to the settlers' sheds to get the wheat and maize that were scattered to feed the fowls. This pretty Pigeon would often run along the track in front of us, fly a few dozen yards ahead when we approached too near, alight again, and repeat its little run along the road.

The last and least of the Pigeon family seen was the little peaceful Ground-Dove (*Geopelia tranquilla*). It is exceedingly tame, and its plaintive note, especially that of the male—"Colly-whoop, colly-whoop, colly-whoop"—reminded us of more interior localities where the bird is very abundant.

I was surprised to find the Honey-eaters scarce, as far as species were concerned, as only one was seen—viz., the Yellow-eared (*Ptilotis lewini*), which made up for the scarcity of its allies in being seen in every locality visited, from the open and forest country to the densest of dense jungle. We had not been in the scrubs long before the Noisy Pitta (*Pitta strepitans*) was heard calling to its mate. This bird is usually known locally as the "Dragoon-Bird." It is extremely shy and wary, keeping to the thickest scrubs; but I soon saw a bird by imitating its call—"Whit, whit, wee-e-e-oo," also "Whit-whit-whit." The bird is very cautious when it gets within a hundred yards of you, and will then stop answering, and will make a detour of the locality where you are hiding, keeping up the call; its presence is eventually made known by the bird darting along the ground, the beautiful bright blue patch on its shoulders flashing in the light as it half runs, half flies, through the dense undergrowth of tangled lawyer vines and other thorned and jagged plants. The Pitta lives principally on the shell-snails, it having special stones whereon to crack them, and here the remains of many varieties of shells are often found. White Cockatoos (*Cacatua galerita*) were very plentiful, their harsh calling being almost deafening as the mobs congregated in a certain patch of scrub not far from Mr. McDonald's house. A pair of Black Cockatoos (*Calyptorhynchus funereus*) was seen on one occasion, but they seemed rare at this time of the year. The King Lory (*Aprosmictus cyanopygius*) was seen several times flying over the trees, and was, in all probability, breeding. Our well-known friend of many States, the Crimson Parrakeet (*Platycercus elegans*), was about in pairs seeking nesting hollows, while two Lorikeets—the Scaly-breasted (*Trichoglossus chlorolepidotus*) and the Blue Mountain (*T. novæ-hollandiæ*)—were present.

One of the most comical and inquisitive birds met with in the scrub was the Cat-Bird (*Ælurædus viridis*). No matter where you went, one of these birds would turn up with a truly human-like voice of "Here you ar-r-r-r-ah." The Robin family was represented in the Yellow-rumped Shrike-Robin (*Eopsaltria chrysorrhous*) and the Large-headed Robin (*Pæcilodryas capito*). The latter was found breeding, the nest being a pretty structure of fine shreds covered with bits of green moss, and outside of this little pieces of flat bark stuck on to make it appear as its surroundings: and this, being placed on a lawyer vine midway between two trees, was well out of the way of the usual forest robbers. The birds were very tame, and would come within a few feet of us. Two exquisite little Wrens were noted—the Variegated (*Malurus lamberti*) and the Orange-backed (*M. melanocephalus*).

The latter, with its black velvety coat relieved with a bright orange mantle on the back, looked like a miniature artilleryman as it strutted on the fern leaves in company with its little brown mate. The Grass-Warbler (*Cisticola exilis*) was seen in the "bladey" grass at "Levenholme," in which it no doubt builds its tiny covered nest and lays its small greenish-blue eggs speckled with brown spots. The cumbersome nests of the Yellow-throated Scrub-Wren (*Sericornis citreogularis*) were observed in various situations, but the inevitable lawyer cane seemed to be the favourite spot, and from the vines of these thickly-barbed plants the domed nests were suspended, and looked like large bunches of dark fibre, such as would be lodged in the trees by high floods. The birds were breeding, as eggs were found in several of these safely-guarded homes. The Large-billed Scrub-Wren (*Sericornis magnirostris*) was also seen in a number of situations in the scrub.

Several species of Fantails were conspicuous on account of their animated habits, notably the White-shafted (*Rhipidura albiscapa*). The Rufous-fronted Fantail (*Rhipidura rufifrons*) was also common—a sprightly creature, ever on the move to catch the small gnats and other flying insects that abound near the streams. The widely-dispersed Black-and-White Fantail (*Rhipidura tricolor*) was present in more open situations, especially about the home-stead clearings, where it was carrying on its usual useful avocation of catching flies and other insect pests. Two other Flycatchers—the Black-faced (*Monarcha melanops*) and the Spectacled (*Piezorhynchus gouldi*)—were both fairly abundant in the scrub, as was the Brown Fly-eater (*Pseudogerygone fusca*), this sprightly little creature being often met with on the edge of the clearings in small companies of three or four. As we wended our way through the more open glades o'erspread with stately palms, or threaded a path along some "snigging" track, cut for the purpose of timber hauling, we ever and anon heard the peculiar whip-like crack of the Coachwhip-Bird (*Psophodes crepitans*), which resounded through the trees, answered quickly by the short note of the female, sounding like an echo of the swishing note. The Grey Shrike-Thrush (*Collyriocincla harmonica*) was breeding, a nest being seen far up in a paper-bark (*Melaleuca*) tree. The liquid notes of the birds were often heard in the dense forest, like the ripple of a silvery stream as it flows over a pebbly bed in these sylvan glades. The Rufous-breasted Shrike-Thrush (*Pinarolestes rufigaster*) was on one occasion seen and identified. At night, in a "dead tree" clearing, the mournful notes of the Boobook Owl (*Ninox boobook*) were heard, and the bird seen as it flew noiselessly past us in the gloaming. A bird noted twice was the Pied Caterpillar-eater (*Lalage leucomelana*). The Dollar-Bird, or Roller (*Eurystomus australis*), kept in the open country, where the dead giants left in the forest clearings provided good breeding-holes.

Birds of prey were present in the Wedge-tailed Eagle (*Uroaetus audax*), seen soaring aloft on its great wings, while in the scrub

the White Goshawk (*Astur novæ-hollandiæ*) was present, also the common Goshawk (*A. approximans*) and the Brown Hawk (*Hieracidea orientalis*). The useful little Kestrel (*Cerchneis cenchroides*) was carrying out its usual good work—catching mice in the open glades—hovering above for a second or two, and then pouncing down like lightning upon its prey.

Through the kindness of Mr. A. S. Douglas, a pioneer townsman of Cooroy, I was enabled to further study the bird-life by staying two days at his home, about 3 miles out of the town, where Mrs. Douglas and their daughter made me welcome. It was easy to see that they loved and cared for the birds, for, on entering their dining-room, the first thing that caught my eye was a nest of the Swallow (*Hirundo neoxena*) built on the wall, the foundation being formed of a picture nail. The female bird was sitting, while from a neighbouring point of vantage the male bird twittered his song of thanksgiving to those who had so generously afforded protection. Mr. Douglas's home being situated among the dense scrub made it extremely good for bird-observing, many species coming close to the house to seek their food. I noted the Tree-Martin (*Petrochelidon nigricans*) building in the hollow trees, and on one occasion, just prior to stormy weather, a number of Spine-tailed Swifts (*Chaturā caudacuta*) were hawking high in the air after their usual prey. In the scrub near I first noted the Spine-tailed Log-runner (*Orthonyx spinicaudus*) scratching about in the decaying leaves in the dense undergrowth in search of the little hoppers which live in these damp localities.

At Mr. McDonald's house several Swamp-Quail (*Synæcus australis*) were so tame that they would come right up to the door and feed upon bread-crumbs, as did also the Red-browed Finch (*Egitha temporalis*), while yet another Finch, the Chestnut-breasted (*Munia castaneithorax*), came to eat the seeds from introduced grasses in the front garden. At the end of the fortnight we were reluctant to leave such a bird-paradise, with the wealth of Nature we had seen during so short a period, the memories of which will long remain, and to bid adieu to our kind host and hostess and family. Their last cheery words were—"Now, mind and come again."

The following is a complete list of the birds observed:—

- Uroaëtus audax* (Wedge-tailed Eagle).
- Hieracidea orientalis* (Brown Hawk).
- Cerchneis cenchroides* (Kestrel).
- Astur novæ-hollandiæ* (White Goshawk):
- A. approximans* (Goshawk).
- Ninox boobook* (Boobook Owl).
- Chaturā caudacuta* (Spine-tailed Swift).
- Hirundo neoxena* (Welcome Swallow).
- Petrochelidon nigricans* (Tree-Martin).
- Eurystomus australis* (Dollar-Bird).
- Dacelo gigas* (Laughing Jackass).
- Halcyon sanctus* (Sacred Kingfisher).

H. macleayi (Forest Kingfisher).
Alcyon azurea (Blue Kingfisher).
Artamus leucogaster (White-rumped Wood-Swallow).
Pardalotus punctatus (Spotted Pardalote).
Strepera graculina (Pied Crow-Shrike).
Gymnorhina tibicen (Black-backed Magpie).
Cracticus destructor (Butcher-Bird).
Grallina picata (Magpie-Lark).
Graucalus melanops (Black-faced Cuckoo-Shrike).
Lalage leucomelæna (Pied Caterpillar-eater).
Pachycephala gutturalis (White-throated Thickhead).
Collyriocincla harmonica (Grey Shrike-Thrush).
C. rufigaster (Rufous-breasted Shrike-Thrush).
Falcunculus frontatus (Yellow-bellied Shrike-Tit).
Rhipidura albiscapa (White-shafted Fantail).
R. rufifrons (Rufous-fronted Fantail).
R. tricolor (Black-and-White Fantail).
Monarcha melanopsis (Black-faced Flycatcher).
Piezorhynchus gouldi (Spectacled Flycatcher).
Pseudogerygone fusca (Brown Fly-eater).
Eopsaltria chrysorrhous (Yellow-rumped Robin).
Pacilodryas capito (Large-headed Robin).
Psophodes crepitans (Coachwhip-Bird).
Malurus lamberti (Variegated Wren).
M. melanocephalus (Orange-backed Wren).
Cisticola exilis (Grass-Warbler).
Sericornis citreogularis (Yellow-throated Scrub-Wren).
S. magnirostris (Large-billed Scrub-Wren).
Acanthiza pusilla (Brown Tit).
Anthus australis (Pipit).
Cinctorhamphus cruralis (Black-breasted Song-Lark).
Ægitha temporalis (Red-browed Finch).
Munia castaneithorax (Chestnut-breasted Finch).
Pitta strepitans (Noisy Pitta).
Ptilonorhynchus violaceus (Satin Bower-Bird).
Ælurædus viridis (Cat-Bird).
Sericulus melinus (Regent-Bird).
Mimeta sagittatus (Oriole).
Sphecotheres maxillaris (Fig-Bird).
Corone australis (Raven).
Ptilotis lewini (Yellow-eared Honey-eater).
Zosterops cerulescens (White-eye).
Ptilorhis paradisea (Rifle-Bird).
Climacteris leucophæa (White-throated Tree-creeper).
Orthonyx spinicaudus (Spine-tailed Log-runner).
Cacomantis flabelliformis (Fan-tailed Cuckoo).
Chalcococcyx plagosus (Bronze-Cuckoo).
Scythrops novæ-hollandiæ (Channelbill).
Cacatua galerita (White Cockatoo).
Calyptorhynchus funereus (Black Cockatoo).
Aprosmictus cyanopygius (King Lory).
Platycercus elegans (Crimson Parrakeet).
Trichoglossus novæ-hollandiæ (Blue Mountain Lorikeet).
T. chlorolepidotus (Scaly-breasted Lorikeet).
Ptilopus swainsoni (Pink-crowned Fruit-Pigeon).

Megaloprepia magnifica (Purple-breasted Fruit-Pigeon, "Whampoo").
Lopholæmus antarcticus (Topknot-Pigeon).
Chalcophaps chrysochlora (Little Green-Pigeon).
Geopelia tranquilla (Ground-Dove)
Macropygia phasianella (Pheasant-tailed Pigeon).
Catheturus lathamii (Brush-Turkey).
Synæcus australis (Swamp-Quail).
Dromæus novæ-hollandiæ (Emu).

Trip to Tambourine Mountain.

BY CAPT. S. A. WHITE, R.A.O.U., ADELAIDE.

No one interested in natural history who visits Queensland should leave that State without exploring one of the sub-tropical scrubs. I fear that within a few years there will not be many scrubs left near Brisbane, for the land which supports such luxuriant vegetation is now being cleared for cultivation purposes. Axe and fire are rapidly destroying the primeval forests. It behoves the Government to set aside large areas of scrub country as reserves. No better scrub could be selected for this purpose than the Tambourine. It is within easy distance of Brisbane, and a fine health resort. I made inquiries in Brisbane *re* the Tambourine Mountain, and some people told me that they believed it to be a pretty place, but had never been there. I called at the Tourists' Bureau, but could gather little information.

I wrote three days in advance to the keeper of the boarding-house at the mount, stating that my wife and I were coming. On the appointed morning we caught the early Beaudesert train from South Brisbane, which must be one of the slowest trains in Queensland, for it took one hour and a half to cover the first 17 miles. In due course we reached the little Logan village, to find that the letter I had written three days previously had been carried out in a private mail-bag by a horseman early that morning, and would not be read till it reached the top of the mountain. There seemed little chance of a conveyance being sent for us that day. Had we known the state of the roads, and the terrific climb up Tambourine Mountain, we should not have expected it. As luck would have it, a resident of the mountain came in to the railway with a load of oranges about 3 p.m., and, after a little explanation, I arranged with this mountaineer to convey us in his German waggon at least part of the distance. So off we jolted at a fair pace. As we journeyed I saw the Blue-faced Honey-eater, Leather-head (Friar-Bird), Pheasant Coucal, Temporal Pomatorhinus, Pale-headed Parrakeet, Pennant Parrakeet, Red-rumped Parrakeet (very plentiful), Miner, and Pencilled Honey-eater. Just at sundown we reached the Tambourine Hotel, which is some distance from the foot of the mountain. Here we decided to stay the night. At dusk great flocks of Scaly-breasted Lorikeets came to roost in some gums a short distance from the hotel, and we stood

under the trees and listened to their chatterings. On the other side of the ridge a very large swamp was situated, and as far as we could see around its margin great flocks of Bald-Coots were feeding, while the snow-white plumage of Egrets stood out against the dark green rushes.

Next morning, after breakfast, I induced the landlady to give us a lift in a springcart for a few miles; then we proceeded on foot up the mountain, which rises 2,000 feet, almost perpendicularly, from the plain. It was a hot day, and the climb was a stiff one; but we soon forgot the heat in admiration of the birds around us. The eucalypts were in blossom, and the Blue-bellied Lorikeet (*Trichoglossus novæ-hollandiæ*) and Scaly-breasted Lorikeet were present in thousands, chattering and screeching. The clear call of the Forest Kingfisher was heard amongst the timber. After a very stiff climb, occupying about two hours, we reached the summit and followed the track through some park-like country, the *Eucalypti* and *Angophoræ* being gigantic and picturesque. Here we heard the Coachwhip-Bird—a sure indication of a scrub being near—and, following the direction of the sound, we could see between the boles of gigantic trees the graceful fronds of the scrub palm, lawyer cane, and other creepers. “Capo di Monti,” a picturesque building perched on piles, some 15 feet from the ground, was reached. After a wash and some lunch we were ready for a ramble in the scrub, which came right up to the edge of the clearing around the house. At this place we spent a few days, never tiring of expeditions into the heart of the vast scrub along innumerable bridle paths. Sometimes we came out on to the verge of the cliffs to win a magnificent view. From one spot, where the cliffs had a sheer face of 2,000 feet, could be seen a river winding through the country below, and the high bluff of Tweed Heads standing out in the blue distance. The scrub on the mountain-top was rich in bird-life. The deep booming note of the Purple-breasted Fruit-Pigeon echoed through the lofty fig-trees, while the clear call of the Pheasant-tailed Pigeon, and the deep cooing of the White-headed Fruit-Pigeon came from the dense mass of vines and creepers. Great numbers of Flock-Pigeons were alarmed from their feeding-trees. Now and again a Wonga Wonga Pigeon passed on swift wings. In the most shady and secluded spots a “pitter patter” over dry leaves revealed the presence of the pretty little Brush Bronze-wing Pigeon. In the same locality, with a long, clear call, repeated many times, that lovely little creature known to the settler as the “Dragoon-Bird” (Noisy Pitta) may be attracted to within a short distance. Another little bird which finds its food scratching amongst the dead leaves and rotten wood of the scrub is the Spine-tailed Log-runner, called by the settler the “Scrub-Hen.” These birds were building on the ground; nest composed of large masses of leaves and twigs.

As we rambled along, our attention was often drawn to the large, dark-coloured nests, suspended from the lawyer-vine (order *Palmae*, species *Calamus muelleri*) of the Yellow-throated Scrub-

Wren, known to the settler as the "Black-nest-Bird." We were often startled by the peculiar call of the Cat-Bird. Leaden Fly-catchers flitted from bough to bough, uttering their frog-like call, and here and there a pair of White-shafted Fantails would be easily detected by their restless motion. We came upon deserted mounds of the Brush-Turkey, and caught a glimpse of the birds themselves. In the early morning the Lyre-Bird, down by the creek, in the thick scrub, imitated the sound of sawing and wood-chopping, and now and again the barking of a dog.

On the edge of a clearing one bright morning a small party of Regent-Birds flew up and down from the scrub-trees to their feeding-grounds amongst the ink-weed. The harsh call of the Rifle-Bird was heard every little while amidst the scrub. The male bird seems conscious of his glorious plumage, and keeps high up on the tallest trees. He perches across a limb, and only his bill on one side and his tail on the other can be seen. In the more open gum country the Leach Kingfisher was seen and heard, and also the Forest Kingfisher. In the same locality we found the Pied Crow-Shrike, its presence being always made known by the peculiar noisy call. Amongst the gums the Harmonious Shrike-Thrush's familiar call could be heard. I think that their notes are not so clear and liquid as those of birds found further south. I observed a bird which I took to be a Frontal Shrike-Tit, and on closer inspection found it to be much smaller than our southern bird, and with a different note. We observed the Drongo on several occasions on the edge of the scrub, but these birds were very shy.

In open gum country Pennant Parrakeets were fairly plentiful, their crimson bodies and blue wing markings striking a note of vivid colour in the landscape. Wherever there were gums in flower, flocks of Blue-bellied Lorikeets (*Trichoglossus novæ-hollandiæ*) assembled, making a great noise squabbling over food. Another scrub bird was the Yellow-breasted Robin, whose beautifully-constructed nests were often seen attached to the lawyer vines. The Satin Bower-Birds interested me much, and I was fortunate in discovering a nest, placed in the fork of a straight eucalypt, 70 or 80 feet from the ground. After a stiff climb, I reached the nest, which was constructed of dry twigs and lined with gum leaves. The eggs were of the usual dark colour. Of Raptores we saw only the Wedge-tailed Eagle and Nankeen Kestrel. The Boobook Owl was heard at night. No Owls were observed on the mountain. On the evening of our last day we found a fine bower of the Satin Bower-Bird. The twigs were well arched over, and the play-ground at either end was decorated with bright feathers, snail shells, seeds, glass, pebbles, bright-coloured leaves, &c.

At 3 o'clock on the morning of our departure a terrific thunder-storm swept over the mountain, $2\frac{1}{2}$ inches of rain falling in 20 minutes. At 5 o'clock we started to descend the mountain in a specially constructed "buckboard." When the edge of the

descent was reached the driver locked the wheels together, and it was a sliding journey to the bottom—a very risky performance, especially as the storm had blown several trees across the track. We reached the railway after a good shaking, and arrived in Brisbane safely.

List of birds observed at the summit of Mt. Tambourine :—

- Wedge-tailed Eagle (*Uroaëtus audax*).
Nankeen Kestrel (*Cerchneis cenchroides*).
Boobook Owl (*Ninox boobook*).
Leach Kingfisher (*Dacelo leachi*).
Forest Kingfisher (*Halcyon macleayi*).
Blue Kingfisher (*Alcyone azurea*).
Pied Crow-Shrike (*Strepera graculina*).
Black-backed Magpie (*Gymnorhina tibicen*).
Black-faced Cuckoo-Shrike (*Graucalus melanops*).
Grey Shrike-Thrush (*Collyriocichla harmonica*).
Shrike-Tit (*Falcunculus frontatus*).
Drongo (*Chibia bracteata*).
White-shafted Fantail (*Rhipidura albiscapa*).
Leaden Flycatcher (*Myiagra rubecula*).
Yellow-breasted Robin (*Eopsaltria australis*).
Lyre-Bird (*Menura alberti*).
Coachwhip-Bird (*Psophodes crepitans*).
Variegated Wren (*Malurus lamberti*).
Yellow-throated Scrub-Wren (*Sericornis citreogularis*).
Noisy Pitta (*Pitta strepitans*).
Satin Bower-Bird (*Ptilonorhynchus violaceus*).
Cat-Bird (*Ælurædus viridis*).
Regent-Bird (*Sericulus chrysocephalus*).
Babbler (*Pomatorhinus temporalis*)—at the foot of mount only.
White-bearded Honey-eater (*Meliornis novæ-hollandiæ*).
Yellow-tufted Honey-eater (*Ptilotis melanops*).
Friar-Bird (*Tropidorhynchus corniculatus*).
Blue-faced Honey-eater (*Entomyza cyanotus*)—at the foot of mount only.
Noisy Miner (*Myzantha garrula*).
Rifle-Bird (*Ptilorhis paradisea*).
White-throated Tree-creeper (*Climacteris leucophæa*).
Spine-tailed Log-runner (*Orthonyx temmincki*).
Pheasant Coucal (*Centropus phasianus*).
Pennant Parrakeet (*Platycercus elegans*).
Pale-headed Parrakeet (*P. pallidiceps*)—foot of mount only.
Red-backed Parrakeet (*Psephotus hæmatonotus*)—foot of mount only.
Blue-bellied Lorikeet (*Trichoglossus novæ-hollandiæ*). This bird is quite a deep blue.
Scaly-breasted Lorikeet (*Psitteuteles chlorolepidotus*).
Purple-breasted Fruit-Pigeon (*Megaloprepia magnifica*).
Topknot or Flock-Pigeon (*Lopholæmus antarcticus*).
White-headed Fruit-Pigeon (*Columba leucomela*).
Little Green-Pigeon (*Chalcophaps chrysochlora*).
Wonga-Wonga Pigeon (*Leucosarcia picata*).
Pheasant-tailed Pigeon (*Macropygia phasianella*).
Brush-Turkey (*Catheturus lathamii*).
Stone-Plover (*Burhinus grallarius*).

Along the Great Barrier Reef.

BY (DR.) WM. MACGILLIVRAY, R.A.O.U., BROKEN HILL, N.S.W.

AFTER the Brisbane session, accompanied by Dr. E. H. Dobbyn, I parted with the other members of the Royal Australasian Ornithologists' Union at Gladstone, when they were leaving on the expedition to the Capricorn Group—*islands at the southern extremity of the Great Barrier Reef*—and embarked on the *Wodonga* (8/10/10) for Cooktown, intending to explore ornithologically some of the islands at the northern end of the Barrier Reef—nearly a thousand miles from the *locale* of the Capricorns. A vexatious delay of 8 days occurred at Cooktown before we could get a suitable boat, and the fact that we had to return by the *Aramac* on 8th November, or wait three weeks longer, curtailed our actual cruise amongst the islands to a little more than a fortnight.

AT COOKTOWN.

On the morning after our arrival in Cooktown we were awake early and heard the voices of birds outside our hotel. These proved to be the Yellow-bellied Fig-Bird (*Sphecotheres flaviventris*) and the Yellow-eared Honey-eater (*Ptilotis lewini*) (*analoga* ?), both species being quite numerous in the street trees. We went out before breakfast for a short ramble, our way leading through a group of cocoa-nut palms east of the town, where there was a scattered undergrowth of lantana and balsam of Peru, in flower. A pair of Lesser Golden Plovers (*Charadrius dominicus*) was flushed from a vacant town allotment. More Fig-Birds and the Helmeted Friar-Bird (*Tropidorhynchus buceroides*) were seen. After breakfast we followed the main street south from the town until we entered a patch of tropical scrub. Here we noted, high in the trees, especially those in flower, the Brown-backed Honey-eater (*Glycyphila modesta*), Yellow-spotted Honey-eater (*Ptilotis analoga*), Helmeted Friar-Bird (*Tropidorhynchus buceroides*), Yellow-throated Friar-Bird (*Philemon citreogularis*), and Sun-Bird (*Cinnyris frenatus*), a large Moreton Bay chestnut, flowering on trunk and branches to their extremities, being a favourite alike of birds and gorgeously hued butterflies. The Fruit-Pigeons *Chalcophaps chrysoclora* and *Ptilopus ewingi* were disturbed from some of the trees, and the Yellow Oriole (*Oriolus flavicinctus*) also was seen, and its loud note constantly heard. In the afternoon, in a patch of cajuput trees, we flushed the Leach Kingfisher (*Dacelo leachi*) from a hollow. Several more Golden Plovers were noted on vacant pieces of ground in and about the town. Many seemed to be in pairs, the male in full plumage.

One day we walked out to the Annan River, about 4 miles south of the town, and noted on the way many Loriekeets (*Trichoglossus novaehollandiae*) feeding on the blossoming trees, together with other honey-loving forms, such as Fig-Birds, Friar-Birds, Sun-Birds, and White-throated Honey-eaters (*Melithreptus albigularis*),

Black-faced and White-bellied Cuckoo-Shrikes (*Graucalus melanops* and *hypoleucus*) and Orioles (*Oriolus affinis* and *flavicinctus*), the Drongo, and the Kingfishers *Halcyon sanctus* and *macleayi*. Along the banks of the Annan were a few Egrets (*Herodias timoriensis*). We followed up the southern bank for some miles, and disturbed a Large-tailed Nightjar (*Caprimulgus macrurus*), besides noting the Flycatchers *Rhipidura dryas* and *Myiagra rubecula* and some common forms. On the mangrove flats Curlews and Whimbrels were feeding in numbers, whenever the tide was out, in company with other Waders. In a patch of scrub near the racecourse we came across a nest of the Plumed Frogmouth (*Podargus papuensis*), with the bird sitting on it. The nest, of small sticks and twigs, was compactly put together, and placed in an upright fork of a pandanus tree at a height of about 15 feet. It measured 4 inches in external depth, 7 inches in diameter across the top; the egg cavity was 4 inches in diameter and 1 inch in depth, and contained one fresh egg. The Leaden Flycatcher was frequently noted in the more open scrubs.

AMONG THE ISLANDS.

We were pleased to embark on the 10-ton cutter *Thistle*, with "Bob" M'Masters, the owner, in charge, and a crew of two—George, an aged aboriginal from the Cairns district, who had spent most of his life on the smaller coastal craft, and Billy, a young black from near Cape Flattery, who had formerly been employed as a diver for *bêche-de-mer*.

We had to beat out against a fairly rough sea after leaving the mouth of the Endeavour River till we rounded Cape Bedford, when we made good time with the prevailing south-east trade wind, passing in succession several low woody islands, favoured resorts of the Torres Strait or Nutmeg Pigeon (*Myristicivora spilorrhoea*) for roosting and nesting purposes. This fine Pigeon is as big as the largest of our domestic Pigeons, creamy-white in colour, with slaty-black wing and tail feathers. It ranges right down the coast of Queensland to the neighbourhood of the Mackay district, being, however, more numerous in the northern parts. They find in the scrubs on the mainland various edible fruits, which grow there to profusion, and retire to the islands off the coast to roost for the night, often flying 10 to 15 miles to do so. As one passes up the coast they may frequently be seen, in small flocks of from 5 to 20 or more, flying low over the sea to some island. Their favourite roosting-place on these islands is amongst the mangroves. The birds are good eating, and many are shot for the table all along the coast, but with little appreciable effect on their numbers, so it is said. On a low sandspit several Pelicans (*Pelecanus conspicillatus*) were observed not long before we rounded the bold, rocky headland of Cape Flattery to a safe and sheltered anchorage, where we decided to stay the night. A few Reef-Herons (*Demicregretta sacra*) were searching the rocky shore for food, and Curlews and Whimbrels the mud flats.

Leaving the bay at daylight, with Lizard Island looming high on our right—where the Mrs. Watson tragedy was enacted 30 years ago—we stand out till Point Lookout is rounded; thence northwards, skirting the Turtle Group of islands, we reach the Howick Group, numbered from One to Ten. Many sea-birds are noted along these islands, notably Noddies (*Anous stolidus*), Lesser Crested Terns (*Sterna media*) Reef-Herons, and Pelicans. The Noddies look quite black when flying, as is their custom, lower to the waves than any of the other Terns, and with a quicker flight. One cannot help pitying the shoals of smaller fish hunted to the surface by large species, there to encounter Terns and other sea-birds, who dive incessantly upon them until the whole shoal goes below again, leaving the Terns to scatter and scout round until the little fishes are hunted to the surface again, when a rallying cry from a Tern brings all the others together once more to the attack. One wonders whether there is any place of refuge for little fish. The Tern secures his prey by diving on to the surface of the sea, taking the fish, and instantly swallowing it, for their swallowing capacity is great. Occasionally in diving they go completely beneath the water, but never to any depth. They rise immediately on the wing, shake the water off, and fly on. Only once did I see a Tern swimming, and then because it was unable to fly. A broad coral reef connects all the Howick Group. As we near No. 10, our objective, numbers of Terns are seen hovering over it. These, on closer approach, turn out to be mostly Noddies, Lesser Crested Terns, and Brown-winged Terns (*Sterna anaetheta*), with a few Silver Gulls (*Larus novaehollandiae*).

The islet is only about 400 yards long and 150 broad, rising about 10 feet above high water mark, covered in the centre with a low shrubby growth. The Noddies were nesting everywhere—on the ground, on the grass, and upon the shrubby herbage a foot or more from the ground. The nests were, in nearly every instance, constructed of sea-weed, with a lining of sea-shells. Some birds seemed to be connoisseurs in conchology, as many very beautiful shells were to be found on their nests, whereas others took no care, lining theirs with only a few broken fragments. The nests contained from fresh eggs to nearly fully-fledged young birds—in each instance only one. The parent birds allowed us to approach quite closely before rising from their nests, but would not permit of any handling. The eggs showed a certain amount of variation, but it is not so marked in this species as in others. Several Gulls were on the islet, having bred earlier, large young ones being seen either hiding in the grass or being hurried off to the water's edge by the old birds. It was rather amusing, and very human, to see three old birds trying to get a half-fledged young one to the water, much against his will, as he continually tried to get back. They pushed him with their breasts, pulled him by his wings, and buffeted him with their own all the way down the beach, and at last, getting him by the back of the neck and wings, forcibly dropped him right into the water, when he

swam off, and they flew on quite satisfied. One Gull's nest in the grass contained a newly-hatched young bird and a chipping egg.

On one end of the island was an untenanted nest of the Osprey or Fish-Hawk—a substantial structure built up of sticks, bones, sea-weed, bottle-skins, and other odds and ends, to over 2 feet in height. At the other end was an old Pelicans' nesting-place, where there had been 40 or more nests 3 or 4 months previously: they had evidently been deserted, as there were one or a pair of rotten eggs in nearly every nest, all limy and weather-worn. I heard afterwards that a boat's crew had visited the island in June and taken a lot of eggs from it. There were no other birds breeding on the islet. *Sterna anæsthesia*, when hovering over the boat, rather puzzled me, as the under surface was a most beautiful pale green; however, it was only the colour of the sea reflected on the pure white of the under surface, and I noticed the same effect on the Brown Gannet (*Sula leucogaster*) and other birds, later.

Leaving the islet, we beat against the wind towards the shore, as the sun prevents us from finding an opening in the reef. We are very glad when we round it, and, later, Barrow Point, to a safe anchorage at dusk off the mainland. At daybreak we stand out until Ninian Head is rounded, and then on with a favouring breeze till we sight Pigeon Island Light-house. Here we note many Pigeons leaving for the mainland. Off Cape Melville we note several Brown Gannets fishing. We pass quite close to the Cape, and several blacks ashore "Make 'um smoke," as Billy puts it, as a signal to us. However, we cross Bathurst Bay, a spacious opening, during which many Noddies, Brown-winged Terns, and Brown Gannets are seen, to the Flinders Group of islands—high, rocky islands, through which there are three deep-water passages, where the scenery is very fine. We take the outer one. The rocky islands rise high on either side of the passage, clothed with trees, palms, and shrubs. In the calm water of the passage a flock of Brown-winged Terns are busily hunting a shoal of little fish.

Crossing the 40 miles stretch of Princess Charlotte Bay brings us to Claremont Point. One of several Pelicans on a sand-bank reef near here flies up and perches on top of a beacon to get a better view of us, and near by, on another sand-bank, are many Noddies, Brown-winged Terns, and Lesser Crested Terns. Our objective for the night is Aye (I) sand-bank and reef. When we sight it many Pelicans, Reef-Herons, and Terns are either on the sand-bank or adjacent parts of the exposed coral. Nearer, we can see that the shore is occupied by over one hundred Reef-Herons, both white and bluish, besides those on the reef. The sand-bank rises about 10 feet above high water mark, and about 150 yards of the top is covered with a dead growth of some tall leguminous plant surrounded by tussocky grass and a perennial shrubby plant with a yellow mallow-like flower. Great numbers of Brown-winged Terns rise round us and keep up their shrill cries of distress

as they hover overhead. We soon find that they have just started to nest. The nest consists simply of a depression in the sand, scraped out under a tussock of grass, and well concealed by it—in fact, it is only by searching that any can be found at all, or by seeing the bird flying from the nest. Very few, however, contain the single egg—the clutch—most of the depressions being only in course of preparation. Up in the thick tangle of dead plants in the centre of the sand-bank are many nests of the Reef-Heron in course of construction, while some are complete, but only one contains a pair of eggs—an incomplete clutch. This nest was placed about 2 feet from the ground—a compact platform of interwoven sticks measuring 1 foot in diameter and slightly depressed in the centre. Great numbers of Sandpipers (*Heteropygia acuminata*), Barred-rumped Godwits (*Limosa nova-zealandiae*), Turnstones (*Arenaria interpres*), and a pair of Pied Oystercatchers (*Hæmatopus longirostris*), are all on the margin. At one end of the sand-bank are the remains of old Pelican nests. Billy the black fills his bucket with eggs of the green turtle, which he digs out of the sand, and is happy in the prospect of a bountiful repast. The night is clear and moonlit, and the rolling of the boat rocks us to sleep, in spite of the hardness of the deck, the shrill cries of the Terns and the croakings of the Herons, which continue throughout the night.

Next day we are off at daylight for Pelican Island, only 2 miles distant. This is a much larger sand-bank, with a tall growth of bushes with musky-smelling leaves, covered all over with dead “fequirity” climber, and in this we find many Heron nests, old and new, but none occupied, though many Reef-Herons and a few Nankeen Night-Herons (*Nycticorax caledonicus*) are flushed from the bushes. Here again we find the Brown-winged Terns just preparing their nests. Several Rails (*Hypotaenidia philippinensis*) are also flushed, and one shot for identification. Billy replenishes his bucket with turtle eggs, as he and George have eaten most of the last lot. We pass several of the Claremont Group, and call at No. 5, but see a cutter leaving it and the dry grass on the island on fire. When we come abreast the island is burning fiercely, and the birds hovering over it, uttering cries of distress. *Bêche-de-mer* and pearl fishers (mostly the former) visit all these islands that sea-birds are known to breed upon to gather bird and turtle eggs as food for their blacks, as it saves them a good deal in the cost of keeping them. We land, however, on No. 6 of the Claremont Group—a large sand-bank covered with coarse grass, a strongly growing convolvulus with a large pink flower, some large bushes at one end, and a clump of sisal hemp. A number of Brown-winged Terns are nesting here, but the nests are difficult to find under the grass and tangle. The bank was also overrun with sleek brown rats. In the larger bushes are many Reef-Herons, and their nests in course of formation. Several young Gulls are ready to take to the water. Two pairs of Pied Oystercatchers are on the shore, and one Long-billed Stone-Plover

(*Orthorhamphus magnirostris*), and great numbers of Curlews, Whimbrels, and Sandpipers. There are also a few pairs of Black-naped Terns (*Sterna melanauchen*) and a pair of Caspians (*Hydroprogne caspia*). We sail again in a north-westerly direction, endeavouring to round a reef, but, owing to the approach of darkness, are compelled to run towards the mainland, and anchor in the first shallow water, in an unsheltered position, where we pass a very uncomfortable night.

Again at daylight we start for Night Island, where many Nutmeg-Pigeons are supposed to nest. We meet numbers coming away from it, and when we go to the island they are hovering all over it, and going off in larger and smaller flocks almost continuously. The island is scrubby, and occupied all along one side by a dense belt of mangrove. The Yellow-spotted Honey-eater (*Ptilotis analoga*), White-rumped Wood-Swallow (*Artamus leucogaster*), and Mangrove Kingfisher (*Halcyon sordidus*) are noted. The Pigeons are mostly in the mangroves, where we note a few nests in various stages of completion, but none containing an egg. Three pairs of Roseate Terns (*Sterna gracilis*) are hovering about the island and uttering cries of alarm, but no nests are found. A long sail after this takes us round Cape Direction to Orchid Point, where we anchor to replenish our water supply, going ashore to a lovely little sandy bay let into a rocky shore, where the tropical scrub comes to the water's edge all round. We find a fine fresh-water spring just above high water mark, with a pool of clean, cold water. Resuming our journey into Lloyd's Bay, we anchor behind a large island of the same name, where a sandal-wood getter has his home. Stretching along the front of the island for about half a mile is a thick belt of mangrove, the island rising behind, green and wooded, to a height of 200 feet. When we arrive in the evening, Nutmeg-Pigeons are arriving in small numbers from the north-western part of the mainland to roost in the mangroves. The loud whistling of the Varied Honey-eater (*Ptilotis versicolor*) is heard from the mangroves, and also the call of the Mangrove-Kingfisher. We land and search them—no easy matter in the heat and moisture and mud. The hoo-hooing of the Pigeons is heard on all sides, and, wandering up the hillside to cool down, we note an old Eagle's eyry (probably that of the Sea-Eagle), many Pigeons' nests in course of formation, and an untenanted Kingfisher's, in a white ants' nest on a *Melaleuca*. After a visit to the ocean-side we return, to find that the Pigeons have more than doubled their numbers in the mangroves, and are arriving in an almost incessant stream. Their hoo-hooing is blended into a continuous murmur, as of a distant sea breaking on a rocky shore. There is, however, a distraction to the monotony of the Pigeons' note, and this consists in the continued screechings of thousands of Blue Mountain Lorikeets (*Trichoglossus novæ-hollandiæ*), which are also arriving from the mainland in vast flocks to rest in this same belt of mangrove. This large stream of screeching and cooing

creatures continues to pour into the mangrove patch until it can hold no more, and the noise is almost deafening. The overflow occupies the trees on the side of the island, until, not every tree, but every limb, has its quota of either Pigeons or Lorikeets, the Pigeons making the dark mass of the mangroves to appear as if covered with great white blossoms. The Lorikeets take longer to settle, rising again and again in vast flocks, whirling and screeching over the trees; but when they are all settled their voices are the first to quieten, the cooing of the Pigeons lasting about an hour longer. Then, with darkness, all is quiet till the moon rises, when a few Pigeons can be heard until dawn. The night is calm, with light fleecy clouds crossing the face of the moon; great shadowy bird-like forms flit by, and one crossing the moon reveals the form of a flying fox. At earliest dawn, when the mangrove belt is still a dark mass, the Lorikeets bestir themselves and begin their screeching again. With a very little more light they are all astir, and, rising in a dense wheeling, whirling, and screaming host, soon head off to the mainland. As the last Lorikeets are leaving, the advance guard of the Pigeons begins to move off in small flocks—threes, pairs, or singly at first, and then in larger numbers; and this continues for about two hours, when quietness (except for the occasional call of a Kingfisher or Honey-eater) is again the portion of the mangrove belt.

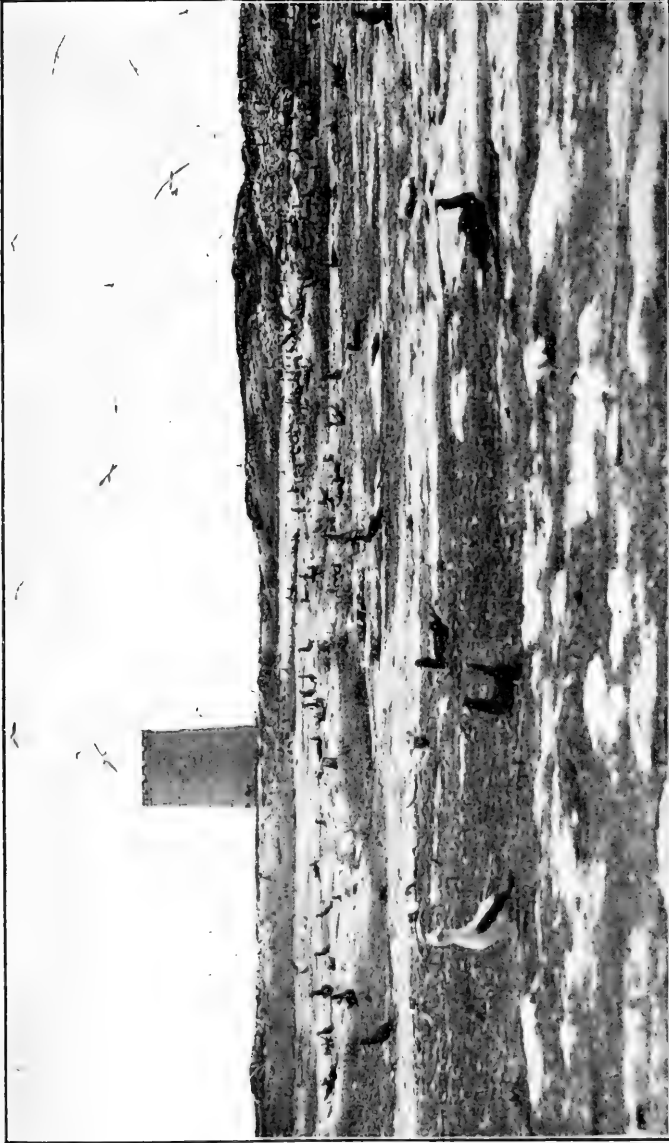
Passing between Cape Restoration and the large wooded island of the same name, we see our first Frigate-Birds (*Fregata ariel*) sailing round the end of the island. On the sandy beach are numbers of Lesser Crested and Roseate Terns. Numbers of these Terns, with Sooties, Brown-wings, and Noddies, are persecuting the shoals of little fish. We visit a sand-bank near the Point Piper lightship, but no birds occupy it, so we run back to a larger vegetated one on the same line of reef. Here we anchor for the night. Great numbers of Curlews, Whimbrels, and Little Stints are on the shore, with flocks of Terns and Gulls. The Brown-winged Tern is found to be nesting under the herbage back from the beach, and from the higher growth or tangle of shrubs and climbing plants in the centre of the island many Reef-Herons and Night-Herons are disturbed. I go through this on hands and knees, and find several old Honey-eaters' nests (no birds being observed), many old Herons' nests, and those of the Wood-Swallow (*Artamus leucogaster*) and Barred-shouldered Dove (*Geopelia humeralis*), several birds of both species being present on the island, as well as Flycatchers—*Myiagra rubecula* and *Rhipidura dryas*. In the morning the Doves can be heard cooing from the scrub, the Wood-Swallows are hawking low for food, whilst several Gulls are on the shore preening their feathers and washing in the sea. A Whimbrel perches on a bare branch, but seems to have a difficulty in balancing himself, and looks distinctly as though out of his element. Reef-Herons are searching the water's edge in their usual crouching attitude.

We make a start this morning towards the outer part of the Great Barrier Reef and the Raine Island opening, deeming it better to go out from here than from Cape Grenville, because of a more favourable wind. We ship a lot of water before getting the shelter of a reef after passing the Haggerstone, a high island rising 500 feet above water level, where a *bêche-de-mer* fisherman has his smoke-house. We have more rough sea before gaining the shelter of the Sir Charles Hardy Group, anchoring under the lee of the westernmost one. There are three large islands in the group, and on the one we anchor off is a fine grove of coconut palms and a patch of sweet potatoes. The beach on the weather side is a mass of coral and pumice where it is not precipitous rock or coral reef. The two larger islands rise to a height of 200 feet above water level, are very rocky, and covered with coarse grass, a few pandanus trees, and small patches of scrub. Reef-Herons are all round the island, but not nesting, and Golden Plovers on every open space; no Terns are nesting. A pair of Long-billed Stone-Plovers have a nest on the coral beach, slightly under the shelter of a straggling bush, the solitary egg being in a slight depression in the coral sand. The egg is chipping, and hatches out during the day. The young bird is very feeble, and is attacked by ants. I free it of these pests, and shift it twice before they let it alone. The old birds are very timid, and will never allow anyone to approach near to them. We explore the island fairly thoroughly, as we have to remain an extra day to allow the sea to moderate. The following land-birds are noted:—*Eurystomus pacificus*, *Halcyon macleayi*, *Graucalus melanops*, *Myiagra rubecula*, *Rhipidura dryas*. Having ballasted, watered our boat, and tightened the rigging, we make out again till we sight the Ashmore Sand-banks—three in all—about 2 miles from each other, lying about half-way between the Sir Charles Hardy Islands and the Raine Island opening in the Great Barrier. We sight many Brown Gannets, and when we near the most easterly of the banks (No. 3) we notice a number of these birds, and decide to land, and also to anchor for the night, the wind and tide making it impossible for us to reach the shelter of the Barrier. We have a large escort of Gannets by the time we anchor. On landing most of the top of the bank is seen to be occupied by Brown Gannets. Most of these rise as we approach, leaving about 30 sitting birds. These permit of a close approach before leaving their nests—as well, too, for no sooner does a bird quit its nest than a Gull seizes an egg and makes off with it. As usual, they are constantly on the watch to steal other birds' eggs in all the rookeries visited by us. There are about 50 nests, 30 of which contain two eggs each and the rest one, mostly incomplete clutches or reduced by the Gulls. Numbers of the nests are just being scraped out. The nests are merely a depression scraped in the sand, some hollows having bits of straw, stick, coral, or shell gathered round them; dimensions, 1 foot in diameter and 4 inches in depth. This rookery has

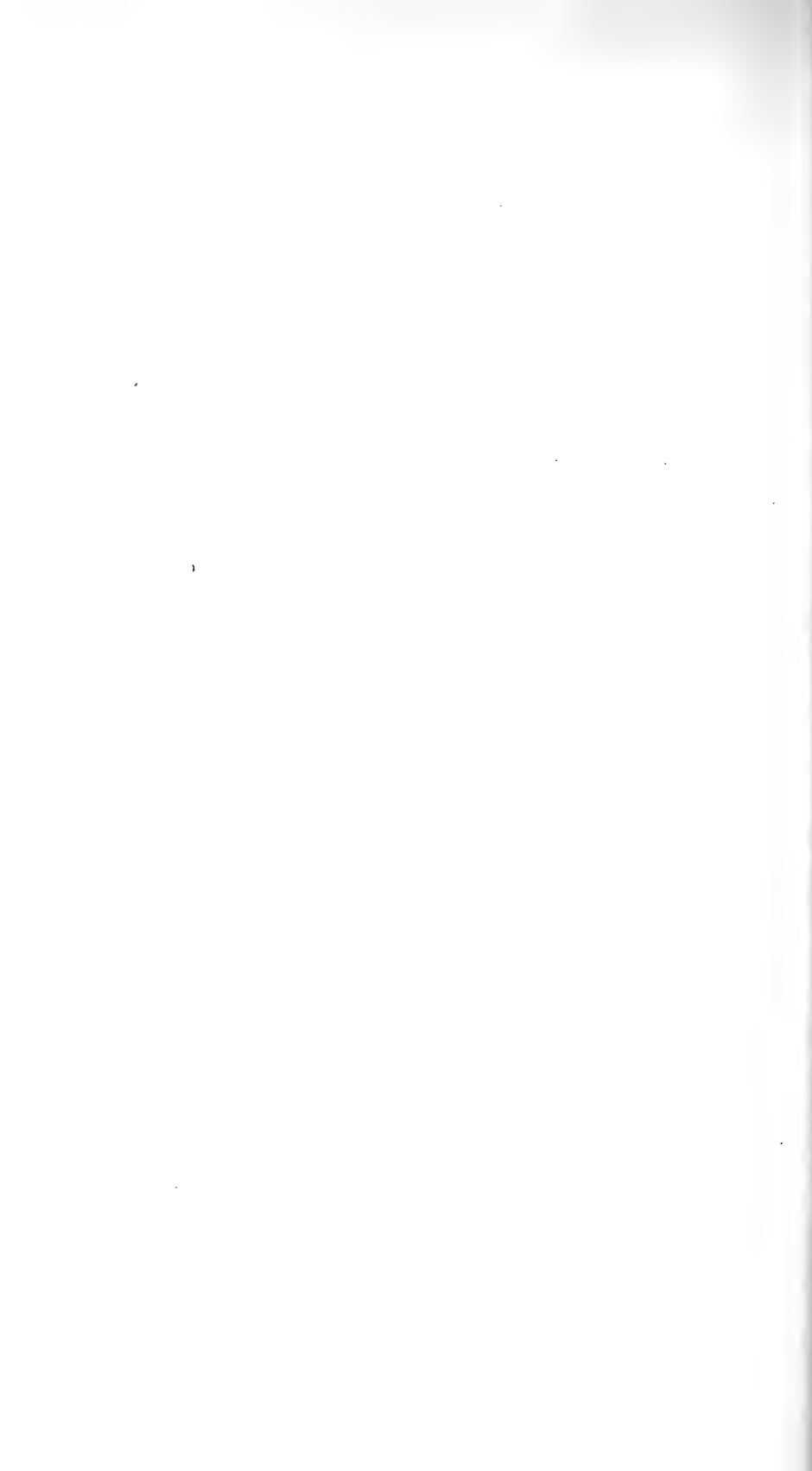
not long been occupied, as the eggs are all either fresh or at an early stage of incubation. This species is also nesting in smaller numbers on No. 2 sand-bank. The following day we make out to the reef, but have a struggle to reach it, and decide to anchor under shelter of the corner of the reef, as it would be impossible to go through the opening against the incoming tide, which races through like a millstream. The whole reef here, much to our disappointment, is covered with water at low tide to a depth of from 2 to 3 feet. Many Noddies (*Anous stolidus*) are fishing along the reef. Next day, with the wind blowing very strongly, we find it quite impossible to move from where we are anchored.

RAINE ISLAND.

We are up early on the 30th October, as the wind has moderated; but the tides vary, and we have to tack about for 2 hours before we get through the passage and make the Pacific, and after much tossing gain the shelter of the great detached reef, and sight the Raine Island tower. This tower is built on the eastern end of the island, and is constructed of cut blocks of coralline limestone, and is a round, castellated building 64 feet high, with an internal diameter of about 20 feet. It was erected, so the inscription states, by H.M.S. *Fly*; the date, however, has weathered away. We discern a cloud of sea-birds over the island, and, under an escort of Brown (*Sula leucogaster*), Red-legged (*Sula piscatrix*), and Masked Gannets (*Sula cyanops*), we soon sight the island itself. We are puzzled at first with the Red-legged Gannet, as there are more immature than mature birds flying, and the difference in colouring is considerable. Nearing the anchorage at the north-west corner, we are surrounded by a vast number of Gannets (mature and immature), Frigate-Birds, Noddies, Sooty and Brown-winged Terns, and Gulls. Great numbers of turtles are on the beach and in the shallow water round the boat. The island itself is one-third of a mile long, a quarter of a mile broad, and rises 15 to 20 feet above sea level. It is known as a vegetated coral sand-bank, the vegetation consisting of a coarse grass, a kind of pig-face weed, and a low perennial shrub of horizontal growth, not more than 1 to 1½ feet from the ground anywhere, and bearing grey-green cordate leaves and a yellow flower. The centre of the island has been excavated at one time for guano, leaving exposed heaps of coral rock and *débris*. When we land the birds rise in a dense cloud until the air is full of them, and still there seem to be thousands of old and young birds remaining on the ground. We start to explore systematically, as our boatman has only given us a limited time, because of our anchorage being rather risky. Fully nine-tenths of the nesting birds are Brown Gannets, which are all over the island, some sitting on either fresh or incubating eggs, small naked young or young in down, or feeding nearly fully-fledged birds, while many are just starting to scoop out their nests in the sand, these depressions varying from 8 inches to 12 inches in diameter



Raine Island, at northern end Great Barrier Reef, showing Brooding Gannets (*Sula cyanops* and *S. leucogaster*). Red-legged Gannets (*S. piscatrix*) are nesting on rising ground on the right, and Lesser Frigate-Birds (*Fregata ariel*) on the left hand side of the tower, while many Mutton-Bird burrows (*Puffinus sphenurus*) are behind the photographer's point of view.





Brown Gannet ("Booby") (*Sula leucogaster*) and Young.



Masked Gannet (*Sula cyanops*) on Nest.

and 3 or 4 inches in depth, sometimes with sticks, bits of coral, shells, or dirt collected round them. Many are on bare coral rock, or on the pig-face, flattened down. Most of the nests contain a pair of eggs, there being great variation in the size and shape of the eggs, though the two eggs in any one nest usually match. The young birds are hatched with eyes closed, with only an indication of down on head, back, humeral, femoral, and each pectoral region. The eyes open very soon, and the birds become covered with whitish down at an early stage, the beak and legs being of a pale slaty-grey, much the same colour as the naked skin; the gape also a pale slate colour. They grow almost to full size before acquiring any feathers, the first to appear being the primaries, then the scapulars and feathers of head, and secondaries, with the tail feathers, this first feathering being of a brownish-grey. This colour is general on head, back, and wings, with dirty-greyish breast, abdomen, and under surface of wings when they fly. The young birds hatched out often show great disparity in size, one being hatched some days later than the other. This usually results in only one surviving, as, in proportion to the number of nests containing a pair of eggs, very few seem to rear more than a single young one. The naked skin on the face of the adult Brown Gannet shows a good deal of variation in colour, some being of a greenish-yellow, others of quite a blue colour. The Masked Gannet, a fine white bird, larger than the other two, with dark pinions and conspicuous pale leaden-coloured mask, comes next in numbers to the Brown Gannet, and their nests and young are scattered amongst the others promiscuously all over the islet. The nests, in size, formation, and situation, differ in no wise from those of the Brown bird, being mostly on the ground. The eggs, larger in general than those of the Brown, are almost invariably two in number. The nestling Masked Gannet is much the same as that of the Brown, except that the mask is decidedly darker in colour. The downy young is pure white in colour, and, when feathered, a greyish or dirty white, the mask getting lighter coloured as the bird matures. The sitting birds of both species allow of a close approach, becoming restless and picking up and throwing the sticks and shells of the nest from side to side. When closer, they often disgorge one or more good-sized fish, then run off the nest with shuffling feet and flapping wings till they rise on the wing. This disgorging is not done as a means of offence, the fish being given more as an offering to distract the attention of an enemy from themselves until escape is possible, or even from their young, much in the same way as it is disgorged when the bird is buffeted by a Frigate-Bird. The Red-legged Gannet nests in groups in different parts of the island. All of the nests are placed on the horizontal shrubby growth, and are a clear foot or more from the ground. The nest consists of a substantial interwoven platform of sticks, about 8 to 12 inches in diameter, depressed to about an inch in the centre for the reception of the single egg.

The great majority are occupied by fully-fledged young birds, most of them just ready to fly. Many have left the nest, and are roosting on the shrubby growth round the old nests. There are very few small young birds, and still fewer eggs. The young are hatched out blind, with pale leaden-coloured skin, and with only an indication of down, distributed in the same way as in the other species, but with a very dark and shorter bill and dark mask, and this, instead of getting lighter as the bird grows older, gets darker, the bill and face of the fully-feathered young being almost black. The down on the nestling is also darker than in the other two kinds, and the fully-feathered young bird is of a dirty-grey general colour, especially on the head, back, breast, and abdomen, which is white in the adult. The bill and mask in the adult is creamy-white, with red border above the eyes and under the chin, and red legs. The legs of the mature young are leaden, with a tinge of pink. We find two adults sitting on small young with the bill and mask as in a mature adult, but with the general feathering of immaturity, leading us to believe that these birds do not attain to their mature plumage until two years at least have elapsed, and that they breed during the stage of immaturity. We cannot make this species leave their nests when sitting upon newly-hatched young.

On the eastern side of the island, near its centre, we come upon the nesting-place of the Frigate-Bird (*Fregata ariel*), where about 50 young birds, fully feathered and able, but unwilling, to fly, are congregated. They are all at about the same stage of development, and give the idea that the eggs must have been laid about May or June. Two young birds seem to be about each nest, and the nests consist of flat platforms of sticks and grass, raised from 4 to 6 inches above the general level of the ground where they are not placed on some small ledge of rock or other elevation. They are, of course, at this stage trodden down and liberally covered with excreta, but give one the idea that they were formerly about 8 inches in diameter. The young birds in general colour are remarkably like the lighter-coloured examples of our Wedge-tailed Eagle (*Uroaetus*). Numbers of Pectoral Rails are running over the island. Brown-winged Terns are nesting in the crevices of the coral rock, and Noddies are in great numbers, but have not yet commenced to nest. Gulls are, as usual, indulging their thieving habits. At the north-western end of the island many burrows of a Petrel are found. We dig out several to a depth of 4 or 5 feet, and find them to contain either one or a pair of birds (*Puffinus sphenurus*). There are no eggs. It seems that the birds are only cleaning out their burrows, and will probably lay in a month's time.

The crowd of birds overhead all this time, from the smaller noisy Terns to the great silent Frigate-Birds, is indescribable. We regret that we cannot spend more time on the islet. However, we make a careful examination, and, it is hoped, miss very little of any importance, although the islet, small though it



Red-legged Gannet (*Sula piscatrix*) on Nest.



Young Lesser Frigate-Birds (*Fregata ariel*).

is, would well repay a more leisured examination, as it is crowded with interest for the ornithologist.

No Tropic-Bird is seen on the island or anywhere during our trip. Leaving the island, we have our bird escort for some distance, during which time we witness a spirited course. A flying-fish rises out of the water on iridescent wings, going past our boat. A Brown Gannet is soon in full pursuit, but with all its exertion the bird cannot gain an inch on the fish over a distance of about 500 yards, when the fish seeks safety in his watery domain.

OTHER ISLANDS.

We spend another night behind the reef, and get away with the trade wind this time in our favour, and do not take long to return past the Sir Charles Hardy Islands, turning northward past Cape Grenville and the Cockburn Reef to the Bird Islands, where expectations formed from the name are not to be realized. We anchor at a small shelly beach on the northernmost islet, and go ashore at the identical spot where, many years ago, Huxley the surgeon and John Macgillivray the naturalist landed from the *Rattlesnake*. They found some starving blacks on this point: we find only their tracks. There are large trees on the island covered with green and ripe bean-like pods—the ripe ones with bright scarlet seeds in them. These trees serve as a roosting-place for many Nutmeg-Pigeons. The only other land-bird is the small Honey-eater *Ptilotis analoga*. Reef-Herons are on the coral at low water, and many Curlews and Whimbrels, and Sand-pipers and Barred-rumped Godwits on the shores of the central lagoon, the whole group of islands forming the rim of an atoll.

A favouring wind takes us next day past Boydong Cay, Cairncross Island, near Tern Island, where a rocky shore and a heavy sea make landing impossible, so we run for shelter into the Escape River—a large inlet, blocked at its mouth by a large wooded island, and having a north and south passage in. We anchor at the back of the island, where there is an old hut, overshadowed by several bushy trees bearing an abundance of large fruit of the colour and size of a pomegranate, and of a pleasantly acid taste, with a single large stone. We learn later to appreciate them when tramping through the hot northern scrubs.

Dr. Dobbryn and I set out to explore part of the island. The grass is long, coarse, and luxuriant, and the scrub thick in some parts and open in others. Our first find is the beautifully-constructed nest of the little Sun-Bird (*Cinnyris frenata*) hanging from a single dry twig not 3 feet from the ground. It is externally composed of cobwebs, small twigs, and grass, and lined with the silky wild kapok—a common tree on the Peninsula. Out in more open scrub, and we flush a Black Butcher-Bird (*Cracticus quoyi*) from her nest about 15 feet up in an acacia. This nest contains four eggs, the usual clutch. The bird is a very

shy one. After passing through another belt of scrub we come upon an open glade, from which a Stone-Plover (*Burhinus grallarius*) rises. Her pair of eggs is placed, as usual, on bare ground under shelter of a straggling tree. From a dry swamp two Cranes (*Antigone australasiana*) rise with loud protesting trumpeting. The ground where these great birds have been digging up the rhizomes of the rushes looks as though it had been rooted by pigs. They fly high into the air, and soar about for an hour afterwards on their broad wings, with outstretched neck and legs. Entering another patch of scrub, a second nest of the Sun-Bird is found in a similar situation to the first, this one containing one egg. Not far from this the Little Dove (*Geopelia cuneata*) flies from her tiny twig-built nest on a knot-hole of a *Pandanus* at about 10 feet from the ground. The nest is not more than 2 inches in diameter, and contains two fresh eggs. Many other birds are seen, such as *Ptilopus ewingi*, *Geopelia humeralis*, *Centropus phasianus*, *Pinarolestes rufiventris*, *Dicaeum hirundinaceum*, and *Ptilotis analoga*. Several Terns are fishing in the inlet, notably the Black-naped (*S. melanauchen*), Roseate (*S. gracilis*), and the Lesser Crested (*S. media*). We witness an encounter between a Lesser Crested Tern and a Frigate-Bird. The Tern, uttering shrill cries of alarm, endeavours, by turning and dodging, to elude the buffetings of its pursuer, but at last opens its bill and disgorges two fish, which, by an easy and seemingly effortless double swoop, are in turn caught and instantly swallowed by the Frigate-Bird. We have several times before noticed them pursuing and bullying Terns of different species, usually the larger ones—*H. caspia*, *S. media*, and *S. bergii*. Frigate-Birds are usually to be seen about all the islands, soaring overhead like great long-winged Hawks until darkness closes in, waiting to rob any Terns flying to roost with a cropful of fish.

We go ashore early next day to further explore the island. From the fruit trees near the hut we flush several Rose-crowned Fruit-Pigeons (*Ptilopus ewingi*) and a small *Turnix* from the grass. On the beach on the opposite side of the island are a pair of Long-billed Stone-Plovers and a pair of Red-capped Dottrels (*Ægialitis ruficapilla*), with several flocks of the Little Stint (*Limonites ruficollis*). On the grass land near the shore a flock of Masked Plover (*Lobivanellus miles*) is feeding. About 100 yards inland from the beach, over an ironstone ridge, we come upon a large fresh-water lagoon, on which there are a few Teal (*Anas gibberifrons*), Black Duck (*A. superciliosa*), and Grebes. Several Masked Plovers rise vociferating from the margin, alarming an Egret (*Herodias timoriensis*), a White-fronted Heron (*Noto-phoyx novæ-hollandiæ*), and a Jabiru (*Xenorhynchus asiaticus*). Over the water, and settled upon some small islets, are a few Black-naped Terns. Going round the margin, a little Sun-Bird leaves her nest, hanging under a small tea-tree, and flies into the scrub. This nest contains two eggs. We cross over a sandy tea-tree ridge to another small lagoon, but take shelter from a

tropical shower under a tea-tree—not much use, as we rapidly get wet, having little clothing. We dry quickly on the way. We circle through some scrub, in which we note very few birds, and come back to the lagoon, on which there are now five Black-billed Spoonbills (*Platalea regia*). Making our way boatwards, we note *Myiagra rubecula* in some stunted trees, searching for insects. This it does by threading its way in and out the branches, picking one off here and there, and occasionally making a short flight to one amongst the leaves, or hovering over a branch till satisfied whether something which has attracted its attention is good to eat or not; then perhaps it darts off to another place, perches with the characteristic quivering movement of the tail, and resumes its search. A pair of Mistletoe-Birds (*Dicaeum*) are busily engaged in gathering material for a nest. On our way home through a thick belt of scrub we disturb several Nutmeg-Pigeons and a pair of Rose-crowned (Ewing) Fruit-Pigeons from their mid-day siesta in the branches.

On the 3rd of November we enter the Albany Passage early in the morning, and drop anchor opposite Somerset, Mr. Jardine's well-known homestead. Our friend Mr. W. M'Lennan comes down to the beach when we land, and we are made welcome by Mr. Jardine, who is just going off for a few days to another property. After breakfast we return to our cutter, go through the Passage, and round to Bushy Island—a rocky islet of about a quarter of an acre in extent. There are a good many Terns of three species hovering over it when we land—*S. anæsthesia*, *S. melanauchen*, and *S. gracilis*. Many nests of the Black-naped Tern are found on the rugged ironstone rock a little above high water mark, the pair of eggs being placed in each instance on a fine bedding of rock chippings in some convenient depression or crevice. Several nests contain only one egg, and there are a few young birds. At a slightly higher level, under shelving rocks, sometimes as much as 2 feet under, are seen the single eggs of the Brown-winged Tern (*S. anæsthesia*). Most of these are at an advanced stage of incubation, and there are a few young birds. On the top of the island, where there is a growth of coarse grass, mostly flattened down by the wind, is the nesting-place of the Roseate Tern (*S. gracilis*). The nests are depressions in the grass, each containing two eggs. These nests are mostly deserted, no doubt since a visit paid to the island three weeks previously by Mr. M'Lennan, in company with Mr. Bert Jardine. Leaving this rock, we pass through the channel again to its eastern end and out to a small vegetated rock rising just above high water, with a low growth of mangroves on it, known as A Rock, or Cypheny. Several Reef-Herons rise from it, and we examine their nests. Four contain each one egg, and two three each, all placed low down in the bushes. Two nests contain young Herons. A young Nutmeg-Pigeon is perched in one of the trees, having just left the nest.

ON THE MAINLAND.

Returning to Somerset early, we go down to what are known as open pockets—tracts on which there is open timber without undergrowth, which intersect the scrub. We first come to a Shining Starling (*Calornis metallica*) rookery. These birds only started to build about a fortnight previously. They usually choose a tall, lightly-foliaged *Eucalyptus*, known locally as the "Moreton Bay ash." The nests are pensive, somewhat rounded structures, about 8 to 12 inches in diameter, constructed externally of vine tendrils and pieces of wild vine, lined internally with strips of the paper-like bark of *Melaleuca leucodendron*. The first-comers hang their nests amongst the leaves at the extremity of the branches, and these nests are often so clustered together as to coalesce, their combined weight bending the limbs downward. Later comers build further in along the limb until the whole tree is a mass of nests. Such a tree, when the birds are building, presents a very animated scene, the continual chatter of the birds and the quick darting flight of so many sprightly and glossy little forms to and from the tree making it pleasurable to one to watch them. In the same tree one often finds, hanging in an outlying fork, the bag-like nest of the Helmeted Friar-Bird (*Tropidorhynchus buceroides*), and, after careful search, the thin, cradle-like nest of the Yellow-bellied Fig-Bird (*Sphecotheres flaviventris*), through which the eggs can easily be detected from below, or occasionally the nest of the Drongo (*Chibia*). These species seemingly prefer to nest in company. The last three especially often occupy a tree quite apart from the Shining Starlings. No doubt this is for their mutual protection, as many suitable trees near are often unoccupied. At this time of the year the principal food of the Starlings seems to be the mace covering the wild nutmeg, the ground under their rookeries being littered with the nutmegs passed after the mace has been digested. These birds nearly always lay three eggs to each nest, rarely two—at least, that is the conclusion come to by Mr. McLennan and by myself after a careful examination of a number of nests. On the same afternoon we examine several other *Calornis* trees, and hear the loud, sharp whistle of the Albert Rifle-Bird (*Craspedophora alberti*) in the scrub.

Next day we are out before breakfast to observe a Manucode (*Phonygama gouldi*). We see and listen to him calling from the top of a high tree in some thick scrub—no easy matter, as the openings in the scrub by which one can view the tree-tops are few, and even at this early hour the atmosphere is humid, like that of a glass-house. We come across the nest, containing two eggs, of the Little Shrike-Thrush (*Pinarolestes rufigaster*), supported at about 3 feet from the ground by two slender, single-stemmed bushes. We go to listen to the loud whistling note of a Shrike-Robin, and watch him disporting himself amongst the vines and trees, where the Wood Fantail (*Rhipidura dryas*) is also flitting about. The Rifle-Bird is again heard, and on returning to breakfast we come

across mounds of the Brush-Turkey (*Catheturus purpureicollis*) and of the Scrub-Fowl (*Megapodius tumulus*). After breakfast we take the cutter out through the Channel to the west, past York Island, to a small rocky island where sea-birds are supposed to nest. However, a pair of Oyster-catchers are the only sea-birds on it. We, however, search the rocks on it, and two patches of scrub, from which we flush a large number of Wood Fantails and White-tailed Kingfishers (*Tanysiptera sylvia*). They are in every bush, evidently resting on their way across to the mainland. Here is also one Forest Kingfisher (*Halcyon macleayi*) and a Winking-Owl, possibly *Ninox peninsularis*. We return to Mr. Vidgen's house, 2 miles from Somerset, where, after a rest, Mr. Vidgen's little son pilots us to see a newly-constructed bower of the Fawn-breasted Bower-Bird (*Chlamydodera cerviniventris*), and points out the hollow stump from which he is in the habit of watching the bird disporting himself in the bower. Green berries, so far, are the only ornaments on the bower. The boy puts a piece of red cloth near the bower, and waits in his hiding-place to see what use the bird will make of it. The bird merely picks it up, carries it away into the scrub, and leaves it there. We hurry on to cross a creek before the tide rises, for swimming creeks frequented by crocodiles is not a desirable practice; however, it is only waist high. In the adjacent mangroves we listen to the loud but pleasant whistling note of the Varied Honey-eater (*Ptilotis versicolor*), and Mr. McLennan points out several old nests, and one, in an old Bower-Bird's nest, of the White-rumped Wood-Swallow (*Artamus leucogaster*). A Fig-Bird's nest in a mangrove contains newly-hatched young. We also observe the nest, with two eggs, of the Barred-shouldered Dove in a mangrove. We go home in the dusk, following the track through the scrub, from which we flush a Megapode, which flies on to a horizontal limb, where the fowl is silhouetted against the sky.

Next day we proceed in a north-westerly direction, through some thick patches of scrub, along dry or running creeks, but examining more particularly the open pockets. The first nesting tree, a Moreton Bay ash, contains one nest of the Helmeted Friar-Bird, with three eggs, and three nests of Fig-Birds—one containing two eggs, the others three each. In an adjoining tree another nest is being built. The nest of this species is usually placed far out on a slender fork amongst the leaves, is composed of fine tendrils and thin stems of climbing plants wound from one side of the fork to the other to form an open-work cradle about 4 inches in diameter and 2 inches in depth. Several other trees near contain nests of Friar-Birds and Fig-Birds, besides one of a Drongo. A fine specimen of the Plumbed Frogmouth (*Podargus papuensis*), disturbed from its roosting-place on a buttressed root near the ground, looks reproachfully at us with its great red eyes. The plumage of this specimen has decidedly a reddish tinge. We have also a very good view of three specimens of the large Palm-Cockatoo (*Microglossus aterrimus*), perched on

a bare tree quite close to us, with their crests erect and all the feathers of the neck ruffled. Although such big birds, their voices are decidedly more musical than those of any other Black Cockatoo. In the scrub we frequently hear the loud, clear, and incisive whistle of the Rifle-Bird, and find two old nests—one in a sapling, the other in the fork of a tree, both at a height of about 5 feet from the ground. The Blue Mountain Lorikeet is everywhere in the open glades, feeding on the blossoming trees. Our last day sees us make an early start for Mr. Vidgen's home, where we have breakfast. On the way the loud call of a Channelbill (*Scythrops*) attracts our attention to this great Cuckoo as he flies overhead. *Ptilotis versicolor* are again noisily asserting themselves at the mangrove crossing, and near Puira we see a Drongo building its nest. Going west from the house we pass through an open glade in the scrub, where Mr. Elgner has his butterfly cages, to more open country. A hollow that has been prepared by the great Palm-Cockatoo is examined by Mr. M'Lennan. It is large, open, and filled up for a foot or more with chipped-up wood, evidently carried to the hollow by the birds. This, I hear, is their usual method of nest preparation. Entering a patch of scrub where there is a beautiful running stream and a luxuriant growth of palms, tree-ferns, and smaller ferns, we cross through it, flushing a Rufous-breasted Shrike-Thrush from its nest and eggs. The note of this small Shrike-Thrush is hardly distinguishable from that of the ordinary Grey Thrush. Two more pairs of Palm-Cockatoos are disturbed after this. Drongos, Friar-Birds, Fig-Birds, and Orioles are quite numerous outside, and in the scrub the note of the Rifle-Bird is frequently, and that of the Manucode less often, heard. We find several old nests of the former, mostly in the pandanus, and at last see a female Rifle-Bird leave a nest placed at about 10 feet from the ground in a small tree with a single straight stem and small branching top, the nest being placed where the branches go off. The nest is composed outwardly of broad leaves, placed mostly with the stems upwards, and is lined with a scanty lining of leaf midribs, arranged in a circular manner. It contains two fresh eggs. In the scrub we frequently hear and see the Fruit-Pigeons—*Ptilopus ewingi*, *Lamprotreron superba*, *Megaloprepia assimilis*, and *Columba leucomela*. The Little Shrike-Thrush is often heard, and the Honey-eaters *Ptilotis gracilis* and *Myzomela obscura* seen. Another pair of Palm-Cockatoos go complainingly away, and we retrace our steps for a while, then go out and enter another belt of scrub, where we flush some Brush-Turkeys. These birds often fly up on to a tree when disturbed. Their mound is seen in course of preparation. Later we come across a large mound of the Megapode 12 feet in height and 20 feet in diameter. The Megapode is flushed, and flies up on to a high horizontal branch. Near here we notice what looks like an old Pigeon's nest on a slender horizontal branch. Though three of us are looking at it from only a few yards, so marked is the protection afforded

by the colouring of the sitting bird—a Fruit-Pigeon (*Megaloprepia assimilis*)—that none of us notices her till she leaves the nest. The nest contains one egg. Two Orioles (*O. affinis*) are noted on the homeward track.

Next day we very reluctantly leave for Thursday Island, there to catch our steamer for the south.

Birds of Cardwell and Herbert River Districts (N.Q.)*

BY K. BROADBENT, Zoological Collector, Queensland Museum.

UROÆTUS AUDAX (Wedge-tailed Eagle).—Noted in September at Dalrymple's Gap.

HALIAETUS LEUCOGASTER (White-bellied Sea-Eagle).—August, Cardwell beach.

HALIASTUR GIRRENERA (White-headed Sea-Eagle).—August, beach, Cardwell.

PANDION LEUCOCEPHALUS (Osprey).—August. Breeding in a large tea-tree on the beach below Cardwell; nest with young in.

FALCO SUBNIGER (Black Falcon).—September, Herbert River. Scarce.

HIERACIDEA ORIENTALIS (Brown Hawk).—September, Herbert River.

ASTUR NOVÆ-HOLLANDIÆ (White Goshawk).—September, Dalrymple's Gap scrubs.

ASTUR APPROXIMANS (Goshawk).—September, Herbert River.

ACCIPITER CIRRHOCEPHALUS (Sparrow-Hawk).—August, Cardwell.

MILVUS AFFINIS (Kite).—September, Herbert River. Common.

LOPHOICTINIA ISURA (Square-tailed Kite).—September, Herbert River. Common.

ELANUS AXILLARIS (Black-shouldered Kite).—November, Gowrie Creek. This is a rare bird in the Cardwell district. At Chinchilla and out west they are more plentiful, also on the River Warrego and on the Alice at Barcaldine. At Springsure I shot a pair in September.

STRIX TENEBRICOZA (Sooty Owl).—August, in Cardwell scrubs.

STRIX DELICATULA (Lesser Masked Owl).—Murray River, edge of scrubs.

NINON RUFA (Rufous Owl).—September, Gowrie Creek, mountain gully.

NINON LURIDA (Lurid Owl).—September. I first shot this bird at Cardwell in 1885, and it was named by Mr. C. W. De Vis, Curator of the Queensland Museum. It is a rare bird, and hard to find in the scrubs, keeping in all the darkest and thickest places. At dusk it

* These notes were made during a collecting tour undertaken by Mr. Broadbent from August, 1888, to March, 1889. The somewhat belated paper by the veteran collector is none the less valuable because the collection therein detailed is in the Queensland Museum, and available for reference for students and others.—EDS.

flies out into the open, and its call is like the rest of the *Ninox*—"Mopoke" repeated.

ÆGOTHELES NOVÆ-HOLLANDIÆ (Owlet Nightjar).—August. Not very common in the Cardwell district. They live in holes of trees in the daytime, and if one knocks at the bottom of the tree with a stick, should one live there he will pop out his head and take a look at the disturber of his sleep. Large "goannas" (lace lizards) must kill a good many of these birds. I shot a "goanna" with one in its mouth, just caught in a gum spout.

PODARGUS PHALÆNOIDES (Freckled Frogmouth).—Common at Cardwell.

PODARGUS PAPUENSIS (Plumed Frogmouth).—September, in the mountains at the head of Gowrie Creek, sleeping in thick tree on open grassy spur, 3,000 feet above the level of the sea.

EUROSTOPUS ALBIGULARIS (White-throated Nightjar).—August. This is a common bird in the Cardwell district. It camps on the bare ground in the daytime, and at dusk flies over the open grass-flats, catching moths. The edge of the scrub is its favourite hunting ground. I have sometimes shot four or five specimens at dusk near Cardwell. It is very Hawk-like in its flight. Common in the Cairns district, along river flats and scrub pockets, in the rainy season.

CAPRIMULGUS MACRURUS (Large-tailed Nightjar).—August. Common on the Herbert, edge of scrubs or in the scrub in a clear place, always sleeping on the ground, sometimes two together. This bird has a wide range north.

CHÆTURA CAUDACUTA (Spine-tailed Swift).—Herbert River, near Mr. Craig's station in the hills. On warm days, just before rain, these birds were here in hundreds, flying all round the house. January I have seen them in hundreds flying along the Cardwell beach.

CALLOCALIA FRANCICA (Grey-rumped Swiftlet).—Common at Cardwell in August. When these birds are seen flying near the ground it is a sure sign of approaching rainy weather.

HIRUNDO NEOXENA.—August, Cardwell. There were a few of these birds flying about Cardwell this month, and sitting on the telegraph wires in the street. They have a pretty little song when preening themselves.

PETROCHELIDON NIGRICANS (Tree-Martin).—August, Cardwell. A few specimens of this bird were flying in the street in Cardwell this month in company with *H. neoxena*.

MEROPS ORNATUS.—19th August, Cardwell, in little flocks. These birds do not breed about Cardwell. A few breed on the Herbert River, about Craig's, but not many. In October I have seen them flying over Cardwell in thousands for days, going south.

EURYSTOMUS PACIFICUS (Dollar-Bird).—9th August, single ones seen. Scarce at this time of the year, but in September and October plentiful on all the tea-tree flats behind Cardwell.

DACELO GIGAS (Brown Kingfisher).—19th August, Cardwell. Common.

DACELO LEACHI (Leach Kingfisher).—August. Cardwell is the true habitat of this bird. Prefers the tea-tree swamps.

HALCYON SANCTUS (Sacred Kingfisher).—August, about mouths of salt-water creeks, in the mangroves, Cardwell.

HALCYON SORDIDUS (Mangrove Kingfisher).—Mangroves, Maunga Creek, Cardwell.

HALCYON MACLEAYI (Forest Kingfisher). — August. Common at Cardwell.

TANYSIPTERA SYLVIA (White-tailed Kingfisher). — November. Common in all the scrubby mountain gullies and on the small scrubby creeks near the mountains in the Cardwell district. These birds come here about November and leave in February and early in March. They bore a hole into small ant-hills (termites'), and lay four round white eggs. They look beautiful in their native state, flying about and showing their handsome white tails. A very shy bird, and hard to find in the dense scrubs where they live. Very common at Cape York.

ALCYONE AZUREA (Blue Kingfisher). — August, Cardwell, on the little creeks.

ALCYONE PUSILLA (Little Kingfisher).—August, Cardwell. Common in little creeks running into Gowrie Creek, in Gowrie Gorge, in November. These birds appear to leave the coast for the creeks in the hills in the breeding-time, or about November. In a creek in the mountains I saw four together, sitting on logs in the water, and near the beach in the summer—not one to be seen in their usual winter haunts, little mangrove creeks and swamps.

ARTAMUS SORDIDUS (Wood-Swallow). — September. Breeding at Craig's, Herbert River.

ARTAMUS MINOR (Little Wood-Swallow).—Small flocks near Cardwell this time of the year (August) seen sitting on the telegraph wires.

ARTAMUS LEUCOGASTER (White-rumped Wood-Swallow).—August, Cardwell, feeding on the tea-tree flats in the early morning—the tea-tree in flower and insects plentiful—in company with *Chibia bracteata* and *Graucalus melanops*.

PARDALOTUS PUNCTATUS (Spotted Pardalote).—October, Seaview Range, and at Cardwell in February, in poor plumage.

PARDALOTUS MELANOCEPHALUS (Black-headed Pardalote). — Found throughout the year at Cardwell.

STREPERA GRACULINA (Pied Crow-Shrike).—22nd August, Dalrymple's Gap mountains.

GYMNORHINA TIBICEN (Black-backed Crow-Shrike).—October, near Craig's, Herbert River. This was the first time I had seen this bird near Cardwell.

CRATICUS QUOYI (*RUFESCENS*) (Black Butcher-Bird).—Cardwell, and in mountain scrubs, in August and January.

GRALLINA PICATA (Magpie-Lark).—August. A few in the winter on the beach at Cardwell.

GRAUCALUS MELANOPS (Black-faced Cuckoo-Shrike).—Common in August at Cardwell.

GRAUCALUS MENTALIS (Little Cuckoo-Shrike).—August. Cardwell is the true habitat of this bird. Here all the year round.

GRAUCALUS LINEATUS (Barred Cuckoo-Shrike). — August, Dalrymple's Gap scrubs.

EDOLISOMA TENUIROSTRE (Caterpillar-eater).—November. Common about Cardwell.

LALAGE LEUCOMELÆNA (Pied Caterpillar-eater).—August, Cardwell.

LALAGE TRICOLOR (White-shouldered Caterpillar-eater).—20th September, Dalrymple's Gap, Cardwell.

PACHYCEPHALA RUFIVENTRIS (Rufous-breasted Thickhead).—August, Cardwell.

COLLYRIOCINCLA HARMONICA (Grey Shrike-Thrush).—August, Cardwell. Common.

COLLYRIOCINCLA RUFIGASTER (Rufous-breasted Shrike-Thrush).—August, Cardwell scrubs.

COLLYRIOCINCLA BOWERI (SIBILA) (Bower Shrike-Thrush).—First shot this new bird in the back scrubs over Seaview Range, south of the Herbert River, in 1883. This is a true mountain bird, not found in any of the low river scrubs. Found this bird on Bellenden-Ker, at Palm Camp, 4,000 feet above sea level. Also common in the high scrubs in the Herberton district.

FALCUNCULUS FRONTATUS (Shrike-Tit).—August, Herbert River. Rare.

CHIBIA BRACTEATA (Drongo).—11th August, common at Cardwell.

RHIPIDURA ALBISCAPA (White-shafted Fantail).—This pretty Flycatcher is common all over the Cardwell district, both mountain and plain, and so tame that it will sit on the barrel of the gun.

RHIPIDURA RUFIFRONS (Rufous-fronted Fantail).—August, Cardwell. Common.

RHIPIDURA ISURA (Northern Fantail).—August, Cardwell. Common in winter. In breeding-time this bird takes to the hills.

RHIPIDURA TRICOLOR (Black-and-White Fantail).—9th August, Cardwell.

SISURA INQUIETA (Restless Flycatcher).—September, Craig's, Herbert River.

PIEZORHYNCHUS NITIDUS (Shining Flycatcher).—9th August, in the mangroves. This bird inhabits mouths of creeks and rivers, and is nearly always found in mangrove swamps. Common at Cardwell.

ARSES KAUPI (Pied Flycatcher).—August. A common bird here in all scrubs, but has a preference for the hill scrubs. Cardwell.

MYIAGRA RUBECULA (PLUMBEA) (Leaden Flycatcher).—11th August, Cardwell. Common.

MACHÆORHYNCHUS FLAVIVENTER (Yellow-breasted Flycatcher).—August, all scrubs, Cardwell.

MICRÆCA FLAVIGASTER (Lemon-breasted Flycatcher).—August, Cardwell. Common in forest.

MONARCHA MELANOPSIS (Black-faced Flycatcher).—9th August, Cardwell scrubs. This is a very common bird at Cape York at all times.

PIEZORHYNCHUS LEUCOTIS (White-eared Flycatcher).—August, Cardwell. This is one of the rarest Flycatchers. They appear commoner here than elsewhere. I shot one near Rockhampton, in scrub country, in 1887. Beach scrubs, Cardwell.

PIEZORHYNCHUS GOULDI (Spectacled Flycatcher).—August, Cardwell. Common in the scrubs.

PETROECA BICOLOR (Hooded Robin).—Cardwell. A rare bird here.

HETEROMYIAS CINEREIFRONS (Fly-Robin).—Seaview Range. Found in all the gullies, and on the tops of high mountains. Shot this bird at Palm Camp, 4,000 feet above sea (Bellenden-Ker expedition). Common also in the high scrubs at Herberton.

PŒILODRYAS SUPERCILIOSA (White-browed Robin).—Craig's, Herbert Gorge. This is a common bird in the river scrubs where the river comes through the mountains.

PŒILODRYAS CAPITO (Large-headed Robin).—Craig's, Herbert River Gorge. This little Robin is found on the tops of all the high mountains in the Cardwell and Cairns districts. Common on Bellenden-Ker at 5,000 feet, and at the head of Gowrie Creek, in the country of the "boongarry," tree kangaroo (*Dendrolagus*).

EOPSALTRIA AUSTRALIS * (Yellow-breasted Shrike-Robin).—This fine Robin is common near Melbourne, and just as common near Cardwell in hilly country. This was the first bird heard in the morning at Palm Camp, 4,000 feet (Bellenden-Ker). The eastern is more beautiful than the Melbourne bird. August, Cardwell.

EOPSALTRIA INORNATA.—August, Cardwell. Common Robin here, found in all river scrubs. Shot specimen of this bird at Cape York, behind Mr. F. L. Jardine's house.

PSOPHODES CREPITANS (Coachwhip-Bird).—August, Cardwell. Common in all hill scrubs in this district; small in size.

MALURUS AMABILIS (Lovely Wren).—August, Cardwell, river scrubs. This is a common bird at Cape York.

MALURUS CRUENTATUS (Red-backed Wren).—11th August, Cardwell.

CISTICOLA EXILIS (Grass-Warbler).—30th August, Herbert River. This pretty little bird is rare on Bellenden Plains in long grass, also on the grass flats on the Herbert as far as Craig's, Herbert Gorge, and on the head of the Murray, near the hills.

SERICORNIS CITREOGULARIS (Yellow-throated Scrub-Wren).—September, Seaview Range.

SERICORNIS MAGNIROSTRIS (Large-billed Scrub-Wren).—August, Cardwell scrubs.

ANTHUS AUSTRALIS (Pipit).—September, Herbert River. Rare.

ÆGINTHA TEMPORALIS (Red-browed Finch).—Craig's, Herbert River.

NEOCHMIA PHÆTON (Crimson Finch).—Craig's, Herbert River.

MUNIA CASTANEITHORAX (Chestnut-breasted Finch).—September, Herbert River.

PITTA SIMILLIMA (Lesser Noisy Pitta).—September, Herbert River scrubs.

PITTA MACKLOTI (Blue-breasted Pitta).—September, Herbert River. This was the first time I had seen this Pitta near Cardwell. It was high up the Herbert, near Craig's, in a hill scrub.

* Mr. Broadbent no doubt intends this species for *E. chrysorrhous*, with the *bright yellow* rump, and different from *E. australis* of southern parts, with its *dull wax-yellow* rump.—EDS.

OREOCINCLA HEINEI (Russet-tailed Ground-Thrush).—Hill scrubs, Herbert Gorge.

PTILONORHYNCHUS VIOLACEUS (Satin Bower-Bird).—Herbert Gorge.

ÆLUREDUS MACULOSUS (Spotted Cat-Bird).—Common in all hill and river scrubs from Seaview Range to Cairns, and in Herberton district.

CHLAMYDODERA ORIENTALIS (Queensland Bower-Bird).—Shot specimens of this bird at Herbert Vale, and on the River Herbert, at Craig's, but it is only a casual visitor. The east coast, about Cardwell and Cairns, is not its locality. Common out from Townsville, and at Kimberley, Gulf of Carpentaria. It is very common on all the rivers on the Gulf.

SCENOPÆTES DENTIROSTRIS (Tooth-billed Bower-Bird).—Seaview Range and all the ranges along to the Herberton scrubs, also on Bellenden-Ker, at a height of 4,000 feet. This bird makes a curious dancing or play-ground. It scratches the ground quite bare for the space of a yard, then lays eight or nine large leaves down on the cleared space, and plays upon them, every morning laying down fresh leaves. This is only in the breeding-time, September and October. This bird is also a grand imitator of all the birds in its locality. There is no bird that I know (Lyre-Bird excepted) that will imitate all the birds like this one.

ORIOLUS AFFINIS (Northern Oriole).—August. Common in all the Cardwell scrubs.

SPHECOTHERES FLAVIVENTRIS (Yellow-bellied Fig-Bird).—11th August, Cardwell.

CORVUS CRONOIDES (Crow).—August, Herbert River.

CALORNIS METALLICA (Shining Starling).—August, Herbert River. Just coming to breed.

POMATORHINUS TEMPORALIS (Babbler).—August, Craig's, Herbert River. This is a rare bird in the Cardwell district.

GLYCYPHILA FASCIATA (White-breasted Honey-eater).—August, feeding on tea-tree, Cardwell.

GLYCYPHILA SUBOCULARIS (Least Honey-eater).—Cardwell (Maunga Creek).

PTILOTIS LEWINI (Yellow-eared Honey-eater).—August. Common in all scrubs, Cardwell.

PTILOTIS FASCIOGULARIS (Fasciated Honey-eater).—Cardwell, mouth Maunga Creek.

PTILOTIS FLAVA (Yellow Honey-eater).—Common all the year at Cardwell, near the beach.

PTILOTIS CHRYSOPS (Yellow-faced Honey-eater).—Herbert River.

PTILOTIS FRENATA (Bridled Honey-eater).—Cardwell, in the winter time. This is a mountain bird; found it at 5,000 feet, on Bellenden-Ker, also round my camp at Herberton, highest country in the district. This is one of my new birds (1873), named by Dr. Ramsay.

PTILOTIS MACLEAYANA (Yellow-streaked Honey-eater).—Common on Maunga Creek, Cardwell.

PHILEMON CORNICULATUS (Friar-Bird).—September, Herbert River:

PHILEMON BUCEROIDES (Helmeted Friar-Bird).—Common at Cardwell September and October.

ACANTHORHYNCHUS TENUIROSTRIS (Spine-billed Honey-eater).—September, mountains near Cardwell. This bird was common on Bellenden-Ker, at 5,000 feet; also common in the Herberton forest country, called up there “tangle-foot,” feeding on *Banksia*. Country like the tops of the Gippsland mountains.

MYZOMELA SANGUINOLENTA (Sanguineous Honey-eater).—August, Cardwell.

MYZOMELA OBSCURA (Dusky Honey-eater).—September, Herbert River scrubs.

MELITHREPTUS GULARIS (Black-chinned Honey-eater).—August, Herbert River, feeding in the large gums when in blossom.

MELITHREPTUS ALBIGULARIS (White-throated Honey-eater).—Common in Cardwell district.

MYZANTHA GARRULA (Noisy Miner).—Rare bird here; Craig’s, Herbert River.

DICÆUM HIRUNDINACEUM (Mistletoe-Bird).—August, Cardwell.

CINNYRIS FRENATA (Sun-Bird).—Common all the year, feeding on the flowers in the gardens near the beach, Cardwell.

ZOSTEROPS CÆRULESCENS (White-eye).—Cardwell. Common.

PTILORHIS VICTORIÆ (Victoria Rifle-Bird).—Found on islands, North Barnard, Dunk, Hinchinbrook; Clump Point, Tully River, Gowrie Creek Gorge, Herbert River Gorge, Seaview Range, south of the Herbert River, and all the coast range to Herberton.

CLIMACTERIS SCANDENS (Brown Tree-creeper).—A few specimens of this bird seen between Gowrie’s Creek and Coldwater Station, on the Herbert River, in the open forest. This is a rare bird in the Cardwell district. November.

CLIMACTERIS LEUCOPHÆA (White-throated Tree-creeper).—Seaview Range.

ORTHONYX SPALDINGI (Black-headed Log-runner).—All the hill scrubs in the Cardwell district.

SITTELLA LEUCOPTERA (White-winged Tree-runner).—Cardwell, in forest country.

SITTELLA STRIATA (Striated Tree-runner).—Cardwell, in little flocks.

CACOMANTIS PALLIDA (Pallid Cuckoo).—October, Craig’s, Herbert River.

CUCULUS SATURATUS (CANOROIDES) (Oriental Cuckoo).—This is a summer visitant to Cardwell, arriving in November and leaving end of February. A very solitary bird. I have seldom seen two together. It keeps near the beach, about Cardwell, in the low bushes. I have never seen this bird inland more than 5 miles from the coast. It utters a note not unlike *Cacomantis pallidus*, but seldom; it is a quiet bird, very Hawk-like in its flight, and shy to get a shot at. Very early morning is the only time to get specimens.

CACOMANTIS FLABELLIFORMIS (Fan-tailed Cuckoo).—September, Gowrie Creek.

CACOMANTIS VARIOLOSUS (TYMBONOMUS) (Square-tailed Cuckoo).—

September, mountains, head of Gowrie's Creek, Hell's Gate Camp, 3,000 feet. I saw and heard the call of this bird in the great scrubby mountains in the "boongarry" country. Around our camp this was the last bird heard at night and first in the morning. Raining most of the time.

CHALCOCOCCYX PLAGOSUS (Bronze-Cuckoo).—August, Herbert River.

CHALCOCOCCYX PÆCILURUS (RUSSATUS) (Rufous-throated Bronze-Cuckoo).—November, Herbert River. This bird stays here all the year. I have shot specimens at all times, but in the springtime it is more common. It is a noisy bird in the breeding time, and is always about the edges of scrubs. I have seen this bird in scores at Cape York in March.

SCYTHROPS NOVÆ-HOLLANDIÆ (Channelbill).—The Channelbill is a migratory bird here in October. It is fondest of hill scrubs. In the Gowrie Creek scrubs these birds lay in the nests of *Strepera graculina* (Pied Crow-Shrike). At the head of the Murray River, 25 miles out of Cardwell, in January, in the scrub at the base of the mountains, Channelbills were numerous. They appeared to be collecting together for migration purposes. They are high fliers, and keep in the highest trees in the forest and scrub, feeding on small figs. The figs appear to be their favourite diet, but they eat insects, and even meat (tame ones). In the breeding time these birds are flying about and screeching all night—in fact, they appear to be more lively in the night than in the daytime. I am fully convinced that they feed their young all night, and the foster-parents all day. A pair of these birds lived on Mount Graham, near where I was staying at Mr. Richard Lee's, Gowrie Creek Gorge. In the daytime they would not be heard, but after dark, until dawn, they were busy all the time, flying from peak to peak up the mountain, and screeching the whole time. In the daytime the Crow-Shrikes were at work, and no Cuckoos were to be seen or heard. At Cape York I have seen specimens of these birds in February. I shot four feeding in a fig-tree—two adult and two young, the latter being as large as the old ones. At Cape York in March all kinds of Cuckoos were quite common. Their stay there was about a month, and then they all disappeared except *Chalcococcyx russatus* and *Cacomantis tymbononus* (*variolosus*). They were nearly all young birds.

EUDYNAMIS CYANOCEPHALA (Koel).—November, Herbert River.

CENTROPUS PHASIANUS (Coucal).—Murray River. On 17th January I found a nest of this bird built on the ground in long grass. The nest is about 1 foot in diameter by 11 inches high, composed of small branches of bloodwood (*Eucalyptus*) twisted together and lined with grass, with entrance on top. The nest contained three young, covered with long down, and one egg, white in colour. Common on all the east coast of Queensland on grassy flats. At Cardwell common at all times.

CACATUA GALERITA (White Cockatoo).—August. The specimens of this bird are smaller here than in the south. Common in all the Cardwell district.

CALYPTORHYNCHUS BANKSI (Banksian Cockatoo).—August, Cardwell. These red-tailed black Cockatoos assemble in large flocks this month; have seen 60 in one flock.

APROSMICTUS CYANOPYGIUS (King Lory).—August, Cardwell.

PTISTES COCCINEOPTERUS (Crimson-winged Lory).—22nd August. The dry weather this year must have driven this bird to the coast. They were here in small flocks on the beach, in poor plumage. Common on all the Gulf waters and on the Alice and Thomson Rivers, Central District of Queensland.

PLATYCERCUS NIGRESCENS (Campbell Parrakeet).—December, Sea-view Range.

PLATYCERCUS PALLIDICEPS (Pale-headed Parrakeet).—November, Herbert River. One pair seen. This is not an east coast bird; only a casual visitor to the Cardwell district. Common at Chinchilla and on some of the western rivers—namely, the Alice, near Barcaldine, and at Springsure, Central District.

TRICHOGLOSSUS NOVÆ-HOLLANDIÆ (Blue-bellied Lorikeet).—August.

TRICHOGLOSSUS CHLOROLEPIDOTUS (Scaly-breasted Lorikeet).—August.

TRICHOGLOSSUS PUSILLUS (Little Lorikeet).—August, in flocks, at Cardwell, feeding on the blossoms of bloodwood and tea-tree.

CYCLOPSITTACUS MACCOYI (Blue-faced Lorilet).—Cardwell, feeding on small fig-trees, edge of scrub, September.

PTILOPUS SWAINSONI (Red-crowned Fruit-Pigeon).—September.

PTILOPUS SUPERBA (Purple-crowned Fruit-Pigeon).—September, Gowrie's Creek.

MEGALOPREPIA MAGNIFICA (Purple-breasted Fruit-Pigeon).—September. This is a common bird in all the hill scrubs in the Cardwell and Herbert River district. It makes a small nest of a few sticks in a small tree or bush in the scrubby gullies, and lays usually one white egg. Common in Dalrymple's Gap scrubs.

COLUMBA LEUCOMELA (White-headed Fruit-Pigeon).—30th August.

MYRISTICIVORA SPILORRHOA (Nutmeg-Pigeon).—These Pigeons come to the Cardwell district about the middle of September. All the islands in Rockingham Bay have a fair share of these birds breeding on them—namely, Brook, Barnard, Dunk, and Little Mangrove Island in Hinchinbrook Channel. Up the Herbert, Murray, Tully, and all the rivers that empty into Rockingham Bay, these birds fly for feeding purposes, as far as the top of the Coast Range scrubs. On the River Murray, in January, they were in thousands, flying between the islands and the scrubs in the mountains in the morning, and returning in the evening. I never found a nest of these birds in the river or mountain scrubs, but on the North Barnard and Hinchinbrook Islands they were in plenty. They break down the high bushes on Brook Island with their weight. Another curious habit this bird has—on the North Barnards I have seen them in scores drinking salt water. These Pigeons are found down the coast of New Guinea as far as the end of Cloudy Bay. Common on Constance Island, off Kerepune, in February.

LOPHOLEMUS ANTARCTICUS (Topknot-Pigeon).—August, Dalrymple's Gap scrubs. This Pigeon has a wide range—from the Clarence River, in New South Wales, up the east coast of Australia to Cape York. I have shot this bird in Mud Bay, about 2 miles above where Mr. F. L. Jardine lives, 6 miles from Cape York. In the winter months it is common in all the hill scrubs in the Cardwell and Cairns districts, and on the Russell and Mulgrave Rivers in June, July, and

August. On the Bellenden-Ker expedition numbers of these birds were eaten in camp.

CHALCOPHAPS CHRYSOCHLORA (Little Green-Pigeon).—September, Cardwell. Common in all the scrubs on the east coast of Australia. Shot one specimen at Healesville, 40 miles from Melbourne, on the Wood's Point road, Gippsland, Victoria. Common at Port Moresby, New Guinea.

GEOPELIA HUMERALIS (Barred-shouldered Dove). — Cardwell. Common. This bird has also a wide range—Chinchilla, out west from Brisbane, Cardwell, Cairns, and at Cape York. Numerous on the beach near the old settlement in January.

GEOPELIA TRANQUILLA (Ground-Dove).—Common, Cardwell, all times.

MACROPYGIA PHASIANELLA (Pheasant-tailed Pigeon). — August, Cardwell.

CATHETURUS LATHAMI (Brush-Turkey).—Common in hill scrubs, Gowrie's Creek.

MEGAPODIUS DUPELREYI (Scrub-Fowl).—From south of the Herbert, Seaview Range, to Cape York. Common at Cairns, Herberton scrubs. Called by the settlers Scrub-Fowl or Scrub-Hen. At Cape York these birds make very large mounds for breeding purposes. About Cardwell and the Cairns district the mounds are smaller—about the size of the mound of *T. lathamii*. The eggs are deep down in the centre of the mound. I have seen eight taken from one mound. September and October are the best months in the Cardwell scrubs for the eggs of this bird. When "mingan" hunting at Craig's, Herbert Gorge, with the blacks, we used to have some nights 30 or 40 of the eggs for supper. The birds have a curious habit of crowing in the scrubs late at night and early in the morning (about 3 o'clock). They are shy, but easy to shoot. When walking about in the scrubs they nearly always fly into the first tree and look at the intruder. They are also very inquisitive. Frequently, when sitting in the scrub waiting for something to turn up, one of these birds would come along, scratching up leaves as he came, and, on seeing me, would turn and run a few yards, then come up quite close and have a good look at the stranger.

SYNGECUS AUSTRALIS (Brown Quail). — November. Common on Herbert River.

CASUARIUS AUSTRALIS (Cassowary).—Common in Herbert scrubs.

EUPODOTIS AUSTRALIS (Wild Turkey, Bustard).—August, Herbert River. This is a rare bird here. Shot one on the grassy flats on the Herbert in August.

BURHINUS GRALLARIUS (Stone-Plover).—Common near the sea-beach at Cardwell in August.

ORTHORHAMPHUS (ESACUS) MAGNIROSTRIS (Long-billed Stone-Plover).—Shot one of these birds in February at Gould Island. Have seen them at the mouth of Maunga Creek, Cardwell (single ones); rather scarce. Shot this bird at Bountiful Island, in Gulf of Carpentaria. I never saw more than one at a time, and always walking on the mud or sandy shores on the islands.

LOBIVANELUS LOBATUS (Spur-winged Plover).—September, Herbert River.

CHARADRIUS DOMINICUS (Lesser Golden Plover).—August, Cardwell. Common on the beach this month, in winter plumage. This is a common bird on the beach below Albany Pass, Cape York, and on all the islands in Torres Strait.

ÆGIALITIS MELANOPS (Black-fronted Dottrel).—Common on the Herbert River.

ÆGIALITIS RUFICAPILLA (Red-capped Dottrel).—Beach, Cardwell. Common on the sea-beaches, Gulf of Carpentaria.

LIMOSA NOVÆ-ZEALANDIÆ (Barred-rumped Godwit).—Cardwell, beach.

TRINGOIDES HYPOLEUCUS (Common Sandpiper).—In the mangroves, Cardwell. I observed this bird at Cairns on the roots of the mangroves, and have frequently seen it at Cape York, also in the mangroves—never more than one at a time—sitting on the roots.

GALLINAGO AUSTRALIS (Snipe).—Somewhat rare. Seen on Herbert River in August.

NUMENIUS CYANOPUS (Curlew).—Common on all the islands and shores of Rockingham Bay.

CARPHEIBIS SPINICOLLIS (Straw-necked Ibis).—Common on the Herbert River in August. Also plentiful in the Cardwell and Cairns districts in June, July, and August. In August, near Cardwell, in 1888, the season was very dry, and all, or nearly all, of the back-waters dried up. There was one swamp near Cardwell with a little mud and water left, and it was covered with these birds, walking about in the mud, while *Anas superciliosa* (Black Duck), *Ibis molucca* (White Ibis), *Plegadis falcinellus* (Glossy Ibis), *Notophox novæ-hollandiæ* (White-fronted Heron), and *Nycticorax caledonicus* (Night-Heron) were sitting on all the trees around the water-hole.

IBIS MOLUCCA (White Ibis).—August, Herbert River.

PLATALEA REGIA (Black-billed Spoonbill).—September, Herbert River. This was a very common bird on the Herbert, sitting on dead trees on the edges of swamps.

ANTIGONE AUSTRALASIANA (Native Companion).—September, Herbert River. I noticed a few specimens of this bird here this month.

XENORHYNCHUS ASIATICUS (Black-necked Stork, Jabiru).—September, Herbert River. This is a common bird in the Cardwell district. All the mouths of creeks and rivers emptying into Rockingham Bay are the habitat of this species; also found on the banks of swamps inland 40 miles from the shore. In January I noticed a pure white one at the mouth of Maunga Creek, 2 miles from Cardwell.

ARDEA CINEREA (Grey Heron).—Cardwell. This is a rare bird in Australia. I have only seen two specimens—one at Cardwell, the other at Kimberley, Gulf of Carpentaria.

ARDEA SUMATRANA (Great-billed Heron).—Cardwell. This bird is not common here. It lives in small, scrubby creeks and mouths of mangrove creeks. On the Murray River, near Cardwell, I have killed them as they flew out of the creeks into the river at dusk. Noted also on the Mulgrave, just above its junction with the Russell River, in 1872. Have never seen more than one at a time.

NOTOPHOYN PACIFICA (White-necked Heron).—September, Herbert River.

NOTOPHOYX NOVÆ-HOLLANDIÆ (White-fronted Heron).—August, Cardwell. This is a very common bird here at all times, inhabiting the swamps.

HERODIAS TIMORIENSIS (White Egret).—August, Cardwell. In June and July, at the mouth of the Norman, I have seen hundreds of these birds sitting in the mangroves, in company with the White Ibis and Black-billed Spoonbill.

MESOPHOYX PLUMIFERA (Plumed Egret).—August, on the beach at Cardwell.

DEMIEGRETTA SACRA (Reef-Heron).—Brook Island reefs.

NYCTICORAX CALEDONICUS (Night-Heron).—August, Cardwell.

DUPETOR GOULDI (Yellow-necked Mangrove-Bittern).—In the mangroves at Cardwell.

PORPHYRIO MELANONOTUS (Bald-Coot).—Herbert River, sitting on the bushes on the bank of the river, in September.

GALLINULA TENEBROSA (Black Moor-Hen).—September, Herbert River.

HYDRALECTOR GALLINACEUS (Comb-crested Jacana).—Murray River swamps, Bellenden Plains.

HYPOTÆNIDIA PHILIPPINENSIS (Pectoral Rail).—August, Herbert River.

RALLINA TRICOLOR (Red-necked Rail).—September, Gowrie's Creek. Eggs of this bird were found in the scrubs on the Murray River in January, and are in the Queensland Museum.*

ANSERANAS SEMIPALMATA (Pied Goose).—Cardwell. Common at the mouths of the Tully and Murray Rivers, sitting on the mangroves, Christmas time.

* These eggs were inspected by the visiting oologists during the recent Brisbane session of the R.A.O.U. The specimens may be described as oval in form; colour white, with the slightest perceptible tone; surface glossy, and texture somewhat fine; dimensions, about $1\frac{1}{2} \times 1\frac{1}{10}$ inches. Typical Rails' eggs are usually elliptical in shape, spotted with reddish and purplish brown on a warmish-white ground. Have the eggs of the Red-necked to be re-described, or do the white eggs belong to another bird? Cockerell, the collector who first obtained this Rail, in the neighbourhood of Somerset, Cape York, stated that he found the eggs, which were *white*. While engaged on my work, "Nests and Eggs of Australian Birds," Mr. Harry Barnard kindly sent me a white egg, collected in North Queensland, marked "Scrub-Rail." Mr. D. Le Souëf had a set of three similar eggs in his collection.

Regarding the particular Rail's white eggs in the Brisbane Museum, Mr. Broadbent some time ago kindly furnished me with these additional and interesting field notes (*vide* "Nests and Eggs," p. 744):—"My tent was near the river scrub (30 miles from Cardwell), about 200 yards away, in the grass. But close to my tent, about 50 yards distant, was a little creek with scrub very thick with a great quantity of ferns and undergrowth. At night I often heard the call of the Scrub-Rail, and sometimes on very dark nights they would come round the tent, but too dark to shoot. In the morning I frequently heard them in the scrub calling to each other, when I endeavoured to get them. Several mornings I got up at dawn, and crawled into the scrub amongst the ferns, but, unfortunately, I could not see the birds—too dense and dark. However, one morning, when crawling as usual in the ferns, I nearly broke two beautiful white eggs, laid on the ground amongst the ferns in a little circular basin lined with a few bits of leaves and small pieces of dead sticks, just scrub rubbish. The eggs were quite warm. I shot the female just as she was beginning to sit, judging by her breast feathers. Afterwards I shot the male about the middle of January. I hunted these scrubs for six weeks afterwards, and could attribute the eggs to no other bird."—A. J. C.

NETTOPUS PULCHELLUS (Green Goose-Teal).—September, Herbert River. Common on Bellenden Plains, in the small swamps.

TADORNA RADJAH (White-headed Shieldrake).—August, Cardwell. The White-headed Shieldrake or "Burdekin Duck" is common this month, feeding on crustacea at the mouths of creeks and rivers, near the mangroves.

ANAS SUPERCILIOSA (Black Duck).—August, Cardwell.

NETTION GIBBERIFRONS (Grey Teal).—September, Herbert River. Common.

SPATULA RHYNCHOTIS (Shoveller).—October, Herbert River.

DENDROCYCNA ARCUATA (Whistling-Duck). — October, Herbert River.

NYROCA AUSTRALIS (White-eyed Duck). — October, Herbert River. This bird was very common on the river in October. Usually a rare bird here, but common about Melbourne. The dry weather this season (1888) caused great numbers of water-fowl not noticed previously to come here.

BIZIURA LOBATA (Musk-Duck).—One seen in October, on the Herbert River.

HYDROPROGNE CASPIA (Caspian Tern).—August, Cardwell beach. Shot specimen of this Tern on Maunga Creek; it is a common Tern at Kimberley, mouth of Norman River, Gulf of Carpentaria.

STERNA BERGII (Crested Tern).—February, Cardwell.

STERNA MEDIA (Lesser Crested Tern).—February, Gould Island.

GELOCHELIDON ANGLICA (Gull-billed Tern). — February, Gould Island.

PHALACROCORAX GOULDI (White-breasted Cormorant).—October, Herbert River.

PHALACROCORAX MELANOLEUCUS (Little Cormorant).—October, Herbert River.

PELECANUS CONSPICILLATUS (Pelican).—Maunga Creek, Cardwell.

PLOTUS NOVÆ-HOLLANDIÆ (Darter).—Herbert River.

SULA LEUCOGASTER (Brown Gannet, Booby).—Fairway Buoy, Dungeness, Hinchinbrook Channel, mouth of the Herbert. Shot specimen sitting on Fairway Buoy.

PODICEPS NOVÆ-HOLLANDIÆ (Black-throated Grebe). — October, Herbert River.

NOTE.—There are more species of birds in the Cardwell district than those I have noted in this paper; but the birds I have mentioned I observed and shot specimens of during the eight months I was in the district. The season of 1888 was very dry in that neighbourhood—all waters, except the rivers and large creeks, were dry. That alone would influence bird-life adversely.—K. B.

Production of Podargus Call

(Accepted as read before the Brisbane session R.A.O.U.)

BY A. H. E. MATTINGLEY, C.M.Z.S.

SOME time ago a gentleman remarked to me that he had a Podargus (*Podargus strigoides*) which had the feathers of one wing cut off. He intended to destroy it, because he had grown tired of feeding it, and on account of the bird not being able to fly away when liberated. Desiring to save the life of the interesting nocturnal bird, I obtained it, and released it in my garden at Kew, Victoria. I resolved to feed it until it could fly away and hunt for itself. The bird gradually became fairly tame, and readily took pieces of meat from my hand. Any stray mice that I captured it ate ravenously. In course of time it started its hooting call during the night, and occasionally a wild mate, attracted by its nocturne, would make its appearance. These birds became so accustomed to my proximity to them that they allowed me to get within a few feet of them whilst they were calling. I was enabled thereby to observe how the Podargus' hooting note was produced. With its head elevated at an angle of about 30 degrees, with its bill fully closed, and with throat distended, the bird pulsates its throat, giving forth a rapid vibrating note, sounding at a distance like "Oom-oom-oom-oom-oom," but when close to the bird the call of a single "oom" or hoot I found consists of two notes produced not unlike "Too-roo, too-roo, too-roo," emitted in an almost continuous delivery, ranging from 14 "ooms" or hoots to 158 "ooms" without cessation. From lengthy observations I was able to ascertain that the greatest number of notes was produced on moonlight nights, especially about 11 o'clock. Sometimes the bird uttered a few hoots during the daytime. This occurred more often about 6 p.m. On several occasions I timed the duration of the calls, and found them uttered at about 6 "ooms" to the second. As a rule, there is the succession of calls uttered by the bird, ranging from 2 seconds' to about 27 seconds' duration. The whole series of calls were emitted during the space of about 3 minutes. Generally, the Podargus started its call in subdued tones, the full volume of sound being reached after a few hoots. The subdued tones had a ventriloquial effect.

For many years past I have taken notice of the Podargus in their home in the bush, but I have never yet heard them utter the familiar call of "mopoke," which note some persons attribute to this bird, although I have made special efforts to ascertain the truth of their statements.

OMISSION.—The name of Dr. Ronald Hamlyn Harris, of the Queensland Museum, should be added to the list of members from Queensland who joined the R.A.O.U.

Note on Hawks.

GREY v. WHITE GOSHAWKS.—Mr. H. L. White has received the following interesting communication from Mr. H. G. Barnard, from Cape York:—“What I am about to state is perfectly authentic, and I have witnesses to prove it. This is in regard to the Hawks. In my first letter from here I stated that I hoped to prove that the three Hawks—namely, *Astur cinereus*, *A. novæ-hollandiæ*, and *A. leucosomus*—were the same bird. At the first four nests taken the birds of two of the nests were both grey, as in *A. cinereus*; at the other two the birds were pure white; then Mr. Bert Jardine informed me of a nest where one bird was pure white and the other grey. As he was leaving for New Guinea, he offered to show me the nest, which was 8 miles from here, towards Somerset. I went with him, and we flushed a grey bird from the nest. As it was too late for further investigations that night, I proceeded with him to Somerset, returning the following day. Next morning, getting a daybreak start (I had a tramp of 16 miles, besides shooting the birds and having a large tree to climb), I reached my destination about 9 o'clock, and flushed a pure white bird from the nest. This bird, which was very shy, proved to be the male. After waiting about two hours, the bird returned to the edge of the nest, where I shot it. As it lay on the nest, I was afraid the dead bird would frighten its mate on its return, so I started to climb to the nest. To the first fork was about 50 feet. I was about half-way up when the female, a grey bird, flew into the nest and sat beside the dead one. Quickly I made my way down the tree for my gun; and as the bird hopped off the nest on to a limb I secured it, for complete identification. I then finished the climb, and got the other bird and a set of three eggs. One of the eggs was pierced in the end by a shot; but this will only make the set more interesting, as it in no wise spoilt the egg. On my way home I found another nest, from which the female flew, and she was pure white. I waited about half an hour before climbing, as I wanted to see the male, and when he came he was grey—so in one day I got a nest with a white male and grey female and *vice versa*. I obtained another female from a nest at which both birds were grey, and it is identical with the grey bird shot with the white male. The grey birds are undoubtedly the ones classed as *A. cinereus*, while the white are exactly like *A. novæ-hollandiæ*. The birds are larger than *A. approximans*, and the eggs considerably larger. As I have the skins—I regretted having to shoot these fine birds—to prove the relationship, but it may be some time before they come into your possession, I ask you, in justice to Mr. Jardine, who first brought the matter under my notice, and to Bert, who found and showed me the nest from which I secured the birds, to kindly place the foregoing facts before some ornithological society.”

Copies of Royal Letters.

Marlborough House, Pall Mall, S.W.,

4th July, 1910.

DEAR SIR,—I have laid before the King and Queen the ninth volume of *The Emu*, and am commanded by Their Majesties to convey to the Australasian Ornithologists' Union Their Majesties' sincere thanks for their courtesy in sending the ninth volume for the acceptance of the King and Queen.

Their Majesties are interested to hear that the Union will hold its next sitting at Brisbane, and that the Government of Queensland are likely to afford the members facilities to explore the islands on the Barrier Reef.

The King and Queen wish the Union every success.

I am, yours faithfully,

(Sd.) E. W. WALLINGTON.

A. J. Campbell, Esq.

COMMONWEALTH OF AUSTRALIA.

(PRIME MINISTER.)

Melbourne, 18th August, 1910.

SIR,—In continuation of my letter of the 16th May last, relative to the application of your society for permission to use the prefix "Royal," I now have the honour to inform you that advice has been received from the Secretary of State for the Colonies that His Majesty the King has been graciously pleased to approve the grant of the prefix "Royal" to the Australasian Ornithologists' Union.

I have the honour to be, sir,

Your most obedient servant,

M. L. SHEPHERD, Secretary.

The President of the Ornithologists' Union,
Zoological Gardens, Melbourne.

COLOURED FIGURE FUND.—The proceeds of the popular lecture given at Brisbane during the session of the R.A.O.U. were £81 4s., which amount has been received by the hon. treasurer, thanks to Mr. H. Tryon, the organizing secretary, and the members of the Brisbane Field Naturalists' Club.

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THE objects of the Society are the advancement and popularization of the Science of Ornithology, the protection of useful and ornamental avifauna, and the publication of a magazine called *The Emu*.

The business of the Society shall be conducted by a Council, consisting of a President, two Vice-Presidents, Secretary, Treasurer, Librarian, Editors of *The Emu*, and six members; each office-bearer and member of the Council shall retire at the end of each financial year, but shall be eligible for re-election.

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Every member shall be required to pay an annual subscription of fifteen shillings, due on the first of July each year. (The usual exchange to be added to Foreign, Interstate and Country cheques, drafts, &c.)

The offices of the Society shall be at the office of the Hon. Secretary of the Society for the time being, or at such other place as the Council may appoint.

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Official Organ of the ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION.



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ANNOUNCEMENTS.

Articles (technical papers should if possible be type-written) and communications intended for publication, also books and publications for notice, should be addressed to the Editors, *The Emu*, c/o MR. A. J. CAMPBELL, Custom-House, Melbourne.

MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

Occasionally, when funds permit, it is intended to issue Coloured Plates of hitherto unfigured Australian Birds. Voluntary subscriptions to a "COLOURED FIGURE FUND" are courteously invited from members.

The price of *The Emu* to non-members is 4/- per copy. Extra copies may be had by members at half-price.

The Emu

Official Organ of the Royal Australasian Ornithologists' Union.

"Birds of a feather."

VOL. X.]

21ST JANUARY, 1911.

[PART 4.]

Description of a New Goshawk.

BY A. J. CAMPBELL, COL. MEM. B.O.U.

ERYTHROTRIORCHIS RUFOTIBIA, sp. nov.

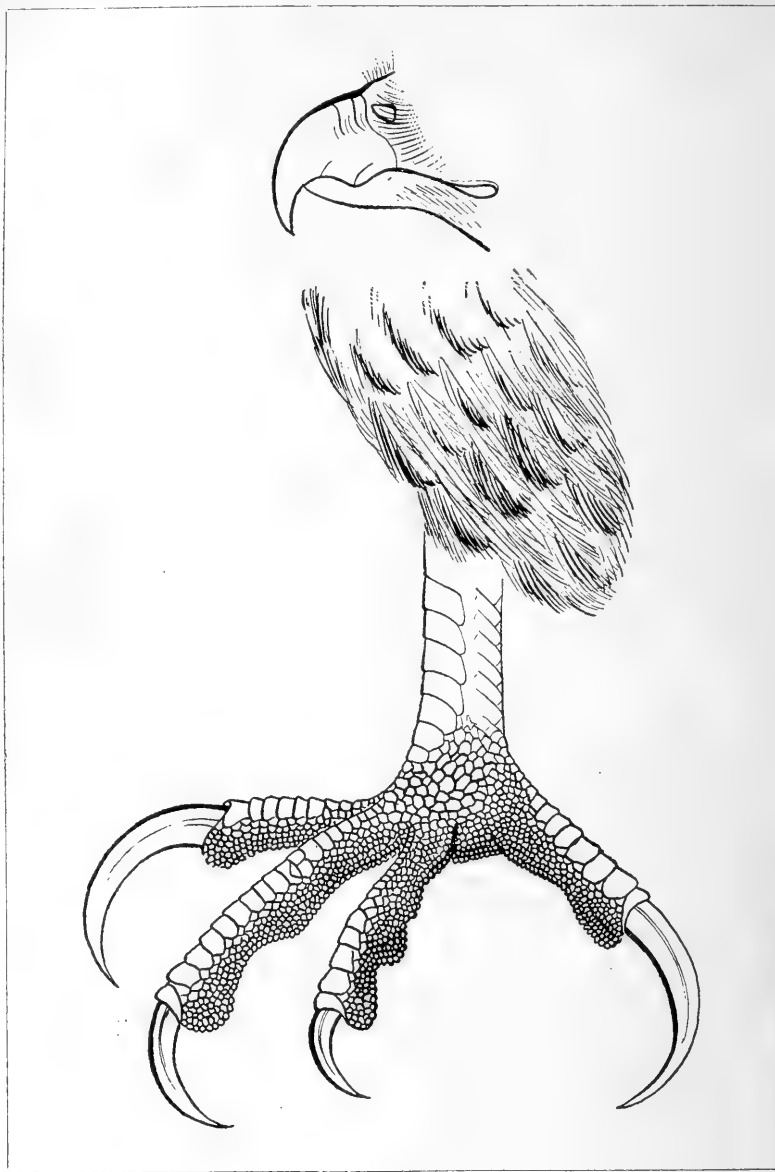
Adult Female.—Upper Surface.—Head, mantle, and tail coverts blackish-brown (darkest on the head, lightest on the tail coverts), each feather edged with brown, varying in shade from rufous to cinnamon; wing coverts blackish-brown, edged with rufous, so that the dark markings on each feather appear broadly wedge-shaped, same as on rest of upper surface; primaries and secondaries brownish, and tail greyish, all distinctly barred with a darker colour. Under Surface.—Throat and neck dull white, each feather with a narrow dark brown stripe; chest and flanks tinged with rufous, each feather also with a distinct central dark brown stripe; breast and abdomen whitish, feathers narrowly and conspicuously striped with dark brown; tail coverts buffy-white; wing coverts and legs (tibia) rich rufous or chestnut-brown, the former marked with spots of dark brown; wings and tail greyish-white, both beautifully barred with slaty colour. Iris yellow; tarsus yellow; bill black at tip, grey at base (Hill).

Dimensions in inches:—Total length, $22\frac{1}{2}$; wing, $16\frac{1}{2}$; tail, 10; tarsus, 3; culmen, $1\frac{1}{2}$; middle toe (including claw), $3\frac{3}{8}$.

Habitat.—Napier Broome Bay, North-West Australia.

Remarks.—This large and handsome new Goshawk is the second of the genus found in Australia, the other being the Red Goshawk (*Erythrotriorchis radiatus*), and is closely allied to the Marquis Doria Goshawk (*E. doriae*),* found in New Guinea,

* Of Salvadori and D'Alberty. For figures see Gould-Sharpe's "Birds of New Guinea," vol. i., pl. 2, concerning which Dr. Sharpe wrote:—"The original specimen came from Hall Bay, in south-eastern New Guinea. This is the bird which forms the principal figure in the plate, and which we consider to be immature. The second specimen figured in the plate is apparently a fully adult bird, and was obtained by Mr. Goldie on the Astrolabe Mountains, in south-eastern New Guinea. We believe it to be an adult male, and the type to be an immature female, notwithstanding some discrepancies in the proportions of the quills and tail feathers exhibited by the two specimens. If we are correct in thus assuming the relation of these two individuals, then it is evident that the genus *Megatriorchis* is the same as the Australian genus *Erythrotriorchis*, of which *E. radiatus* is the representative species on the latter continent. A larger number of specimens is, however, requisite to settle the point satisfactorily."



Bill and Foot of *Erythrotriorchis rufotibia* (Campbell).
(About $\frac{3}{4}$ natural size.)

FROM A DRAWING BY C. G. BRITTELBANK.

but from which the Australian bird differs chiefly by its lighter colouration, the absence of dark spots on the under tail coverts, and by the very distinct and uniform-coloured (rufous) thighs (tibia).

The addition of an entirely new Hawk for Australia being an ornithological discovery of some importance, I evoked the willing aid of Mr. A. W. Milligan in my research through all the available literature on the subject, and he has concurred in my deduction that this bird has hitherto been undescribed.

While Mr. G. F. Hill, the collector, and Mr. H. L. White, who subsidized his North-Western trip, both receive all credit for the discovery, I propose for the new bird the name *Erythrotriorchis rufotibia*, or the Red-legged Goshawk. In the accompanying illustration Mr. C. C. Brittlebank has kindly drawn the bill and foot of the bird, the latter showing how exceedingly powerful and lengthened are the claws or nails.

Mr. White thoughtfully forwarded this bird to me, with many other large species, for exhibition at the Brisbane session of the R.A.O.U., but, owing to adverse circumstances, the parcel remained in Melbourne until my return. Mr. Hill's field notes regarding the bird appear on page 266 of this issue.

Description of a New Ephthianura.

BY EDWIN ASHBY, R.A.O.U., BLACKWOOD, S.A.

EPHTHIANURA LOVENSIS, sp. nov.

Adult Male.—General colour above buff-brown; lesser, median, and greater wing coverts buff-brown, with narrow dark drab centres; primaries, inner web drab, outer web edged with buff, quills reddish-brown; secondaries, centres drab, broadly margined with buff. Tail, two centre feathers dark buffish-brown margined with pale buff, others smoky-drab narrowly margined in outer web with pale buff, inner web broadly tipped with pale buff; upper tail coverts buff-brown washed with yellow; rump buff-brown. Lores deep golden-yellow; brow, cheeks, chin, eyelids, throat, and whole of under side, including under tail coverts, rich yellow; forehead, upper portion of head and neck, and auricular region buff washed with yellow, with centres of feathers drab. Under side of wings pale drab, base of feathers and down slaty-grey; under wing coverts yellow to buffish-white. Bill dark brown; feet and legs brown; iris white.

Female.—While the upper portion exhibits the same buffish (desert) colouration as the male, the yellow of the under side is not so rich and extensively blended with buff. In one specimen breast and sides are buff blending into yellow, abdomen rich yellow. In the other the sides of breast are buff

with the centre almost pure yellow, abdomen buff-yellow. In both specimens the lores are pale yellow. In one the eyebrow is clearly marked in pale yellow; in the other, probably a young bird, it is represented by a slight yellow wash only. Both females are only partially through moulting, the tail feathers being almost entirely young quills.

Measurements in inches:—Male. — Wing, 3; tail, 1.65; culmen, .55; tarsus, .80. Females. — (1) Total length, 5; wing, 3.05; tail, 1.68; culmen, .47; tarsus, .83. (2) Total length, 4.72; wing, 2.9; tail, 1.62; culmen, .47; tarsus, .9; middle toe, .65; hind toe (including claw), .55.

Habitat.—Leigh's Creek, S.A.

Remarks.—I am indebted to Mr. J. R. B. Love for the handsome little birds above described, received in the flesh after injecting formalin, and it is with pleasure I name the species after him, while in the vernacular it may be known as the Desert Bush-Chat. The male was obtained on the 11th of November last, and the two females a month later. There was a flock of about a score. I have provisionally referred this species to the genus *Ephthianura*, but it is of very robust form, and may, after further investigation, exhibit generic differences. On comparison with Gould's figure and description of *Ephthianura crocea*, Castelnau and Ramsay, the species herein described is distinctly larger, and, while exhibiting some similarities, is very dissimilar in general colouration, has no yellow rump, and no crescent mark on breast. Through the kindness of Mr. R. Etheridge, the skin of the male has been compared with the *Ephthianuræ* in the national collection in the Australian Museum, and Mr. A. J. North supports my opinion that the new bird is possibly allied to the *Ephthianuræ*.

Description of the Nest and Egg of White-winged Petrel (*Cestrelata leucoptera*, Gould).

By A. F. BASSET HULL, R.A.O.U., SYDNEY.

(Published as "Bulletin No. 1" of the R.A.O.U., 15/12/10.)

Nest.—A depression in the ground, or a crevice amongst loose stones, lined with a small quantity of broken pieces of dead fronds of the cabbage palm.

Egg.—One, soft chalky-white, rounded oval; dimensions, 1.96 x 1.48 inches.

Remarks.—This species breeds in considerable numbers on Cabbage Tree Island, off the entrance to Port Stephens, New South Wales. This is the type locality of the species, and I believe that it has not been found elsewhere, except as an occasional straggler on the wing. The birds were found in small numbers on the 16th

October, 1910; singly, for the most part concealed under the fallen fronds of the cabbage palm. On the 2nd November there were more birds, nearly all in pairs, and many were in crevices amongst the rocks; they were evidently mating. On 4th December large numbers of birds were found sitting, each on one egg, and all nests were more or less in the open—*e.g.*, there was no semblance of a burrow, such as is constructed by its nearest ally, *Æ. cooki*, Gray. In some instances several nests were found in close proximity under large masses of dead fronds, and deep in natural crevices amongst the stones, but there was no evidence of any scratching out of soil to form the nesting-place.

The eggs vary greatly in dimensions and shape; the major axis varies from 1.76 to 2.12, and the minor axis from 1.36 to 1.54, the average dimensions of 31 measured specimens being 1.96 x 1.46 inches.

Further Remarks on the Finding of the Nest and Egg of *Æstrelata leucoptera*.

BY A. F. BASSET HULL, R.A.O.U., SYDNEY.

IN his "Handbook to the Birds of Australia," p. 454, John Gould, in dealing with his *Æstrelata leucoptera*, or White-winged Petrel, expressed the opinion that his bird was different from the *Æ. (Procellaria) cooki* of G. R. Gray. His specimen was obtained while breeding on Cabbage Tree Island, at the mouth of Port Stephens, and he was informed that the bird bred there in abundance. He added:—"The Australian seas abound with Petrels, the investigation of the various species of which, their habits and economy, as well as their places of abode, will serve to occupy the attention of ornithologists for years to come."

On the 30th December, 1906, my friend Mr. R. N. Cadden, who was on the staff of the Danysz Rabbit Inoculation Station at Broughton Island, writing to me with reference to Petrels' eggs, said:—"It is too late to procure good Mutton-Birds' or Storm-Petrels' eggs now."

At the time I was not aware that any Petrel other than the Mutton-Bird (*Puffinus sphenurus*) was known to breed so far north, but I stored up the remark for future investigation. My discovery of *Pelagodroma marina* breeding on an islet off Wollongong in 1909 revived my interest in the matter, and I decided to make an expedition to the islands in the vicinity of Port Stephens this season, in order to determine, first, what species of Storm-Petrel bred on Broughton Island, and, second, whether Gould's White-winged Petrel still frequented the type locality of the species.

Accompanied by Mr. C. Hedley, F.L.S., Assistant Curator of the Australian Museum, Dr. Hamlyn Harris, F.Z.S., Director of

the Brisbane Museum, and several other friends, I left Sydney on the 15th October last, and reached Nelson's Bay, at the entrance to Port Stephens, at daylight on the 16th. Here a launch was in readiness, and by 9 o'clock we had covered the 12 miles of ocean and reached Broughton Island. A short walk brought us to a sandy hillock with a north-easterly aspect, and here we soon discovered the small burrows of a Petrel, which on investigation proved to be those of *Pelagodroma marina*. Many burrows contained birds sitting on perfectly fresh eggs; a few eggs were about half incubated, while other burrows contained a bird but no egg. None of the eggs taken was spotted with reddish, as was the case with a fair proportion of the eggs taken the previous year off Wollongong. There were many hundreds of burrows, and in the accompanying photograph no less than five entrances to burrows can be detected. Numerous fragments or skeletons of dead Petrels were lying about, and we were informed by the launch proprietor that some domestic cats which had been liberated on the island were responsible for much slaughter of these innocents. I am inclined to think that several Harriers I saw hovering about the locality were the real offenders, the remains having the appearance of being picked rather than chewed. Some Greek fishermen who reside on the island, on being questioned as to birds breeding there, said that a large Mutton-Bird with a white breast was to be found on the western end of the island. A long journey to the spot, however, revealed only a number of burrows, some of which were inhabited by *Puffinus sphenurus*, engaged in cleaning out their habitations for the following month's operations.

After lunch we returned to the entrance to Port Stephens, where Cabbage Tree, Boondelbah (or Big), and Little Islands form a triangle. Landing on the first-named, we immediately discovered a number of Penguins (*Eudyptula minor*) occupying shallow burrows or ensconced in crevices under the rocks on the shore. These birds were sitting on fresh or partly incubated eggs, or had one or two young ones in varying stages of growth. This was an interesting discovery, and constituted another "farthest north" record of a breeding-place of this species, my previous record being off Wollongong (Tom Thumb Island), 140 miles south of Port Stephens (October, 1909). Above, and closely approaching the Penguins' zone, were numerous burrows of *Puffinus sphenurus*, some of which were inhabited by the birds, but no eggs had been laid.

The western or shoreward side of Cabbage Tree Island is densely covered with vegetation, consisting chiefly of the cabbage palm (*Livistona australis*), with a few large native plum (*Sideroxylon australe*) trees, and vines innumerable, forming a very tangled growth, through which it was difficult to force a way. After struggling through a belt of tangled scrub, Dr. Harris and

I came to a steep gully, evidently forming a watercourse in wet weather, strewn with loose boulders and smaller stones. Large cabbage palms grew here in abundance, and there were masses of dead fronds lying underneath the trees. Stumbling over this *débris*, we heard a shrill cry, like the sounds "Peep, peep" rapidly repeated several times, and a small bluish-grey bird fluttered out from under the dead fronds, and half-flew, half-waddled down the gully towards the shore. It soon became entangled in the vines, and upon being captured proved to be *Æstrelata leucoptera*, Gld. Further search revealed several more birds, all of which uttered their cry upon hearing our footsteps. Some were discovered hidden in deep crevices amongst the loose stones, and in one case two birds were together. Careful search failed to disclose any sign of eggs, but, upon dissection, two females taken showed signs of an early intention of laying. The day was then nearly done, so after taking several Penguins, adult and young, and eggs, we returned to Nelson's Bay. Early the next morning we returned to the island, having first made an ineffectual attempt to land on Boondelbah Island, and Mr. Hedley and I ascended to the top of Cabbage Tree Island, taking the gully route. It was a fairly stiff climb of about 500 feet, but the view from the top was ample reward for the exertion. The seaward side fell away almost perpendicularly to the ocean, and a few tussocks clinging to the cliff showed signs of Mutton-Birds' tracks. A rocky platform on the summit was burrowed in all directions, and amongst the stones were many early arrivals of the *Puffinus sphenurus*, which greeted us with their melancholy wails.

Very few *Æstrelatas* were seen towards the top, so we abandoned the search and returned home.

On the 30th October we again visited Cabbage Tree Island, the Messrs. Robert and Henry Grant, taxidermists to the Australian Museum, accompanying us. On this occasion Henry Grant found an *Æstrelata* in a deep crevice under the rocks amongst the Penguins. He extracted the bird, and saw what he took to be a young bird in the recesses of the crevice, but was unable to get it out. On visiting the gully again, we found a larger number of the Petrels, mostly in pairs, sitting on nests formed of masses of fragments of dead cabbage palm fronds, but no eggs had been laid. Curiously enough, the female birds examined showed no signs of laying in the immediate future. The weather appearing to threaten a change, we returned to port, and spent the remainder of the day in obtaining specimens of the land-birds, procuring *Coracina lineata*, *Tropidorhynchus corniculatus*, *Malurus lamberti*, and others.

I then decided to give the Petrels a month to make up their minds to lay, and on the 4th December last, my brother, Mr. W. D. Hull, Mr. Thos. P. Austin, of Cobborah, and I went up

again. Landing about 7 o'clock in the morning, we found the Penguins still at work, several having fresh eggs under them. This bird must arrive to breed at intervals from late August to December, judging from our discovery of nearly full-grown birds in October and fresh eggs in December. *Puffinus sphenurus* had commenced to lay apparently some days before our arrival, as we found many burrows tenanted, and eggs either fresh or slightly incubated.

We gave these two species scant attention, however, and quickly made our way to the gully. Immediately upon entering its shades I found a White-winged Petrel sitting in full view amongst some vines trailing over the ground, and on removing her discovered her egg reposing on a bed of dead cabbage palm fronds, broken into short pieces and piled for a few inches in depth in a hollow amongst the stones. The egg was pure white, soft and chalky in texture, elongated oval in shape, measuring 2.12 x 1.4 inches. My brother soon found another, and Mr. Austin followed with a third. Thereafter we went on finding the sitting birds in all directions in the gully. In most cases the bird was visible, either under an overhanging rock or in a crevice amongst the stones. In several instances a cry from under a mass of fallen fronds led to a search, and the bird was found nesting amongst the stones beneath. In one place I found five sitting birds under one mass of fronds. The eggs were for the most part fresh, but several were partly incubated, and two contained feathered chicks. There is no doubt, therefore, that they had commenced to lay shortly after our visit on 30th October. As the first egg taken was of abnormal length, I took the measurement of 31 specimens, and found the average dimensions to be 1.96 x 1.46 inches. The egg I selected for a type was 1.96 x 1.48 inches. There is considerable variation in dimensions and shape of the eggs, but for the most part they are stout rounded oval in shape, while a few are elongated oval. The major axis varies from 1.76 to 2.12 inches, and the minor axis from 1.36 to 1.54 inches.

The birds show no difference outwardly between the sexes, but individual specimens show slight variation in the slaty-grey colour on the sides of the neck; in some cases this colour extends right over the throat, becoming lighter towards the middle. One specimen had a few scattered white feathers on the crown. The sitting birds showed no fear, but pecked sharply at one's hand, although the beak is not strong or large enough to inflict more than a slight scratch. When removed from the nest they generally fluttered down the gully towards the sea, but in some instances returned after going a short distance, and sought shelter in a rock crevice.

After exploring the first gully, we re-embarked in the dinghy, and visited another gully further to the north. The landing at

this point proved difficult, but was successfully accomplished, and in the shades of the palms many more sitting birds were found. I may here remark that in the first gully Mr. Austin took two perfectly fresh eggs from a nest, but no bird was sitting on them, and I assume that their occurrence together was accidental. Many broken eggs or shells with large ragged holes in them were found. The launch man who accompanied us attributed these broken eggs to snakes, but as we saw no sign of any reptile other than a very small lizard, I am inclined to charge the bush-rats with the robberies, as their nests were to be seen amongst the vines, and the ragged holes in the eggs bore the appearance of having been nibbled out. Occasional dead birds were seen, but these probably were killed by becoming entangled in the vines. In this connection I may mention that we found a Penguin at the entrance to its burrow amongst the tussocks, with one leg securely held by tangled grass, which had become wound round it. A soft-shelled egg was lying underneath the bird, which was alive but very thin. We released her, to her apparent satisfaction.

Leaving Cabbage Tree Island about 10 a.m., we proceeded to Broughton Island, and landed in Esmeralda Cove, a beautiful sheltered bay behind a huge sugarloaf rock, on which some Cormorants (*Phalacrocorax carbo*) were apparently nesting in an inaccessible place. After lunch and a bathe, we inspected the Storm-Petrels' burrows, and found several tenanted by young birds in down, and a few with adult birds sitting on nearly hatched eggs. Beyond a few Harriers and one White-bellied Sea-Eagle, we saw nothing more of interest on this island.

On the return journey we noticed a number of "Shearwaters" (a much more suitable name than "Mutton-Birds") of the *P. sphenurus* species, and amongst them were a few more robust birds with whitish or yellowish bills. These may prove to be *P. carneipes* (Gould), but further search is necessary to ascertain whether they breed in the vicinity. I took a male bird of another species on Cabbage Tree Island, but have not yet established its identity.

On the 6th December we went up Port Stephens to a small island, also called Cabbage Tree, about 12 miles from the entrance to the port. Here we were fortunate enough to find an extensive Nankeen Night-Heronry, some hundreds of nests being lodged in the branches of the large ironwood trees (*Sideroxylon australe*) or native plum. These nests for the most part contained one or two young birds in varying stages of growth, from the just hatched to full-fledged birds able to fly. A fair number of nests contained eggs, chiefly clutches of two or three, but two were found containing four eggs each. As the two and three sets were mostly partially incubated, it may be considered that they formed the full intended clutch in each

case. On a small sand-spit which we visited on our way home, we found a few two and three sets of eggs of *Sterna sinensis* and one pair of *Ægialitis ruficapilla*.

On the 7th December we again took the launch outside the Heads, and after considerable difficulty effected a landing on Big or Boondelbah Island. We had to ascend a narrow cleft in the cliffs for a distance of 300 feet, but the labour was not well repaid, for we found nothing but immense numbers of *Puffinus sphenurus*. Every available yard of sandy soil was burrowed, and each burrow was tenanted by a bird and egg, while a sociable little lizard basked on the sand-heap at the entrance, and whisked into the burrow on our approach. Many birds were unable to find sufficient accommodation for burrowing purposes, and had to content themselves with the slight shelter afforded by a thick tussock or a stunted bush (*Atriplex*, sp.) These birds were often quite visible from above, but sat unmoved as we passed by.

We next visited a small split rock or islet off Point Stephens, called Shark Island. The signalman at the Port informed me that three species of birds frequented this island—viz., the common Mutton-Bird, the Cabbage Tree Island Petrel, and a smaller one called "Blue-billy." The last is probably the White-faced Storm-Petrel, but our most careful search of both halves of the islet failed to reveal anything but *Puffinus sphenurus* and two nests of *Demigretta sacra*, one containing two young birds and the other empty.

Field Notes on the Birds of Kimberley, North-West Australia.

BY G. F. HILL, R.A.O.U., MELBOURNE.

IN August of last year I visited the newly-established mission station (lat. 14° 6' S., long. 126° 40' E.) on Napier Broome Bay, far north-west of Australia, and the following notes and observations are the result of 10 months' work, devoted principally to ornithology, in the interests of Mr. H. L. White, Belltrees, New South Wales, in a remote and practically unknown region. The locality is about 300 miles north-east of Derby and 135 miles north-west of Wyndham.

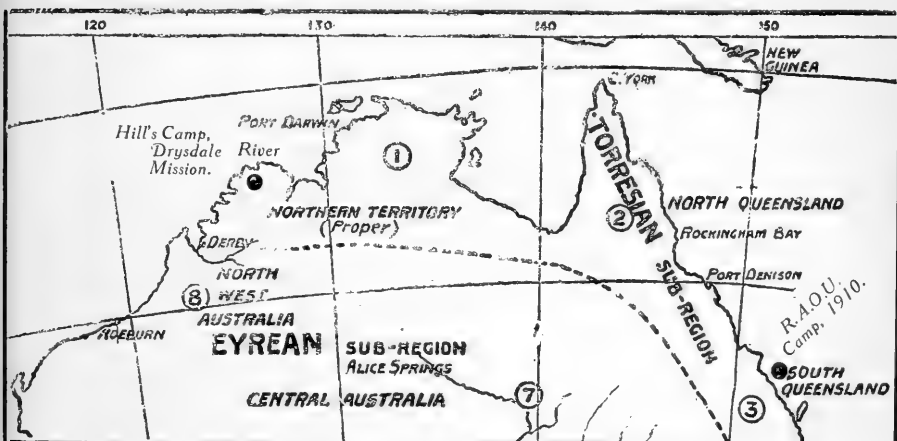
The season was evidently a very unusual one, and the rainfall far below the average, if one could judge accurately from the appearance of the country and the evidence of great volumes of water in the creeks and rivers during past seasons. Between October and April, 34 inches of rain were recorded—a generous rainfall under some conditions, yet not sufficient for this country when distributed generally in light showers over a period of six



Creek Scene: Home of White-breasted Honey-eater (*Glycyphila fasciata*), also of Tawny Grass-Bird (*Megalurus galactotes*) and Red-backed Wren (*Malurus cruentatus*) along the grassy margin.

FROM A PHOTO. BY G. F. HILL.

months of the year. Although most of my work was confined to the country between the Drysdale River and the east side of Napier Broome Bay, I paid several brief visits to the islands and many points on the mainland between that bay and Gibson Point (Parry Harbour), and on my return by lugger to Derby in July further opportunities were afforded for seeing much of the coast and adjacent islands of Kimberley, but I regret that the exigencies of travel would not permit of longer delays at many promising spots. Most of the coast and the islands are extremely rocky and barren, and possessed of very little bird, animal, and insect life. Sea-birds are remarkably scarce, and I saw no signs of "rookeries" on any of the islands, nearly all of which are inhabited or visited by aborigines. A few localities on the coast call for some notice before going on to a more detailed description of the country in which I did most of my work.



Parry Harbour, at the entrance to which lies Hecla Island (lat. $13^{\circ} 5' S.$, long. $126^{\circ} E.$) is one of the most picturesque as well as one of the safest harbours on the north-west coast. At a distance the whole of the surrounding country appears to be a level and fertile basaltic plateau, but a closer examination proves it to be composed almost entirely of broken basaltic rocks and gravel, lightly timbered with stunted eucalypts, acacias, and many species of small shrubs. The precipitous slopes, however, are thickly clothed with tropical trees, shrubs, and creepers, where bird and insect life is plentiful and varied, and differs remarkably from that found further up the coast. Water is not abundant, but there are many permanent springs close to the shore. Hecla Island is about 12 acres in extent, and waterless. Two-thirds of its surface are treeless, but well grassed, while the remainder is similar to the slopes on the adjacent mainland.

Augustus Island (lat. $15^{\circ} 26' S.$, long. $124^{\circ} 34' E.$) and the

adjacent mainland appear to closely resemble Parry Harbour as regards flora and fauna, though both are more varied; but the geological formation is very different, being largely sandstone. For scenic beauty there is nothing on the north-west coast to compare with this locality, and, indeed, it would be difficult to picture anything grander than the rugged coast-line at Hanover Bay and the entrance to Prince Regent River. The precipitous, table-topped hills, Mts. Trafalgar and Waterloo, are remarkable features of this country. Further south the coast again becomes rocky, barren, and uninviting. Sea-birds are very scarce on the entire length of this coast, and few species were seen.

As most of my notes refer to the birds found between the eastern shore of Napier Broome Bay and the Drysdale River, a fuller description of this area may be given. A dense fringe of mangroves forms the predominant feature of the coast-line; however, many little sandy bays and rocky points break the dark green line, and add considerably to the beauty of an already pleasing landscape. Birds are numerous in the mangroves, but, as a rule, their nests are most difficult to find, owing to the density of the vegetation. Bird-observing here is anything but a pleasure. Soft mud, water, and a labyrinth of aerial roots make progress slow and arduous, while the humid atmosphere, and the attacks of countless thousands of mosquitoes and sand-flies, are almost past endurance; yet there is a strange fascination about the mangrove fringe, with its peculiar birds, insects, and marine life. In this bay there is a rise and fall in the tide of 8 feet, and at low tide considerable areas of sand and mud are exposed, affording rich feeding ground for several species of Waders.

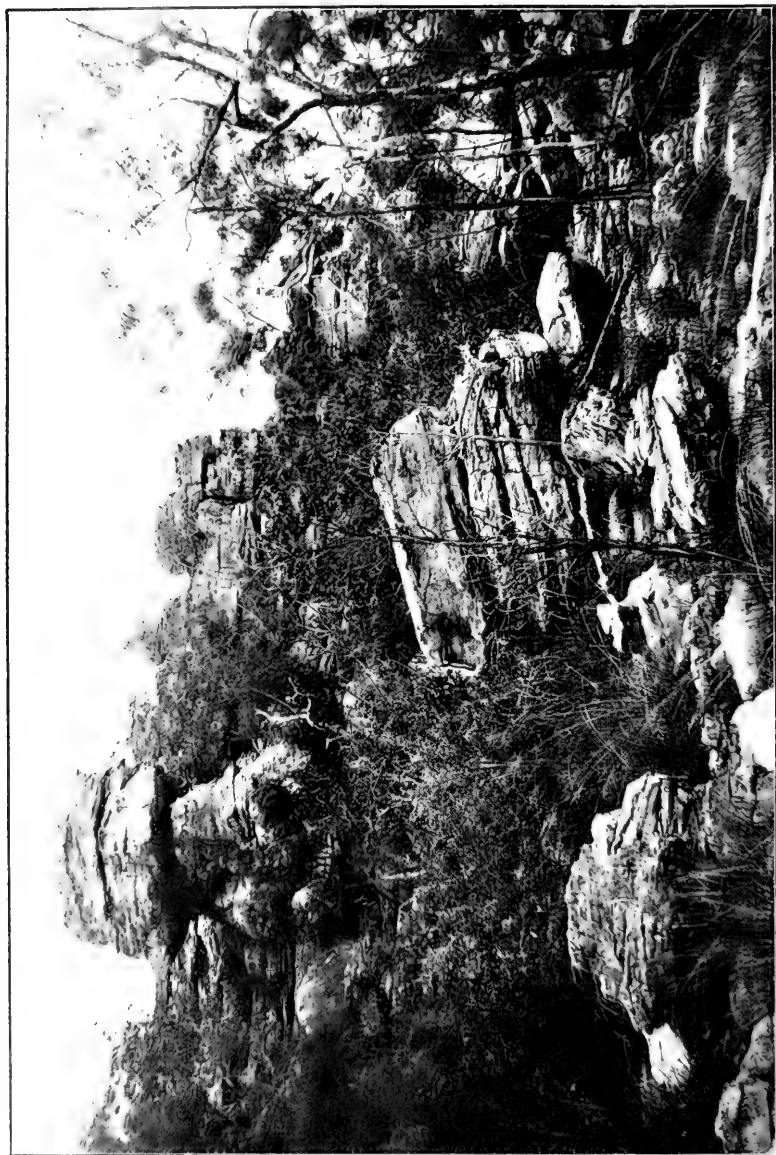
Travelling inland from the shore, sandy and slightly undulating country is met with for two or three miles, in which occasional outcrops of sandstone occur. Some of these outcrops are merely isolated rocks, while others cover a considerable area and rise to an altitude of 60 to 80 feet above the surrounding country. Most of the sandy area is covered with a fairly heavy growth of eucalypts and a smaller proportion of the other trees and shrubs, such as *Melaleuca leucadendron* (in wet localities), *Acacia doratoxylon*, *A. tumida*, *Calycotrix microphylla*, and *C. laricina*. Some of the coastal localities are timbered almost exclusively with *Grevillea*, which, during flowering time, is alive with birds by day and flying-foxes (*Pteropus*) by night.

During the wet season grass grows luxuriantly, even on the poorest soil, and one species—*Sarga stipoides*, Ewart and White—attains a height of from 10 to 14 feet.

Tropical forest growth is confined to one area of about 2 acres in extent, in which the principal flora is *Melaleuca leucadendron*, and a number of strange trees, of which I collected specimens, but have not yet been able to procure the botanical names. Many pandanus trees also graced the scene. In this locality birds are numerous, probably on account of the shelter from sun and wind and the abundance of food and water.



Mangrove Creek : Home of White-tailed Robin (*Pæcilodryas pulverulenta*),
Shining Flycatcher (*Piezorhynchus nitidus*), and Brown-tailed Fly-
catcher (*Micræca brunneicauda*).



Sandstone Country : Home of Lavender-flanked Wren (*Mahurus dulcis*), Brown-breasted Shrike-Thrush (*Collyriochla woodwardi*), and Rock-Pigeon (*Petrophassa albipennis*).

The broken sandstone country commences at from 2 to 3 miles from the coast, and forms the western wall of the higher but more or less level country between Napier Broome Bay and the Drysdale River. This wall rises abruptly from the lower country, and is composed entirely of sandstone rocks, scantily clothed with stunted eucalypts, pines, and many varieties of shrubs, chief of which are *Calycothrix microphylla*, *C. laricina*, and *Acacia leptophleba*. A few species of birds, notably *Malurus dulcis* (Lavender-flanked Wren), *Collyriocichla woodwardi* (Brown-breasted Shrike-Thrush), and *Petrophassa albipennis* (White-quilled Rock-Pigeon), are peculiar to this class of country, but, generally speaking, bird-life is very scarce. A large rock-kangaroo (*Macropus woodwardi*?) and a small wallaby (*Petrogale*, sp. ?) are fairly plentiful here.

Travelling in a south-easterly to easterly direction, the country generally is level or slightly undulating, and, excepting a few rich marshes and flats along permanent creeks, is absolutely worthless for pastoral purposes. In the poorest of the gravel and scrub-covered areas I found the two species of Honey-eaters, *Ptilotis sonora* and *P. planasi* (Campbell, *Emu*, x., p. 168), fairly plentiful, but other birds and game were very scarce. The difficulty of procuring food in the bush was one of the most serious troubles we had to face, not only in this, but in almost every locality I visited.

As the Drysdale River is approached, rich alluvial plains of large extent take the place of the poorer sandy or gravelly country to the westward. I spent a week at the beginning of June about the river and the country near Camp FB/85 of the Kimberley Exploration Expedition of 1901, but I was disappointed to find bird-life poorly represented and nests few and far between.

Quail were numerous, and, from tracks seen, kangaroos were evidently fairly plentiful at times, but it was evident that large parties of aborigines had been hunting there just previous to our arrival. Small crocodiles and fish were plentiful in the river, but no water-fowl were seen.

I cannot allow this opportunity to pass without referring to the courtesy, hospitality, and cordial assistance extended to me by Bishop Torres, Very Rev. Father Planas, and the members of the Drysdale River Mission, and by many residents of Derby, whose kindness will always remain the most pleasant recollection I possess of this trip. I also desire to express my best thanks to Mr. Joseph Hope, Chief Draughtsman, and to Mr. Fred. S. Brockman, Chief Inspecting Surveyor, Lands Department, W.A., for plans and valuable information; also to Mr. W. B. Fletcher, W.A. Government Agency and Tourists' Office, Melbourne, for maps, guide books, letters of introduction, &c., which were of the utmost assistance to me.

Mr. H. L. White, of Scone, New South Wales, kindly consented to allow the ornithological collection to remain in Melbourne until my return, and it is to him and Mr. A. J. Campbell that

my thanks are due for the identification of the specimens therein.

In the following notes I have used the technical nomenclature adopted in Mathews' "Handlist of the Birds of Australia" (Suppl., *Emu*, vol. vii.) All measurements of birds were taken in the flesh, and in recording tail measurements I have given the length of the longest feathers. New records for North-West Australia are indicated by asterisks, thus (*).

In conclusion, it is hoped that yet another page has been added to the history of Australian avifauna, and that the facts and opinions recorded in the following notes will prove of interest to ornithologists and others. The failure to secure observations on the nidification of several new or rare species, and the comparative paucity of field notes on the rest, are only too obvious; but I would ask critical readers to bear in mind that I was generally alone, in a wild country, where the hostility and treachery of the aborigines were very great, and where insect pests taxed the collector's patience to the utmost of human endurance.

DROMÆUS NOVÆ-HOLLANDIÆ (Emu).

The plumage of the North-Western appears to be somewhat darker than that of the Southern birds. The food consists largely of seeds of a *Grevillea* and of a hardy bush which bears an abundant crop of woody and unpleasantly flavoured fruit.

MEGAPODIUS TUMULUS (Scrub-Fowl).*

I noticed these birds only in the tropical scrubs at Parry Harbour, on Hecla Island, and on the mainland abreast of Augustus Island. Several mounds were found in the first-mentioned localities, the largest of which measured 12 feet in diameter at the top, 28 feet at the base, and 8 feet high. From the appearance of the mounds, I judged that the young had hatched out about the middle of January. The loud, discordant cries of the Scrub-Fowls were heard only at daybreak.

SYNÆCUS AUSTRALIS (Brown Quail).

Numerous in well-grassed country. Their food consists largely of leaves of several small species of herbaceous plants, grass seeds, and locusts. The crop of one specimen contained a lizard (*Gecko*) 3 inches long and several locusts.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	186 ..	86 ..	20 ..	14 ..	38
♂ ..	165 ..	81 ..	20 ..	13 ..	37
♀ ..	167 ..	86 ..	20 ..	14 ..	35

TURNIX CASTANONOTA (Chestnut-backed Quail).

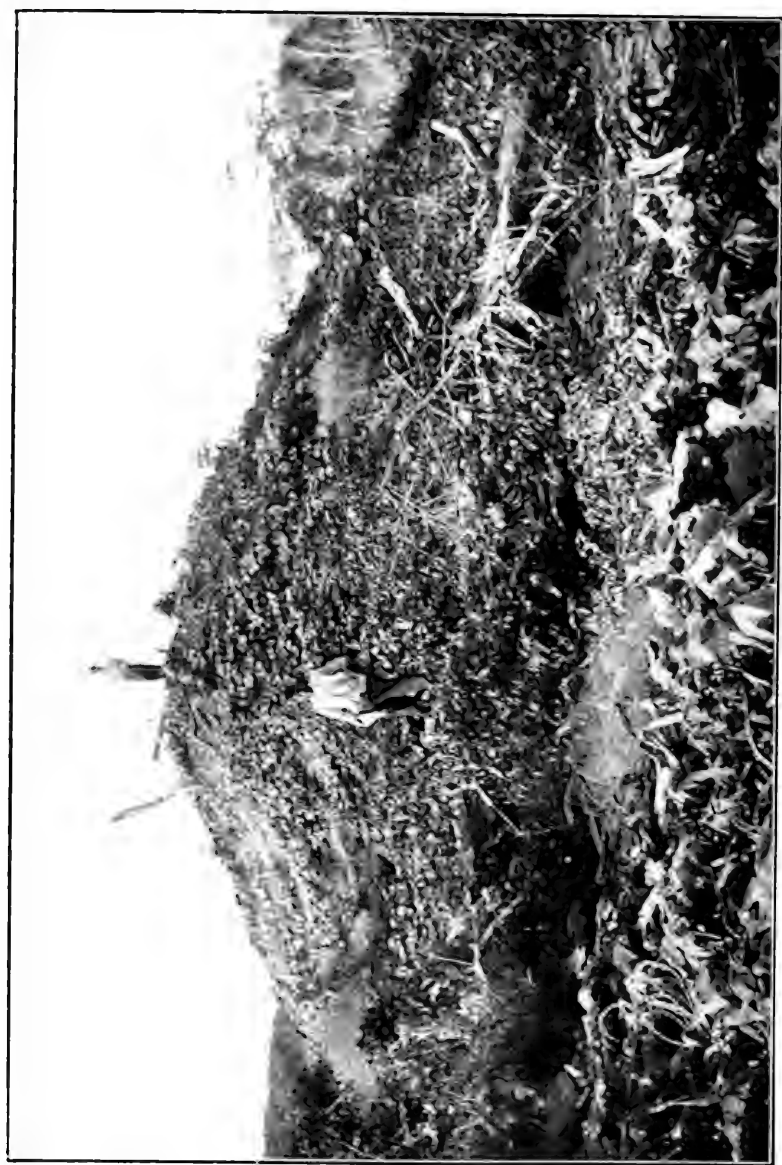
The remarks on *Synæcus australis* apply also to this species.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	162 ..	81.5 ..	22.5 ..	14 ..	29
♀ ..	200 ..	94 ..	25 ..	16.5 ..	39
♀ ..	186 ..	90 ..	25 ..	16.5 ..	35

MYRISTICIVORA SPILORRHOA (Nutmeg-Pigeon) ?

Prior to my arrival several large white Pigeons were shot at Parry



Egg-mound of Scrub-Fowl (*Megapodius tumulus*).

Harbour by the aboriginal natives attached to the mission station, but they were not identified. Subsequently, I spent a good deal of time hunting in these scrubs without securing any specimens, although I saw and heard Pigeons which I believe were referable to this species.

PTILOPUS EWINGI (Rose-crowned Fruit-Pigeon).

A very uncommon species, which was seen only in the dense tropical scrub on the eastern slopes of Parry Harbour on 15th April, 1910.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
Imm. ♂ ..	—	112	16	13.5	72

GEOPELIA HUMERALIS (Barred-shouldered Dove).

A very common species in the mangroves on the coast and islands from King Sound (Derby) to Parry Harbour, but uncommon further north.

GEOPELIA PLACIDA (Ground-Dove).

Eggs of this very common bird were taken from 21/12/09 to 3/5/10. The nests are generally built at from 4 feet 6 inches to 7 feet from the ground, in small scrub.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	217	95	16	13.5	98.5
♀ ..	218	86	16	11.5	87

PHAPS CHALCOPHTERA (Bronze-wing Pigeon).

Were fairly plentiful. The nesting season extends from the middle of March to the end of July.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	355	189	26	19.5	135
♂ ..	363	185	26	20.5	131
♀ ..	324	165	22	20	120
♀ ..	327	176	23	20	—

PETROPHASSA ALBIPENNIS (White-quilled Rock-Pigeon).

Resident, and fairly numerous, on the rocky plateau country east of Napier Broome Bay. Like *Geophaps smithi* (Naked-eyed Partridge-Pigeon) they were sometimes met with in flocks of 6 or 8 birds, but more often in pairs. The nests are built of twigs placed on the most exposed surfaces of rocks. The mission "boys" told me that most of these Pigeons nested in September, which is correct, I think, although I took eggs in the middle of October and as late as the end of April. Acacia seeds form the principal article of food.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	286	123	21	13	113
♂ ..	—	122	21	12	111
♀ ..	275	122	21	14	108
♀ ..	286	125	21	14	116
♀ ..	269	121	22	11	—

GEOPHAPS SMITHI (Naked-eyed Partridge-Pigeon).

A common species in all localities east of Napier Broome Bay, where they were generally seen in flocks of from 6 to 20 birds. Young

birds were seen at the end of March, and eggs were taken from 7th May to 28th June. Two beautiful cream-coloured eggs are laid on the ground in a shallow depression lined with grass. Acacia and grass seeds are the chief articles of food. As a rule, these Pigeons are found at some distance from water, which they visit with great regularity about 10 a.m. and 5 p.m. daily.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂	278	130	30	15	91
♂	285	131	28	16	95
♂	272	131	28	15	93.5
♂	272	131	28	15	89.5
♀	274	128	28	15	94
♀	270	131	25	16	91
♀	276	126	28	15	95
♀	263	128	26	16.5	89

EULABEORNIS CASTANEIVENTER (Chestnut-bellied Rail) ?*

A single specimen only was seen (7/12/09), but, as I did not secure it, the identification may not be correct.

FULICA AUSTRALLIS (Coot).

Occasionally seen on the edge of the mangroves at the outlet of a small creek.

STERNA BERGII (Crested Tern).

Rarely seen.

LARUS NOVÆ-HOLLANDIÆ (Silver Gull).

Were not seen farther north than Scott Strait (14° 35' S. lat.)

HÆMATOPUS FULIGINOSUS (Black Oyster-catcher).

Occasionally seen on the coast and islands.

HÆMATOPUS LONGIROSTRIS (Pied Oyster-catcher).

Occasionally seen on the coast and islands.

CHARADRIUS DOMINICUS (Lesser Golden Plover).

Very uncommon.

OCHTHODROMUS VEREDUS (Oriental Dottrel).

ÆGIALITIS RUFICAPILLA (Red-capped Dottrel).

Fairly numerous.

NUMENIUS CYANOPUS (Curlew).

NUMENIUS VARIEGATUS (Whimbrel).

Numerous.

HETERACTITES BREVIPES (Grey-rumped Sandpiper).

Fairly numerous.

TRINGOIDES HYPOLEUCUS (Common Sandpiper).

GLOTTIS NEBULARIUS (Greenshank).

Numerous.

HETEROPYGIA AURITA (Sharp-tailed Stint).

TRINGA CRASSIROSTRIS (Great Sandpiper).

PISOBIA RUFICOLLIS (Little Stint).

BURHINUS GRALLARIUS (Stone-Plover).

Not numerous; were seen in all localities from the coast to the Drysdale River.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	556	.. 266	.. 131	.. 53	.. 177

ORTHORHAMPHUS MAGNIROSTRIS (Long-billed Stone-Plover).

An uncommon species ; noticed on the coast and islands.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	542	.. 261	.. 92	.. 75	.. 113

EUPODOTIS AUSTRALIS (Bustard).

Uncommon.

ANTIGONE AUSTRALASIANA (Crane or Native Companion).

An occasional visitor.

IBIS MOLUCCA (White Ibis).

Very uncommon.

XENORHYNCHUS ASIATICUS (Black-necked Stork).

An occasional visitor.

ARDEA SUMATRANA (Great-billed Heron).*

Were seen from Parry Harbour northwards. As a rule they are found in the tall mangroves, which they rarely leave unless disturbed.

HERODIAS TIMORIENSIS (White Egret).

Very uncommon.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ..	850	.. 352	.. 148	.. 104	.. 127

NOTOPHOYX NOVÆ-HOLLANDIÆ (White-fronted Heron).

Uncommon, and remarkably shy.

DEMIEGRETTA SACRA (Reef-Heron).

Uncommon, and difficult to approach.

NYCTICORAX CALEDONICUS (Night-Heron).

Uncommon.

BUTORIDES STAGNATILIS (Little Mangrove-Bittern).

An uncommon bird, generally seen in the densest mangroves.

PHALACROCORAX SULCIROSTRIS (Little Black Cormorant).

Uncommon.

PHALACROCORAX HYPOLEUCUS (Pied Cormorant).

Uncommon.

SULA LEUCOGASTER (Brown Gannet).*

Fairly numerous between Cape Bougainville and Collier Bay.

FREGATA ARIEL (Lesser Frigate-Bird).

Fairly plentiful.

PHAETHON RUBRICAUDA (Red-tailed Tropic-Bird).

A pair only seen.

PELECANUS CONSPICILLATUS (Pelican).

Were seen on some rocks in Vansittart Bay.

CIRCUS ASSIMILIS (Spotted Harrier).

Very uncommon.

CIRCUS GOULDI (Harrier).

Uncommon.

ASTUR FASCIATUS (Goshawk).

Uncommon and non-resident.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ..	462	265	78	—	213
♀ ..	442	267	68	—	216
♀ ..	492	280	84	23	229

HALIAETUS LEUCOGASTER (White-bellied Sea-Eagle).

An uncommon bird on the Kimberley coast-line. The blacks told me that they often saw these Eagles carry away turtles, which they caught by swooping down upon them as they rose to the surface to breathe. In a subsequent trip to Bernier Island, off Carnarvon, W.A., I noticed that these birds lived almost entirely on sea-snakes.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Tail.
♀ ..	780	581	100	271

ERYTHROTRIORCHIS RADIATUS (Red Goshawk).*

A single specimen was secured.

ERYTHROTRIORCHIS RUFOTIBIA (Red-legged Goshawk).

(For description see Campbell, p. 249.)

I saw four only of these new and fine Goshawks. On 1/5/10 a pair took possession of the nest referred to under *Hieracidea orientalis*, to which they added a few sticks and a lining of green cajaput leaves. They were not seen again until the middle of June, and then only occasionally, flying at a great height. On 30th June a bird was noticed on the nest for the first time, and on the following day a single egg was secured, the shell of which was already chipped, but I managed to save it. Mr. White describes it thus :—Shape, round oval; colour, dirty white, without markings; shell rather coarse, and shows slight gloss; dimensions, 2.16 x 1.73 inches. As the nest had been examined at a distance almost daily since the beginning of May, and the sitting bird was not noticed until the end of June, I feel sure that the process of incubation was carried on by the heat of the sun during the day and by the birds only at night. The female bird was secured on 30th June, and by 20th July the male had mated again and commenced a new nest in a tall cajaput, about 50 yards distant from the first nest. All attempts to procure the male failed.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ..	552	390	75	—	250
♀ ..	570	380	78	30	240

UROAETUS AUDAX (Wedge-tailed Eagle).

Uncommon.

HALIASTUR GIRRENERA (White-headed Sea-Eagle).

An uncommon bird. The nests are built in mangrove trees on the outer side of the coastal fringe, of sticks and a small quantity of grass and sea-weed. Eggs were taken at Napier Broome Bay on 20/7/10. Crabs and cuttle-fish are the principal articles of food.

HALIASTUR SPHENURUS (Whistling-Eagle).

Were seen from 16th May to the end of July.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Tail.
♀ ..	552	412	55	256

MILVUS AFFINIS (Kite).

Grass fires, and the consequent harvest of lizards, small mammals, and insects, attracted many Hawks in April, May, and June, amongst which Kites were prominent. Great daring is shown by these fine birds in the pursuit of their prey, and it is not an unusual thing to find their wing and tail feathers much damaged by fire. In August and September I saw many Kites in the town of Derby, where they were doing good work as scavengers.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Tail.
♀ ..	513	394	49	233

LOPHOICTINIA ISURA (Square-tailed Kite).

A single specimen only was secured at Parry Harbour.

FALCO LUNULATUS (Little Falcon).

These birds were very uncommon, excepting in March and April. The crops of two birds examined contained portions of two small birds and many locusts.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ..	317	248	32	14	131

HIERACIDEA ORIENTALIS (Western Brown Hawk).

A few birds remained in the district throughout the year, but one nest only was found, from which broods were reared in October and November. During March, April, and May, when grass fires were burning in all directions, these Hawks became numerous. The crops of those examined contained lizards and large insects (*Mantidæ* and *Phasmidæ*) only.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	444	330	67	24	195
♂ ..	430	335	70	—	130

CERCHNEIS CENCHROIDES (Kestrel).

A few pairs were seen on and after 29th March, evidently having followed a flight of locusts which arrived a few days earlier.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Tail.
♂ ..	296	233	35	137
♀ ..	344	250	40	156

PANDION LEUCOCEPHALUS (Osprey).

These birds were seen at frequent intervals on the coast. On 9/4/10 I examined a nest, built on a precipitous basaltic rock in Parry Harbour, upon which both birds were sitting, but only to find it empty. Figures of birds, eggs, and a kangaroo, recently scratched by aborigines on an adjacent rock, told their own tale. The birds remained near the nest, so I returned on 17th and took from it one perfect egg and pieces of another clearly showing claw-holes. I visited this locality again on 10th July, and found that a brood had been reared from the same nest since my last visit, and that an old nest about a quarter of a mile distant was being rebuilt. The nest from which eggs were taken was built of seaweed, drift-wood, and grass, and measured as follows :—Outside—length, 4 feet 6 inches ; breadth, 3 feet 9 inches ; depth, 4½ inches. Inside—length, 2 feet 6 inches ; breadth, 1 foot 9 inches ; depth, 3 inches.

NINOX OCELLATA (Marbled Owl).

Very uncommon. Young birds were seen in October. From dissections made I believe this species to be entirely insectivorous. All the specimens secured by me proved to be infected with semi-transparent worms of from $1\frac{1}{2}$ inches to 2 inches in length, which were located in the eye-socket, about the heart, between the skin and bone of the skull, in the intestines, and in the abdominal cavity.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	300	277	38	—	117
♂ ..	305	215	31	16.5	120
♀ ..	308	205	38	—	125

NINOX OCCIDENTALIS (Western Winking-Owl).

Appeared to be more numerous than the other species of Owls found in Kimberley. The frequently uttered cry—"Whoop-whoop"—is indistinguishable from the cry of *N. connivens* of Victoria.

Measurement of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	392	268	38	30	153

NINOX RUFA (Rufous Owl).

An uncommon species. These Owls usually retain in the talons some portion of the previous meal—generally the tail of a small nocturnal mammal (*Phascologale penicillata* or *Petaurus breviceps*).

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
	482	328	56	32	229

STRIX DELICATULA (Delicate Owl).

Very uncommon. Two examples were secured for identification, and upon examination the crops were found to contain portions of small birds and marsupials. An almost perfect specimen of the marsupial *Petaurus breviceps* was taken from one crop. These North Kimberley birds are remarkable for their large size, feathered tarsi, partial or total absence of brown spots on the under surface, and the partial or total absence of brown in the feathers of the facial disc; but, as Gould states, this fine phase of plumage, notably the spotless whiteness of under surface, indicates fully adult birds.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ..	368	290	65	—	120
♂ ..	368	308	75	30	129

TRICHOGLOSSUS RUBRITORQUES (Red-collared Lorikeet).

Arrived at Napier Broome Bay on 28/11/09, and were seen in small flocks until 2/3/10. Their food, during these months, consisted of honey from *Grevillea* and cajaput flowers and fruit juice of a certain tree.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	310	149	18	—	138
♀ ...	322	158	17	22	142
♀ ...	312	150	16	22	125
♀ ...	295	142	15	—	118.5

PTILOSLERA VERSICOLOR (Varied Lorikeet).

Large flocks of these pretty Lorikeets arrived at Napier Broome Bay on

and after 20/12/09, and some few remained until July. Several pairs were seen preparing nesting-places (28/4/10), but none of them was used. While watching a pair of Crimson Finches (*Neochmia phaeaton*) building their nest in a small hollow—a very unusual position for these birds—I saw a pair of Lorikeets drive them away and immediately set to work to remove the nest, which they did in an incredibly short space of time. After working inside the hollow for a few minutes, both flew away, leaving the Finches to collect the remains of their nest, which they rebuilt in the top of a pandanus palm close by.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	193	113	12	—	67
♂ ...	195	111	12	—	67
♂ ...	199	116	12	—	72
♂ ...	206	119	12	—	72
♀ ...	187	111	12	13	60
♀ ...	193	116	12	—	72
♀ ...	188	115	12	—	63
♀ ...	200	111	12	—	65

CALYPTORHYNCHUS MACRORHYNCHUS (Great-billed Cockatoo).

The first arrivals reached Napier Broome Bay on 4/2/10, and were in the district in large flocks at the end of July. During these months their food appeared to consist entirely of seeds of grevilleas.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	638	405	30	—	295
♂ ...	609	415	28	—	293
♂ ...	608	395	28	70	280
♂ ...	640	418	28	65	300
♂ ...	640	434	33	68	298
♀ ...	622	410	29	69	280
♀ ...	625	383	30	—	288
♀ ...	633	416	28	65	285

CACATUA GALERITA (White Cockatoo)

Were fairly numerous about the Drysdale River and on Augustus Island. On the island *C. galerita* and *C. gymnopsis* were in company. I did not notice a perceptible difference in size between the mainland birds of North Kimberley and those of S.W. Australia and Victoria, but the small size of the island form is very noticeable.

CACATUA GYMNOPSIS (Bare-eyed Cockatoo).

A small flock arrived at the station 10/6/10. In the early part of August they were numerous on Augustus Island and on many small islands and rocks in the Buccaneer Archipelago, further south.

CACATUA ROSEICAPILLA (Rose-breasted Cockatoo).

Arrived about the beginning of June with young birds.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	317	263	21	28	134
♂ ...	354	258	23	31.5	138
Imm. ♀ ...	337	235	21	24	130

PTISTES COCCINEOPTERUS (Crimson-winged Lory).

A somewhat uncommon bird, generally seen in parties of from three to eight birds. The only record I have of their nesting habits is of a nest taken on 15th June by one of the natives, which contained three young birds. In this case the birds entered a hollow near the top of a small

eucalyptus tree and descended to within 12 inches of ground level, where the young were found. The blacks assured me that this was not unusual. Their food consists of many kinds of fruits or seeds and several species of *Loranthus* (mistletoe).

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂	... 305 ...	186 ...	18 ...	20 ...	137
♂	... 310 ...	167 ...	17 ...	— ...	130
♂	... 313 ...	183 ...	19 ...	— ...	130
♂	... 303 ...	192 ...	17 ...	— ...	135
♀	... 325 ...	179 ...	18.5 ...	— ...	138
♀	... 329 ...	193 ...	18 ...	20 ...	135
♀	... 321 ...	183 ...	18 ...	19 ...	141

PLATYCERCUS BROWNI (Smutty Parrakeet).

An uncommon species, generally seen in companies of three, on the eastern side of Napier Broome Bay. Unripe acacia seeds and the fruit of another tree appear to be the chief articles of diet.

[According to the *Bulletin of the British Ornithologists' Club* (No. CLXIV.), Mr. G. M. Mathews has made a new sub-species of this Parrot, naming it in honour of myself—*P. venustus hilli*. He states he considers it "differs from *P. venustus*, Kuhl., in having the white feathers of the face reduced to a narrow line, the blue spreading nearly all the way up to the black below the eyes. The blue on the primary coverts is also very much more intense. Iris umber; bill whitish-grey; feet dark grey. Measurements as in *P. venustus*."]]

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂	... 312 ...	143 ...	20 ...	18 ...	151
♂	... 310 ...	143 ...	16.5 ...	— ...	156
♂	... 316 ...	151 ...	18 ...	— ...	161
♂	... 312 ...	144 ...	17.5 ...	19.5 ...	155
♂	... 312 ...	142 ...	18 ...	20 ...	158
♂	... 312 ...	142 ...	18 ...	19 ...	154
♀	... 299 ...	131 ...	17 ...	— ...	147
♀	... 325 ...	140 ...	17.5 ...	19 ...	153

PODARGUS PHALÆNOIDES (Freckled Frogmouth).

Occasionally seen in trees, but more often flushed from branches lying on the ground.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀	... 374 ...	198 ...	24 ...	31 ...	157
♀	... 367 ...	198 ...	22 ...	30 ...	154

ÆGOTHELES NOVÆ-HOLLANDIÆ (Owlet Nightjar).

Uncommon. I secured a specimen of *Æ. rufa* (Hall) at Derby, and was rather surprised that I did not meet with examples in the far North-West.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀	... 227 ...	125 ...	22 ...	12.5 ...	109

EURYSTOMUS PACIFICUS (Dollar-Bird).

A few birds arrived at Napier Broome Bay on 9/1/10, and remained about two weeks. The crops of specimens secured contained a large number of winged females of the green, nest-building tree-ant (*Ecophylla smaragdina*).

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀	... 296 ...	192 ...	16.25 ...	30 ...	96

ALCYONE PULCHRA (Purple Kingfisher).

A scarce species. Small fish, caught in salt and fresh water, appear to be their only food.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	170 ...	72 ...	10 ...	46 ...	31
♂ ...	176 ...	74 ...	11 ...	41 ...	32.5

DACELO CERVINA (Fawn-breasted Kingfisher).

Very uncommon. As a rule they are extremely difficult to approach, but during the heat of the day they will frequently remain motionless and hidden amongst the leaves of small eucalypts until very closely approached. Scorpions appear to be their favourite article of diet.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ (?) ...	402 ...	175 ...	26 ...	60 ...	116
♀ ...	415 ...	175 ...	23 ...	67 ...	126
♀ ...	439 ...	193 ...	25 ...	73 ...	127

HALCYON PYRRHOPYGIUS (Red-backed Kingfisher).

A rare bird, generally seen in the open forest.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	232 ...	95 ...	15 ...	36 ...	70

HALCYON SANCTUS (Sacred Kingfisher).

A common species in the mangroves and timbered country.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	223 ...	90 ...	15 ...	39 ...	61
♀ ...	182 ...	92 ...	12 ...	41 ...	56
♀ ...	210 ...	86.5 ...	13 ...	38 ...	57

HALCYON WESTRALASIANUS (Western Sacred Kingfisher).

Less numerous than *H. sanctus*, and generally found in or near the mangroves.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ...	214 ...	88 ...	12.25 ...	36 ...	56
♂ ...	211 ...	88 ...	12 ...	34 ...	55
♂ ...	220 ...	90 ...	12 ...	42 ...	57

MEROPS ORNATUS (Bee-eater).

Birds were seen at frequent intervals during the ten months I spent in the district, but they rarely stayed more than a few days. It was almost impossible to follow their erratic movements through the timbered country with sufficient accuracy to determine their course. However, the following notes were recorded when favourable opportunities for observation occurred :— Small flocks arrived at Mission Station from the north on 18th and 22nd March. Small flocks passed over station on 27th April and 17th May, flying east. Numerous on Hecla Island 13th February ; flew in south-easterly direction on leaving the island.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	274 ...	110 ...	10.5 ...	32 ...	133
♂ ...	272 ...	107 ...	11.5 ...	31 ...	129
♀ ...	226 ...	106 ...	10 ...	30 ...	94

EUROSTOPUS ARGUS (Spotted Nightjar).

A few birds arrived at Napier Broome Bay about the beginning of May. Their food consists entirely of night-flying *Coleoptera* (beetles).

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	299 ...	214 ...	20 ...	7 ...	144
♀ ...	306 ...	219 ...	18 ...	7.5 ...	150
♀ ...	292 ...	206 ...	18 ...	8 ...	138

CHÆTURA CAUDACUTA (Spine-tailed Swift).

A number of birds passed over the Mission Station on 10th, 11th, and 12th March, flying southward, and on 20th February a small flock passed over Parry Harbour, flying in a south-easterly direction.

CYPSELUS PACIFICUS (White-rumped Swift).

Great numbers passed over Napier Broome Bay, flying south, on 4/11/09. On 17/1/10 and 30/3/10 smaller flocks passed over, flying south and south-east. On 7th, 8th and 13th April several small flocks passed over Parry Harbour, flying east.

CUCULUS INORNATUS (Pallid Cuckoo).

I saw one pair only (24/11/09.)

CACOMANTIS FLABELLIFORMIS (Square-tailed Cuckoo).

Eggs were taken from the nests of *Glycyphila fasciata* (White-breasted Honey-eater) and *Ptilotis flavescens* (Yellow Honey-eater).

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	224 ...	138 ...	17 ...	21 ...	110

MESOCALIUS PALLIOLATUS (Black-eared Cuckoo).

A single bird only was seen (24/5/10).

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ...	205 ...	110 ...	20 ...	15 ...	83

CENTROPUS PHASIANUS (Coucal).

Fairly numerous near the coast and on many of the islands, though rarely seen inland. Ticks were found on the heads of every specimen I examined.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	575 ...	213 ...	52 ...	33 ...	309
♀ ...	603 ...	224 ...	52 ...	35 ...	347

PITTA IRIS (Rainbow Pitta).

A very uncommon species; seen at Napier Broome Bay and Parry Harbour. Two eggs were taken in the former locality on 1/5/10 from a nest built in a tussock of grass. (See illustration.) The nest measured $3\frac{3}{4}$ inches in diameter by $1\frac{1}{4}$ inches deep, and was lined and lightly roofed over with grass.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	160 ...	104 ...	39 ...	24 ...	35

PETROCHELIDON ARIEL (Fairy Martin)?

Small flocks passed over, travelling in an easterly to south-easterly direction, in October, March, and June, but, owing to the great height at which they flew, I was unable to secure any specimens for identification. One notices the absence of the familiar Swallow (*Hirundo neoxena*) in this district, and on my return southward I did not see any until Roeburne (lat. $20^{\circ} 2' S.$) was reached, in the middle of August.



Nest of Rainbow Pitta (*Pitta iris*).

MICRÆCA ASSIMILIS (Lesser Brown Flycatcher).

A common bird in the open and lightly timbered country. The nesting season appears to be September and October.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	117	75	14	9	47
♂ ...	136	74	15	9	49
♀ ...	131	75	15	10	49.5

MICRÆCA BRUNNEICAUDA (Brown-tailed Flycatcher).*

(For description see *Emu*, vol. x., p. 169.)

These shy and very uncommon birds were seen only on Augustus Island and on the eastern side of Napier Broome Bay. A greenish-brown back and brown tail distinguish the species, even at a distance, from *M. assimilis*, while their habit of concealing themselves in the thickest growths of mangrove, and living entirely on small crabs and other forms of marine life, is in contrast to the conditions of life of the latter species. The loud notes of this species closely resemble those of the Yellow-faced Honey-eater (*Ptilotis chrysops*) of south-eastern Australia. One nest only was found, which contained a single egg. This nest was placed in a dead mangrove tree, 5 feet over high water mark, and was built of bark and spider web, covered on the outside with small pieces of leaf.

Dimensions of nest in inches :—Outside—length, 1.6 ; breadth, 1.6 ; depth, 1.1. Inside—length, 1.4 ; breadth, 1.3 ; depth, 0.6.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	139	73	15	9.5	53
♂ ...	140	72.5	13	9	56.5
♀ ...	122	67	13.5	9	47

PETRÆCA PICATA (Pied Robin).

Uncommon, and apparently non-resident.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	167	89	19	12	63.25
♀ ...	156	82	20	12	63.5
♀ ...	150	80	19	13	58

SMICRORNIS FLAVESCENS (Yellow-tinted Tree-Tit).

A few of these birds appeared to be resident, but it was not until March and April that they became plentiful. The following notes refer to four nests taken near the Drysdale River in June :—

(a) Nest built amongst acacia flowers, 5 feet 6 inches from the ground, of caterpillar silk, cocoons, and fine pieces of red bark, neatly covered on outside with small dead leaves and acacia flowers. Length, 3.1 inches ; breadth, 1.8 inches ; with an opening on either side. Contents—One egg, in advanced state of incubation (8/6/10).

(b) Nest built in *Acacia tumida* (F. v. M.), 6 feet from the ground, of fine strips of bark, silk, and acacia flowers, lined with silk and spider egg cases. Length, 3.5 inches ; breadth, 2.1 inches. Contents—Two eggs, in advanced state of incubation (4/6/10).

(c) Nest built in *Acacia tumida*, 5 feet from the ground, of silk, spider web and egg cases, small leaves, and sepals of *Grevillea*, lined with silk and spider egg cases. Length, 3 inches ; breadth, 2.1 inches. Contents—One young, about two days old.

(d) Nest built in white gum (eucalypt) sapling, 4 feet from the ground, of grass, small leaves, spider egg cases, sepals of a *Grevillea*, and grass seeds ; lined with silk, spider web and egg cases. Contents—Two eggs, slightly incubated (5/6/10).

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	90 ...	46.5 ...	14 ...	6 ...	35
♂ ...	90 ...	47 ...	15.5 ...	6.5 ...	32.5
♂ ...	88 ...	45 ...	16 ...	6 ...	32.5
♂ ...	92.5 ...	47 ...	15 ...	6.5 ...	34
♂ ...	83 ...	43 ...	13.5 ...	6 ...	30
♀ ...	88 ...	44 ...	14.5 ...	7.5 ...	29
♀ ...	91 ...	44.5 ...	14 ...	6.5 ...	32
♀ ...	86 ...	46 ...	15 ...	6 ...	33
♀ ...	86 ...	46 ...	16 ...	6 ...	31

GERYGONE CINERASCENS (Grey Fly-eater).

Very uncommon.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	109 ...	53 ...	16 ...	9 ...	35
♂ ...	110 ...	52 ...	16.5 ...	10.5 ...	35
♂ ...	114 ...	58 ...	17 ...	10 ...	40
♂ ...	110 ...	52 ...	15 ...	8.5 ...	37
♀ ...	104 ...	50 ...	16.5 ...	10 ...	35

PSEUDOGERYGONE LÆVIGASTER (Buff-breasted Fly-eater).

I noticed some of these little birds in the mangroves from Gibson Point to Napier Broome Bay, where a few nests were found, placed at the extremity of slender branches overhanging water. Two of these nests were built with the openings about 12 inches from large nesting colonies of wasps (*Polistes*, sp.) A close examination of these nests convinced me that such sites were chosen, after sound reasoning, as a protection against intruders; at any rate, one is impressed by the activity of these pugnacious little insects in the interests of their own and their neighbours' nests. The similar habit of the Black-throated Fly-eater (*P. personata*) in building near wasps' nests, on the authority of Mr. D. Le Souëf, is recorded in Campbell's "Nests and Eggs," p. 162.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
Imm. ♂ ...	112 ...	54 ...	16 ...	10 ...	44
Imm. ♂ ...	104 ...	48 ...	16.5 ...	8.5 ...	38
♂ ...	109 ...	49 ...	16 ...	9 ...	39
♀ ...	114 ...	51.5 ...	16 ...	11 ...	39
♀ ...	105 ...	49 ...	17.5 ...	9 ...	35

PSEUDOGERYGONE CHLORONOTA (Green-backed Fly-eater).

A single specimen only was secured, at Parry Harbour, on 16/11/09.

Measurements of bird in mm. :—

Total length	Wing.	Tarsus.	Bill.
96 ...	51 ...	16 ...	10

PŒCILODRYAS CERVINIVENTRIS (Buff-sided Robin).

An uncommon species, which was seen only in moist and densely timbered country near Napier Broome Bay and Drysdale River. The nesting season appears to be from October to the end of December. Green nest-building tree-ants were the only insects found in the crops. Descriptions of nests :—

(a) Built of rootlets, with a few pieces of bark attached to the outside; not lined; 35 feet from the ground. Contained two eggs (18/10/09). Dimensions of nest in inches :—Outside—length, 3; breadth, 2.5; depth, 1.7. Inside—length, 2.1; breadth, 1.9; depth, 1.3.

(b) Built of twigs, lined with rootlets; a few pieces of cajaput bark loosely attached to the outside; about 20 feet from the ground (30/10/09).

Dimensions of nest in inches:—Outside—length, 4; breadth, 2.5; depth, 1.5. Inside—length, 2.1; breadth, 1.9; depth, 1.2.

(c) Built of rootlets and a few twigs; piece of cajaput bark from $\frac{1}{4}$ to 2 inches long hanging from the outside; 30 feet from the ground. Contained two eggs (27/11/09). Dimensions of nest in inches:—Outside—length, 3.2; breadth, 3; depth, 1.8. Inside—length, 2.3; breadth, 2; depth, 1.1.

(d) Built of rootlets and twigs; not lined; 25 feet from the ground (28/11/09). Dimensions of nest in inches:—Outside—length, 2.9; breadth, 2.7; depth, 2. Inside—length, 2.2; breadth, 2.1; depth, 1.2.

(e) Built of twigs; lined with rootlets; a few pieces of bark hanging from outside; 8 feet from the ground; contained 2 eggs (31/12/09). Dimensions of nest in inches:—Outside—length, 4; breadth, 2; depth, 3.2. Inside—length, 2.5; breadth, 1.2; depth, 2.2.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	162	85	24	14	67
♂ ...	155	87	25	15	69
♂ ...	168	80	22	15	70
♂ ...	168	82	23	15	71
♀ ...	160	75	20.5	13	62
♀ ...	160	77	19.5	13	57
♀ ...	152	80	20	12	64

PECILODRYAS PULVERULENTUS (White-tailed Robin).*

A description of the nest and eggs, together with field notes on this bird appeared in *The Emu*, vol. x, p. 132.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	161	76	21.5	15	73
♂ ...	167	80	21	15.75	61
♂ ...	164	79	22	14	59
♂ ...	155	75	22	14	60
♂ ...	153	76	23	15.5	59
♀ ...	145	68	21.5	14	53
♀ ...	145	70	20	13	52
♀ ...	157	73	20	14	57
♀ ...	153	73	21	14	55
♀ ...	152	75	21.5	14	58

RHIPIDURA PREISSI (Western Fantail).

See note on *R. dryas*.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	145	66	15	8.5	74

RHIPIDURA DRYAS (Wood Fantail).

A party of three birds was seen in a dense belt of mangroves, which on examination proved to be made up of a male of this species and a male and female *R. preissi*.

RHIPIDURA ISURA (Northern Fantail).

Although not numerous, this species was seen in all localities. No decided preference in the choice of nesting sites was noticed. Some nests were built in acacia scrub 3 or 4 feet from the ground, while others were found at a height of from 70 to 75 feet. From one to three eggs are laid. The nests closely resemble those of *R. albiscapa*.

Dimensions of nests in inches:—(a) Outside—length 2.3, breadth 2, depth 3.6 (inclusive of tail, 2.2); inside—length 1.9, breadth 1.6, depth 0.8. (b) Outside—length 2.2, breadth 1.9, depth 3 (inclusive of tail, 2); inside—

length 1.5, breadth 1.7, depth 1. (c) Outside—length 2.3, breadth 2, depth 4 inclusive of tail, 2.4); inside—length 2, breadth 1.8, depth 1.1.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	172 ...	80 ...	15 ...	12 ...	79
♂ ...	170 ...	80 ...	15 ...	11 ...	82
♀ ...	179 ...	81 ...	14 ...	12.5 ...	82.5
♀ ...	165 ...	81 ...	15 ...	13 ...	77

RHIPIDURA TRICOLOR (Black-and-White Fantail).

A resident species. All specimens secured were distinctly spotted on throat and fore-neck, and in some cases on the wing coverts, nape, and lores.

Measurements of birds in mm :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	202 ...	90 ...	24.5 ...	12 ...	98
♀ ...	201 ...	86 ...	24 ...	— ...	—

MYIAGRA CONCINNA (Blue Flycatcher).

These birds were distributed over all the country I saw north of Parry Harbour, but they were rather uncommon, and were generally seen in the mangroves. One set of eggs was taken two miles from the east coast of Napier Broome Bay, from a nest situated on a long, slender eucalypt branch, 18 feet from the ground. The nest was neatly constructed of bark and spider web, and was lined with fine grass.

Dimensions in inches :—Outside—length, 3.6; breadth, 2.5; depth, 1.8. Inside—length, 1.9; breadth, 1.8; depth, 0.8.

Measurements of birds in mm. —

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	160 ...	73.5 ...	14.5 ...	12 ...	65
♂ ...	157 ...	70 ...	14 ...	14 ...	61
♂ ...	157 ...	70 ...	15 ...	11 ...	62
♂ ...	158 ...	73 ...	15 ...	11 ...	63
♂ ...	155 ...	71 ...	15 ...	11 ...	65
♀ ...	161 ...	70 ...	14 ...	12 ...	68

MYIAGRA LATIROSTRIS (Broad-billed Flycatcher).

An uncommon species; always found in or near the mangroves.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	160 ...	66 ...	18 ...	11 ...	68.5
♀ ...	156 ...	66 ...	17 ...	10.5 ...	68
♀ ...	152 ...	68 ...	16 ...	12 ...	64

SISURA NANA (Little Flycatcher).

Fairly common near the Drysdale River in June, but scarce in other localities. The birds are extremely shy when nesting, and will desert a partly built nest if watched, even from a distance. One pair commenced and pulled down three nests successively, then laid in the fourth nest, which was almost overturned during a storm. When visited on 24/12/09, this nest was found to contain one egg. The other was afterwards found on the ground 70 feet below. The damaged nest was removed for the fifth time, and rebuilt in an inaccessible position. None of these nests was less than 70 feet from the ground, and all were built on slender branches of the tallest trees.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	190 ...	85 ...	18 ...	12 ...	84
♂ ...	190 ...	93 ...	16 ...	13.5 ...	85

PIEZORHYNCHUS NITIDUS (Shining Flycatcher).*

These beautiful and extremely shy birds were seen on the coast from Augustus Island (lat. 15° 35' S.) northwards, where they live entirely on the mud or amongst the low branches and roots in the thickest belts of mangrove. The warning-note of the male bird is three clear and distinct whistles, which are answered by the female in a call that may be likened to the creaking of a door. The nests are built from 4 to 6 feet above water level, of rough pieces of bark, closely woven together and lined with fine pieces of bark, twigs, and small dead leaves, or with rootlets. Eggs were taken from 5/1/10 to 20/3/3. From one nest I took a set of eggs on 18/2/10 of the usual type, and on 20/3/10 a second set of pure white eggs. The irides of all male birds examined by me were umber and not red (Hall, p. 19). Their food consists principally of minute shells, crabs, and a small species of black ant.

Dimensions of nests in inches :—(a) Outside—length 2.8, breadth 2.5, depth 2.5 ; inside—length 2.2, breadth 2.1, depth 2.1. (b) Outside—length 3.5, breadth 3.1, depth 2.4 ; inside—length 2.5, breadth 2.2, depth 1.6. (c) Outside—length 2.8, breadth 2.5, depth 2.5 ; inside—length 2.6, breadth 2.2, depth 1.6.

Measurement of birds in mm. :—

		Total length.		Wing.		Tarsus.		Bill.		Tail.	
Imm.	♂	...	190	...	85.5	...	20.5	...	15.5	...	79
	♂	...	190	...	85	...	21.5	...	17.5	...	79
	♂	...	191	...	85	...	20.5	...	15.5	...	77
	+	...	160	...	73.5	...	20	...	13	...	52
	+	...	182	...	80	...	21	...	16.5	...	74
	+	...	180	...	78	...	19	...	15	...	72
	+	...	189	...	76	...	21	...	15.5	...	70

CORACINA ROBUSTA (Black-faced Cuckoo-Shrike).

Fairly numerous on the mainland and islands. Their food consists principally of large caterpillars and *Mantida*.

Measurements of birds in mm. :—

		Total length.		Wing.		Tarsus		Bill.		Tail.
♀	...	308	...	180	...	28	...	23	...	133
♂	...	315	...	185	...	29	...	25	...	137

CORACINA HYPOLEUCA (White-bellied Cuckoo-Shrike).

The remarks on the previous species apply also to this.

Measurements of birds in mm. :—

		Total length.		Wing.		Tarsus.		Bill.		Tail.
♂	...	265	...	145	...	25	...	23	...	107
♂	...	278	...	153	...	26	...	26	...	114
♂	...	268	...	149	...	23	...	22	...	113
♂	...	258	...	145	...	23	...	21.5	...	105
+	...	265	...	148	...	25	...	20	...	114
+	...	276	...	145	...	25	...	24	...	105

EDOLISOMA TENUIROSTRE (Jardine Caterpillar-eater).*

The movements of a few pairs which arrived at Napier Broome Bay on and after 4/12/09 were closely watched until the end of February, when the last of them left the district. During these months the birds were generally to be seen in the topmost branches of the largest trees. Their food appears to consist entirely of large caterpillars—hence the very appropriate name of Caterpillar-eater for the bird.

Dimensions of bird in mm. :—

		Total length.		Wing.		Tarsus.		Bill.		Tail.
♂	...	244	...	122	...	24	...	19	...	96

LALAGE TRICOLOR (White-shouldered Caterpillar-eater).

A small flock in adult ♂ plumage passed over the Mission Station on 7/11/09, flying south, and, during the two months following, occasional birds were seen travelling in the same direction. From the beginning of January until 22/4/10 none was seen, but on this date I shot one bird from a flock of twelve which flew over in an easterly direction. These and all that were seen subsequently were female birds. On 27/4/10 many birds settled near the station, and their numbers increased daily until 3/5/10, when they began to decrease rapidly until none remained on 15th June. During their stay they lived almost entirely on the ground during the day, only occasionally flying up to the eucalypt flowers to catch the insects that were numerous in them. As in the case of Pardalotes, an accumulation of honey and pollen was frequently noticeable on the feathers of the throat and forehead.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	183	97	19	13	74

LALAGE LEUCOMELÆNA (Pied Caterpillar-eater).*

One pair secured in the tropical scrubs at Parry Harbour were the only birds of this species seen during my trip.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	203	98	22	15	83
♀ ...	---	94	20	14.5	84

POMATOSTOMUS RUBECULUS (Red-breasted Babbler).

Were fairly numerous. The nesting season appears to be September and October.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	258	103	31	27	109
♀ ...	255	96	34	26	103

CISTICOLA EXILIS (Grass-Warbler).

Excepting on Hecla Island and Cape Bougainville I saw very few of these birds.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	114	44	17	11	30
♂ ...	106	45	18	10.5	29
♂ ...	110	42	17	10.5	38
♀ ...	106	40	17.5	10	34
♀ ...	127	40	17	9	54
♀ ...	121	38	18	9	48

MEGALURUS GALACTOTES (Tawny Grass-Bird).*

On my arrival at the station, in the middle of October, this species was one of the first to attract my attention. About a dozen birds inhabited a patch of very luxuriant swamp grass on the edge of the small area of tropical forest mentioned in my introductory remarks, but, owing to the height of most of the grass (6 or 7 feet), I had to confine my observations to a few pairs and some odd birds inhabiting shorter growths. Having doubts as to their identity, I determined to spare no effort to secure eggs, for I felt sure the nesting season was approaching, if it had not already arrived. I found that the mated birds never moved far from a given point, and that I could rely upon finding them within a few yards of the same place day after day. When cautiously approaching the domain of a pair, the first intimation of

their presence would be two sharp notes and the rustling of dry leaves as the birds crept through the matted grass down to the ground. An attempt to flush the bird from its hiding-place would bring all hope of further observations to an end, but, if absolute stillness were maintained for perhaps fifteen minutes, the rustling would be renewed, and presently the bird would appear for an instant, utter its pleasing notes once more, and again disappear from sight, leaving only the sound of its movements in the grass to warn the watcher of its approach. After a few re-appearances in this manner its curiosity would get the better of its judgment, and it would hop and flutter to a higher position in the grass, survey the intruder for a moment at short range, and then finally disappear. The unattached birds do not remain within such a limited area, and show far less desire to conceal themselves. It struck me as a remarkable fact that these unattached birds were nearly always found in company with one or two Grass-Warblers (*Cisticola exilis*). Neither species confines itself to open grass flats, for I have frequently watched them, both separately and in company, feeding on the ground amongst ferns growing in the densest patches of forest, where the light was so dull that it was not easy to follow their movements. After spending so much time, and suffering not a little from mosquitoes, in this swampy locality, I was disappointed to find that the Grass-Birds (*Megalurus*) had all left the district about 17th November. A few days later the last of the Grass-Warblers (*Cisticola*) had gone also. On 13th May the first *Megalurus* returned with their young, and were followed by the *Cisticola* one month later. The latter were numerous near Cape Bougainville and on Hecla Island in November, December, and February.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	179	...	56	...	21.5 ...
				13	...
					75

MALURUS CRUENTATUS (Red-backed Wren).

A common species on the level sandy country. A few late nests were found in November and December in tussock and spinifex grass near creeks and soaks. A nest, from which three eggs were taken on 3/12/09, was built of grass, bark, and spider web, and lined with fine grass and rootlets, 12 inches from the ground, in tussock grass. Another nest, from which three eggs were taken on 11/12/09, was built of cajapat bark and grass, without lining, 18 inches from the ground, in tussock grass.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂	...	132	...	42	...
♂	...	106	...	41	...
♂	...	103	...	41	...
Imm. ♂	...	126	...	39	...
♂	...	100	...	40	...
♂	...	116	...	41	...
♂	...	112	...	40	...
♂	...	106	...	40	...
♂	...	112	...	41	...
♂	...	112	...	36	...
♂	...	108	...	38	...
♂	...	112	...	41	...
♂	...	122	...	38	...
♂	...	123	...	38	...

MALURUS DULCIS (Lavender-flanked Wren).

A description of the nest and eggs and field notes on this beautiful bird appeared in *The Emu*, vol. x., p. 133.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	134 ...	47 ...	22 ...	10 ...	59
♂ ...	130 ...	47 ...	20 ...	10 ...	56
♂ ...	128 ...	47 ...	20 ...	10 ...	56
♂ ...	139 ...	47 ...	20 ...	11 ...	58.5
♂ ...	142 ...	46 ...	21 ...	10.5 ...	68
♂ ...	142 ...	47 ...	21 ...	10.5 ...	69
♂ ...	140 ...	45 ...	20 ...	10.5 ...	69
♀ ...	123 ...	45 ...	20 ...	11 ...	57.5
♀ ...	124 ...	42 ...	20 ...	10 ...	59
♀ ...	133 ...	45 ...	20 ...	10 ...	60
♀ ...	136 ...	45 ...	21 ...	10.5 ...	64
♀ ...	135 ...	48 ...	21 ...	11 ...	65

ARTAMUS LEUCOGASTER (White-rumped Wood-Swallow).

Small flocks passed over Napier Broome Bay on 22nd and 26th March, flying southward.

ARTAMUS CINEREUS (Grey-breasted Wood-Swallow).

Fairly numerous, and apparently resident. Their food consists largely of locusts.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	179 ...	116 ...	21 ...	18 ...	65
♂ ...	182 ...	107 ...	20.5 ...	18.5 ...	65

ARTAMUS MINOR (Little Wood-Swallow).

These birds arrived on 27/3/10, and remained in the district without nesting up to the time of my departure in July.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	150 ...	104 ...	12.5 ...	12 ...	57
♀ ...	140 ...	95 ...	13.5 ...	10.5 ...	52
♀ ...	146 ...	98 ...	13.5 ...	10 ...	56
♀ ...	140 ...	97 ...	14 ...	10 ...	54
♀ ...	145 ...	95 ...	13 ...	12 ...	55

COLLYRIOCICHLA BRUNNEA (Brown Shrike-Thrush).

A common species in most localities. The nests are generally built of bark and lined with mid-ribs of a fern, and placed in thick bushes or on the tops of broken stumps. One nest differed considerably from all others in being built of wire-like creeper, eucalypt leaves, a few pieces of bark, leaves of a *Grevillea*, and lined with rootlets and mid-ribs of ferns. Dimensions of this nest in inches :—Outside—length, 9 ; breadth, 6 ; depth, 4.5. Inside—length, 3.3 ; breadth, 3.1 ; depth, 2.6. Lizards were found in many of the birds dissected.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	255 ...	122 ...	30 ...	21 ...	105
♂ ...	253 ...	130 ...	31 ...	22 ...	110
♂ ...	250 ...	125 ...	30 ...	22 ...	102
♂ ...	259 ...	128 ...	30 ...	21 ...	105
♂ ...	265 ...	117 ...	30 ...	22 ...	106
♀ ...	259 ...	118 ...	29 ...	22 ...	105
Imm. ♀ ...	263 ...	123 ...	34 ...	20.5 ...	111.5

COLLYRIOCICHLA WOODWARDI (Brown-breasted Shrike-Thrush).*

(Hartert, Nov. Zool., xii., p. 228.)

These rare birds inhabit the broken sandstone plateau east of Napier

Broome Bay, where they take the place of *C. brunnea* (Brown Shrike-Thrush) of the open forest country. They are extremely shy, and difficult to approach in this rugged country, as they fly and hop from rock to rock, exposing themselves only for an instant before concealing themselves in crevices or under overhanging ledges. The notes are very strong and clear, and when uttered amidst such surroundings the two quickly repeated whistles are multiplied by many echoes, producing an effect that is not equalled by any bird in the north-west. I feel sure that this species is a resident one, although I saw it very occasionally, and never twice in the same locality.

GRALLINA PICATA (Magpie-Lark).

I saw a few pairs at Parry Harbour on 16/11/09. but it was not until 30/4/10 that the first pair arrived at the station. During the few weeks following many small parties of six or eight arrived.

CRATICUS PICATUS (Pied Butcher-Bird).

Fairly numerous. Late clutches of two and three eggs were taken on 30/10/09 from nests built about 20 feet from the ground in small eucalypt trees. The nests are built of strong twigs, followed by a layer of wire-like creeper, and lined with grass. Examination of crop contents proved that these birds live almost entirely on caterpillars and locusts.

Dimensions of nests in inches :—Outside—length, 8 ; breadth, 7 ; depth, 5. Inside—length, 3.2 ; breadth, 3.2 ; depth, 2.2.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
Imm. ♂ ...	332 ...	157 ...	34 ...	40 ...	131
♂ ...	320.5 ...	151 ...	34 ...	43 ...	118
Imm. ♂ ...	331 ...	155 ...	33 ...	46 ...	128.5
♂ ...	326 ...	159 ...	33 ...	43 ...	118
♂ ...	320 ...	161 ...	31 ...	42 ...	125
+ ...	306 ...	155 ...	30 ...	39 ...	106
+ ...	305 ...	152 ...	31.5 ...	39 ...	120
+ ...	305 ...	155 ...	31 ...	41 ...	115
+ ...	317 ...	150 ...	31 ...	38 ...	113

FALCUNCULUS WHITEI (Yellow Shrike-Tit).

(Campbell, *Emu*, vol. x., p. 167.)

My first introduction to this species was on 31/12/09, when I saw a pair near the Mission Station. Feeling certain that they were of a new species, I devoted a good deal of time during the next month to watching their movements, but at the outset it was evident that they did not intend nesting, for each time I saw them they were travelling slowly towards the south-east and getting further from my camp, so I decided to shoot them on the first opportunity—which did not occur until 5/3/10, when I secured both birds. I saw no more until 9/6/10, when I noticed another pair in some lightly-timbered country 11 miles south-east of Napier Broome Bay. This pair appeared to be nesting, but as our party was returning after a long trip on short rations, a brief search only could be made, which failed to reveal the nest. In their habits they closely resemble *F. frontatus*, though they are more difficult to locate on account of their subdued notes.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	154 ...	78 ...	22 ...	16.5 ...	62
♀ ...	155 ...	76 ...	20 ...	15 ...	59

OREOICA CRISTATA (Bell-Bird).

One pair only was seen, 12 miles south-east of Napier Broome Bay.

PACHYCEPHALA MELANURA (Black-tailed Thickhead).

Were found in the mangroves only, where they were uncommon.

Measurements of bird in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	169	81	22	15	63

PACHYCEPHALA FALCATA (Northern Thickhead).

A common species, generally found in acacia scrub. The nests are generally built of twigs and wire-like creeper, with or without a lining of grass. Eggs were taken in November and December.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	163	84	21	13	68
♂ ...	153	86	20	14	63
♂ ...	164	80.25	19	12	66
♂ ...	170	87	20.5	13	66
♂ ...	165	86	20	13.5	—
♂ ...	160	81	19	13	66
♂ ...	171	88	19	13	66
♂ ...	166	83	20.5	15	65
♂ ...	160	85	20.5	11.5	60
♂ ...	176	87	20	14	69

EOPSALTRIA HILLI (Hill Shrike-Robin).

(Campbell, *Emu*, vol. x., p. 168.)

NEOSITTA LEUCOPTERA (White-winged Tree-runner).

A somewhat rare bird, generally seen in small flocks of 6 or 8. The nesting season appears to be in June, in which month several partly built nests were found near the Drysdale River.

Measurement of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	116	76	15	15	36
♂ ...	115	71	15	13	32
♂ ...	115	76	16	13	36
♂ ...	119	80	16	13.5	35
♂ ...	117	81	17	14.5	38
♂ ...	120	79	15.5	13	36
♂ ...	115	77	17	14.5	36
♂ ...	119	78	16	14	36.5

CLIMACTERIS MELANURA (Black-tailed Tree-creeper).

I saw these birds only amongst the large timber in the dry localities near Napier Broome Bay, where they were rare and difficult to approach. Young birds were seen in the middle of October. The female is distinguished by a white throat and rufous colour of lower throat, where it is black in the male. The crops of all specimens examined contained only numerous remains of one species of ant (*Iridomyrmex detectus*, Smith). The nature of their food, I think, accounts for the peculiar odour possessed by these birds.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	189	95	23	16	73
♂ ...	190	94	23	16	70
♂ ...	186	95	22	18	73
♂ ...	193	98	23	15	72
♂ ...	199	95	14.5	14	72
♂ ...	187	91	22	16	70
Imm. ...	185	91	23	15	71
♂ ...	171	90	22	16	71

ZOSTEROPS LUTEA (Yellow White-eye).

Were seen in the mangroves from Derby northwards, but they were

uncommon in all localities excepting on Hecla Island and the shores of Parry Harbour. The nesting season appears to be from the beginning of February to April. Nests are built of grass and spider web on the outside, and lined with fine pieces of grass and rootlets. Dimensions of nests in inches :—Outside—length, 3 ; breadth, 2.6 ; depth, 1.3. Inside—length, 1.9 ; breadth, 1.8 ; depth, 1.2.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	109	53	18	10	40
♂ ...	119	55	16	11	43
♂ ...	123	55	16.75	11	44
♂ ...	114	54	15.5	11	39

DICÆUM HIRUNDINACEUM (Mistletoe-Bird).

These birds were not uncommon in all localities I visited. Mistletoes (*Loranthus*), of which there are six varieties near Napier Broome Bay, afford a regular and abundant food supply. The nesting season commences at the beginning of January.

PARDALOTUS UROPYGIALIS (Chestnut-rumped Pardalote).

Although some birds remained in the district throughout the ten months I was there, it was not until the middle of March that they became numerous. The nesting season commenced at the end of April, and was at its height at the end of July. Most of the nesting burrows, which vary in length from 18 inches to 2 feet, were made in the sides of holes dug in the sandy soil by pigs in search of roots ; others were made in the banks of creeks and watercourses. Under favourable conditions, nine days are occupied from the commencement of the burrow to the completion of the nest. The egg chamber is invariably lined with coarse pieces of eucalypt bark. Two eggs are laid. Small insects gathered from the flowers of a *Grevillea* and eucalypts form the principal article of food, in collecting which the feathers of the throat and forehead frequently become matted with honey and pollen. Lizards are responsible for the destruction of many nests.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	103	57	17.5	7.5	28
♂ ...	104	58	17	7.5	30
♂ ...	103	54	17	8	29
♂ ...	104	58	17.5	8	29
♂ ...	110	52	11.5	8.5	29
♂ ...	106	60	17	8	28
♂ ...	102	58	17	8	28
♂ ...	104	61	19	7	27
♀ ...	104	60	18	7.5	28
♀ ...	106	61	17	8	31
♀ ...	101	57.5	16	8	28
♀ ...	105	60	17	8	29
♀ ...	109	58	18	7	29

MELITHREPTUS ALBIGULARIS (White-throated Honey-eater).

A resident species.

Measurements in birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	135	68	16	12	54
♂ ...	142	69	16.5	13	52
♂ ...	143	69	16	12	49
♀ ...	132	65	15	11	50
♀ ...	127	65	16	11	50
♀ ...	133	63	16.5	10.5	47

MELITHREPTUS LATIOR (Golden-backed Honey-eater).

Flocks of from 12 to 18 birds passed the station on 4th to 28th November, flying south-west. From the latter date to 16th February, 1910, none was seen, but on 17th February two flocks of about 20 birds passed. Between 17th February and 30th June I frequently saw or heard them in some open forest, but they were generally in parties of two or three pairs, and showed no desire to commence nesting. The notes of this species are similar to those of *M. brevirostris* (Brown-headed Honey-eater), though stronger, and audible at a greater distance.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	134 ...	70 ...	16 ...	12 ...	51
♀ ...	164 ...	83 ...	19 ...	15 ...	62

MYZOMELA ERYTHROCEPHALA (Red-headed Honey-eater).

A resident and fairly plentiful species in the mangroves from Derby northwards. They rarely leave the mangroves, and when they do so it is only to visit flowering eucalypts close by. The denseness of the foliage renders it almost impossible to watch their movements or to locate their nests, which are generally placed in the tops of the highest mangroves. A nest taken from such a position at Napier Broome Bay, on 26/3/10, contained two beautifully marked eggs, which were, unfortunately, too far gone to blow. The nest was 35 feet from water level, and was built of fine bark, covered on the outside with leaves of a coastal shrub (*Calycotrix microphylla*), and lined with hair-like rootlets. A second nest was placed in a cluster of *Loranthus* growing in a mangrove 20 feet from water level, and was built of fine pieces of bark, sea-weed, and spider web, lined with bark and rootlets. The heads of female birds are always tinged with red (see Hall's "Key," p. 37). Dimensions of nests in inches :—(a) Outside—length 23, breadth 2, depth 1.5; inside—length 1.5, breadth 1.3, depth 1.2. (b) Outside—length 2.3, breadth 2, depth 1.7; inside—length 1.6, breadth 1.3, depth 1.4.

A regular supply of honey is obtainable from the mangrove flowers, and it is from these that most of their food is obtained throughout the year.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	124 ...	53 ...	16 ...	15 ...	40
♂ ...	120 ...	56 ...	16 ...	14 ...	39
♂ ...	120 ...	56 ...	14.5 ...	14 ...	38
♂ ...	122 ...	54.5 ...	16 ...	15 ...	41.5
♂ ...	121 ...	59 ...	16 ...	15 ...	42
♂ ...	116 ...	55 ...	15.5 ...	15.5 ...	37
♂ ...	110 ...	54 ...	14.5 ...	13 ...	38
♂ ...	112 ...	52 ...	16 ...	14 ...	37
♂ ...	116 ...	51 ...	15 ...	13.5 ...	39
♀ ...	112 ...	53 ...	15 ...	14 ...	35

MYZOMELA NIGRA (Black Honey-eater).

A single specimen only was noticed.

MYZOMELA PECTORALIS (Banded Honey-eater).

The first arrivals appeared at Napier Broome Bay on 26/12/09, when the first crop of *Grevillea* flowers opened, and their numbers increased largely during the next few weeks. As the flowers failed their numbers decreased, until none remained in the first week of February. However, they returned in the middle of March, when the second crop of flowers opened. The majority went away again as the food supply decreased, but a few pairs remained until the end of July, when my observations ceased. Two nests only were found, the first of which contained two fresh eggs (10/5/10), and the second two young (20/7/10). The early arrivals were accompanied by many birds of immature plumage (see note by Mr. A. J. Campbell, *Emu*

vol x., p. 167), so that I presume the two nests found in May and July were late broods. The nests were very lightly constructed of fine grass, bark, and spider web, and were lined with grass.

Dimensions of nests in inches:—Outside—length, 2.2; breadth, 2; depth, 1.9. Inside—length, 1.6; breadth, 1.4; depth, 1.6.

The food appears to consist entirely of honey.

Measurements of birds in mm. :—

		Total length.	Wing.	Tarsus.	Bill.	Tail.
	♂	128	68	14	15	46
	♂	128	65	14	13	43
Imm.	♂	130	64.5	14	13	43
	♂	133	66	15	14.5	45
	♂	135	65	16.5	16	47
Imm.	♂	127	62	14.5	13	42.5
	♂	117	62	13	13	42
	♀	120	60	14	13	39
	♀	120	60	13.5	13	40
	♀	125	61.25	14.5	12.25	41.5
Imm.	♀	119	59	13.25	12	39
Imm.	♀	125	61.5	14.5	12	40
	♀	126	62.5	14	13.5	42

GLYCYPHILA FASCIATA (White-breasted Honey-eater).

Were noted in the Napier Broome Bay district only, where the first arrivals appeared on 1/12/09. By the 26th they were plentiful near all the creeks and springs, and on 1/1/10 nineteen nests were commenced along one small creek. The first set of eggs was taken on 5/1/10, and the last on 18/5/10. Two eggs are invariably laid, excepting in cases where a nest contains a Cuckoo's egg. I believe that when a Cuckoo's egg is the first or second egg to be deposited in the nest, the Honey-eater does not lay her full clutch, but proceeds to incubate the Cuckoo's egg only, or the Cuckoo's egg and one of her own. I noticed that where a nest contained a full clutch of Honey-eater's eggs and a Cuckoo's egg the former were always in a more advanced state of incubation than the latter. My supposition is based on the following records and several more of similar nature :—A nest taken on 7/1/10 contained two slightly incubated Honey-eater's eggs and one fresh egg of *Cacomantis flabelliformis* (Square-tailed Cuckoo). A second nest taken on 13/1/10 contained one Honey-eater's egg and one egg of *C. flabelliformis*, both of which were somewhat incubated. A third nest, which was commenced on 1/1/10 and taken on 13/1/10, contained only a slightly incubated egg of *C. flabelliformis*. A fourth nest, taken on 3/2/10, contained one egg of each species, both showing signs of incubation. The nests are built of cajaput bark throughout, and are so closely woven that they are practically rain-proof. Nearly all have a strongly built resting place below the opening, upon which the birds alight before entering the nest and when feeding their young, and from which frequently hang several broad pieces of bark, varying in length from 4 to 9 inches. Similar pieces sometimes hang from the sides and bottom also. I noticed several instances of these birds having abandoned their first nest to build another on the same branch, or on one in close proximity to it. In three cases abandonment appeared to be due to the presence of a Cuckoo's egg in the nest, and in others to the fact that I had examined or taken eggs from the first nest.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂	148	71	19	15.5	49
♂	146	73	20	15	49
♀	144	68	16	13	51
♀	141	66	15	14	48

CONOPOPHILA RUFIGULARIS (Red-throated Honey-eater).

The first arrivals appeared on 26th March, and were followed by many others up to 27th April, after which they gradually decreased in numbers, until none remained after 24th May. This species is largely insectivorous, even when honey is abundant.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	138 ...	67 ...	16.5 ...	11 ...	46
♂ ...	135 ...	65 ...	16 ...	11 ...	45
♂ ...	136 ...	69 ...	17 ...	11.5 ...	46.5
♀ ...	133 ...	65.5 ...	16 ...	10.5 ...	46
♀ ...	134 ...	66 ...	16 ...	11 ...	42

STIGMATOPS OCULARIS (Brown Honey-eater).

A very common bird in all localities on the mainland and islands. Eggs were taken from the beginning of March to the end of June from nests built in many species of trees and grass. The nests vary much in appearance, some being built entirely of grass and spider web, whilst others contain only bark and spider egg cases. The male birds are noticeably larger than the females, and those figured by Gould are typical of the North Kimberley birds. Small parties were seen flying between Eclipse and Graham Moore Islands and the mainland.

Measurements of nests in inches :—(a) Outside—length 2.1, breadth 1.8, depth 2.1; inside—length 1.5, breadth 1.2, depth 1.8. (b) Outside—length 2.2, breadth 1.7, depth 2; inside—length 1.7, breadth 1.3, depth 1.7. (c) Outside—length 2.6, breadth 1.9, depth 1.6; inside—length 1.8, breadth 1.5, depth 1.4.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	132 ...	61 ...	17 ...	16 ...	52
♂ ...	135 ...	65 ...	18 ...	16 ...	55
♂ ...	146 ...	65 ...	15 ...	16 ...	55
♂ ...	138 ...	66 ...	14 ...	15 ...	54
♂ ...	149 ...	66 ...	14 ...	13 ...	55
♂ ...	151 ...	68 ...	17 ...	17 ...	58
♂ ...	152 ...	69 ...	16.5 ...	15 ...	58.5
♂ ...	143 ...	65 ...	16 ...	16 ...	57
♂ ...	145 ...	65 ...	15 ...	16.5 ...	55
♀ ...	133 ...	62 ...	16 ...	15 ...	47
♀ ...	131 ...	59 ...	15.5 ...	13.5 ...	51

PTILOIS SONORA (Singing Honey-eater).

This widely-distributed species shows a decided preference for the poorest class of country—viz., the sandy coastal belt and the sandstone plateau country, on which the principal vegetation is stunted eucalypt, *Calycotrix microphylla* (Cunn.), *C. laricina* (R. Br.), &c.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	187 ...	86 ...	20 ...	16 ...	80
♂ ...	188 ...	82 ...	21.5 ...	16.5 ...	75
♂ ...	182 ...	76 ...	20 ...	15 ...	70
♀ ...	176 ...	79 ...	22 ...	15 ...	68

PTILOIS FLAVESCENS (Yellow-tinted Honey-eater).

A very common bird in all scrubby and timbered country; noted as a foster-parent of *Cacomantis flabelliformis* (Square-tailed Cuckoo).

Descriptions of nests :—

(a) Built in a small tree, 6 feet from the ground, of thread-like pieces of eucalyptus bark and spider web, closely woven and almost covered on

outside with spider egg cases, web, and a white downy vegetable substance. Contents—One egg of *P. flavescens*, and one egg of *Cacomantis flabelliformis*, both in advanced state of incubation (17/1/10).

(b) Built in small eucalypt tree, 7 feet from the ground, of bark and spider web, thickly lined with rootlets. Contents—Two eggs (18/5/10).

(c) Built in a small tree, 7 feet 6 inches from the ground, of bark and spider web, without lining. Contents—One egg, slightly incubated (25/5/10).

(d) Built in acacia tree (*Acacia tumida*), 8 feet from the ground, of bark, spider web, caterpillar silk, and grass, lined with fine pieces of bark.

Dimensions of the above nests in inches :—(a) Outside—length 2.3, breadth 2.1, depth 1.8; inside—length 1.7, breadth 1.4, depth 1.3. (b) Outside—length 2.5, breadth 1.7, depth 1.9; inside—length 1.9, breadth 1.3, depth 1.7. (c) Outside—length 2.4, breadth 1.8, depth 1.4; inside—length 1.6, breadth 1.2, depth 1.3. (d) Outside—length 2.4, breadth 2.1, depth 1.7; inside—length 1.7, breadth 1.5, depth 1.4.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	147	69	18	12	60
♂ ...	145	66	17	13	55
♂ ...	151	70	17	12	62
♂ ...	160	70	17	12	65
♂ ...	151	58	15.5	12	61
♀ ...	141	66	15	11	60
♀ ...	142	67	15.5	10.5	58
♀ ...	145	68	16.25	11	56
♀ ...	142	66.5	16	11.25	57.5

PTILOTTIS UNICOLOR (White-gaped Honey-eater).

A rather uncommon species in all localities, from Parry Harbour to the Drysdale River. A nest commenced on 2nd January was ready for eggs on 9th, and contained two eggs on 17th. On 20th a new nest was commenced by the same pair of birds at a height of 40 feet in a tall, slender tree. This nest was built of bark and spider web, and lined with grass. Dimensions in inches :—Outside—length, 4; breadth, 2.5; depth, 3.2. Inside—length, 2.5; breadth, 1.8; depth, 2.1.

Another nest, containing one young bird about a week old (28/11/09), was built 50 feet from the ground in a very tall tree, principally of grass, flower-heads, and a small quantity of bark and spider web. Dimensions of nest in inches :—Outside—length, 4.2; breadth, 3.8; depth, 2.8. Inside—length, 2.7; breadth, 2.7; depth, 2.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	206	94.5	22.25	19.5	81
♂ ...	215	98	24.5	21.5	83
♂ ...	211	95	25	19.5	82
♀ ...	180	88	24	18	80
Imm. ...	204	85	23	19	77
♀ ...	207	91	23	19	78
♀ ...	194	90	23	18	77
♀ ...	202	91	23	19	82

PTILOTTIS PLANASI (Yellow-necked Honey-eater).

(Campbell, *Emu*, vol. x., p. 168.)

I shot two of these birds on 7/5/10 in the sandstone plateau country, 5 miles north-east of the station, which proved on examination to be males (type and co-type specimens). Subsequent visits were paid to this locality without success, but in June, when passing through similar country 10 miles south-east of the station, I saw many pairs, and one nest from which the

young had recently flown. In their habits they resemble *P. sonora* somewhat, though they are easily distinguished, even at a distance, from the commoner species.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	157	74.5	19	14	63
♂ ...	154	72	19	14	61.5

Description of nest :—Built in *Grevillea*, 6 feet from the ground, amongst pendulous leaves ; lightly constructed of grass and spider webs.

Measurements of nest in inches :—Outside—length, 2.7 ; breadth, 2 ; depth, 1.8. Inside—length, 1.8 ; breadth, 1.5 ; depth, 1.5.

MYZANTHA LUTEA (Yellow Miner).

Fairly numerous during the flowering of the eucalypts.

Measurements of birds in mm. :—

	Total length.	Wing	Tarsus.	Bill.	Tail.
♂ ...	275	136	30	21	118
♀ ...	271	125	29	21	112

ENTOMYZA ALBIPENNIS (White-quilled Honey-eater).

This species was very seldom seen.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♀ ...	317	145	32	32	125.5

TROPIDORHYNCHUS ARGENTICEPS (Silvery-crowned Friar-Bird).

In January these birds leave the level forest country for the sandstone plateau, where the nests are found in January, February, and March. Two eggs are laid. Their food consists principally of the fruit of species of fig and other trees.

Dimensions of nests in inches :—(a) Outside—length 5.1, breadth 4.3, depth 3.8 ; inside—length 3.4, breadth 2.8, depth 2.5. (b) Outside—length 5, breadth 3.5, depth 4 ; inside—length 3.5, breadth 3, depth 3.2.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill and casque.	Tail.
♂ ...	315	139	33	40	112
♂ ...	295	130	30	30	113
Bill only.					
♂ ...	306	132	32	24	110
♀ ...	305	131	30	26	109

PHILEMON SORDIDUS (Little Friar-Bird).

This species was fairly plentiful on the eastern side of Napier Broome Bay, where it is resident. The nests are built from 6 to 30 feet from the ground, and are generally well concealed by leaves. The materials used are twigs, rootlets, grass, fibre, and spider web on the outside, and grass and roots on the inner side. The whole structure is light but strong, and closely woven. The eggs are visible from beneath. Dimensions in inches :—(a) Outside—length 3.7, breadth 3.7, depth 3.3 ; inside—length 3.1, breadth 3, depth 3. (b) Outside—length 5.5, breadth 4.5, depth 3.8 ; inside—length 2.8, breadth 2.7, depth 2.8.

The nesting season appears to extend from December to March. The food is chiefly honey, insects, and fruits.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	282	127	28	31	107
♂ ...	284	128	30	35	107
♂ ...	288	133	29	31	110
♀ ...	277	115	30	33	98

TÆNIOPYGIA CASTANOTIS (Chestnut-eared Finch).

Rarely seen.

STICTOPTERA ANNULOSA (Black-ringed Finch).

A common bird near the coast and on the sandstone hills, where eggs were taken from March to June. As a rule the nests are built in exposed positions in stunted scrub (*Calycotrix microphylla*, Cunn.), but it is not unusual to find them very carefully concealed amongst the dead leaves of pandanus palms. Fine twigs and grass or grass only are the materials used in nest building. From three to eight eggs are laid.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill	Tail.
♂ ...	106 ...	49 ...	13 ...	10 ...	44

MUNIA CASTANEITHORAX (Chestnut-breasted Finch).

These birds were very numerous on Hecla Island on 14/11/09, and appeared to be resting after a long flight. Very few were seen at Napier Broome Bay until May, when many small flocks of 10 to 20 birds (generally in immature plumage) arrived.

POEPHILA ACUTICAUDA (Long-tailed Grass-Finch).

A common resident near Napier Broome Bay. The nests are generally built in the tops of pandanus palms, or in small trees, at from 4 feet 6 inches to 20 feet from the ground, but it is not unusual to find them in spinifex grass, from 12 to 18 inches from the ground. The nests vary somewhat according to the site chosen. Those in the grass and pandanus are generally built of grass and lined with feathers. Charcoal was found amongst the feathers in three nests taken from spinifex. I noticed that nests built in trees were generally constructed of grass, small herbaceous plants, and pieces of wire-like creeper, and were more often lined with grass than with feathers. One nest was lined with about 18 inches of snake-skin. The nesting season commenced after the rainy season, eggs being taken from 23rd April to 21st June. From 3 to 8 eggs are laid in a nest.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	156 ...	58 ...	14 ...	10 ...	77
♂ ...	142 ...	56 ...	16 ...	11 ...	55.5
♂ ...	165 ...	59 ...	16 ...	10 ...	78

POEPHILA PERSONATA (Masked Finch).

A few birds were seen near Napier Broome Bay at rare intervals, but in the barren country nearer the Drysdale River this species is more plentiful than *P. acuticauda*. The nests are more often built in the grass than in trees, and in many cases rest on the ground, near a stump or log. About a teaspoonful of finely broken charcoal was found in each nest.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	132 ...	58 ...	16 ...	12 ...	58
♂ ...	132 ...	56 ...	15 ...	11 ...	55
♂ ...	135 ...	59 ...	15 ...	11 ...	54
♀ ...	131 ...	55 ...	15 ...	11 ...	51

POEPHILA GOULDÆ (Gouldian Finch).

On 16th and 19th November, flocks of these Finches arrived at the station, and remained a couple of weeks. Six weeks later many more arrived, and remained until the beginning of July. None of these birds nested in the district. The red and black-headed varieties were always found in the same flocks, the latter outnumbering the former by about three to one.

NEOCHMIA PHAETON (Crimson Finch).

This beautiful bird is resident and fairly plentiful about all the creeks and springs from Napier Broome Bay to the Drysdale River. The nests are generally built in pandanus palms, or in the forks of large cajaput trees, at from 10 to 50 feet from the ground. Plate XXXIV. shows the sites of three nests in the bark of a fallen tree. The materials used in nest-building are partly decayed leaves of a coarse swamp grass or cajaput bark on the outside, with feathers or grass as lining. Both sexes assist in building their large and roughly constructed nests. Flower buds and seeds of many small plants, honey from the flowers of *Grevillea*, and grass seeds form the chief articles of diet. Green tree-ants (*Ecophylla smaragdina*) destroy many eggs and young of this species.

ORIOBUS AFFINIS (Northern Oriole).

Uncommon.

ORIOBUS FLAVICINCTUS (Yellow Oriole).

I saw a few pairs at Parry Harbour and on Mary Island, in the densest foliage, where they are difficult to locate on account of their protective colouring and habit of remaining motionless when approached.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	295 ...	139 ...	23.5 ...	30 ...	107
♀ ...	282 ...	136 ...	25 ...	28 ...	105

CHIBIA BRACTEATA (Spangled Drongo).*

Were fairly plentiful near Parry Harbour, but very uncommon in other localities.

Measurements of birds in mm. :—

	Total length.	Wing.	Tarsus.	Bill.	Tail.
♂ ...	324 ...	156 ...	26 ...	35 ...	135
♀ ...	292 ...	154 ...	27 ...	35 ...	132

CHLAMYDODERA NUCHALIS (Great Bower-Bird).

Seen at Napier Broome Bay and Parry Harbour. Several bowers were found in both localities, at some distance from the coast, amongst thin, stunted scrub. Most of these were ornamented with coral and shells, or quartz crystals and freshly picked fruit of eucalyptus trees. Their food consists principally of wild figs, grapes, and other fruits.

CORVUS CORONOIDES (Crow).

Were seen in all localities I visited, including the islands. Locusts and lizards only were found in the crops.

Measurements of birds in mm. :—

	Total length:	Wing:	Tarsus.	Bill.	Tail.
♂ ...	534 ...	362 ...	62 ...	57 ...	204
♀ ...	494 ...	350 ...	64 ...	51 ...	190

Bird Day.

BIRD Day was celebrated throughout Victoria on Friday, 28th October, 1910. The Minister for Education, Mr. A. A. Billson, had suggested that on that day school work should proceed as usual in the morning, but that a special programme should be carried out in the afternoon, as follows:—School song; brief statement of the aims of the Gould League of Bird Lovers; enrolment of members of the Gould League of Bird Lovers;



Fallen Tree : White X indicates nesting-sites, in bark, of Crimson Finches (*Neochmia phaeton*).



Play-ground of Great Bower-Bird (*Chlamydodera nuchalis*).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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recitation; school song; short address by visitor or teacher on "Birds: their Value and Interest"; rapid revision of the school bird list and the list of last Bird Day; where convenient, an excursion, about half-past 2, to visit haunts of birds, nests previously noted. A list of birds seen should be made, in two columns—(1) birds positively identified; (2) birds about which there is a doubt. In city schools, where the excursion may not be practicable, the programme may be extended, and may include a composition exercise.

This was adhered to in the majority of schools, and the pupils learned a great deal about bird-life.

Members of the Royal Australasian Ornithologists' Union, the Bird Observers' Club, the Field Naturalists' Club of Victoria, and kindred societies visited different schools and delivered brief addresses about birds and their habits, &c., impressing on the children the necessity for protecting bird-life for its economic value, besides its beauty and interest. Some of the bigger schools of the metropolis were favoured by visits from leading members of the Union. But there was in some instances a little overlapping of lecturers, not likely to recur in future.

In the country districts, generally, Bird Day celebration was a success, and, with the facilities offered for open-air lessons, in many instances the scholars had a most interesting and instructive afternoon. At Drouin West State school Mr. Isaac Batey, the veteran bird observer, and Mr. Swan were in attendance to judge essays for which prizes had been offered. The subject was—"What I Have Seen in the Bush," pupils of the fourth, fifth, and sixth classes competing. The examiners were pleased with the quality of the essays submitted. During the afternoon Mr. Batey explained interesting features regarding different specimens of birds displayed, and read an essay on nature study. At Maryborough Mr. Alex. H. Chisholm did good service in a similar direction, as did Mr. A. G. Campbell at Stawell and Mr. G. E. Shepherd in the Mornington district, and these instances of Bird Day celebrations in the country are fairly typical of a large number of others. At Ballarat four large schools met in the Athenæum Hall, where the Rev. A. Greenwood lectured agreeably on "Birds: their Homes, Habits, Uses, &c." At the Mortlake State school, where an instructive paper was read by "F. R," the Rev. Mr. M'Bride, according to *The Mortlake Despatch* (2/11/10), is reported to have stated "that one of the chief characteristics of Australian birds was that they are songless." Surely the reverend gentleman must have been misreported.

In connection with Arbor and Bird Day, the following letter from Captain S. A. White, of Wetunga, Fulham, South Australia, which appeared in *The Register*, 24th August, 1910, is of interest:—

"With the greatest pleasure I read in *The Register* an article headed 'Arbor and Bird Day.' I have been waiting for this move a long while, and at last it has come. It is only through the children that we can hope to educate the coming generations to recognize the great part our native birds play in the welfare of the State, quite apart from preventing much cruelty in destroying our feathered friends. It is a fitting thing that Arbor Day and Bird Day should be held at the same time, because one depends on the other. It has been a great wonder to me that this fact has not been noticed before. Much has been done and said (quite rightly, too) by our Forest Department and National Park Board, but how strange that bird protection has not come into the question, when we know that science, and also many thousands of practical demonstrations, have shown us that the flora is dependent on the birds for its existence as much as the birds are dependent on it. They are the eradicators of hundreds of different kinds of pests and blights which attack our timber trees and our flora in general, and their fertilization, also, is almost dependent on the native birds in many cases. The Education Department is to be heartily congratulated on this important undertaking. It has a wonderfully energetic officer in Mr. Edquist, who has only lately taken to this study, but is rapidly furnishing himself with a practical knowledge of our native birds. All the many ornithologists in South Australia will do all they can to help the movement. I am proud to think of being one of the original members of the first Ornithological Association of Australasia—the S.A.O.A.—which has done an immense amount of work, not only in the advancement of ornithological science, but also for the protection of birds. The South Australian Education Department is the first to form school clubs, and may this increase each year; but the Victorian Department has had two annual 'Bird Days,' and has started the Gould League for the protection of native birds. The membership up to date is 25,000."

Stray Feathers.

GROUND-LARK'S NEST ON HIGHWAY.—Whilst strolling down the Chadstone-road here last week I flushed a Ground-Lark (*Anthus*). On looking down I found the nest in a clump of onion weed, with three eggs in it, right in the roadway—in fact, only two yards from the centre, and over which spot numbers of horses and cattle pass every day.—J. F. BRADLY. Murrumbeena, 22/9/10.

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FOSTER-PARENT OF FAN-TAILED CUCKOO.—I have received from Mr. C. E. Ortin, a new member of the R.A.O.U. in Western Australia, a letter with the following postscript:—"While my men were engaged in scrub-cutting a few days ago in the densest thicket, they flushed a bird from a nest which turned out to be a Redthroat's (*Pyrrholaemus brunnea*), containing two eggs, also egg of Fan-tailed Cuckoo (*Cacomantis flabelliformis*). I believe this is a new foster-parent for this Cuckoo."—J. A. ROSS. Melbourne, 30/9/10.

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PLUMAGE OF THE FEMALE PINK-BREASTED ROBIN (*Petræca rhodinogaster*).—Mr. O. L. Adams obtained one of the above species, when on one of his surveying trips to the

Patersonia district, which had a very distinct pink breast. He then consulted Hall's "Key," also North's "Nests and Eggs," but neither author had mentioned this fact. Mr. Adams was then anxious to procure another female to confirm the first one. When up at the Tunnel, in October, 1910, I obtained one which also had the very distinct pink breast, while several others were noticed at close quarters.—P. C. THOMPSON. Launceston.

* * *

NATIVE CAT AND HERONS.—A short while back a ploughman taking his horses to the river for their mid-day drink saw two Herons (*Notophox nova-hollandiæ*) feeding on a grassy flat, probaby on worms, as it was just after a heavy rain. A tiger-cat (*Dasyurus maculatus*) came out of some blackberries by the river and ran swiftly toward the Herons. When these raised their heads the cat flattened himself on the ground, in the language of my informant, who halted his horses to watch the impending tragedy. When the birds resumed feeding the cat again ran forward, to halt motionless as they raised their heads. In this way he had succeeded in getting within a few yards of the birds, when one of the horses shook itself; the Herons heard the chains rattle, looked around, saw the cat, and flew off. The cat ran back to the blackberries without delay.—O. L. ADAMS. Launceston, 17/9/10.

* * *

NEST AND EGGS OF THE ROCK FIELD-WREN.—Description of two clutches of eggs of *Calamanthus montanellus* (Milligan), M. 535, taken by Mr. F. Lawson Whitlock in the Stirling Ranges, Western Australia:—

No. 1 (taken 12/9/1910).—Clutch four. Eggs fresh. Shape, swollen oval; texture of shell fine, smooth and glossy; ground colour chocolate-red (not unlike that of *Chthonicola sagittata*), with a few spots of a darker shade scattered over the surface and merging into an indistinct cap at the larger end of the egg. Very slight variation in the colouring of the four eggs.

Measurements in inches:—(a) .83 x .58, (b) .80 x .58, (c) .81 x .6, (d) .82 x .59.

Nest.—Dome shaped, composed of loosely woven dried grass, with a lining of small feathers; entrance at the side on a level with the ground. The structure is like the nest of *Pyrrolæmus brunnea*, and placed in a hole scratched in the ground. Situation—a rocky ridge.

No. 2 (taken 4/9/10).—Clutch three. Eggs fresh. Shape, swollen oval; texture of shell fine, smooth and glossy; ground colour light chocolate-brown (similar to *C. fuliginosus*), a few spots or splashes of a darker shade scattered over the surface, and forming rather a distinct cap at the larger end.

Measurements:—(a) .84 x .64, (b) .84 x .63, (c) .83 x .64.—H. L. WHITE. Belltrees.

WHITE - SHOULDERED CATERPILLAR - EATER (LALAGE TRICOLOR).—A few years ago this handsome and useful bird was comparatively rare about this district. During the last few nesting seasons, however, I have noted a steady increase in their numbers; and now they are becoming plentiful. At the present time three pairs are nesting in our orchard—one nest being placed high in a cherry-plum and the other two low in pear trees. In the first-mentioned tree a pair of birds built last year, and safely reared a brood of young; so, presumably, these are the same birds again returned. I am always glad to see them about the place, not only on account of their insect-eating proclivities, but also for their bright, cheerful ways and musical chattering song. The other day I spent a pleasant half-hour watching one of these birds—a male—weaving the fibres of its tiny nest around the slender branchlets in one of the fruit-trees. A pretty picture he made, sitting lightly in a fork of two limbs, his head moving briskly from side to side, as he wove each fibre into position. Both sexes assist in the building of the nest and incubation of the eggs, but I find the male bird, if anything, the more industrious of the two. Certainly, he is a very energetic helpmeet.

Last month I found three of these nests in a local park—a favourite place for marauding boys—simply by watching the birds for a few minutes. In this place the nests are invariably situated high up in pine trees. The birds display but little fear of human beings, and will sit or fly close by while the nest is being examined. In this connection a little incident that came under the notice of a large number of picnickers at a spot in the Pyrenees Mountains, last week, called forth many expressions of admiration. Right in the centre of the picnicking ground a pair of *Lalages* had built their nest low in a wattle-tree. Never having been disturbed, the sitting bird had become so tame and trustful that she would allow visitors to approach quite closely, and even stroke her back, as she sat sheltering her single young one.—A. H. CHISHOLM. Maryborough (Vic.), 22/11/10.

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FIELD NOTES FROM BROOME HILL, WESTERN AUSTRALIA.*—9th April, 1910.—*Neositta pileata* (Black-capped Tree-runner).—Unusual numbers of this bird were seen on above date. While driving along a high road a distance of 6 miles, small parties of three to six birds were seen all the way.

7th May.—*Cuculus inornatus* (Pallid Cuckoo) first heard.

21st June.—*Ninox ocellata*.—A specimen of this Owl that I

* These notes were accompanied by an interesting set of photographs taken by Mrs. Carter, but it is regretted want of space did not permit of their reproduction.
—EDS.

dissected contained the two legs and feet and many feathers of a Parrot, apparently *Barnardius zonarius*.

30th June.—When Mrs. Carter was driving along the road, a pair of *Uroaëtus audax* (Wedge-tailed Eagles) that were perched in a jam-tree (*Acacia*) on the edge of the road followed the buggy for some distance, flying and hovering at a height of only a few feet above it, much to the alarm of the horse. Mrs. Carter said she could have struck them with the whip, but was doubtful of the consequences if one fell in the carriage or upon the horse. I tried to find these Eagles subsequently, but without success, so I poisoned the carcass of a lamb in one of my paddocks where I had seen Eagles; but, although one of them undoubtedly visited the body, the only result was the unfortunate death of six Magpies (*Gymnorhina dorsalis*) and a fine Brown Hawk (*Hieracidia orientalis*) that I found lying by the lamb.

8th July.—*Podiceps novae-hollandiae* (Black-throated Grebes) made their appearance upon two of my stock tanks—an earlier date than usual.

Podargus strigoides.—While walking through one of my paddocks, my attention was attracted by what seemed to be a strip of dry bark in the small upper branches of a York gum tree. As fallen bark is not usually seen in the smooth upper limbs, I used my field glass, and found that the object was a fine Tawny Frogmouth, its body compressed and elongated to an extraordinary length. I am well acquainted with the upright pose of this bird, resembling the dead limb, but the horizontal position was new to me. I may mention that the Owlet Nightjar (*Egotheles*) has the habit of compressing the feathers when it knows it is observed in the open (where it is rarely seen), thus making it appear very small.

8th July.—*Cacomantis flabelliformis* (Fan-tailed Cuckoo) first heard and seen.

21st May.—A fine specimen of *Diomedea exulans* was received by me, having been captured on a steamer not far from Cape Leeuwin. It measured 3 feet 6 inches in length, 9 feet 6 inches expanse of wing, and weighed 15 lbs.

17th July.—*Zonifer tricolor* and *Petroica campbelli* (Black-breasted Plover and Western Scarlet-breasted Robin) were first observed, and a nest of the White-fronted Bush-Chat (*Ephthianura albifrons*) containing three eggs was observed.

23rd July.—*Pachycephala rufiventris* (Rufous-breasted Thick-head) made its appearance, uttering its pleasant song.

29th July.—*Petroica goodenovii* (Red-capped Robin) appeared in considerable numbers on its winter migration.

3rd August.—*Zosterops gouldi* (Green-backed White-eye) still about in flocks.

9th August.—A nest of the Long-billed Honey-eater (*Meliornis longirostris*) was seen containing two eggs.

12th August.—A few Black-and-White Swallows (*Cheramacca leucosternum*) were observed, flying, as usual, at a considerable height.

18th August.—A nest containing three incubated eggs of the Gilbert Thickhead (*Pachycephala gilberti*) was found in the dead prickly leaves of a stinkwood tree. The nest was 5 feet from the ground, and was made of twigs and fibrous bark. The lining consisted of fine fibre and grass, with a little sheep's wool. The male bird was sitting.

20th August.—A party of Banded Wrens (*Malurus splendens*) was noted, one male bird being in full plumage. On 28th September I saw another family 50 miles from here, in which was no male bird in full plumage, one only having partly assumed its breeding feathers.

26th August.—The family of eleven Magpies (*Gymnorhina dorsalis*) which had been about the house, feeding on scraps from the kitchen, since my return in April, was reduced to four birds of last year, which were in the immature brownish plumage, the others having paired and gone away to nest. At date of writing (29th October) these four birds are still about the house and in full moult. According to my experience, this Magpie does not breed until two years of age.

1st September.—A nest of *Calamanthus montanellus* (Rock Field-Wren) was found on a sand plain, built as usual in a slight hollow in the ground. It contained two Wrens' eggs and one of the Fan-tailed Cuckoo (*Cacomantis flabelliformis*). I think this is the first record of this Cuckoo laying in a Rock Field-Wren's nest. White-shouldered Caterpillar-eaters (*Lalage tricolor*) made their first appearance, and the White-tailed Cockatoos (*Calyptorhynchus baudini*) were making ready their nesting-holes.

4th September.—Observed a nest of the Bronze-wing Pigeon (*Phaps chalcoptera*) containing two incubated eggs, about 10 feet from the ground in a sheoak tree (*Casuarina*). The male bird was sitting. The Western Thickhead (*Pachycephala occidentalis*) was noted singing, in immature plumage.

5th September.—Young Black-breasted Plovers (*Zonifer tricolor*) were observed about ten days old.

14th September.—The Black-throated Grebes had eggs in their nest on one of my stock tanks, as I could see them from the edge of the water. On the 19th I waded to the nest to see how the eggs were progressing, but found only one egg and the nest forsaken, and a second nest had been built about 20 yards away, which contained three eggs. Another egg, at least, must have been subsequently laid, as four young birds hatched out on 13th October.

15th September.—Two eggs of the White-tailed Cockatoo (*C. baudini*) were brought to me, having been just taken from the

nest. The young bushman who brought them assured me that an interval of a week or more elapses between the laying of the first and second egg, and that as soon as the first egg hatches the birds leave off sitting, and the second egg is usually left in the nest, infertile.

17th September.—The Black Duck (*Anas superciliosa*) had eggs, and the Sacred Kingfisher (*Halcyon sanctus*) made its first appearance this season.

19th September.—Pallid Cuckoos began to have a break in their voices.

21st September.—For the first time here, I observed an undoubted pair of Spotted Scrub-Wrens (*Sericornis maculata*). I observed them through my binoculars for some time. A pair of Black-and-White Fantails (*Rhipidura tricolor*) had built a nest and were sitting on three eggs on the top of a flood-gate across the creek. After some trouble in locating the exact tree, I found a nest of the Ground Graucalus (*Pteropodocys phasianella*) built about 30 feet from the ground on the forked limb of a York gum (eucalypt). Upon examining it, found it contained two young about a week old, one of them being much larger than the other. The nest was very flat, and almost impossible to be seen from the ground below. It was placed in the fork without any attachment, and was made of fine grass, roots, weeds, and a little moss, lichen, and sheep's wool intermixed. It was sundown when I first identified the tree in which the nest was built, after long watching the parent birds flying with food for the young. I stood below the tree trying to locate the nest with my binoculars for some time before I became aware that in the field of view was one of the parent birds perched on a straight dead branch immediately above the nest. The branch and bird were both in a perpendicular position, and the bird kept motionless, stretched out to its utmost length, with the beak pointed upwards, and could very easily have been overlooked. I have not read of this protective pose of the Ground Graucalus.

23rd September.—Found a Bronze-wing's (*Phaps chalcoptera*) nest, 5 feet from the ground, in a stinkwood bush. One egg was in the nest, and the other on the ground, both having been pierced in several places by some sharp instrument, and as a fine lace lizard (iguana) was near the foot of the bush I took it to be the egg-destroyer. About 100 yards distant was another nest of the Bronze-wing, built about 25 feet from the ground in the fork of a sheoak tree.

On 12th October a Bronze-wing Pigeon flew from the hollow spout of a large white gum tree, and on exploring the hollow I found there were two incubated eggs. The male bird was sitting. This laying in holes was a new experience to me, and I do not find it mentioned in ornithological works.

25th September.—Noted fledged young of *Calamanthus mon-tanellus* and *Climacteris rufa* (Rufous Tree-creeper). Mr. Hassell presented me with a skin of the Black-cheeked Falcon (*Falco melanogenys*), which he had shot in order to identify a species of Hawk that he said was in habit of killing the Mallee-Fowl (*Lipoa*).

Saw nest of Western Fantail (*Rhipidura preissi*), containing three eggs, built about 8 feet from the ground on a pendent bough of the river casuarina (sheoak).

Notophoyx nova-hollandiae (White-fronted Herons) have fledged young birds.

Porphyrocephalus spurius (Red-capped Parrakeet) and *Barnardius zonarius* have young in nests.

2nd October.—Climbed to a nest of *Cracticus leucopterus (destructor?)* (White-winged Butcher-Bird), which was built in the small twigs of a dead jam-tree, about 15 feet from the ground. It contained four eggs.

Found a nest of *Ptilotis cratitia* (Wattle-cheeked Honey-eater) that contained two fresh eggs. It was about 3½ feet from the ground, in a low bush. Most of this species had young birds at this date.

4th October.—Observed well-grown young of the Black Duck that could fly a short distance, and on 22nd October saw a brood of twelve young, newly hatched, on one of my tanks.

5th October.—Many young Magpies in the nests.

8th October.—Fresh eggs of the Little Penguin (*Eudyptula minor*) sent to me from the south coast.

Found nest of *Oreoica cristata* (Bell-Bird) built in the hollow of a charred sheoak stump, about 4 feet from the ground. The male bird was sitting on three eggs, and the usual complement of hairy caterpillars, alive.

9th October.—Noted nest of *Podargus strigoides* containing two eggs.

11th October.—Observed young of *Glycyphila melanops* (Tawny-crowned Honey-eater) in the nest. Here we have one of the disadvantages to students of the extreme "law of priority." Why should the very appropriate, well-known name of *fulvifrons*, which has stood for 70 years, be altered to that of *melanops*?

12th October.—Young Leaden Crow-Shrikes (*Strepera plumbea*) fledged from the nest.

21st October.—While at work with one of my men a jam-tree (*Acacia acuminata*) was felled. I noticed before the tree fell that there was an old nest of the *Pomatorhinus superciliosus* (White-browed Babbler) about 25 feet from the ground in the small, upper twigs, and that a *Collyriocinclla rufiventris* (Buff-bellied Shrike-Thrush) was moving about it in an agitated manner, but never thought it could have its eggs there. How-

ever, on examination I found that the Thrush had built its nest, composed of coarse pieces of bark and fibre, inside the old nest of the Babbler, and that its three fresh eggs had been broken by the fall. This incidentally confirms Mr. A. J. Campbell's supposition in "Nests and Eggs," page 92. Although this species of Shrike-Thrush is very common in this district, I have so far only seen one other nest, and that was about 10 feet from the ground, built in the fork of a jam-tree, and contained two fresh eggs on 21st October, 1907. It is a curious coincidence that the two nests should have been found on the same day of the same month.

22nd October.—Observed small young in down of *Zonifer tricolor*.—TOM CARTER. Wensleydale, 31/10/10.

P.S.—7th November.—Black-and-White Fantail.—Apparently the same pair of birds has now a second clutch of three eggs in the nest built on the flood-gate.—T. C.

From Magazines, &c.

BIRD'S NEST IN SHEEP'S WOOL.—Mortlake, Tuesday.—While a sheep was being sheared on Mr. A. Burger's farm, Telanga, near Penshurst, a Starling's nest was found in the wool. The nest had one egg in it.—*Age*, 23/11/10.

* * *

WESTERN AUSTRALIAN BIRDS.—Following some observations made in *The Emu*, vol. x., p. 58, respecting an article by Mr. W. R. Ogilvie-Grant (*Ibis*, October, 1909), Mr. Tom Carter, who possesses considerable local knowledge, both ornithological and geographical, has further criticised the latter at some length in *The Ibis* for October, 1910. Referring to a supposed egg of *Climacteris wellsi* (Grant) in Mr. A. J. Campbell's collection, a description is given in a footnote hereunder,* also descriptions of the eggs of *Certhionyx occidentalis* (Grant).

Reviews.

[“The Birds of Dumfries-shire,” by Hugh S. Gladstone, M.A., F.Z.S., M.B.O.U. Witherby and Co., London. Price, 25s. net.]

THIS handsome volume is an addition to the county avifaunas with which British ornithologists are so well provided. Its author, who was well equipped for his pleasant work, has been able to make his “contribution to the fauna of the Solway area” of permanent value by the co-operation of careful observers in

* Egg indistinguishable from that of *C. rufa*, but slightly smaller—dimensions, .92 x .74 inches. Eggs of *Certhionyx occidentalis* may be described as oval in form, slightly glossy, light buffy-white in colour, finely spotted with dark brown or umber, with dull underlying markings of grey. Not unlike eggs of *Artamus sordidus*. Dimensions in inches:—(1) .92 x .66, (2) .9 x .66, (3) .9 x .65.—A. J. C.

different parts of Dumfries-shire. To ornithologists in the British Isles, the book, which is a model of what such a work should be, must prove indispensable. Each species occurring in the Solway area is dealt with exhaustively, and the introductory chapters furnish general details regarding physical features of the district, climate, &c. The illustrations are numerous, and good, save those which depict stuffed birds, and of this class there are more than could be desired. But this is a slight blemish on a valuable work. Writing of the Common Sandpiper (*Totanus hypoleucus*), the author says that the birds arrive at their nesting-haunts about the third week in April, leaving late in July or early in August, and "after a brief sojourn of a week or two on the coast, depart to their more southerly winter quarters." He mentions the fact that the species, in winter, is found in Australia, as far south as Tasmania.

[*"Life of William MacGillivray, by Wm. MacGillivray, W.S. With a Scientific Appreciation by J. Arthur Thomson. London: John Murray. Price, 10s. 6d. net.*]

To write the life of such a man as William MacGillivray—the "accurate MacGillivray," as Darwin called him—a sympathetic pen was needed, and the great British ornithologist has been fortunate in his biographer. The little volume under notice sketches the boyhood and career of MacGillivray, and the scientific value of his work is brought out in Prof. Thomson's lucid "appreciation."

The future historian of British birds was born at Old Aberdeen in 1796, his father being a surgeon in the army, and when three years of age he was taken to live on a farm on the island of Harris, where he received his early education and commenced to look on nature with delight. In a poem he himself says, "The solitudes of nature were my school." When only twelve years old he entered Aberdeen College, and, taking his M.A. degree, began the study of medicine. In 1816 he commenced the study of botany, and subsequently devoted attention to ornithology, geology, and other branches of natural history. In fact, he at one period or other of his life took all nature for his province, but ornithology became his favourite study, and he will be remembered by his "History of British Birds." He was an open-air naturalist, religious, and with a strain of poetry in his nature, but he was also a scientist. "MacGillivray," says Prof. Thomson, "must be given a very high place, for three reasons:—(1) Because of his classification, which got below the often misleading resemblances in superficial appearance and habits to the affinities indicated by anatomical architecture; (2) because of the pattern of thoroughness which he set in his anatomical investigations; (3) because of the excellence of his observations on the life and habits of birds." The late Prof. Alfred Newton wrote of MacGillivray:—"Among ornithologists

of the highest rank there have been few whose opinion is more worthy of attention than MacGillivray, a trained anatomist and a man of thoroughly independent mind."

The record of MacGillivray's life and work, as set out in the volume under notice, should be read by all ornithologists; it is inspiring.

It is interesting that two sons of the great British "bird-man," John and Paul, also became eminent in natural science, and spent portions of their lives in Australia. John MacGillivray was naturalist on three scientific expeditions, including that of the *Fly* to Torres Strait and the Eastern Archipelago (1842-46), and he died at Sydney in 1867. Paul settled in Australia. He was a surgeon, and a student of natural science. A monument to his memory has been erected at Bendigo, where he resided, and his collection of natural specimens is preserved in the National Museum, Melbourne.

Correspondence.

THE CARTER ALBATROSS.

To the Editors of "*The Emu*."

SIRS,—The editorial statement appearing in the last number of *The Emu* (October, 1910, vol. x., p. 144) is incorrect in stating that the specimen of *Thalassogeron carteri*, described as new by the Hon. Walter Rothschild (*vide Bull. Brit. Orn. Club*, xiv., p. 6) "was found washed ashore dead off North-West Australia." It was caught by a black boy in my employment while it was swimming in the open sea at Point Cloates, and brought to me by him while still alive (*vide Emu*, vol. iii., p. 208). I think the editors, who, as far as I know, have never seen the bird, have gone out of their way to question the validity of this species, seeing that the Hon. Walter Rothschild described it as new (Dr. Ernst Hartert concurring with him), and that the late Dr. R. Bowdler Sharpe assured me (after examination of the skin) that it was a good species, when I was in England in 1903. So far, the only Albatross procured that resembles *T. carteri* was procured at Gough Island, in the South Atlantic, by the Scottish National Antarctic Expedition in 1904, and was described by my friend Mr. Wm. Eagle Clarke in *The Ibis*, 1905, p. 266, where he states:—"Dr. Hartert remarks that he finds nothing to show that other Albatrosses have the bill black in the young."

In my paper in *The Emu* mentioned above, the word "thing" has been substituted for "skin" by a printer's error in the fourth line, p. 209.—I am, &c.,

TOM CARTER.

Broome Hill, Western Australia, 27/10/10.

[No persons are more "in love" with Australian birds or

ornithology than the editors of *The Emu*. All they desire to obtain are facts. They thank Mr. Carter for his correction regarding the finding of the bird, but they submit that the criticism Mr. Carter particularly objects to is reasonable, which time alone can prove, or otherwise. Mr. Carter must be aware that the bills of the young of the *Thalassogeron* (*T. cautus*) which breeds in Australian waters are dark, and that specimens of birds and eggs of the Albatrosses of Gough Island were collected and described as far back as 1895 (*vide* Verrill, *Trans. Connect. Ac.*, vol. ix.)—EDS.]

Bird Observers' Club.

AT the Athenæum Hall, Melbourne, on 13th December, 1910, the Bird Observers' Club gave a unique entertainment. A fine series of lantern slides was displayed, illustrating the recent expedition of members of the Royal Australasian Ornithologists' Union to the Capricorn Islands, at the southern extremity of the Great Barrier Reef. Mr. A. J. Campbell, C.M.B.O.U., presided, and made a short introductory address. Mr. Chas. Barrett, hon. secretary Bird Observers' Club, gave an account of the expedition, describing different islands that were visited and the experiences of the naturalists in camp and on reef and forest rambles. Mr. D. Le Souëf, C.M.Z.S., dealt with the bird life of the coral islands, and Mr. J. A. Leach, M.Sc., gave a most interesting account of the vegetation and of the life of the reef and lagoon. He also touched on the theories regarding the formation of coral islands. During an interval refreshments were served. Among those present were :—Mr. F. Tudor, Minister for Customs; Mr. N. C. Lockyer, Acting Comptroller-General of Customs; Mr. Theo. Fink and Miss Fink; Mr. J. W. Israel, Auditor-General, and Mrs. Israel; Mr. J. A. Kershaw, F.E.S., Curator of the National Museum, and Mrs. Kershaw; Mr. W. A. Kendall, M.R.C.V.S.; Mr. H. C. Dannevig, Director of Fisheries.—*Herald*, 14/12/10.

Under the auspices of the Bird Observers' Club, Mr. Edgar F. Stead, R.A.O.U., delivered, at the Independent Hall, on 18th November, 1910, a lecture on "Bird Life in New Zealand." Mr. A. H. E. Mattingley, C.M.Z.S., presided, and there was a large attendance. Mr. Stead, who for many years has been a student of the avifauna of the Dominion, illustrated his lecture with a series of lantern slides from his own photographs, taken in the wildest parts of New Zealand. Some of these pictures rival in interest and beauty the best work of the Kearton Bros., in England, and Radcliffe Dugmore, in the United States. Mr. Stead has undertaken so many adventurous expeditions that he was able to relate stories not only of the birds, but also of exciting incidents by flood and field. With two companions he navigated, on a frail raft, whose floats were kerosene tins, several of the big cascaded rivers of the South Island. He spoke of the Weka Rail, the Kea, the Kiwi and other species, and told the story of his trip to an almost inaccessible rock in the ocean, where the Spotted Cormorants nest. Regarding the Kea, Mr. Stead stated that the bird does indeed kill sheep, but is not nearly so black as it has been painted. Only when frozen out of the mountains does it come seeking animal food in the lowlands and among the foothills. The Weka Rail, he was pleased to note, was holding its own against stoats and weasels. Mr. Stead was accorded a hearty vote of thanks, on the motion of Mr. A. J. Campbell, Col. M. B.O.U., seconded by Mr. D. Le Souëf, C.M.Z.S., for his lecture.

South Australian Ornithological Association.

THE monthly meeting of this Association was held on Friday evening, 25th November. Business included correspondence concerning the introduction of the Mallee-Fowl into Kangaroo Island. The secretary was requested to push the matter on, as the season was far advanced. A long discussion took place in reference to the extension of the close season for game, and it was thought by the majority of the members that if the season were extended to 10th January it would give the birds a chance. Several cases of shooting birds in close season were brought forward, and it was with the greatest regret that members listened to such flagrant breaches of the law and wanton cruelty. The remainder of the evening was taken up by a narrative of the last expedition under the Royal Australasian Ornithologists' Union to the Great Barrier Reef, last October, which was read by Capt. S. A. White. A list of the birds noted during the expedition, as well as their habits, &c., was read by Mr. J. W. Mellor. A number of specimens were exhibited from these localities, principally the Capricorn Islands.

Notes and Notices.

PODARGUS CALLS.—In Mr. Mattingley's article, p. 246, six "ooms" should read six "calls."

WANTED.—If any member has copies of vols. i., ii., iii., or parts thereof, of *The Emu*, which they wish to sell, will they please communicate with the hon. secretary, R.A.O.U., stating price, &c.

PRIOR NAME.—In *re* 358A, *Psephotus chrysopterygius blaauwi*, Van Oort, in "Notes from the Leyden Museum," xxxii, p. 71 (1910), this bird is the same as *P. cucullatus*, North.—G. M. MATHEWS.

NEW SUB-SPECIES.—*Munia castaneithorax assimilis* differs from *M. castaneithorax* (Gould) in having the chestnut band on the chest much darker in colour and the upper tail coverts rich chestnut-brown. Wing, 55 mm. *Hab.*—Eureka, Northern Territory.—G. M. MATHEWS. *Bulletin B.O.C.*, No. clxiv.

A CORRECTION.—Referring to the highly interesting photo. blocks that accompany Mr. Tom Iredale's article on the Kermadec Islands in this volume, it should have been stated that the original negative of Plate II. was taken by Mr. W. L. Wallace, and those of Plates III. and V. were by Mr. R. B. Oliver.

EXTENSION OF LOCALITY.—In a small lot of skins sent to me from the Northern Territory was a skin of *Aphelocephala nigricincta*, ♂ (No. 691, "Handlist"). This bird was obtained for the first time by the members of the Horn Scientific Expedition, when two males and a female were collected by Mr. Keartland. It was described by Mr. A. J. North in *The Ibis* (1895), and is fairly well figured on plate 7 in the "Report of the Horn Scientific Expedition—Aves" (1896).—G. M. MATHEWS. Watford (England), 28/10/10.

TRIP TO THE TUNNEL DISTRICT, TASMANIA.—Mr. P. C. Thompson forwards some interesting notes of birds observed in the above-mentioned locality during October last. He was accompanied by Mr. O. L. Adams, another member of the R.A.O.U. What struck the observers first was the fact that, while birds were hatching in the Launceston district, at the Tunnel very few species were even building. About three dozen species were noted, including the rare endemic *Acanthornis magna*, or Scrub-Tit, a specimen of which was obtained for museum purposes.

NOISY SCRUB-BIRD (*Atrichia clamosa*).—Regarding the original finding of the nest of this species, mentioned in Campbell's "Nests and Eggs," page 1,080, I may state that Mr. J. Hassell, not A. T. Hassell, was in company with Mr. E. A. Hassell when the nest was found. I was shown the locality, and the scrub amongst which the nest was built appears to be a dwarf species of tea-tree (*Melaleuca*), which, growing to a height of from 2 to 4 feet, forms comparatively open spaces in the midst of the dense "marlock," or "mà-lock," scrub, that extends over great areas of that district.—TOM CARTER. Broome Hill, 27/10/10.

A COCKATOO'S VOCABULARY.—A White Cockatoo (*Cacatua galerita*) in the possession of Mr. J. R. Clayton, Prahran, during a sudden downpour of rain and hail to which it was exposed in the yard, gave voice to the following utterances as fast as an observer could take them down in shorthand. All the time the bird was ducking its crested head and waving outstretched wings:—"Cup of tea, Thyra"; "Hip, hip, hurra"; "Hullo, Silver"; "Hullo, Thyra"; "Here you are"; "Come on"; "Hullo, old fellow"; "Hullo, Maggie"; "Have a drink"; "Hullo, Cocky"; "Good-bye, Tommy"; "Hip, hip, hurra"; "Hullo there"; "Do you want a drink, Thyra?" "Hullo, Thyra"; "Pretty Thyra"; "Have a drink"; "Do you want a drink?" "Pretty Cocky"; "Hullo, Cocky"; "Do you want a Thyra?" "Hullo, Margo"; "A cup of Thyra"; "Pretty Joey"; "Hullo"; "Hullo, Tom"; "Maggie"; "Cocky"; "Have a cup of tea, Tom"; "Hullo, Silver"; "Oh dear, oh dear," &c., &c.

BIRDS OF THE CAPRICORN ISLANDS (*Emu*, vol. x., p. 195).—The name of the Roseate Tern (*Sterna gracilis*) was inadvertently omitted from the "draft" list when the list for publication was being compiled. This bird was noticed on North-West Island and at North Reef. Mr. J. W. Mellor writes:—"A bird that the compilers of the list failed to record is the White-fronted Heron (*Notophoxyx novæ-hollandiæ*). These birds were identified on North-West Island, but were not so plentiful as the Reef-Heron."

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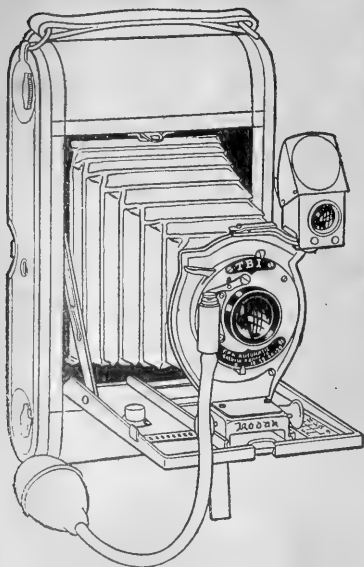
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(The author of each article is responsible for the facts recorded therein, and any deductions he may draw.)

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ANNOUNCEMENTS.

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MSS. of general articles should reach the editors at least six weeks prior to the issue of the number for which they are intended.

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"Birds of a feather."

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[PART 5.

In the Stirling Ranges, Western Australia.

BY F. LAWSON WHITLOCK, YOUNG'S SIDING, D.R., W.A.

THE Stirling Ranges lie a little over 50 miles to the north of Albany, and may be conveniently reached from Cranbrook railway station, on the Great Southern railway.

The first hills rise abruptly from the surrounding plains about 8 miles to the east of Cranbrook, the latter township, according to the railway survey, having a height of 835 feet above sea level. The ranges run almost due east for about 40 miles, when they cease just as suddenly as they appear at their western extremity. A little to the north a series of undulating downs run parallel to the main ranges, but their height is much dwarfed by the latter. I had no time to examine these lower ranges, but I have no doubt they would prove very interesting from a scientific point of view, owing to the proximity of numerous salt lakes to the foot of their northern slopes. From Donelly Peak, on a rather unfavourable day, I counted upwards of 60 of these salt lakes. I was only able to work Lake Balicup, a sheet of water of about 3 square miles in area and nowhere deeper than 3 feet. Lake Balicup lies at the eastern extremity of the lower ranges, which themselves merge into the undulating sand-plain about 20 miles east of Cranbrook.

The main Stirling Ranges are by no means a *terra incognita* from a scientific point of view. In September of 1902 Mr. A. W. Milligan, then a resident of this State, organized an expedition to the ranges. He was accompanied by Mr. C. P. Conigrave and Dr. Alex. Morrison, the latter gentleman then holding the position of Government Botanist to this State. The party did excellent work in a limited period (see *Emu*, vol. iii., p. 9). Other scientists have visited the ranges since that date, but, as far as I know, they had other researches in view, and did little or no ornithological work.

At the request of Mr. H. L. White, of Belltrees, New South Wales, I undertook this trip. My special quest was certain rare and little-known birds believed to still exist in the extreme south-west of our State. Mr. White approved of my suggestion that my search might as well commence on the northern slopes of the Stirling Ranges, and, after spending as much time there as I

could reasonably spare, I should work my way back to the coast. I followed this plan as well as circumstances allowed.

Before giving an account of the results of my trip, I must refer to the remarkable season recently experienced, from a meteorological point of view. After an unusually dry and hot summer, the weather broke early in April, and the amount of rain falling gradually increased in volume, until over 7 inches were recorded for May, followed by over 10 inches in June, and nearly 11 inches for July. Our mean annual rainfall is but 36 inches, so the reader will get a good idea of the weather experienced previous to my starting.

I left home 22nd August, and, until I reached the main Albany-Perth road, nearly 30 miles away, I had a hard struggle to get my turn-out through. Despite a driving accident experienced between Albany and Mount Barker, I had my camp erected at the foot of Donelly Peak by 31st of the same month. I may as well state that this accident resulted in rather severe injuries to both my legs, and that for several weeks I got over the rough ground with pain and difficulty.

I do not propose to give a complete list of the birds I observed, as this would only entail a recapitulation of Mr. A. W. Milligan's list already published. I shall, therefore, merely enumerate additions to his list, and give an account of my observations on the more interesting species encountered during the trip. I must add that I did not penetrate so far east as Mr. Milligan and his party, neither did I climb any peaks other than Mount Donelly. On the other hand, I put in some time around Lake Balicup, and what other country I explored I subjected to a more detailed examination than was possible on their part, owing to the limited time at their disposal. I regret also to add that much of the country on the north side of the ranges has recently been ravaged by fires. Miles of country have been swept, and the land is only now showing signs of recovery. In an area set aside as a public park this is much to be regretted. It can hardly fail to have an adverse effect on the abundance of the feebler birds; but, to look at it from a selfish point of view, I may have been aided in my researches by the enforced concentration of the more robust species in the tracts of scrub which escaped the general destruction.

There are two species mentioned by Mr. Milligan of which I saw nothing whatever—viz., *Meliornis sericea* and *Malurus elegans*. With regard to the latter, Mr. Milligan records that he "shot a beautiful male when a fourth of the way up Mount Toolbrunup." I did not reach so far east as this, but I consider it much to be regretted that this specimen, and also other equally interesting ones, were lost, owing to an accident to a pickle-tank. I think it very probable that a careful examination and comparison with the south coast form would have revealed differences in plumage due to climate, as I have never found the coastal bird in other than low, wet situations. It breeds on my own ground, but so closely does it hug the swamps that I have never seen it on the

adjacent jarrah hills, despite the fact that the latter are clothed with plenty of low-growing scrub.

There are three species for the discovery of which Mr. Milligan may claim special credit—viz., *Calamanthus montanellus*, *Meliphreptus leucogenys* (both new to science), and what may be termed the re-discovery of the *Malurus pulcherrimus* of Gould—the Wren with the “intense indigo breast.” I met with all three, and propose to add a few notes to what Mr. Milligan has already written. I was fortunate enough to obtain nests of two out of the three.

Regarding the Blue-breasted Wren (*Malurus pulcherrimus*), one wants a calm, sunny day to find it, for it is by no means vociferous, and I regard it as one of the most secretive of the whole family. The favourite haunt appeared to be some low, rounded hill littered with ironstone, and clothed with a not too dense and rather low growth of marlock, or mallee, and other smaller shrubs. Naturally, at the foot of the slopes of such a hill one finds a shallow creek. I found it a good plan to follow up the creek, keeping a sharp look-out and having both ears open for the feeble but high-pitched alarm note. With the aid of a little artifice in the imitation of the call-note, or, failing that, with a representation of the cry of a wounded bird, the female may generally be induced to show herself, and, after a time, in most cases, the male; but the latter, perhaps being devoid of what is termed “feminine” curiosity, soon retires again. I was very anxious to obtain an authentic nest and eggs. Though the latter were described as long as over 70 years ago, no other nests have been recorded since; and, despite the respect all Gilbert’s observations are entitled to, I have always thought that the position of the nest he describes, which he found in the Wongan Hills, was somewhat exceptional.

In the light of Mr. Milligan’s re-discovery of the present species, Mr. A. J. Campbell has retracted, in part, his account of the nest and eggs in his well-known work, the specimens from Pine Creek, Northern Territory, to which he alludes being referable to some other species—very probably, I think, to *Malurus dulcis* (Mathews). *M. pulcherrimus* is, I believe, strictly confined to the south-west of this State; but I hardly think it touches the coastal districts anywhere, its place being taken by *M. elegans*, also a dark blue breasted bird, but easily distinguished by the very pale blue (or bluish-white) of the back. I may also state that in the brown plumage both sexes of these species are readily separable. In the adult male the beak, once it becomes black, remains black; but in females and young males the beak of *M. elegans* is of a light cinnamon-brown, in contrast with dark hazel-brown in the case of *M. pulcherrimus*. Also, the loreal stripe differs in the same degree, being deep chocolate in *M. pulcherrimus* and warm brown in *M. elegans*. I may add that these features in another species found also in localities frequented by both the former—viz., *M. splendens*—are still lighter, the beak being cinnamon and the

loral stripe of quite a pale ferruginous tint. But in the cases of *M. pulcherrimus* and *M. elegans* a surer guide exists in the colour of the upper parts. *M. pulcherrimus* has these more like *M. splendens*, being rather ashy in tint, whereas in *M. elegans* the whole of the wing is of a dull snuff colour. I also find that the throat and breast of *M. elegans* are much paler than in the case of *M. pulcherrimus*, the same tendency towards "ashiness" being observable in the latter.

I had one curious experience in searching for this Wren. It was rather late in the afternoon when I first arrived at my camping ground at Mount Donelly, and I had no time to put up a tent. Next morning I was having breakfast under the lee of a clump of mallee, when four *Maluri* approached quite closely. Though the male was not in full nuptial dress, I was able to identify him as of the present species. It was about a month after this encounter before I saw another party.

On 23rd September I was at the foot of a low hill, such as I have before described, when I encountered a party of four. There were two males and two birds in brown plumage, presumably females. One male was obviously a more mature bird than the other. The latter showed considerable brown on the head, and the deep blue of the breast was streaked with greyish-brown. The older bird, on the other hand, had the crown wholly blue and the breast of a deep velvety indigo-blue. I followed them quietly up the hill. Presently one of the brown birds appeared with a piece of grass in her bill. I watched the direction she took, and cautiously moved towards it. She soon appeared with her bill empty. I waited again, and after a brief time she passed me as before, with another piece of grass, and I was able to locate the clump of mallee to which she was making. Waiting until she reappeared, I walked to the spot, and at a distance of a few feet could discern a half-finished nest, placed very low down, and just on the outside of a clump of scrub. Carefully marking the place, I at once retired. Hardly had I reached the foot of the hill before I encountered another party. This comprised two old males, two younger males in half-nuptial plumage, and only two brown females (?). The whole party appeared to be labouring under great excitement, the males chasing one another to and fro to the accompaniment of much shrill chirruping. Even the females were equally active. But I saw no actual conflict take place. I watched this party for a quarter of an hour, and that was the last I saw of it. Despite frequent visits to the same spot, and close searches of the neighbouring hill, I could not afterwards find a single bird.

I took the nest before mentioned on 3rd October, with a full clutch of three fresh eggs. The female sat closely, and the fully adult male was in attendance too, but I saw nothing of the younger male or of the second female. On 8th October I found a second nest. This, too, was very low down, and not very carefully hidden. The situation was in low, dead scrub, on a sand-

bank overlooking Lake Balicup. Only one male was comprised in this family. Unfortunately, these eggs were heavily incubated ; but the chick in one egg had died, and this was the only one out of the three I managed to save.

On 2nd November I found my third and last nest some distance from the foot of the main ranges, and not far from the township of Tenterden. My attention was attracted by a beautiful old male. It was early in the morning, and I presently enticed a second male and two females from low scrub in which they were feeding. The locality looked promising, and I soon found an empty, and possibly last year's, nest. Further search revealed a second. This was low down, as before, and contained three nearly fresh eggs. Nests of this *Malurus* do not differ essentially from those of other members of the family, though individually they differ a little in the skill or otherwise with which they are woven. This last nest was the most substantial and neatly made of the three, and was warmly lined with Parrot and other feathers.

The eggs of the three clutches were much alike ; in all, the ground colour pure white after blowing. The markings were distinctly blotched, and distributed irregularly over the whole shell. In colour they were of a dull ferruginous brown. The shape of the eggs showed a tendency, in all cases, to the elongated ellipse type.

Not far from this nest was that of a "Gnou" (*Lipoa ocellata*). The mound was of the usual type. Occasionally I saw one or other parent. They frequented the nest for about a month before an egg was laid.

Another interesting species not mentioned by Mr. Milligan was *Hylacola pyrrhopygia* (Chestnut-rumped Ground-Wren). This species was local, and inhabited similar country to *Malurus pulcherrimus*. It is interesting to note that wherever I found the present species I found *M. pulcherrimus* ; but, on the other hand, the haunts of the latter were more varied than those of the former, which seemed restricted to low-growing scrub on stony hillsides. The Chestnut-rumped Ground-Wren is an early breeder. Fully-fledged young (they call to one another with a plaintive cry) were on the move early in October. Possibly the species is double-brooded. In our State it has a wide range, for I met with it in the Wongan Hills, 400 miles to the north, and again some 300 miles to the east, in the Lake Dundas country.

I found a kindred species—viz., *Sericornis maculata* (Spotted Scrub-Wren)—present at Yetermirrup, but very local. The young were on the wing at the end of September.

Of the *Acanthizæ* I saw but little. *A. chrysorrhoa* (Yellow-rumped Tit) was much the commonest, whilst *A. mastersi* (or *A. inornata*) and *A. apicalis* were far from numerous.

I found two species of Thickheads—viz., *Pachycephala occidentalis* and *P. rufiventris*. The latter was breeding near Lake Balicup, the males being in fully adult plumage. *P. occidentalis* was less common. I did not find a nest, and it was not until I

was much nearer the coast that I saw the handsome fully-plumaged male.

Only one species of Tree-creeper was present—*Climacteris rufa*. I found four or five nests, all rather low down in hollow trunks : but in every case the nests contained young.

Rock Field-Wren (*Calamanthus montanellus*).—This is a cheerful and fearless little bird, which seems to prefer rather than shun the presence of man or other animate being. It has a simple but pleasing song, the cadences, though brief, being uttered in a very musical tone. When singing it usually perches on some point of vantage, and will continue its song despite the presence of an intruder within only a few feet of its perch. It inhabits the stony foothills of the ranges or the sparsely-clothed sand-plains, showing a preference for those tracts either devoid of vegetation or where the scrub is of the most stunted character. I never saw it amongst timber, but it was not uncommon on the sand-banks on the eastern side of Lake Balicup, where there was a sparse growth of salt-bush and samphires, and a more luxuriant crop of tussocky grasses. I did not see a single specimen west of the sand-plain which terminates with the belt of timber at Solomon's Well. It was present as far east as I penetrated, but did not seem to ascend very far up the slopes of the various peaks. On 4th September I found my first nest, quite by accident. My horses had strayed, but I could hear their bells in the distance. In following them up I walked right over a nest, the female fluttering off her eggs within a few inches of my foot. The locality was a stony spur of the main peak, and just within the area recently swept by a fire. Cover for the nest there was none, but a short, thick piece of half-burnt timber formed a little shelter, though I could look down right on the exposed dome of the nest. On closer examination the latter proved to be oval in shape, very well woven of dried grasses on the outside, with a lining of finer grasses, a few feathers, and kangaroo hair. The entrance was flush with the surface of the ground, and I found a deep cavity had been excavated in the sand to contain the structure of the nest. There were three eggs, blunt ovals in shape, of a creamy ground colour, very warmly washed with reddish-brown. They reminded me somewhat of certain varieties of the eggs of the English Redbreast, but still more of those of our Red-throat (*Pyrrholæmus brunnea*), but the cloudy markings were much lighter in tone than in eggs of the latter. I obtained a similar nest on the shores of Lake Balicup on 12th September. This nest was also amongst very sparse vegetation, and within a yard or two of the water's edge. The female sat close, as before. The nest was similar, and contained four fresh eggs. A third nest was almost on the main track to the Salt River, and had been disturbed by a dog or some other marauder. The parents were near, but the nest was partly torn from its site, and only contained a newly-hatched young bird. The latter had a sparse covering of neutral-coloured down.

Another pair were, I knew, building a nest near my Mt. Donnelly camp; but the female was very cunning, and threw me off the scent by conveying her materials to the nest in a roundabout way. I had to shift camp before clearing the matter up, but on returning to the locality ten days later I at once found the site, which I had passed and repassed every time I went to fetch water to the camp. The nest, however, was deserted, and appeared to have been trodden upon by a horse.

This *Calamanthus* must be an early breeder, as young were on the wing when I arrived in the ranges. Young in nestling plumage hardly differ from adults. Probably the species is double-brooded.

Western Brown-headed Honey-eater (*Melithreptus leucogenys*).—This Honey-eater seems to prefer the open country rather than the forests of gums. I did not find it common anywhere. Where it occurred it was usually flitting about in little parties of less than half a dozen. It is a fussy, animated bird, and is constantly uttering its rather unmusical and rattling notes. Its favourite haunts appeared to be the sand-plain which had escaped the general destruction and where there was a growth of stunted jarrahs. Certain creeks whose banks were well clothed with scrub of the mallee type were also much favoured, and it was in such localities this bird seemed to find its food. I cannot recollect ever having observed it extracting the nectar from flowers. Its quest seemed to be more insectivorous, and the sprays of foliage were assiduously searched in pursuit of its prey. It must be a late breeder, as I saw the sexes more than once in the act of pairing. This was in the beginning of October, when many species had eggs. Unfortunately, I had to leave the locality a few days later, otherwise I feel sure I should have obtained the nest and eggs.

Wattle-cheeked Honey-eater (*Ptilotis cratitia*).—Mr. Milligan describes this bird "as local in a pronounced degree." I, on the other hand, found it not uncommon. This may have been due either to concentration brought about by the recent bush-fires or to my having made a closer examination of the country than was possible in his case. Wherever any extensive patches of marlock or mallee had escaped the general destruction, there I found this beautiful Honey-eater.

It is hardly a bird likely to escape observation. If it may not be described as inquisitive, like *Ptilotis sonora*, it is equally determined to make its presence known. In its general habits it reminded me of *Ptilotis leucotis*, or rather *P. novæ-norciæ*, as our interior form is called. It was equally noisy and active, and its notes are heard here, there, and everywhere when an intruder invades its haunts. Sometimes a single bird, or even a pair, would approach closely and peer through the intervening branches at the stranger, but more often they flew from point to point in a circular course, continually calling to one another with their unmusical notes.

I found eight or nine nests in all, but their discovery was by

no means an easy task. The first I obtained was situated in a very small dwarf *Banksia*. The nest was suspended from the foliage of the bush in a little recess, and I considered myself lucky not to pass it by unobserved. It contained two fresh eggs. All the other nests I found—some with eggs, others with newly-hatched young—were very low down; none higher than 3 feet. All were very neatly made of green grasses, held together by spiders' webs and lined with the same soft material. I marked the situation of one I found building by fixing a piece of cotton wool to a dry twig. This was promptly seized by the female and used as lining for her nest.

The eggs have been accurately described in Mr. A. J. Campbell's work (see p. 401), but both eggs and nest appear to be remarkably small for the size of the parent bird. Generally, I think, however, the female is the smaller of the two sexes in this species.* I was not able to obtain a full-grown nestling. I watched a pair I found when newly hatched for more than a week, but their growth was slow, and at that period they showed no signs of a wattle. When I returned to the nest still later both were gone, and only a few shreds of the nest remained.

Of the other species of *Ptilotis* mentioned in Mr. Milligan's list—viz., *P. sonora* and *P. ornatus*—I only encountered the latter. I can thus confirm his note that *P. sonora* is absent from the north side of the ranges.

Graceful Honey-eater (*Ptilotis ornatus*).—This bird first appeared in the white gums a few miles to the north of Mt. Barker. In the Stirling Ranges it frequented the white gums, and, despite the fact of some thousands of acres having been ringbarked around Solomon's Well, the species still clings to the locality. It is a late breeder, and it was not until I had found half a dozen nests of the previous year that I got one with eggs. This was suspended from the foliage of a *Melaleuca* at a height of about 10 feet. All the nests I found were very neatly woven of green grass-stems, but little else being used in their construction. The eggs are very dark coloured—the shell of a brownish tint, sparsely dotted with chocolate or purplish spots. A second nest of the present season overhung the main road near Tenterden, but it was empty. I observed individuals pairing as late as the beginning of November.

Referring to other Honey-eaters, I found the *Meliornis* group represented by *M. longirostris* and *M. mystacalis*. In the ranges proper the former was rare, and I only obtained one nest. As usual, this was near water. In the swamps of the lower lands, I, however, found the species more plentiful.

M. mystacalis (Moustached Honey-eater) was by no means uncommon around Donnelly Peak. It was one of the first birds to attract my attention on arrival in the ranges. A favourite haunt was a very steep hillside thickly clothed with dwarf *Banksia*

* This is usually the case in the genus *Ptilotis*.—Eds.

and other shrubs. Here I found nests with young, and also young on the wing, early in September. This hill was in a sheltered situation and faced the north. On the sand-plain below I obtained several nests with eggs a little later. All the nests were low down. They were rather loosely constructed of dried grass-stems and lined with vegetable down. The eggs varied even in the same nest. Some were pure white in ground colour, and others had a distinct warm tint about them so pronounced in tone that it might be called very light brown, and resembling, in this respect, eggs of *M. longirostris*. This tint was very apparent in a nest containing a pure white egg and one of the present type. The markings on the eggs were rather small and sparse and in the form of dark brown spots. Some eggs closely resembled those of *Glycyphila fulvifrons*, but eggs of the latter were always white in ground colour, and generally distinctly larger. I did not find the Moustached Honey-eater a close sitter.

The Tawny-crowned Honey-eater (*Glycyphila fulvifrons*) was the commonest bird of the sand-plains. I found many nests. All were within a few inches of the ground, and could hardly be called concealed. The only variation in the eggs was in the character of the markings. In the majority they partook of the form of cloudy, rust-coloured dots and dashes, but in some the place of the latter was taken by very fine points of deep chocolate. This species seems to be able to protect its nests from the visits of the various species of Cuckoo inhabiting the ranges, as, despite the number of nests I found, none contained a Cuckoo's egg.

Referring to other Honey-eaters, I met with all mentioned by Mr. Milligan, but only saw one pair of *Manorhina obscura* east of Solomon's Well. I obtained a nest with one egg of *Acanthochaera lunulata* near Mt. Donelly, but I saw nothing more of this species.

Of the *Falconidae* I saw few, and only noted one clutch of eggs. These were referable to the common Brown Hawk (*Hieracidea berigora*), and were laid in the hollow of a truncated white gum. There was no attempt at a nest. Of the other Hawks, an occasional Sparrow-Hawk (*Accipiter cirrhocephalus*) or Kestrel (*Cerchneis cenchroides*) was seen, and in one instance I saw a White-fronted Falcon (*Falco lunulatus*) flying at great speed towards the ranges. There were untenanted nests of the Wedge-tailed Eagle at Lake Balicup and also at Yetermirrup, but I saw none of these Eagles on the wing. Like Mr. Milligan, not a single Crow or Raven did I see during the whole trip.

Parrots were not common, but an interesting addition to Mr. Milligan's list is the Grass-Parrakeet (*Neophema elegans*). I saw a single pair at Lake Balicup. *Barnardius semitorquatus* — the common "Ring-neck" of settlers — was distinctly rare. The Red-capped Parrakeet (*Porphyrocephalus spurius*) was more in evidence, and I was fortunate enough to locate a nest. I frequently met with pairs, or even small parties, of this species away from the timber on the sand-plains, and think it quite possible they were last year's progeny, and not breeding. The nest I

obtained was found near Lake Balicup, and gave me a lot of trouble. Every morning the parent birds fed near my camp. The difficulty was to follow their flight with the eye through the intervening timber to the nesting tree. After exercising great patience I gradually tracked them down to the point where I usually lost one bird and saw the other fly off to a distance. At length, by hiding in some bushes, I located the tree, which was a large dead white gum, containing more than one likely-looking hole. Next morning I waited till the birds appeared, as usual, to feed, and then hurried down to my lair near the tree. I waited what seemed an interminable time till the birds appeared, and the female immediately popped into a hole in the main stem of the tree. I beat on the trunk with my tomahawk, but she refused to budge. I soon had my rope-ladder at work, and the sight of the dangling fishing line, which must have been visible to her as she sat, caused her to leave her eggs at once. After half an hour's hard chopping I secured five fine eggs. They were somewhat nest-stained and heavily incubated, but I am glad to say were eventually blown. They were a little larger than typical eggs of *Barnardius*. This is a very handsome Parrot, and I think I never saw a finer pair than the proprietors of this nest. The native name is "Chelyup," which is, no doubt, a rendering of the call-note.

I met with a single pair of the Many-coloured Parrakeet (*Psephotus multicolor*). This species is another interesting addition to Mr. Milligan's list. I also secured a clutch of four eggs of *Platycercus icterotis*—the local "Rosella." The entrance to the nest was on the top of a thick horizontal limb of a white gum, at a height of about 40 feet.

The Stirling Range birds differ somewhat from our coastal birds in having the feathers of the mantle edged with red. In the latter, even in old birds, the colour of the mantle is a combination of black and green, with very slight or no trace of red; but further east, in the Lake Dundas district, I secured a fine old male with the edges of the feathers red and with no trace of green at all in the mantle. In our coastal birds the latter colour predominates. Perhaps the extreme eastern form would be Salvadori's *P. xanthogenys*.

Leaving the Parrots, another addition to Mr. Milligan's list is *Pteropodocys phasianella* (Ground Cuckoo-Shrike). A pair were nesting in a white gum near Yetermirrup. The Black-faced Cuckoo-Shrike (*Graucalus melanops*) was not uncommon, but I could detect no difference in habits or general appearance from birds found farther north. The Lesser Brown Flycatcher (*Micræca assimilis*) was rather local, but I saw several nests. These were at heights varying from 3 to 15 feet from the ground. They are miniature nests of the *Graucalus*. I was rather surprised to meet with a pair or two of the White-shouldered Caterpillar-eater (*Lalage tricolor*) breeding at Lake Balicup.

On the latter lake were a good many Ducks, of three species—

viz., Black Duck (*Anas superciliosus*), Teal (*Nettion castaneum*), and Mountain-Duck (*Casarca tadornoides*). Of the two former I found several nests, photographing a Teal's nest with thirteen eggs *in situ*. There were three nests of this species on a very small islet in the lake. I also captured two young, in down, of the Mountain-Duck. In England the Common Sheldrake (*Tadorna casarca*) breeds in rabbit burrows in the coastal sand-hills. There were a good many burrows of the dulgete (*Peregale lagotis*) around Lake Balicup, and I think it probable that a pair or two of the local Mountain-Ducks may have been breeding in them.

The only Waders on the lake were a few Red-fronted Dottrels (*Ægialitis ruficapilla*) and a flock of about 150 Banded Stilts (*Cladorhynchus australis*). The latter seemed to consist of adult birds only. A few pairs of Black Swans (*Chenopsis atrata*) were also present. At Lake Matilda, a sheet of fresh water near Tenterden and some 8 miles from the foot of the ranges, were some pairs of Musk-Ducks (*Biziura lobata*).

I found Wood-Swallows (*Artamus*) fairly plentiful, especially around Lake Balicup, but only of one species—viz., *A. sordidus*. Amongst other situations, I saw a nest on the top of a broken stump. Other pairs, again, were breeding at a considerable height.

The Restless Flycatcher (*Sisura inquieta*) was not uncommon in the same locality, and it was an agreeable experience to be able to examine nests almost within reach, and without any climbing at all. One nest I examined was at a height of not more than 8 feet, and contained mummified young birds. Possibly the parents had fallen victims to their curiosity, for I saw a pair flitting about the head of a large monitor lizard, who was plainly only watching his opportunity to make a capture.

Another bird mentioned by Mr. Milligan is the White-bellied Shrike-Tit (*Falcunculus leucogaster*). The nest of this species was one of the special objects of my quest. I found the species distinctly rare; but it is a difficult bird to find, and, moreover, from its very quiet and unobtrusive manners, liable to be overlooked. In all, I do not think I saw more than four pairs. I spent hours in watching them. Generally, they were in the tops of white gums, but once or twice I saw a female in small acacia scrub. I often, at first glance, mistook *Melithreptus whitlocki* for this species. Both birds have the same habit of hanging from the slender twigs of eucalypts, which they search for food. With its powerful beak the Shrike-Tit strips off any loose bark it may find, and under which spiders spin their cocoons. When I observed this habit first I was in hopes the birds were collecting building material; but in all cases the strip of bark was carried to a convenient perch, and there the spider or its eggs was devoured. The call-note is a single "ko," or "kōō," very softly uttered. Once or twice I was successful in calling the birds up, but more often than not I brought pairs of the Hooded Robin (*Petrarca bicolor*). Of the latter I found nests with eggs, and also observed young on the

wing. Its congener, the Western Scarlet-breasted Robin (*P. campbelli*) was by no means common, but one pair built a pretty nest in a tea-tree near my camp at Yetermirrup.

I am able to confirm Mr. Conigrave's note as to the presence of the Chestnut-backed Ground-Bird (*Cinclosoma castanonotus*) in the ranges. I saw individuals more than once near Solomon's Well, and on one occasion a male was calling from the limb of a dead white gum at a height of 25 feet.

Amongst other nests observed at that locality I must mention three of the Grey-breasted Shrike-Robin (*Eopsaltria gularis*). One of these was low down, but the others, on the contrary, were at heights varying from 15 to 25 feet. All the nests were somewhat loosely constructed, but were cleverly disguised on the outside by longitudinal strips of grey bark. An easy way to find these nests when the female is brooding is to watch the male. He feeds his mate assiduously as she sits on the nest. At Solomon's Well, Lake Balicup, and almost as far south as Mt. Barker, I saw some beautiful Bee-eaters (*Merops ornatus*). The native name is "Berrin-berrin"—an adaptation of the call-note. Though our coastal sand-hills would seem to present an attractive haunt to this species, I have only once met with it there. I refer, of course, to our south coast, east and west of Albany.

When camped near Lake Matilda my attention was attracted by the harsh and guttural notes of a local Reed-Warbler (*Acrocephalus*). I had hitherto regarded the notes of this bird as amongst the sweetest uttered by our native songsters, but these Lake Matilda birds could hardly be called songsters when their efforts were contrasted with those of Swan River or other Reed-Warblers heard further north. Lake Matilda, however, was exceptionally high, and things were not improved by a further fall of 5 inches of rain in 48 hours whilst I was camped there. Though it was the first week in November, building operations were hardly in full swing. I found three nests, which were only reached by swimming out to the circle of reeds encompassing the lake. I failed to get a bird to make identification certain. The nest and eggs seemed typical of *Acrocephalus longirostris*. Possibly the harsh notes had been learned from the swarms of frogs inhabiting the lake; but the matter is worthy of the attention of any other ornithologist who may visit the locality.

Among other birds on Lake Matilda were a few pairs of Blue Bald-Coots (*Porphyrio bellus*). I caught a pair of newly-hatched young. I also noticed nests on the branches of half-submerged trees that looked like those of the pied Little Cormorant (*Pyrhacorax melanoleucus*). Wading and swimming in these lakes are not altogether a pleasant pastime. I came out after one attempt with my legs streaming with blood and with repulsive-looking leeches clinging to my skin.

The heavy rains made the exploration of the various pools and swamps between Mt. Barker and the coast a matter of great difficulty, and I have no doubt the sudden rise of water brought

about by the storm of 31st October and 1st November drowned out nests of some of the aquatic species. I was anxious to obtain eggs of the Spotless Crake, but it was too late in the season before I got tangible proof of this bird's existence in a series of large swamps to the west of Albany. A cat brought in a freshly-killed specimen, and the owner of the cat told me it was quite a common occurrence. Far too many cats are running wild in our scrubs, and the local disappearance of more than one exceptionally interesting species may be safely set down to their depredations.

My researches near the south coast did not result in anything of special interest, but I paid some attention to a newly-described species of White-eye (*Zosterops shortridgei*), Grant. The types were procured on Rabbit Island, King George's Sound. The latter island is only a huge mass of granite, whose area is limited to a couple of hundred acres or thereabouts, and only separated from the mainland by a very narrow channel. It was out of the question, therefore, that such conditions, with the absence of isolation, could produce a local species. *Z. shortridgei* is said to differ from *Z. gouldi* in having the middle of the breast, as well as the belly, thighs, and under tail coverts, pale yellow, the sides and flanks greyer and only slightly washed with cinnamon. In *Z. gouldi* the thighs are always white (*Ibis*, ninth series, vol. iii., p. 650). I found birds answering to this description both to the north and to the west of Albany, and it may be noted that the cinnamon wash on the flanks in one or two I procured was absent. Again, I shot others with the latter characteristic very pronounced. I can only say at present, with certainty, that the birds with the grey flanks and yellow thighs were breeding birds. Possibly the other type may have been breeding too; but I am rather inclined to think the differences are due to age, and are not of specific value.

Alterations in the Nomenclature of "Handlist of the Birds of Australia."

BY GREGORY M. MATHEWS, F.R.S.E., &c.

Now that the Royal Australasian Ornithologists' Union is to bring out a "Checklist" of the birds of Australia, and is to use my "Handlist"* as a base, I have thought it necessary to bring this work up to date.

I have looked up the original description of every bird and genus to see if the spelling, &c., is correct. My object in doing this was that the "Checklist" may be as correct and up-to-date as possible. That other changes will be necessary is a foregone conclusion; the ones here pointed out are the most obvious.

I have recognized that the only means of attaining finality in

* *Emu*, vol. vii., Supp.

the nomenclature is the acceptance of the laws formulated by the International Congresses of Zoologists. My resolve to endeavour to establish the nomenclature of the Australian avifauna upon a secure basis has entailed a tremendous amount of research work, and until my work is completed I cannot promise even an approach to finality. I am desirous of accurately fixing the specific appellation of each bird, and am sparing no time and method to obtain this result. I do feel that, when I have completed my work, the nomenclature therein accepted will, in the main, be that which will stand the test of time.

With regard to the genera, it soon became obvious to me that too much splitting had been done. Dr. Hartert, of Tring, has led the way in the non-recognition of such genera as almost require a microscope for their detection. My own experience has led me to endorse Dr. Hartert's views, and I am suppressing many of the genera I recognized in my "Handlist." I anticipate that later I shall not maintain some of those at present included; but the question of generic rank is not one that can be settled off-hand. The generic names I herewith reject are only such as I am absolutely satisfied (from examination of abundant material) are unnecessary for exact working. I believe that the elimination of these superfluous generic names will lead to the better grasp of the realities of the Australian fauna.

As to the spelling of generic names, I am only accepting the original name as written by its author at its introduction. I have experienced the vagaries of emendation, and also the foibles of the would-be amender, and cannot countenance any correction save such as was made by the author in the same article or work as the name first appeared in. The recognition of later so-called improvements allows of irregularities, and affects, to a great extent, the stability of our nomenclature. The acceptance of the changes herein indicated in the forthcoming "Checklist" will greatly aid in the production of a stable code. I do *not* include the avifaunas of Norfolk and Lord Howe Islands, as these certainly are not Australian.

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5. Genus I.—*Dromaius* is the original spelling.
 Species 3.—*D. parvulus*, Gould, replaces *D. peroni*, Rothschild.
 Species 3A.—Add *D. minor*, Spencer.
 Genus II.—The authority for *Casuarius* is Latham.
 Species 4.—*C. johnsoni*, Muller, replaces *C. australis*, Wall. (preoccupied).
6. Genus III.—The authority for *Megapodius* is Temminck.
 Genus IV.—*Leipoa* is the original spelling.
 Genus V.—*Alectura*, Latham, replaces *Catheturus*, Swainson.
7. Genus VII.—*Synoicus* is the original spelling.
 Species 12.—Omit; is not Australian.
8. Genus XII.—*Ptilinopus* is the original spelling. (*Ptilopus* is, moreover, preoccupied.)

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- Species 24.—*P. regina*, Swainson, replaces *P. swainsoni*, Gould.
9. Genus XIII.—Omit. *Lamprotreron* is not separable from *Ptilinopus*.
- Genus XVI.—*Lopholaimus* is the original spelling.
- Species 30A.—Add *L. minor*, Mathews.
- Species 31.—*C. nortolciensis*, Latham, replaces *C. leucomela*, Temminck.
10. Species 36A.—Add *C. longirostris*, Gould, with which *C. occidentalis*, North, is synonymous.
11. Species 45A.—Add *L. leucogaster*, Gould.
12. Species 47.—*L. melanoleuca*, Latham, replaces *L. picata*, Latham.
- Genus XXVIII.—Omit.
- Genus XXX.—Omit.
- Neither *Hypotænidia* nor *Rallina* is separable from *Eulabeornis*, to which genus must therefore be referred Species 48, 49, 50, and 51.
13. Genus XXXIII.—Omit. I do not consider the genus *Polio-
limnas* recognizable, therefore refer Species 56 to *Porzana*.
- Genus XXXVI.—Omit. The characters upon which this genus are founded are not of sufficient value to ensure its retention, therefore I refer Species No. 59 to *Tribonyx*.
- Genus XXXVII.—The authority for *Gallinula* is Tunstall.
- Genus XXXVIII.—The authority for *Porphyrio* is Bonnatere.
14. Genus XXXIX. and Species 63.—Omit.
- Genus XLI.—*Podiceps* is the original spelling.
- Genus XLII.—Omit. I do not consider the retention of this division necessary. Should it be deemed advisable, then *Dytes*, Kaup, must be used in place of *Lophæthya*, Kaup.
- Species 68.—Omit *forsteri*, Gray, as not yet definitely recorded from Australia, but replace with *patagonica*, Miller.
15. Genus XLIV. and Species 69.—Omit. Not yet recorded from Australia.
- Genus XLV.—*Penguinus*, Brunnich, replaces *Catarrhactes*, Brisson.
- Genus XLVIII.—Omit. Not separable from Genus XLVII.—*Oceanites*.
16. Genus LI.—The authority for *Puffinus* is Cuvier.
- Species 78.—A very doubtful Australian record.
- Species 84.—*P. brevicaudus*, Gould, replaces *P. tenuirostris*, Temminck.
- Genus LII.—Omit. Not separable, in my opinion, from Genus LV.
- Genus LIII. and Species 86.—Omit. I can trace no definite record yet for Australia.
17. Genus LV.—*Procellaria*, Linne, replaces *Majaqueus*, Reichenbach, and hereto should be referred Species 85.
- Genus LVI.—*Æstrelata* is the original spelling.

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- Species 93, 95, and 96.—Omit. There are no Australian records as yet.
- Genus LVII. and Species 99.—Omit. Has not yet occurred in Australia.
18. Genus LX.—Omit. Inseparable from Genus LXI., *Prion*, to which genus species 102 must be attached.
19. Species 108, 110, and 111.—Omit. Not definitely recorded from Australia.
- Genus LXIV.—Omit. No characters available for generic separation from *Diomedea*.
- Species 114.—*D. chrysostoma*, Forster, replaces *D. culminata*, Gould.
- Species 117.—*P. palpebrata*, Forster, replaces *P. fuliginosa*, Gmelin.
20. Species 119.—*H. fluviatilis*, Gould, replaces *H. hybrida*, Pallas.
- Species 120.—*G. macrotarsa*, Gould, replaces *G. anglica*, Mont.
- Genus LXVIII.—Omit. *Hydroprogne* is not separable from *Sterna*.
- Species 121.—The authority for *S. caspia* is Pallas.
- Species 123.—Omit. No Australian record.
21. Species 126.—*S. striata*, Gmelin, replaces *S. frontalis*, Gray.
- Species 128.—*S. fuscata*, Linne, replaces *S. fuliginosa*, Gmelin.
- Genus LXXII.—Omit. Not separable from *Anous*; if it were, *Megaloptyrus*, Boie, replaces *Micranous*, Saunders.
22. Genus LXXVI.—*Catharacta*, Brunnich, replaces *Megalestris*, Bonaparte.
- Species 140.—Omit. Not yet recorded from Australia.
- Genus LXXVII.—Omit. The authority for *Stercorarius* is Schaeffer, but this genus is not separable from *Catharacta*.
- Species 142.—*C. parasiticus*, Linne, replaces *C. crepidatus*, Banks.
23. Genus LXXVIII.—*Morinella*, Meyer and Wolf, replaces *Arenaria*, Brisson.
- Though this genus is a very well marked one, there appears to be no reason to place it in a special sub-family.
23. Genus LXXXI.—*Lobibyx*, Heine, replaces *Lobivanellus*, Strickland.
- Species 147.—*L. novæ-hollandiæ*, Stephens, replaces *L. lobatus*, Vieill.
24. Genus LXXXIII.—The authority for *Squatarola* is Cuvier.
- Species 150.—*S. squatarola*, Linne, replaces *S. helvetica*, Linne.
- Genera LXXXIV., LXXXV., LXXXVI., and LXXXVII. should be united, and the whole of the Species Nos. 151 to 160 inclusive referred to *Charadrius*. To those who would retain the divisions as genera the following changes are necessary:—
- Genus LXXXIV.—*Pluvialis*, Schaeffer, replaces *Charadrius* (of authors), not Linne.

Genus LXXXV.—*Eupoda*, Brandt, replaces *Ochthodromus*, Reichenbach.

Genus LXXXVI.—*Charadrius*, Linne, replaces *Ægialitis*, Boie.

Genus LXXXVII.—*Eudromias*, Brehm, replaces *Peltohyas*, Sharpe; the characters used for separation of the latter are of insufficient value.

Species 151.—*C. fulvus*, Gmelin, replaces *C. dominicus*, Müll.

Genus LXXXVIII.—*Hypsibates*, Nitzsch, replaces *Himantopus*, Brisson.

26. Genus XCI.—The authority for *Numenius* is Brunnich.

Genus XCII.—Omit. No differential character of sufficient value to generically separate this from the preceding, and Species 166 must be referred to *Numenius*.

Genus XCIII.—The authority for *Limosa* is Schaeffer.

Species 167.—*L. baueri*, Naumann, replaces *L. novæ-zealandiæ*, Gray.

Species 168.—*L. melanuroides*, Gould, replaces *L. limosa*, Linne.

Genera XCIV., XCV., XCVI., XCVII., XCVIII., XCIX., and C., must all be included under one genus, the name of which is *Tringa*, Linne, which will include Species 169 to 176. To those who would prefer to retain these divisions as genera the following changes are necessary:—

Genus XCV.—*Tringa*, Linne, replaces *Helodromas*, Kaup.

Genus XCVI.—*Heteroscelus*, Baird, replaces *Heteractitis*, Stejneger.

Genus XCVII.—*Actitis*, Illiger, replaces *Tringoides*, Bonaparte.

Genus XCVIII.—*Xenus*, Kaup, replaces *Terekia*, Bonaparte.

27. Genus CII.—*Arenaria*, Bechstein, replaces *Calidris*, Illiger.

Species 178.—*A. leucophæa*, Pallas, replaces *A. arenaria*, Linne.

28. Genera CIII., CIV., and CV. must be united, the earliest name for which is *Erolia*, Vieillot, which will include the extra-Australian species commonly referred to *Pelidna*. To those who would retain these divisions as genera, the only change necessary is the displacement of *Ancylocheilus*, Kaup, by *Erolia*, Vieillot.

Species 182.—*E. ferruginea*, Brunnich, replaces *E. subarquata*, Gueldendaed.

Genus CVI.—*Canutus*, Brehm, replaces *Tringa*, auct.

Species 184.—*C. magnus*, Gould, replaces *C. crassirostris*, T. and S.

Genus CVII.—The authority for *Gallinago* is Koch.

29. Genus CXI.—*Trachelia*, Scopoli, replaces *Glareola*, Brisson.

There is no necessity to separate the genera *Trachelia* and *Galactochrysea*.

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29. Species 189.—*T. maldivarum*, Latham and Davies, replaces *T. orientalis*, Leach.
Included in Genus CXII., *Burhinus*, is the genus *Ædicnemus*.
30. Genus CXIII. — *Esacus*, Lesson, replaces *Orthorhamphus*, Salvadori.
I cannot recognize the validity of the latter division as generic.
Genus CXIV.—*Choriotis*, Gray, replaces *Eupodotis*, Lesson.
Genus CXV.—*Mathewsia*, Iredale, replaces *Antigone*, Reichenbach (preoccupied).
Species 193.—*M. rubicunda*, Perry, replaces *M. australasiana*, Gould.
Genus CXVI.—The authority for *Ibis* is Lacepede.
31. Genus CXVIII.—*Egatheus*, Billberg, replaces *Plegadis*, Kaup.
The specific name *autumnalis*, Hasselq., has no standing, as it is only a reprint of a pre-Linnean name.
32. Genera CXXIII., CXXIV., and CXXVI. must be united.
The oldest name is *Egretta*, to which is referable Species 202, 203, and 208. If the divisions be retained as generic, *Egretta*, Forster, displaces *Garzetta*, Kaup, for Genus CXXVI.
33. Genus CXXVII.—*Demigretta* is the original spelling.
Genus CXVIII.—The authority for *Nycticorax* is Forster.
Genus CXXX.—*Ixobrychus*, Billberg, replaces *Ardetta*, Gray.
Genus CXXXI.—*Ardeiralla*, Gurney, replaces *Dupetor*, Heine and Reichenow.
Genus CXXXII.—The authority for *Botaurus* is Stephens.
34. Genus CXXXIII.—*Chenopsis* is the original spelling.
34. Genus CXXXV.—*Nettapus* is the original spelling.
Genus CXL.—Omit. Not separable from Genus CXXXIX., *Tadorna*.
Genus CXLII.—*Nettion* is the original spelling.
36. Genus CXLVII.—*Nyroca*, Fleming, replaces *Aythya*, Boie.
Genus CXLVIII. — *Oxyura*, Bonaparte, replaces *Erismatura*, Bonaparte.
37. Genus CL.—*Carbo*, Lacepede, replaces *Phalacrocorax*, Brisson.
38. Genus CLII.—The authority for *Sula* is Scopoli.
Genus CLIII.—The authority for *Fregata* is Lacepede.
Species 250.—Omit.
40. Genus CLVIII.—Omit. I cannot admit the validity of this genus, which, moreover, should bear the name *Nisus*, Lacepede, and would refer Species 260 to Genus CLVII., *Astur*.
41. Genus CLXV.—The authority for *Milvus* is Lacepede.
42. Genus CLXXI.—*Ieracidea* is the original spelling.
43. Species 284.—Omit.
44. Genus CLXXV.—*Tyto*, Billberg, replaces *Strix*, auct.
Genus CLXXVI. and Species 299 and 300.—Omit.

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45. Species 305 is very doubtfully separable from Species 304, *chlorolepidotus*, Kuhl.
Genus CLXXIX.—The authority for *Ptilosclera* is Gould.
Genus CLXXX.—*Glossopsitta* is the original spelling.
46. Genus CLXXXI.—*Cyclopsitta* is the original spelling.
Genus CLXXXII.—*Solenoglossus*, Ranzani, replaces *Microglossus*, Vieillot.
47. Genus CLXXXIV.—*Callocephalon* is the original spelling.
Genus CLXXXV.—*Cacatões*, Dumeril, replaces *Cacatua*, Vieillot.
Species 325.—*L. tenuirostris*, Kuhl, replaces *L. nasica*, Temminck.
Genus CLXXXVII.—*Calopsitta* is the original spelling.
48. Species 329.—*P. anthopeplus*, Vigors, replaces *P. melanura*, Vigors.
Species 331A.—Add *P. coccineopterus*, Gould.
Species 333.—Omit. Not Australian.
49. Species 338.—*P. browni*, Kuhl, replaces *P. flaviventris*, Temminck.
Species 341.—*P. venustus*, Kuhl, replaces *P. browni*, Temminck.
Species 342.—Omit. The bird upon which this species was founded is a hybrid.
Genus CXCIH.—*Purpureicephalus* is the original spelling, and the authority is Bonaparte.
50. Species 354.—*P. hæmatogaster*, Gould, replaces *P. hæmatorrhous*, Bonaparte.
Species 359A.—Add *P. cucullatus*, North, of which *P. blaauwi*, Van Oort, is a synonym.
51. Species 363.—*N. chrysostoma*, Kuhl, replaces *N. venusta*, Temm.
Genus CXCVII. and Species 369 and 370.—Omit.
51. Genus CXCVIII.—*Lathamus*, Lesson, replaces *Euphema*, Wagler.
52. Species 376A.—Omit. I have now thirty-five skins of supposed *P. brachypterus*, Gould, from various localities in Western Australia, and I cannot find any constant characters whereby they can be separated from *P. strigoides*, Latham, from Tasmania, Victoria, and New South Wales.
53. Species 380.—Omit. More material proves this form to be inseparable from Species 379.
54. Species 392.—Omit. The differential characters assigned to this form prove to be inconstant. I have also examined the type of Species 392.
55. Species 393.—Omit.
Genus CCXI.—*Eurostopodus* is the original spelling.
56. Genus CCXIII.—*Collocalia*, Gray, replaces *Salangana*, Thunb.
Genus CCXV.—*Apus*, Scopoli, replaces *Cypselus*, Illiger.

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57. Species 405.—*C. pallidus*, Latham, must replace *C. inornatus*, Vigors and Horsfield. I have very carefully examined the Watling drawing, and there cannot be the slightest doubt that it was drawn from an immature specimen of this species. As a matter of fact, it is a much better representation than the majority of the drawings. I propose to deal in detail with this matter later.
57. Genus CCXVIII.—*Misocalius* is the original spelling.
58. Species 413.—*C. minutillus*, Gould, replaces *C. malayanus*, Raffles.
Genus CCXX.—*Eudynamys* is the original spelling.
59. Genus CCXXIII.—The authority for *Memura* is Latham.
Species 418.—*M. novæ-hollandiæ*, Latham, replaces *M. superba*, Davies.
60. Genus CCXXVI.—*Chelidon*, Forster, replaces *Hirundo*, Schaeffer.
61. Genus CCXXX.—*Petroica* is the original spelling.
62. Species 441.—Omit.
Species 445.—Omit. This supposed form is not constant, and equals No. 444.
63. Genus CCXXXII.—The authority for *Gerygone* is Gould.
Species 453, 454, and 458.—Omit.
Genus CCXXXIII.—Omit. The characters assigned to this genus are not of generic value; therefore, Species 451 to 467 are referable to Genus CCXXXII.
Add 459A, *P. cantator*, Weatherill.
64. Species 463.—Very doubtfully separable from Species 462.
Species 467.—Omit. Not separable from 466.
Species 473.—*P. albigularis* replaces *P. albifacies*, Sharpe; the latter is the New Guinea form.
65. Species 481 and 482.—Omit.
66. Species 487.—*R. motacilloides*, Vigors and Horsfield, replaces *R. tricolor*, Vieillot.
Genus CCXXXIX.—*Seisura* is the original spelling.
67. Genus CCXL.—The authority for *Arses* is Lesson.
68. Genus CCXLV.—*Edolisoma* is the original spelling.
Genus CCXLVII. and Species 512.—Omit.
69. Species 518A.—Add *C. alisteri*, Mathews.
70. Genus CCLI.—*Drymodes* is the original spelling.
71. Species 536A.—Add *C. howei*, Mathews, and separate *C. rubiginosus*, Campbell, from *C. campestris*, Gould.
72. Genus CCLVI.—*Cincloramphus* is the original spelling.
Genus CCLVII. and Species 540 and 541.—Omit. *Merula* is unavailable, even if this division be retained.
Genus CCLVIII.—*Turdus*, Linne, replaces *Oreocichla*, Gould (the original spelling of the latter name is *Oreocinclla*).
The species 540 and 541 should be referred to *Turdus*.
73. Genus CCLIX.—*Epthianura* is the original spelling.
74. Species 559A.—Add *A. mathewsi*, Hartert.

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75. Species 564. — *A. archibaldi*, Mathews, replaces *A. magnirostris*, Campbell (preoccupied).
Species 566A. — Add *A. whitlocki*, North.
Species 574A. — Add *A. flaviventris*, Ashby. *A. leighi*, Grant, is doubtfully separable from Species 574.
76. Species 575A. — Add *A. australis*, North.
Species 579. — Omit. Cannot be separated from Species 577.
Species 581. — *S. barbata*, Latham, is the correct spelling.
77. Species 586A. — Add *S. balstoni*, Grant.
78. Species 599. — *M. cyanotus*, Gould, replaces *M. leucopterus*, Q. and G.
Species 603A. — Add *M. dulcis*, Mathews.
Species 603B. — Add *M. bernieri*, Grant.
79. Species 609. — *M. leucopterus*, Q. and G., replaces *M. edwardi*, Campbell.
Species 610A. — Add *S. mallee*, Campbell.
80. Species 619. — *A. gigantura*, Milligan, replaces *A. megalurus*, Sharpe.
A. varia, Carter, is not separable from *A. macrurus*, Gould.
Species 620A. — Add *A. whitei*, Mathews.
Species 620B. — *A. oweni*, Mathews.
81. Species 626. — Omit. Cannot be separated from Species 625.
Species 627. — Omit. Cannot separate this from Species 628.
Species 632. — Omit. Is not separable from Species 631.
Genus CCLXXV. — *Colluricincla* is the original spelling.
82. Genus CCLXXVI. — Omit. Not generically separable from *Colluricincla*.
Species 644. — *C. rufigaster*, Gould, replaces *C. rufiventris*, Sharpe.
84. Species 661A. — Add *F. whitei*, Campbell.
85. Species 668. — Omit.
86. Species 678. — Omit.
Species 682. — I do not consider this species ought to be included in the Australian avifauna.
Species 687. — Omit. This form is not separable from Species 684.
88. Species 700A. — Add *N. magnirostris*, Ingram.
Species 701A. — Add *C. wellsi*, Grant.
Species 703A. — Add *C. obscura*, Carter.
90. Species 713. — Omit. Is not a valid form.
Species 714. — Omit. Referable to Species 712.
Species 716. — Omit. Cannot be separated from Species 717.
Species 715, 718, 719, and 720. — Omit.
Genus CCLXXXIX. — The authority for *Dicaeum* is Cuvier.
91. Species 728A. — Add *P. pallidus*, Campbell.
92. Genus CCXCIII. — *Plectoramphus* is the original spelling.
94. Genus CCXCVI. — *Gliciphila* is the original spelling.
Genus CCXCVIIA. — Add *Lacustroica*, North.
Species 760A. — Add *Lacustroica whitei*, North.
Certhionyx occidentalis, Grant, is not separable from Species 763.

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96. Species 786.—*P. novæ-hollandiæ*, Latham, replaces *P. ornata*, Gould.
98. Species 801.—*Meliornis nigra*, Bechstein, replaces *M. sericea*, Gould.
- Genus CCCV.—*Manorina* is the original spelling.
99. Genus CCCIX.—*Acanthagenys* is the original spelling.
- Genus CCCX.—*Entomyzon* is the original spelling.
100. Species 821.—*M. flava simillima*, Hartert, replaces *M. barnardi*, North.
101. Species 824A.—Add *M. woodwardi*, Milligan (quite distinct from *M. secunda*, Sharpe).
- Genus CCCXVI.—*Stagonopleura* is the original spelling.
102. Genus CCCXX.—*Stizoptera*, Oberholser, replaces *Stictoptera*, Reichenbach (preoccupied).
- Genus CCCXXI.—The authority for *Munia* is Hodgson.
- Species 834A.—Add *M. assimilis*, Mathews.
- Species 835.—*M. flaviprymna* replaces *M. xanthoprymna*, Mathews.
- Species 838A.—Add *Æ. minor*, Campbell.
103. Species 842.—Omit. Inseparable from Species 841.
- Species 847.—*P. atropygialis*, Diggles, replaces *P. nigrotecta*, Hartert.
- Species 847 and 848.—These should follow Species 841.
104. Genus CCCXXVII.—*Mimetes*, King, replaces *Oriolus*, Linne.
- Species 850.—*M. sagittata*, Latham, is the correct name.
- Species 850A.—Add *M. viridis*, Latham. (Separable from Species 850.)
- Species 853A.—Add *S. stalkerii*, Ingram.
- Genus CCCXXX.—Retain for species 856.
- Species 855.—Omit.
105. Genus CCCXXXI.—*Aplonis* may be used. *Calornis* is preoccupied, and it has been proposed to use *Lamprocorax*, Bonaparte, for the birds heretofore referred to *Calornis*; but I do not consider that there are characters available to justify the separation from *Aplonis*.
- Genus CCCXXXIV.—*Ailurædus* is the original spelling.
- Genus CCCXXXV.—*Chlamydera* is the original spelling.
106. Genus CCCXXXVII.—*Ptiloris* is the original spelling.
106. Genus CCCXXXIX.—Omit. Not separable from *Ptiloris*.
107. Genus CCCXLII.—Omit. Not separable from *Corvus*.
- Species 874.—*Corvus marianæ*, Mathews, replaces *C. australis*, Gould (preoccupied).

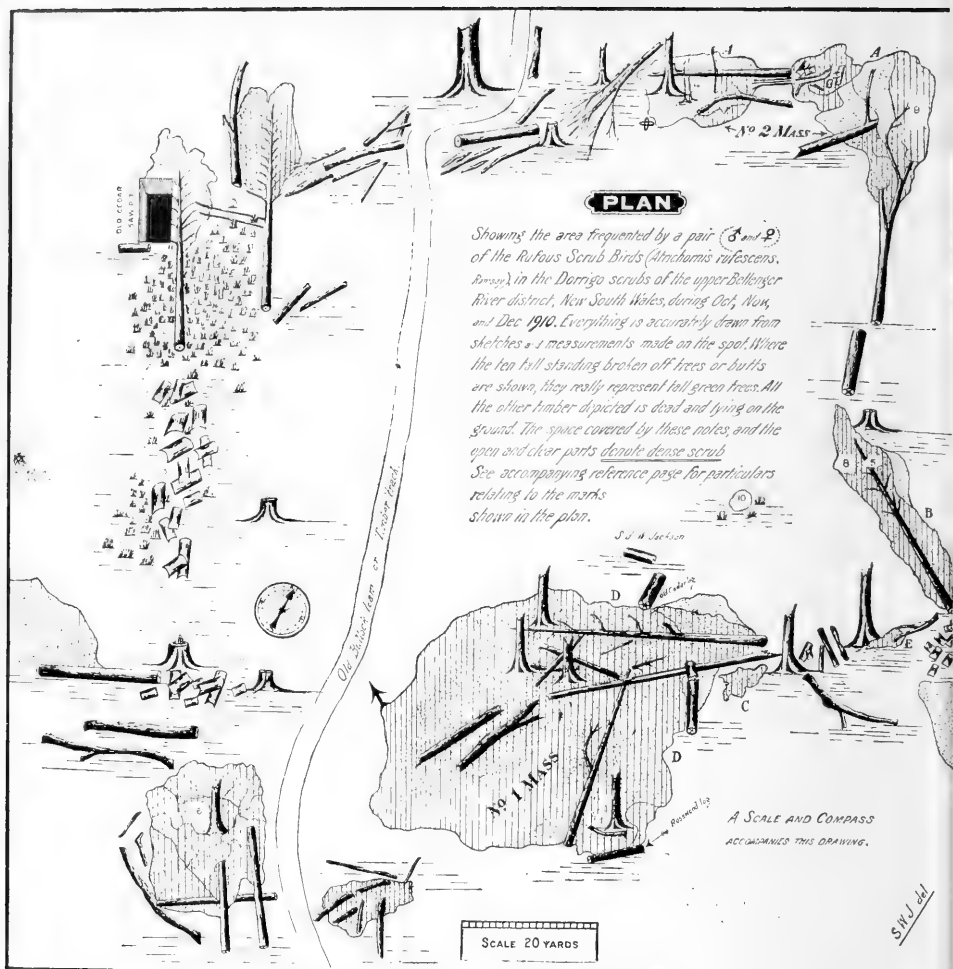
COOTS BREEDING IN TASMANIA. — Referring to Miss J. A. Fletcher's interesting notes on the Coot (*Fulica australis*) breeding in Tasmania (*Emu*, vol. xi., p. 138), several Tasmanian ornithologists aver that this is the first authenticated record of the finding of eggs of the Coot in its insular quarters.

The Haunt of the Rufous Scrub-Bird (*Atrichornis rufescens*, Ramsay).

BY SIDNEY WM. JACKSON, R.A.O.U., CHATSWOOD, N.S.W.

I LEFT Sydney on the 19th September, 1910, for the elevated Dorriggo scrubs at the head of the Bellinger River, New South Wales, where I arrived on the 24th of the same month, and pitched my camp in the forest, near the Little Murray River, on the same spot where my brother and I had camped during October of 1898, when we found the type nest and eggs of the Rufous Scrub-Bird (*Atrichornis rufescens*). My mission this time was on behalf of Mr. Henry L. White, of Belltrees, Scone, New South Wales, and was undertaken for the purpose of procuring the female of this interesting species, hitherto undescribed, and securing another nest and clutch of eggs, as the types of these still remained the only specimens extant. I walked through and carefully examined the scrubs day after day without getting the slightest indication as to the existence of the *Atrichornis* therein. It was not until the 7th October that I met with any success, and heard an *Atrichornis* calling out. On this date I had just left a tree wherein I found a new nest of the Rifle-Bird (*Ptilorhis paradisea*) situated in a dense clump of vines at the unusual height of 74 feet from the ground, and was walking slowly through the scrub in a northerly direction, and when I arrived at a sloping part I heard a note which immediately brought me to a halt, for I felt convinced that it emanated from an *Atrichornis*; only one single note was rendered. I went quietly in the direction of the sound and towards an immense mass (No. 1 mass in plan) of fallen trees and other scrub *débris*, and hid behind a rosewood (*Dysoxylon fraserianum*) log. Very soon the shrill note issued from the confused mass of *débris* and only about 10 feet away. The bird was moving about, mouse-like, amongst this heap of rubbish in the heart of the scrub (see photo.) It went through the same antics as I had frequently noticed in 1898 and 1899, walking stealthily under the heaps of *débris* and along under the sides of large logs as it called out, and moving cautiously from place to place. I have always noticed that this noisy little bird inhabits the most impenetrable parts of the scrub, and where the undergrowth is thick and the ground is strewn in many places with great masses of *débris*, consisting of an accumulated entanglement of trees, branches, vines, and other rubbish (see photos.)

After I had waited for some time the *Atrichornis* suddenly showed itself out of the *débris* for a second or two, and stood on a dead stick about 20 feet away, with its tail erect and wings rather drooped. Then in a flash it disappeared again in the rubbish, and continued at intervals to call out as it travelled about completely hidden from view under the heap. From what I saw of the bird, it was typical of the male birds that I collected previously. While still under the *débris*, it accurately imitated the



PLAN OF AREA FREQUENTED BY ATRICHORNIS.

- 1.—Indicates spot, No. 1 Mass, where male was first heard (7th October, 1910).
- 2.—Nest found 16th October (see photo.)
- 3.—Large sheets of old pine-bark which were examined, with other lots, for No. 2 nest (supposed).
- 4.—Part No. 2 Mass of *débris*, where female was seen in company with male (22nd October, 6th November).
- 5.—Where male was shot (4th December), in thick *débris*.
- 6.—Where male uttered single note at 7 p.m. 17th November.
- 7.—Where I made five attempts to capture the female with the net (16th October) when she was in the nest.
- 8.—Where male sunned himself 14th November.
- 9.—Where best view of the male was obtained, when he was feeding on the ground, No. 2 Mass (17th November).
- 10.—Play-ground of the Lyre-Bird (see photo.)
- 11.—The roost of male *Atrichornis*, on small limb under pine log, about 30 ft. from nest.

NOTE.—Shading of black dots denotes areas where large quantities of fallen trees, vines, and other *débris* were removed when searching for female and No. 2 nest. The upright lines and black dots together indicate where *débris* was searched but not carried away. Shading of black upright lines denotes the large, confused masses of fallen trees, vines, &c., under which the *Atrichornis* lives (see photos.) The male frequented the heaps of *débris* marked A, B, C, D, and E, Nos. 1 and 2 Masses.



Mass No. 1.—Portion of scrub *débris* daily frequented by male *Atrichornis*, and where it was first observed (7/10/10).

Mass No. 2.—Portion of scrub *débris* where female *Atrichornis* was observed twice upon the ground below white cross on tree.



Site where *Atrichornis* Nest was found (16/10/10).
(Nest below white cross.)

notes of the following birds : — Yellow-throated Scrub-Wren (*Sericornis barbara*), Spine-tailed Log-runner (*Orthonyx temmincki*), King Lory (*Aprosmictus cyanopygius*), Yellow-rumped Robin (*Eopsaltria chrysorrhoa*), White Goshawk (*Astur novæ-hollandiæ*), White-throated Tree-creeper (*Climacteris scandens*), White-throated Thickhead (*Pachycephala pectoralis*), White-fronted Scrub-Wren (*Sericornis frontalis*), Lewin's Honey-eater (*Ptilotis chrusotis*), &c. ; and when imitating the note of the Yellow-throated Scrub-Wren these fussy little birds came over to the heap of *débris* and sat on a twig over the *Atrichornis* as it called out beneath them. The loud alarm note of the Spine-tailed Log-runner it very frequently utters to perfection, and it is most difficult to discriminate which bird is calling—an *Atrichornis* or a Log-runner. On account of the breast bone and muscles of the voice apparatus being unusual, the *Atrichornithidæ* have been classed "Abnormal Song-Birds." The discovery of the male *Atrichornis* to-day gave me encouragement, and I naturally expected the bird had its mate somewhere in the vicinity. I first heard the bird to-day at 3 p.m., and I remained at the spot observing until after 4 p.m. I named this part of the scrub "Atrichia Slope," and it lies a few miles from my camp. Before leaving this locality to-day I examined a great many tufts of scrub-grass or sedge (*Gahnia* and *Carex longifolia*) close about the large heap of *débris* which the bird frequented, but I saw no sign of the nest or female. I then travelled through more scrub, and returned to camp before dark. I have never at any time seen an *Atrichornis* in a tree or bush ; they live entirely on the ground, partly hidden amongst the masses of fallen timbers and *débris*, and never for a moment do they leave these places, and therefore appear quite terrestrial in their habits. Their strong legs and very small wings prove that they spend most, if not all, of their time on the ground.

After this date (7th October) I worked on and hunted day after day, and thoroughly searched all the dense scrub, tufts of scrub-grass or sedge, heaps of *débris*, &c., at "Atrichia Slope," and immediately surrounding the place where I had first seen the male bird ; but my efforts were fruitless.

On the morning of the 16th October I sat on a log and listened for three-quarters of an hour at one of the large piles of *débris*, but there was no indication of or sound uttered by the *Atrichornis*, much less getting a glimpse of the bird. This silence was rather disappointing, so at about 9 a.m. I made a fresh start, and once again continued a systematic search. Shortly after 10 a.m. the area of my operations brought me to a small open space in the scrub, which was well covered with many tufts of a narrow, flat grass (*Carex*), which varied from 1 foot to 2 feet 6 inches in height, growing rather closely together. Through the western side of this growth the large section of the topmost portion of a fallen hoop pine (*Araucaria cunninghami*) was lying on the ground. This top part of the tree measured 65 feet long, and was about 3 feet thick at the larger end. This looked to me

a very promising spot, as the broken and tangled mass of branches and *débris* on the ground at the head of the tree would form a safe and natural retreat for the *Atrichornis*. I worked all the eastern patch first, which was much more extensive than that on the western side of the log, and I began to lose hope regarding success in this patch; so at 10.30 a.m. I visited the growth on the western side of the log, and in the centre of the third tuft I examined—which was rather close to the log and much spread out and open—I found a rounded mass of dead and thoroughly bleached grass (*Carex*). This was really a dome-shaped nest, and the material from which it was constructed was so old-looking and thoroughly weather-worn that it had the appearance of having been built a few seasons ago. At first glance I thought it might belong to some small scrub marsupial or rodent, so I knelt down, and, on examining it closely, found it had a neat, round opening on the north-west side, and that the nest resembled that of an *Atrichornis*. In order to view the interior of the structure through the small round opening, I had to bend the tuft of grass back a little, and was thus enabled to look in, finding, to my delight, that it was undoubtedly the nest of *Atrichornis rufescens*, and contained two eggs, typical of those I took 12 years ago. The nest was situated down the slope, 65 yards westward from the western side of the large heap of *débris* wherein I had first seen and heard the male *Atrichornis* on Friday, 7th October. It did not stand quite upright in the grass, and had a slight inclination to lean westward. Possibly a scrub wallaby or other animal may have walked over the tussock, thus causing it to be opened out so much and the nest moved from the perpendicular.

The nest was constructed of dead grass (*Carex longifolia*) and leaves, and lined inside with the same hard, cardboard-like material or dried wood-pulp as before, and the eggs rested in this rounded and hardened receptacle, devoid of any other lining. On close examination of this hard and remarkable lining, one finds that it is dried pulp of soft and decayed wood and grass that the bird had probably worked up and put together while in a wet state. To remove the eggs I took the lid off a small round matchbox and fastened it to the end of a large straightened safety-pin, which acted admirably as a sort of ladle. They were heavily zoned at one end with reddish-brown markings, and were typical, but appeared somewhat incubated—probably about seven days. The pair of eggs measure in inches—(a) 0.87 x 0.69, (b) 0.87 x 0.70.

My next most important endeavour was to capture the female, so I returned to camp and got the lantern and butterfly net. After a long, hot walk I arrived back at the scrub. I cut a strong stick, about 10 feet long, and securely tied the green butterfly net to it. I put both eggs back into the nest, and got under cover to watch developments. It was now 12.30 p.m., and at 1.15 I heard a gentle rustling in the grass and dead leaves on the ground along the western side of the thick log of pine, near



Nest *in situ* of Rufous Scrub-Bird (*Atrichornis rufescens*).

the nest, but no note of any kind. After a while the bird slowly entered the nest, but I could only see her head from where I sat, and I plainly noticed the nest shake as she entered and turned round. I was sitting almost at the back of the nest. I now raised my body slowly, and, taking careful aim with the long net, dropped it down over the nest and tussock; but to my amazement and disgust the bird escaped before I got over. She was as quick as a flash, and I could hardly credit that she had gone. I examined the grass around the nest in case I had accidentally hit and stunned her, but no such fortune. While I was thus engaged trying to capture the female, I could plainly hear the male bird calling loudly some 70 yards away up the slope of the scrub, and at the same large heap of *débris* (mass No. 1) as I had first seen him in on 7th October. From that date on he had taken particular care never to call or utter a sound anywhere in proximity to the nest. I sat down again in hiding, and in about half an hour I heard the female creeping about again like a mouse or small lizard in the grass and dead leaves. With the field-glasses at this close range I faintly caught sight of her twice as she moved along under the side of the log, close to the nest. I could not see her colour well in such subdued light, but from what I saw she did not appear to differ from the male in general colouring. However, after she had carried on some good manœuvring (in a crouched position) under the side of the log, inside the edge of the grass, she cautiously went on the nest once more; and, although I was most careful in using the net, I lost her again, notwithstanding that I had actually seen her fluttering in the net as I rushed over. I was now trembling with eagerness, thinking I had captured her beyond doubt this time. I was perplexed to know what to do for the best. I certainly could not safely shoot her at such a close range without blowing her to pieces, and there was the danger of destroying the nest and eggs; and if I removed the eggs from the nest the chances were that she would abandon the spot altogether. My previous experience with these shy birds was that they usually showed themselves at very close range when they did appear. This female went into the nest five times, at intervals ranging from half an hour up to an hour and a half, and all my care endeavouring to capture her went for nothing save disappointment. What I really required in the first place was a heavy iron hoop, with the net attached, so that when it was placed over the nest it would press its way through the surrounding grass and go right down flat on the ground. There can certainly be no doubt that the bird got away owing to the space between the rather limp ring of the net and the ground. Certainly I could have cleared a space all around the tuft of grass, and so let the net go flush to the ground, but the chances were that the bird would never have gone near the place again.

The nest was built about 16 inches from the side of the pine log, and in a tuft of scrub-grass or sedge about 2 feet high, which

Mr. J. H. Maiden, Government Botanist of New South Wales, has kindly identified and named for me from samples of the grass, flowers, and seed which I collected on the spot. The grass, which is also common in some of our forests, is known as *Carex longifolia* (R. Br.) In all probability, if the eggs had been fresh instead of so heavily incubated, then the female might not have returned again to the nest, as was the case with the type clutch, which was quite fresh when found. The nest I left for the time being, as I wished to photograph it *in situ* later; and, in order to protect it from the impending hail and rain, I stood a long sheet of pine bark over it on a slant from the ground against the pine log.

During the whole time I was near the female *Atrichornis* she did not utter any sound, though the male called out frequently in No. 1 mass of *débris* some 70 or 80 yards away. The male never appears to leave his haunt in this large heap of *débris* (as far as I can detect); consequently, he is perhaps something like the Lyre-Bird (*Menura superba*) in this respect, and does not feed the hen on the nest, and she has to go out and collect her own food. I would not be surprised if this is the case, and also that the construction of the nest is carried out entirely by the female.

The opening of the nest was about 9 inches from the ground, and a platform of grass and dead leaves sloped up towards it, and on this the female went to and fro. The opening was unusually small, and measured $1\frac{1}{4}$ inches across; height or length of nest over all, $7\frac{1}{2}$ inches; width, $4\frac{1}{2}$ inches. In the case of the type nest the opening had been enlarged through removing the eggs from it by inserting the fingers. The bottom of the present nest was 6 inches from the ground in the tussock, and such was the case with my other finds of these interesting structures in 1898 and 1899.* After photographing the nest I had decided to dig the tussock up containing it. Some 30 feet along the western side of the log from the nest, and close to an old cedar saw-pit, and at part marked "11" on the plan, I found a place that was undoubtedly the roosting-spot of the male *Atrichornis*, and the loose feathers and excreta found there proved it to be such. The roost consisted of a small limb a few inches long, which projected from the pine log low down, and well underneath it, and where the log was up from the ground several inches. The nest was about 30 feet south from the old cedar saw-pit (see plan), where cedar logs were sawn up some 20 or 30 years ago, and the area of sedge-like scrub-grass (see plan and photos.) was growing on the small open part where the scrub trees had been cut down in order to make room and light for the men when at their work.

The Lyre-Birds (*Menura superba*) live in the scrub here, and one of their large dome-shaped nests which I found, and which the young bird had recently left, was picturesquely placed up against the foot of an old red cedar (*Cedrela australis*) stump at a steep

* The nest found in 1899 was in the Richmond River scrubs, and the young had gone from it. The nest is now in Mr. H. L. White's collection, and is constructed of dead scrub-grass (*Gahnia*).—S. W. J.



Nest of Lyre-Bird (*Menura superba*), within 30 yards of Nest of Scrub-Bird (*Atrichornis rufescens*).



Play-ground of Lyre-Bird (*Menura superba*), near where the male Scrub-Bird (*Atrichornis rufescens*) daily frequented.

part, and within 30 yards of the nest of the *Atrichornis* (see photo. and plan). It is remarkable that this pair of Lyre-Birds, which I frequently noticed at "Atrichia Slope," should have their nest so close to that of the *Atrichornis*, and the male to have his hillock or play-ground within 15 yards of the large heap of *débris* (mass No. 1) which the male *Atrichornis* daily frequented when carrying on his mimicry.

The ordinary note of the *Atrichornis* is a prolonged and shrill note, resembling "Chirp-chirp-chirp-chirp," and usually repeated four times or more (generally four) in succession, with about half a second duration between each call; but sometimes the interval is a little longer, and the sound gradually lowers in pitch towards the last "chirps." The male only calls, but I have often known him to remain silent for a whole day. Another note which he utters here is "Sweet-sweet-sweet," rendered often slowly, and with a pause of 3 or 4 seconds between each of the "sweets." This note is apparently copied from the White-throated Thickhead (*Pachycephala pectoralis*), and I have often heard this bird answering the *Atrichornis*'s call.

Owing to their being incubated, the ground colour of the eggs is lighter than those of the type set, which were perfectly fresh; so, judging by this, I would conclude that the nest must have just been ready for eggs on 7th October, when I first saw the male bird in No. 1 mass of *débris*.

On the following day (17th October) I again visited "Atrichia Slope," and found the nest safe under the bark, but I saw no sign of the birds, and the male was silent. Next day (18th October) I visited the locality again, and photographed the nest *in situ*, also the pine log and surrounding area. In one of these photos. a few fallen scrub saplings, which lie close together, happen to appear somewhat like a fence, but I want to point out that they are lying just as they fell. I also took other photographs, showing the heaps of confused *débris* frequented by the *Atrichornis*.

I visited "Atrichia Slope" daily, in hopes of again seeing the female, and on 22nd October I discovered both birds in a mass of fallen trees and *débris* (see figure 4 in No. 2 mass on plan, also white cross in black square in photo.) about 80 yards north-east from where the nest was. I only once got a glimpse of the birds as they peeped out of the *débris*. After the "shocks" the female received when I tried to capture her, I fancied she would not build in such a place again. The birds kept well out of sight in the *débris*, and from what little I saw of the female again to-day there appears to be very little (if any) difference between her and the male in general colouring. Only the male bird made any call or note, and he left the female and travelled through the tangled rubbish to the northwards, from where he called, the female remaining perfectly silent. Here the male rendered a peculiar note resembling the squeak of a frog; then, again, rather a clear and loud flute-like whistle. Getting another sight of the female

Atrichornis to-day pleased me very much, and it was my intention to carefully watch, and later on remove and thoroughly search this mass for No. 2 nest; I would then lose no opportunity of shooting the female. If No. 2 nest should be in one of these huge masses of *débris*, then the chances of finding it are very remote indeed, for to remove one of these large heaps of confused rubbish and trees is a big undertaking (see photos.)

I still continued to hunt day after day, and removed tons of *débris*, sometimes spending several hours at a time, following the male *Atrichornis* as he called and continued his wonderful mimicry. I walked to and fro over these heaps for days, with gun ready with extra small charges of dust shot, in case the female might possibly be in company with the male. I saw the male many times, but did not want him unless I ultimately failed to secure the female. When following him it is often very difficult to locate the sound on account of his ventriloquial powers. Sometimes he sounds quite close, whereas the bird is perhaps many yards away; again, the notes often appear to be overhead though they are actually issued on the ground.

The food of this Scrub-Bird consisted chiefly of snails' eggs, young tender-shelled scrub snails (*Helix* and *Panda*), worms, insects, and the larvæ and pupæ of various *Carabidæ* and other *Coleoptera* living in the masses of *débris* and under the damp leaves on the ground.

On 6th November I heard the male calling out at 11.15 a.m. in the mass of *débris* marked No. 2 in the accompanying plan, and 80 yards north-east of the spot where I had found the nest on 16th October. However, suddenly he became silent, and remained so until about noon, when he started, and frequently imitated the scolding and other notes of the Yellow-rumped Robin (*Eopsaltria chrysorrhoa*), White-fronted Scrub-Wren (*Sericornis frontalis*), and other species, and he gradually ran along through the pile of rubbish towards the western end, and I followed and saw him several times. Now, under the *débris* here, and close to a tall green ironwood tree* (*Tarrietia*, sp.) which was growing up through the rubbish, he made a scolding cry, for possibly he saw me; then he became silent, and later on went away unobserved to the eastern end of the heap, and, while he was calling out loudly there, I suddenly saw the female for a few seconds at the extreme western end of No. 2 mass of *débris* (see plan), and in the same place as the male had made the scolding cry just previously, and where I had seen the female also on 22nd October. This was encouraging, as I concluded that No. 2 nest was in this heap of rubbish or its immediate surroundings. When the female vanished under the *débris* she gave three faint and feeble whines or cries similar to those uttered by a very young domestic kitten; this was the first and only sound I ever heard her make.

The following day (7th November) I was about shortly after

* Not to be confused with the ironbark tree (*Eucalyptus*) of our forests.—S. W. J.

daybreak at "Atrichia Slope," with the view to removing large quantities of fallen trees, vines, and entangled rubbish at the western end of No. 2 mass, where I had twice seen the female *Atrichornis*. The scrub was hot and steamy after the continuous and heavy rains, and scrub leeches troublesome. After spending some hours watching for a shot at the female, I finally set to work with axe and hoe to remove more of the *débris*, in hopes of finding No. 2 nest, if there were one.

On 14th November I watched the male *Atrichornis* in a mass of *débris* ("B" in plan), and at the part numbered 8 in the plan, and standing behind an ironwood tree, ready in case the female should also show herself. He called again and again, and I saw him move in a mass of dead pine twigs and limbs on the western side of the long fallen tree. I felt hopeful the female was with him, as he was ruffled and cleaning his plumage and behaving in an unusual manner, and until he called again I was beginning to think he was the female. He ventured out into the sunlight, kept silent, and sat on a twig with his feathers puffed and wings drooped, just as a domestic fowl will often do when she has chickens feeding about. He did not see me, and I got a really splendid view of him. He remained in the sun for several seconds, and, shaking his plumage, broke the silence with a loud and shrill "chirp," and disappeared in the mass of *débris*. I remained watching, and again saw him a few times before I made another search in that heap for No. 2 nest. While I was watching the male here, a Dollar-Bird (*Eurystomus pacificus*) was calling in a tall tree near, and the *Atrichornis* promptly answered by imitating its notes. I never on any previous occasion got such a good sight of the *Atrichornis* as I did to-day. My radius of search had by this time (14th November) extended to a distance of 250 yards from the locality of the nest found on 16th October, and most of the work was carried out in rain. On the 17th November, when removing *débris* in No. 2 mass, I heard a strange noise at the pine log which lies through the northern side of this heap, and the sound resembled a bird in an excited state, and as if it had young ones. It came from beneath the log, where it was up 6 inches from the ground. After much heavy work moving tangled masses of *débris*, limbs, &c., away, I discovered that the sound emanated from a small grey frog, which was sitting on a dead vine caught under the log.

This day I again tried to follow the male Scrub-Bird to his roosting-place, and so get an idea where the female and No. 2 nest (if it really existed) were. But this I found impossible. He was in No. 1 mass of *débris* at 6.30 p.m., when he called, and, leaving it, he apparently worked his way through the dense scrub and *débris* (silently) and crossed the southern end of the narrow timber track and entered the mass of *débris* shown in the bottom left-hand corner of the plan, for here he uttered one note at the part marked 6 about 7 p.m., and the scrub at that hour was very dark. This was the only time that I heard this bird call on the

western side of the narrow timber track, as the heaps of *débris* it daily frequented were on the eastern side, and are all shown on the plan and marked "A," "B," "C," "D," and "E," and these include Nos. 1 and 2 masses. I obtained a still better view of the male *Atrichornis* to-day, when it was feeding on the ground in No. 2 mass of *débris*, and I watched it for 3 or 4 moments, ready if the female appeared. The spot is shown on the plan by the figure 9.

I still continued to visit the locality, and examined numerous places and turned over numbers of large sheets of loose curled pine bark (see plan), in hopes of finding No. 2 nest. I often sat on top of the remaining parts of No. 2 mass of *débris* and other heaps for hours with gun ready, sometimes in pouring rain, waiting to get a shot at the female *Atrichornis*; but I never saw her again during my visit. Failing to procure her after having seen her several times was very tantalizing, and it was now my painful duty to shoot the male in order that my find of the nest be thoroughly authenticated, because there are sceptics even amongst naturalists. On the 4th December the opportunity came, and I have the body of this wonderful feathered mimic preserved in formalin. The eyes are dark brown, with a jet black centre. The wings are unusually small, and when folded have the same appearance as those of the Lyre-Bird. The legs are strong, and, strange to say, the three front toes of the right foot were missing, evidently having been lost for some time by accident.

From personal observations, and from the evidence of other persons who have also investigated the matter, this remarkable bird is fast becoming scarcer. What is to be learnt of its natural economy should be done soon, or it will be too late.

[Members will appreciate the art and technique of Mr. Jackson's excellent illustrations. Thanks are also due to Mr. H. L. White for his goodness in defraying the cost of the blocks, so finely engraved by Messrs. Patterson, Shugg and Co.—EDS.]

Notes on the Mallee Emu-Wren.

By F. E. HOWE, F.Z.S., MELBOURNE.

THE Mallee Emu-Wren (*Stipiturus mallee*, Campbell) is an inhabitant of the vast tracts of porcupine grass in the Mallee, in the north-west corner of Victoria, and doubtless extends its range to similar country in South Australia. The species was described by Mr. A. J. Campbell.* In company with Messrs. J. A. Ross, A. Mattingley, and C. M'Lennan, I first made its acquaintance near Wonga, about 25 miles east of Hopetoun, on 22nd September, 1907. A nest was noticed in the heart of a dead porcupine bush, from which the young had already flown. Mr. Ross and I again

* *Emu*, vol. viii., page 34.

met with the species in the same class of country about 70 miles further west, at Kow Plains, during October, 1909, but were unable to secure specimens. In September, 1910, our party was made up of Messrs. J. A. Ross, A. Mattingley, C. F. Cole, and myself. We reached the Mallee on 4th September, but it was not until the 9th that we found the birds, as usual in the porcupine, on a sand-ridge bordering the Kow Plains road, about 38 miles from Ouyen. We saw them all through the spinifex. I saw what I took to be a female fly from a porcupine bush, and as I discharged my gun a male rose to join the female, which was riddled with the shot; the male, however, was perfect.

Mr. Campbell says that this bird is much smaller than *S. malachurus*, and on measuring my specimen in the flesh I made the dimensions (in inches) as follows:—Total length, exactly 5 inches; culmen, $\frac{5}{16}$; wing, $1\frac{3}{8}$; tail, $2\frac{3}{4}$; tarsus, $\frac{5}{8}$. We were unable to secure a specimen of the still undescribed female. Since leaving the locality I have secured a set of three fresh eggs, taken on 18th September, at Underbool, by Messrs. Geo. Dunn and F. Estick.

Description of Nest.—Oval in shape, with the entrance at the side, the opening having the top built out and forming a verandah; outwardly composed of very fine shreds of bark, soft and light-coloured grasses, and the down of thistles and flowering shrubs, and decorated here and there with a few spiders' cocoons. Interior lined with feathers and fur. The nest was placed in the heart of a bunch of porcupine grass (*Triodia*). Dimensions:—Length, 5 inches; breadth, 3 inches; opening, 2 inches long by $1\frac{1}{4}$ inches wide; interior, level with opening to bottom, 1 inch.

Description of Eggs.—Clutch three, oval in shape; texture of shell very fine; surface slightly glossy; colour white, with a pinkish tinge, and moderately blotched or spotted all over with reddish-brown or rufous. The markings are thickest about the larger end, where they form a zone. Dimensions in inches:—(a) .58 x .44, (b) .58 x .44, (c) .56 x .42.

Annotations.

By A. J. CAMPBELL, C.M.B.O.U., MELBOURNE.

(Published in "Bulletin No. 2" of the R.A.O.U., 21/2/11.)

CRATICUS MENTALIS (Black-backed Butcher-Bird).—Through the enterprise of Mr. H. L. White, New South Wales, and the energy of Mr. Harry Barnard, Queensland, this New Guinea species is now established as an Australian bird also. Mr. Barnard observed several of these birds at Lockerbie, Cape York, and discovered a pair breeding, 1/12/10. Mr. White describes these eggs in the next article.

In the "Catalogue of Birds" * (British Museum) *C. spaldingi* †

* Vol. viii., p. 102.

† "Proc. Linn. Soc. N.S.W.," vol. ii., p. 271 (1877).

(Masters) is indicated as synonymous with *C. mentalis* (Salvadori). At the time I wrote "Nests and Eggs" Mr. Masters' original description was not accessible to me, therefore I accepted the official "catalogue" as being correct, with the qualification—"If *C. mentalis* be really an Australian species, it is somewhat strange it has not been recorded for North Queensland, as it is found on the opposite coast of New Guinea" ("Nests and Eggs," p. 306).

C. mentalis is a small Butcher-Bird (about 10 inches total length), and is black and white, similar to *C. argenteus* of North-West Australia, but having a black back instead of silvery-grey, whereas *C. spaldingi* is larger (14 inches), and black, resembling *C. quoyi* (Lesson). While regretting I inadvertently overlooked Mr. Masters' new sub-species, I apparently strayed in very good company, for Dr. E. Hartert (whose critical work on Australian birds is much appreciated by students here) also missed the same reference, or else he would probably not have created his sub-species *C. quoyi tunneyi* * from the type locality of *C. spaldingi*, the birds being apparently alike.

STRANGE HALCYON. — Another of Mr. Harry Barnard's interesting discoveries in the rich region of Cape York has been an apparently new Kingfisher, which nearest resembles *Halcyon macleayi*, but is different owing to its darker-coloured head and the absence of the conspicuous white bars on the wings.

On 6/II/10 Mr. Barnard observed a pair breeding, and secured the male bird, which may be described as follows:—

Ear-coverts black; head and nape bluish-black, or black with a wash of Prussian blue; wings brownish-black; primaries edged with brilliant ultramarine blue, secondaries and coverts washed with the same colour; upper back and tail coverts also brilliant ultramarine blue; mantle and lower back (rump) a beautiful shade of verditer-blue or metallic cœrulean blue, the ultramarine of the upper back blending with the verditer-blue of the mantle; spot before the eye, broad collar (hind-neck), and all under surface white, except lower flanks, which are slightly tinged with buff; tail brownish-black, upper surface washed with Prussian blue.

Iris dark brown; bill black, except base of lower mandible, which is white; tarsus brown (Barnard).

Length, $7\frac{1}{2}$; wing, $3\frac{3}{8}$; tail, $2\frac{1}{2}$; culmen, $1\frac{3}{8}$; tarsus, $\frac{1}{2}$ inches.

Habitat.—Lockerbie, Cape York.

At present the type is solitary, but should more examples prove the foregoing description to be constant, no doubt ornithologists will readily agree that the bird be named the Barnard Kingfisher (*Halcyon barnardi*), after its discoverer, Mr. H. G. Barnard—one of the Barnards of "Coomooboolaroo" fame.

Mr. H. L. White describes the eggs in the following article.

* "Nov. Zool.," vol. xii., p. 228 (1905).

PLATYCERCUS AMATHUSIA (Blue-cheeked Parrakeet).—Amongst the collection of Cape York skins made by Mr. Barnard, and kindly loaned by Mr. White, is a series of this beautiful yellow-headed Parrot. As Gould states, it is nearly allied to the paler-headed *P. pallidiceps*, but differs in "the greener tone of the colouring of the body and in the rich blue cheeks." However, the blue upon the cheeks is variable in the specimens under notice, there being more or less white on the upper part of the cheek. This variableness is apparently due to age, because in two specimens (♂ and ♀), evidently immature, the cheeks are almost wholly blue, while there are patches of red feathers upon the head.

Regarding the fine black-headed *P. browni* (*venustus*), recently collected by Mr. G. F. Hill, and mentioned in his notes in the last issue of *The Emu*, p. 270, Mr. Gregory M. Mathews has created for it a new sub-species—*P. venustus hilli**—partly because the white feathers of the cheeks are "reduced to a narrow line, the blue spreading nearly all the way up to the black below the eyes." In some specimens (Hill's) I have examined the extent of the white patch is variable, even on the same bird, one skin showing a larger patch of white on one cheek than on the other; also, like *P. amathusia*, *P. browni* has red feathers occasionally on the head. I fear Mr. Mathews' new sub-species is not admissible.

Descriptions of New Eggs.

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

(Published in "Bulletin No. 2" of the R.A.O.U., 21/2/11.)

CRATICUS MENTALIS (Black-backed Butcher-Bird).—Clutch, two eggs, much incubated, taken at Lockerbie, Cape York, North Queensland, by H. G. Barnard, 1/12/10. Nest composed of sticks and lined with strong grass-roots, placed in the fork of a "bloodwood" (eucalypt) tree growing in hilly, stony country.

Shape of eggs, round oval; shell fine, surface glossy. Ground colour greenish-grey, one specimen being of a darker shade; sparingly marked over the greater portion of the shell with spots of reddish-brown, which, with splashes of light slate, form an irregular ring near the larger end of the egg. Dimensions in inches:—(a) 1.06 x .8, (b) 1.05 x .8.

XANTHOTIS FILIGERA (Streak-naped Honey-eater).—Clutch, two eggs, taken by H. G. Barnard at Lockerbie, Cape York, 18/11/10. Nest composed of strips of bark and fibre, woven together, and lined with fibre; placed in a mango-tree.

Shape of eggs, long oval; shell fine and very glossy. Colour pinkish-white, freckled all over with small spots of bright brownish-red, these spots being thicker towards the larger end, where they are mixed with small splashes of pale purple.

* *Bull. B.O.C.*, No. clxiv.

The eggs are different in colour from those of any other Honey-eater I have seen, and approach rather closely to those of *Piczorhynchus gouldi*, but are larger and more glossy. Dimensions in inches :—(a) .93 x .69, (b) .97 x .69.

TRICHOGLOSSUS SEPTENTRIONALIS (Northern Blue Mountain Lorikeet).—Clutch, two eggs, taken by H. G. Barnard at Lockerbie, Cape York, North Queensland, 22/10/10, from a hollow spout of a *Melaleuca* tree. Eggs placed 18 inches from entrance of spout, which was 58 feet from the ground.

Shape of eggs round oval; surface of shell rather coarse, pitted and dull. Colour white, but stained by decayed wood. Dimensions in inches :—(a) 1.0 x .84, (b) .96 x .84.

HALCYON BARNARDI, Campbell (Barnard Kingfisher).—Clutch, five eggs, taken by H. G. Barnard at Lockerbie, Cape York, North Queensland, 5/11/10, from a hollow scooped out of a termites' nest in a tree, 20 feet from the ground.

Shape of eggs, round oval; shell very fine and glossy. Colour pure or pearly white. Dimensions in inches :—(a) .9 x .84, (b) .9 x .83, (c) .92 x .8, (d) .92 x .8, (e) .9 x .82.

Stray Feathers.

FLIGHT OF SWIFTS. — From 11 a.m. to 12 noon a flock of perhaps 1,000 Spine-tailed Swifts (*Chaetura caudacuta*) were flying overhead to-day, at heights varying from a few yards to 300 yards. They immediately preceded a change in the weather to rain. Should you receive word of this flock from others, it would help to determine their line of flight and rate of progress.—A. CHAS. STONE. Prospect, *viâ* Sale. 9/2/11.

* * *

NESTING SITE OF PARDALOTE.—In illustration of the curious position birds will sometimes select for a nesting site, I may mention two instances connected with the little Spotted Pardalote (*Pardalotus punctatus*). At Tobay, W.A., I found a tunnel driven into the sands hardly above high water mark. Indeed, the spray from only a moderately large roller would have washed right into it. The second instance was a tunnel actually driven under a sleeper of the Denmark railway. Both nests contained eggs.—F. L. WHITLOCK. Young's Siding, D.R. (W.A.)

* * *

PETRECA PHENICEA BREEDING IN GIPPSLAND.—On the 13th of last October, when wandering along a secluded creek in the hilly district of Callignee, I observed a male Flame-breasted Robin feeding his mate. Thinking there must be a nest close at hand, I watched them. The female soon flew to a bank, where I discovered her sitting on a clutch of three eggs, which greatly

resembled those of *P. leggii*. On the 12th of December I noted other pairs with young fully fledged. These instances show plainly that not only an exceptional pair stays to breed in Gippsland, but probably numbers.—ARTHUR P. INGLE. 5/3/11.

* * *

NEST AND EGGS OF COLLYRIOCICHLA SUPERCILIOSA (MASTERS).—*Nest*.—A stout structure, composed of strips of bark and lined with grass-stems, built in a cluster of small twigs growing from a tree in forest country. *Eggs*.—Clutch three; in shape stout ovals; surface smooth and very glossy; colour pure white, blotched and spotted all over, but more thickly at the larger end, with markings of blackish-brown and grey, the former predominating. Dimensions in inches:—(a) 1.06 x .79, (b) 1.08 x .77, (c) 1.06 x .79. *Identification*.—Collected by H. G. Barnard at Lockerbie, Cape York, North Queensland; skins forwarded with eggs.—H. L. WHITE. Belltrees, N.S.W.

* * *

AMYTORNIS GIGANTURA v. A. MACRURA.—I have recently had the opportunity of inspecting, at Belltrees, the skins, nest, and eggs of *A. gigantura* obtained by Mr. F. L. Whitlock at Wiluna, Western Australia, on behalf of Mr. H. L. White. After a brief comparison of these skins with those of *A. macrura* which I obtained near Kalgoorlie, I have not the slightest hesitation—while not posing as an expert—in giving as my opinion that the birds are distinct. The greatest point of difference, however, is in the nests. Irrespective of the general shape and lack of the characteristic dome in Mr. Whitlock's nest—already fully referred to by him in *The Emu* (vol. ix., p. 202)—the most marked difference is in the material used in the making of the nest. In the nest of *A. gigantura* the materials used consisted chiefly of twigs of salt-bush and pieces of bark—all “heavy” material—while all the nests of *A. macrura* were composed entirely of fine, light grasses, and this in spite of the fact that the same materials are equally easily procured in both districts.—CHAS. G. GIBSON. Perth, W.A., February, 1911.

* * *

DESCRIPTION OF THE NEST AND EGGS OF GERYGONE CINERASCENS (Sharpe).—The nest was situated in a paper-bark tree (*Melaleuca*), about 4 feet from the ground, and was suspended from a pendent twig. It was composed of fine strips of paper-bark, cowhair, and pieces of native silk, and the edges of the nest were woven on to the branch from which it hung. It was first lined with a layer of fine rootlets and stiff grass, and then a layer of cowhair and rootlets, and then some silk-like native cotton. The entrance was in the side, and had a hood over the hole. A “tail-piece,” about 5 inches long, hung from the bottom of the nest. Dimensions:—Outside, $2\frac{3}{4}$ inches x $2\frac{3}{4}$ x $5\frac{1}{2}$ deep; inside, $1\frac{7}{8}$ inches x $1\frac{7}{8}$ x $2\frac{7}{8}$ deep. Taken 6th December, 1910, at Derby, North-West Australia.

The eggs are three. Ground colour white, with a zone of red, irregular-shaped spots round the larger end, and these spots also sparingly distributed over the rest of the surface. Dimensions—16.5 x 11 mm.

This clutch also contained the egg of *Chalcococcyx minutillus*, which is a lighter colour than the eggs of *C. plagosus*. The measurements are 19 x 12 mm.—GREGORY M. MATHEWS. Watford, England. 3/2/11.

From Magazines, &c.

The Outer's Book for January, 1911, contains, among articles of interest to sporting readers, a pleasantly written account of a camp-out at Clam Lakes, a charming locality in the United States, where nature is still wild and free.

* * *

JOURNAL OF THE NEW YORK ZOOLOGICAL SOCIETY.—We are glad to see that the New York Zoological Society is bringing out a most useful publication, entitled *Zoologica*, and it is to be heartily congratulated on the work. The whole "get-up" of the journal is excellent, and it deserves all prosperity. The articles by Mr. C. W. Beebe, both on the habits of the Hoatzin and on the tail feathers of the Motmot, are of much interest, as well as the field notes of the birds he found in North-Eastern Venezuela, and the photographs with which each article is illustrated are of value.

* * *

THE PHILIPPINE BIRDS.—The first and second parts of the "Manual of Philippine Birds," by Richard C. MacGregor, published by the Bureau of Science, Manila, have lately been issued. The birds mentioned in part i. that are found in Australia are *Cisticola exilis* and *Hirundo javanica*. The two numbers deal with 739 birds, fully described, 360 birds being mentioned in part ii. The numbers are well indexed, both with vernacular as well as scientific names. The books are of great value to ornithologists, and the Bureau of Science is to be congratulated on bringing out this important work.

* * *

NEW AUSTRALIAN BIRDS.—*The Bulletin of the B.O.C.*, No. clxiii., mentions that Mr. G. M. Mathews exhibited a new sub-species of Tree-creeper which had been collected by Mr. Tom Carter, who proposed to describe it as follows:—*Climacteris obscura*.—Differs from typical examples of *C. rufa*, Gould, in being very much darker in colour, both above and below. The bill is longer and more curved, and the measurement of the wing is less, being 86 mm. In an example of *C. rufa* from Broome Hill the wing measures 93 mm. *Habitat*.—Warren River, South-West Australia.

Mr. Mathews also exhibited and described a new species of Ground-Bird, which he named *Cinclosoma alisteri*. *Habitat*.—Western Australia.

* * *

DISTRIBUTION OF AUSTRALIAN LAND-BIRDS. — On this very fascinating subject Mr. Robert Hall, Col. M. B.O.U., has contributed a thoughtful paper to the Royal Society of Tasmania (read 8/8/10). Mr. Hall expresses the opinion that the Australian Passerine birds had their origin in the old Papuan sub-region, and distributed themselves down Cape York Peninsula, some turning to the north-west, and others continuing southward to Victoria, then sheering west in lesser numbers of species; but the westward extension does not join the north-west stream, because of the Great Desert barrier. For the same reason the water barrier of Bass Strait limited the southern flow into Tasmania. However, the present-day Parrot families do not lend themselves to these lines of expansion, a recent evolutionary centre appearing to have occurred in the great interior of the continent. Mr. Hall supports his views with comparative tables and many details concerning genera and areas, which are most interesting to follow for students concerned in geographical distribution. Want of space alone prevents Mr. Hall's article being mentioned at greater length.

* * *

CURIOUS NESTS.—Nearly all the native birds now and then build what may be called freak nests. Sometimes, for example, the Magpie (*Gymnorhina*) builds her nest actually on the ground, and sometimes she uses fencing-wire with which to construct the main edifice. I have just got a curious note, with reference to the present nesting season, regarding the *Grallina picata* or Mud-Lark. Two of their nests have been found built on an ordinary post-and-rail fence, where they were, of course, conspicuous as well as curious objects. The district, however, is unsettled, although there is a certain amount of traffic along the roads. This is the first time that I have heard of the *Grallina* building its nest on a fence. Some time ago I referred to the habit which the Yellow-rumped Tit (*Acanthiza chrysorrhoa*) has of building its nest beneath that of a Magpie. The Tit's nest is joined on to the Magpie's nest, and from a distance seems to be part of it. This season I found one Magpie's nest underneath which were built no fewer than three Tits' nests, all adjoining. The curious thing is that in no case which I have observed has the Magpie objected to this close companionship. On the other hand, the Magpie, apparently, encourages the practice, and acts as a protector to the little Tit. There is no doubt at all that the Tit could not very well have hit upon a safer situation in which to build her nest.—“F. R.,” *The Australasian*, 24/12/10.

DESTRUCTION OF PELICANS. — Under the caption, "Pity the Pelican," the following article was published in the *Adelaide Evening Journal* of 9th February, 1911:—

"When Pelicans were removed from the protected list the Ornithologists' Association expressed its strong disapproval and indignation that what amounted to the first step towards the destruction of this quaint Australian bird should have been taken. Led by Capt. S. A. White, every effort was made to induce the authorities to reconsider their cruel decision. The effect of the withdrawal from the protected list of the Pelican has now been brought home with dastardly force. The reason given for permission to destroy the bird was that it ate enormous quantities of fish, to the detriment of fishermen's livelihood. Capt. White informed a reporter on Thursday morning that, from what he had heard from the Coorong, it appeared that blood-money was now being paid for Pelicans, and that so much a head was given. 'Some scoundrels,' he said, 'allowed the whole rookery on Pelican Island to hatch, to the extent of 2,000 birds. The rookery has now been swept away, because somebody has secured the heads of the 2,000 fledglings. There are only two rookeries in South Australia, and this means that if wholesale destructions like the one so brutally perpetrated are repeated once or twice it practically amounts to the extermination of this remarkable bird. It is one of the most dastardly acts I have ever heard of, and the Ornithologists' Association is going to take prompt action. The Pelican is a very timid bird, and is easily destroyed. We can prove that Pelicans do not consume the enormous quantities of fish they are alleged to do. The same thing has been said about Cormorants—that where they are fish decrease. It has been found that where Cormorants have been destroyed fish have diminished in number. In America they allowed the Pelicans to be almost exterminated; but about 3 or 4 years ago the authorities awoke to the fact that these birds were not injurious to the fishermen's trade, and the authorities set to work to re-establish the birds. Only a few were found on an island on one of the rivers. This was proclaimed a bird sanctuary, and latest reports show they are multiplying most satisfactorily.'"

* * *

GAME PROTECTION IN THE UNITED STATES.—The United States Department of Agriculture Bureau of Biological Survey has issued a series of circulars dealing with game protection. Circular No. 72, "Private Game Preserves and their Future in the United States," is of special interest to Australian ornithologists, in view of the number of landowners in the Commonwealth who have had their estates declared sanctuaries for wild life. Of course, the private game preserves in North America are formed primarily for owners' exclusive enjoyment of the sport to be obtained within their boundaries, and "opposition to them has frequently been mani-

fested in the form of hostile legislation ;” but these preserves “constitute a very important factor in modern game protection, and, as the country becomes more thickly settled, may become one of the chief means of preserving game for future generations.”

Circular No. 71 deals with “National Bird and Mammal Reservations in Alaska.” Seven reservations, it is stated, have been set aside and placed in charge of the Department of Agriculture. With one exception, the reservations comprise small islands at several points along the coast of Alaska and in Behring Sea. All the reservations are used as breeding places by sea birds, or Ducks and Geese. All the species are protected by the Alaska game law, and the birds on the reservation are protected by Act of Congress.

Circular No. 73 is entitled “Progress of Game Protection in 1909.” The year in question, it is stated, was marked by a general awakening “in the movement for the increase of game, both in experiments in propagation and in the establishment of game refuges and private preserves. Several States made provision for the establishment of State preserves, or game farms.” Minnesota and Ontario set aside adjoining tracts, comprising altogether over 2,000,000 acres. No fewer than 26 bird reservations, distributed in 14 States and Territories, were created in 1909, making the total 51. Two reservations in Florida were enlarged during the year. On most of the reservations the birds bred successfully. Nearly half a million birds were imported into the United States during the year. Of this number 371,910 were Canaries. Of the remaining hundred thousand, more than half were non-game birds, and 37,511 were game birds.

* * *

“THE AGRICULTURAL GAZETTE OF NEW SOUTH WALES.”—This journal is still giving prominence to “Insectivorous Birds of New South Wales.” Vol. xxii., part 3 (March), gives two excellent three-colour blocks (after Gould) — namely, Diamond-Bird (*Pardalotus punctatus*) and Shrike-Tit (*Falcunculus frontatus*), with appropriate letter-press.

The same journal has an article, “On a New Genus of Australian Birds,” by A. J. North, Col. M. B.O.U., Ornithologist of the Australian Museum, Sydney.

Mr. North's own words are : — “In December, 1910, Mr. Edwin Ashby, of ‘Wittunga,’ Blackwood, South Australia, wrote to my private address and asked me to examine a skin of a bird he had sent to the Curator of the Australian Museum, and to pass an opinion on it. This I did, replying, ‘A new bird, possibly allied to *Ephthianura*.’ Early in February, 1911, I received from Mr. Ashby a printed ‘Description of a New *Ephthianura*’ (in galley form), in which he had described the specimen in question under the name of *Ephthianura lovensis*, thus associating it with the name of its discoverer, Mr. J. R. B. Love ; but there is nothing in the description to indicate whether

it is a reprint from any publication.* Mr. Ashby hesitatingly referred it to the genus *Ephthianura*, and states it 'may, after further investigation, exhibit generic differences.' I beg to state emphatically that it is not an *Ephthianura*, and I have much pleasure in substituting for it the generic distinction of *Ashbyia*, thereby connecting with it the name of Mr. Edwin Ashby, who, for a number of years past, has been doing good work in Australian ornithology.

"ORDER.—PASSERES.

"Family.—TIMELIIDÆ.

"Sub-Family.—Timeliinæ.

"ASHBYIA, *gen. nov.*

"*Generic characters.*—Like *Ephthianura*, to which it is possibly allied, but it is easily distinguished from that genus by its larger and more robust bill, especially at the base, and its longer and more pointed wings.

"*Type.*—*Ephthianura lovensis*, Ashby. *Habitat.*—Leigh's Creek, South Australia."

Reviews.

[*"Protected Native Birds of South Australia"*: Special Bulletin, Department of Intelligence, South Australia.]

THIS bulletin, which was compiled by Mr. T. Duffield, secretary and intelligence officer, with introduction and descriptions by Mr. A. G. Edquist, lecturer in nature study to the Education Department, is a brochure of 30 pages, with a dozen coloured plates from drawings by Mr. C. Wall, Government artist. Both letter-press and illustrations are good, and the pamphlet should prove useful to young South Australians who are beginning to take an interest in the bird-life of their State. A copy of the Bulletin and two wall-plates of the illustrations have been sent to each school in South Australia for the help and guidance of teachers and scholars. It is hoped that they will foster a love of native birds and develop the spirit of protection in the young. In his introductory remarks Mr. Edquist says:—"Fortunately, we have in South Australia an ever-increasing number of bird observers, who regard bird protection not only from the point of view of the bird-lover, but also from that of the economist, and do all that lies in their power to prevent the extinction of our most valuable birds; yet it is feared that, unless the importance of bird-life be made more widely known, the extermination of some of the species will become inevitable."

A list of protected species is given, and also one of those species which are not afforded protection by law. In the latter it is surprising to notice that Silver-eyes (*Zosterops*) are included. The statement that the plates in the Bulletin are good must be

* Reprinted pages (251, 252) of *The Emu*, vol. x. Mr. North is correct in stating that the reprint should have shown its origin, but, in his official capacity, it was his business to ascertain the source of any such matter.—EDS.

qualified in regard to the colouring of some of the figures, which is not quite satisfactory; but with the process of reproduction used this was probably unavoidable. Perhaps the best plate is that depicting a pair of Spotted Bower-Birds (*Chlamydodera maculata*) and their bower.

[“Foreign Birds for Cage and Aviary,” 2 vols., 4to, in cloth. Part I., “Smaller Foreign Birds,” post free, 6s. 4d.; Part II., “Larger Foreign Birds,” post free, 7s. 10d. *The Feathered World* Office, 9 Arundel-street, Strand, London, W.C.]

No author having come forward to do similar work for British aviculturists to that performed by the late Dr. Karl Russ for their German brethren, Dr. A. G. Butler, F.L.S., F.Z.S., &c., decided to supply the long-felt need. He has kept and studied in captivity more than 200 species of foreign birds, and is therefore eminently qualified to undertake a task of this kind. That Dr. Butler has succeeded admirably may be easily judged by an inspection of the work, which consists of two quarto volumes of closely-printed matter, describing about a thousand species of birds.

In order to render the work instructive as well as useful to bird-keepers, Dr. Butler treats the relationships of the various families, indicating their structural peculiarities. He has devoted a considerable time to collating information respecting the wild life of the various species, which necessarily entailed much research, not to mention expense, on his part.

The plan of this work has been carefully thought out—each family is first treated, every group follows in its natural order, each species is represented by its popular and scientific name, a careful description, the various habitats, an account of the wild life (when obtainable), and, lastly, observations on its behaviour and treatment in captivity. The text is interspersed with about 140 illustrations, mostly from the pencil of Mr. A. F. Lydon, but a few by the author, and others reproduced from photographs, with a frontispiece in colours to each volume, the coloured plate to vol. ii. being an Australian bird—the little “Budgerigar” (*Melopsittacus undulatus*). However, the illustration represents the birds as being more yellowish than they usually seem in the open—the yellow is probably accounted for by in-breeding in captivity. Another interesting and artistic plate is “A Group of Cockatoos,” while many other Australian birds are figured.

In their proper places, the following groups or species of Australian birds are treated comprehensively:—

Vol. I. — Spotted Pardalote (*P. punctatus*), called “Panther-Bird”; Honey-eaters (*Meliphagidæ*), Grass-Finches, &c., Ground-Thrushes (*Geocichla*), Pied Grallina (*G. picata*), White-eyes (*Zosterops*), and Wood-Swallows (*Artamidæ*). Vol. II. — Bee-eater (*Merops*), Bower-Birds (*Ptilonorhynchidæ*), Cockatoos (*Cacatuidæ*), Crow-like birds (*Corvidæ*)—including *Strepera*, Mag-

pies, and Butcher-Birds, and even the unique White-winged Chough (*Corcorax*)—Kingfishers (*Alcedinidæ*), Lorikeets, Birds-of-Paradise (*Paradisidæ*), and the numerous and glorious families of Parrakeets, Pigeons, and Pittas.

Dr. Butler, in his letter-press, has liberally quoted from Australian authors and ornithologists, and has as liberally made due acknowledgment of the same, much to the credit and value of his work.

Every bird-lover, whether field observer or aviculturist, should possess Dr. Butler's pair of well-got-up volumes. Perhaps aviculturists should be ranked first, because the author himself forcibly writes:—"Bird-life can only be partially studied by the field naturalist, owing to the skulking nature of many birds and their amazing cunning in not only concealing their nests but in enticing the investigator from the neighbourhood of the same. Of such birds the habits can only be studied in aviaries; and any seeker after self-advertisement who strives to prevent such a means of acquiring knowledge is an offender both against God and man, and deserving of the severest punishment."

Mrs. Comyns-Lewer, editor of *The Feathered World*, has been so good as to send, for the library of the R.A.O.U., Dr. Butler's two valuable books; but those members desiring copies for themselves, especially at such moderate cost, will do well to apply to the London office, at the address given above.

[“An Australian Bird Book” (Introduction by F. Tate, M.A., I.S.O., Director of Education, Victoria), by J. A. Leach, M.Sc., First Class Honourman and University Exhibitioner in Geology and Biology, University Scholar in Biology, Organizing Inspector of Nature Study (Education Department), Member of Council of R.A.O.U., Vice-President Field Naturalists’ Club of Victoria. Published by arrangement with the Education Department. Whitcombe and Tombs Limited, Christchurch and Melbourne. 1911.]

CONNOISSEURS never judge by size. Art and excellence may be found in small pictures as well as in pictures great in size; so in the case of the little volume—"a pocket book for field use"—at present under review. Its small size by no means limits its usefulness, nor are its small illustrations of less value than the classical plates of Gould and others. This little "bird book" is probably the best of its kind extant—a compendium of ornithology, showing Australian birds in their proper setting and treatment among the birds of the world.

Mr. Leach follows the system of classification laid down in the late Dr. R. Bowdler Sharpe's "Handlist of Birds," which commences with the lowest forms of avifauna (Emu, &c.), building up to the highest (Bower-Birds, &c.) Australia thus possesses both top species and bottom. The comparative reference of figures and letters with each family and species in Mr. Leach's

work may at first sight be confusing to students, but the explanatory "Notes" after the preface will make the connections clear, thus :—

"Where one number is placed over another at the left side of the page, the lower number denotes the number of species of that genus found in the world; the upper denotes the number of species found in Australia and Tasmania. The number at the right side of the page is the length of the bird in inches (from the tip of bill to the tip of tail). The families are numbered consecutively—F. 11, F. 12, and so on. The number after a family name denotes the number of species recorded from Australia and Tasmania. The distribution of the species of each family amongst the six zoo-geographical regions is also shown :—

"F. 17. COLUMBIDÆ (2), WOOD PIGEONS, Passenger-Pigeon, Rock-Dove, 119 sp.—41 (40) A., 25 (17) O., 18 (10) P., 19 (17) E., 4 (0) Nc., 24 (20) Nl.

"This should read :—Family number 17 of the world's birds, COLUMBIDÆ (two of which are found in Australia and Tasmania) contains the Wood-Pigeons, including the Passenger-Pigeon of North America and the Rock-Dove of Europe. It comprises 119 species, of which 41 are found in the Australian region, 40 of them being confined to this region; 25 are found in the Oriental Region, 17 being confined to it; 18 are found in the Palæarctic Region, 10 of which are not found outside the region; 19 have been recorded from the Ethiopian Region, 17 being peculiar to that Region; 4 have been recorded from the Nearctic Region, none of which is restricted to the region; 24 have been recorded from the Neotropical Region, 20 being peculiar to it."

The accepted vernacular name of the species in bold type readily catches the eye; synonymous vernaculars—many of them trivial, however—are given less conspicuously in brackets. Then follow the technical name, distribution, chief points or marks of plumage, and size, for identification, food, &c. No reference is made to nests and eggs, which are designedly omitted, in case school-boys and scouts should be tempted to lay up treasures of eggs.*

Instead of the usual "Remarks" or "Observations," a "Popular Lecture,"† runs through the work, which, in a clever manner, fits the pages where the particular order or families of

* It is a matter of history that nearly all famous ornithologists were egg-collectors in their youthful days. It is feared that, from his wonted enthusiasm, Inspector Leach is no exception to the rule.—A. J. C.

† *Victorian Naturalist*, vol. xxvii., No. 8. Lecture subsequently delivered at Brisbane (*Emu*, vol. x., p. 176) is amplified and brought up to date. Here is one interesting amplification :—"It is interesting to note that Australia contains representatives of twenty-eight families of Song-Birds. Representatives of but nineteen families have been recorded from Britain. The Indian Empire, including Burmah and Ceylon, contains representatives of twenty-two families, North America, also, of twenty-two families, while in South America twenty-three families are represented in this highest division of birds. Again, while only 89 Song-Birds have been recorded as permanent residents of, or regular visitors to, Britain, almost 500 species of Song-Birds have, so far, been recorded from Australia and Tasmania. Of these, 157 have been recorded from Victoria, and are illustrated in this volume. And yet we are told this is a land of songless birds."

birds are considered. Thus, the heavier or more technical matter is agreeably sandwiched with racy and interesting non-scientific writing which captivates the reader.

Photography is fast establishing itself as an indispensable hand-maiden to the sciences. Illustrations (set in groups, and most excellently engraved in half-tone) are given of over 400 Australian birds, while 20 "tricoloured" blocks depict 177 species in natural colours—a complete triumph in photo-mechanical skill by the etchers, Messrs. Patterson, Shugg and Co., from paintings by Miss Ethel M. Paterson. The only drawback noticed is that the birds appear stuffed and mounted—none the less valuable as illustrations than skins and mummies in an ornithologist's cabinet or museum.

How this ornithological compendium, or "Australian Birds in a Nutshell," was written and published for 3s. 6d. is marvellous. Its author and his enterprising publishers have indeed given to the world a unique book. Australians especially will be greatly indebted to Mr. Leach for his untiring labours, and to the long-sightedness of his department in sanctioning the publication of such a useful "bird book," the just reward of which must surely be many editions.

South Australian Ornithological Association.

THE usual monthly meeting was held at Dr. Pulleine's rooms, North-terrace, on Thursday evening, 2nd March, when Capt. S. A. White presided. There was a large attendance. The secretary (Mr. J. W. Mellor) reported having liberated Mallee-Fowl on Kangaroo Island, and stated that he had examined the country composing the reserve on the west end of the island. He found it very sterile and rough, and quite unfit for grazing, much less agriculture. The Government should extend the area of the reserve. Votes of thanks were passed to the Marine Board for having conveyed the birds to Kangaroo Island, and to the lighthouse officials for their assistance. The good service rendered by Mr. Mellor for his care of the birds was much appreciated. Dr. Morgan stated that sufficient money had been promised to procure another batch of Mallee-Fowl. The subject of the Pelican was discussed, and it was agreed to invite other scientific bodies to send representatives to wait upon the Government, requesting that the bird be placed upon the partially protected list, at least. All deeply deplored the wretched slaughter of young Pelicans on the Coorong. Mr. Robert Zietz was of opinion that the Australian Crane, or Native Companion, should be protected, as it was becoming very scarce. Mr. Edquist, of the Education Department, reported that 116 bird clubs had been established in conjunction with the schools, and the roll showed over 4,000 members, who had pledged themselves to protect our native birds. He also stated that he wished to start a competition in the schools for the best essays on birds. He would like to have a silver cup to be competed for as first prize. A subscription list was started, and the money required was raised in the room.

Ornithological Field Research.

THE Western Australian scientific expedition, under Mr. C. P. Conigrave, F.R.G.S. (late of the Perth Museum, and a member of the R.A.O.U.), is to spend six months exploring new country in the Kimberley district, accompanied by Mr. Lachlan Burns, as naturalist. Mr. Conigrave leaves Perth 27th March for Wyndham, where he will add two white men and some native boys to the party, which proceeds south from Wyndham, crosses the head of Cambridge Gulf, goes west to Pentecost River, and then circles north into unexplored tracts. The Government of Western Australia supplies scientific instruments and part of the equipment. The expedition's journal and botanical and geological collections will be handed to the Survey Department. It is expected that zoological collections will reimburse expenses, and that Mr. Conigrave's field observations on birds will be published in *The Emu*. Mr. Gregory M. Mathews is to secure the bird-skins to aid him in his new work, "The Birds of Australia." Members of the R.A.O.U. will therefore await the result of Mr. Conigrave's adventurous expedition with unusual interest. They will also commend the wisdom of the State Premier (the Hon. Frank Wilson) for endorsing the recommendations of his responsible officers in granting Mr. Conigrave monetary assistance, thus placing the expedition on a sure footing. The expedition will consist of six whites, including an experienced police trooper and Mr. Roy Collison, of Adelaide, who joins at the last moment, which should be strong enough to cope with any "brush" from hostile aborigines.

Notes and Notices.

REED-WARBLED IN TASMANIA.—Mr. Robert Legge writes to state that this summer Reed-Warblers (*Acrocephalus australis*) were visitors to the reed-beds on the river at Cullenswood—the first time in that locality, so far as he is aware.

COLOURED FIGURE FUND.—Acknowledgment was unintentionally omitted to be given to Mr. Gregory M. Mathews for his goodness in defraying half the cost of the fine coloured plate (B) in *The Emu*, vol. viii., p. 113. Mr. Mathews has also defrayed half the cost of the coloured plate (C) in this present volume. With the discovery recently of so many new Australian birds, will other enthusiasts emulate Mr. Mathews' good example?

EGG COLLECTING.—At a meeting of the British Ornithologists' Club held 19th October, 1910, the following resolution was carried almost unanimously:—"That this meeting strongly disapproves of the collecting and exhibiting of large series of clutches of eggs of British-breeding birds, or of British-taken eggs of our rare breeding species, except for the purpose of demonstrating some new scientific fact."

BIRDS AND POISON BAITS.—In February, 1910, the Bird Observers' Club (Melbourne) discussed the subject of the harm alleged to be done to native bird-life through the system of poisoning rabbits with baits, and it was decided to bring the matter under the notice of the Victorian Department of Agriculture. This was done, and subsequently the hon. secretary of the Club received from the Secretary of the Department, Mr. E. G. Duffus, a copy of a report from Mr. F. E. Allan, Chief Inspector of Vermin. In a letter accompanying the report (a copy of which was also received), Mr. Allan stated that he had not heard of the death of any insectivorous birds since May, 1909 (the date of the report). He considered the scare to be quite unwarranted, and the statement that "thousands of useful birds are destroyed annually" as greatly exaggerated, if not without foundation. But, even if the grain caused the death of a few birds, the poisoning of rabbits must proceed. In his report Mr. Allan states that the system of poisoning with apples destroys very few birds, and certainly still fewer valuable ones. A few Magpies and Crows fall victims. Grain destroys more birds than fruit does, "and it is my desire to make the latter take the place of the former as much as possible."

The Bird Observers' Club, after discussing the matter again in the light of these statements by the Chief Inspector of Vermin, decided to take no further action; but since then evidence has been accumulating, and competent observers, as well as orchardists and farmers, are at variance with Mr. Allan in the view he takes of the matter. Writing from Mansfield, a member of the Gould League of Bird-Lovers states that large numbers of birds are being destroyed by poison laid for rabbits. An orchardist at White Hills says that "something should be done to stop the killing of birds by rabbit poison." At meetings of the Bird Observers' Club it has been stated that the present system of poisoning rabbits is undoubtedly inimical to the bird-life of the Commonwealth.

ARTICLES, &C., RECEIVED.—The following articles and notes from members have been received, but are unavoidably held over:—"Birds Noted at Wyroona and St. Heliers" (Mr. Isaac Batey), "Some Mallee Birds" (Mr. A. M. Sullivan), "Trip to the Tunnel District, Tasmania" (Mr. P. C. Thompson), "Nesting of the Red Wattle-Bird, &c." (Mr. H. Stuart Dove, F.Z.S.), "Descriptions and Dimensions of Eggs" (Mr. P. A. Gilbert, Sydney), "Notes on Honey-eaters" (Miss J. A. Fletcher), "Birds of the Bush" (Mr. J. C. McLean, M.B.O.U., New Zealand), "When did the White-eye (*Zosterops*) Migrate to New Zealand?" (Mr. A. H. Chisholm), "Birds of Lake Boga District" (Alex. Stone), "Liberating Mallee-Fowl on Kangaroo Island" (J. W. Mellor), "Nesting of *Psephotus hamatonotus* in Captivity" (Mrs. A. F. U. Hardy).

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- Banfield, E. J.*, The Confessions of a Beachcomber.
- Bird Lore*, January–April and November–December, 1909; March–October, November–December, 1910.
- Bird News*, January–April, 1909.
- British Birds*, March and April, 1909, February–December, 1910; January, 1911.
- Buckland, James*, The Birds of Our Colonies and their Protection.
- Bulletin of the B.O.U.*, XXVI., October, 1910.
- Butler, A. G., Ph.D., F.L.S.*, Foreign Birds for Cage and Aviary, Parts I–II.
- Chisholm, A. H.*, Save the Birds.
- Clarke, Austin*, The Birds Collected and Observed during the Cruise of the Steamer of the United States Fisheries.
- Condor*, January, February, 1910.
- Coward, T. A.*, The Fauna of Cheshire, Vols. I. and II.
- Geelong Naturalist*, September, 1910.
- Gladstone, H. S.*, The Birds of Dumfries-shire.
- Haagner, Alwin, F.Z.S.*, The South African Birds of Prey.
- Hall, R.*, The Educational Value of Museum Collections.
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- Hull, A. F. Basset*, Further Notes on the Birds of Lord Howe and Norfolk Islands.
- Ibis*, The, April, July, and October, 1910.
- Iredale, Tom*, Additional Notes on the Birds of Lord Howe and Norfolk Islands.
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- Jouy, P. L.*, The Paradise Flycatchers of Japan and Korea.
- La Revue du Mois*, Tomes V. and VI.
- Littler, Frank, F.E.S.*, The Birds of Tasmania.
- Macgillivray and Thomson*, Life of William Macgillivray.
- Mattingley, A. H. E., C.M.Z.S.*, Some Points of Similarity of Birds and Fishes.

Mearns, E. A., A List of Birds Collected by Dr. P. Bartsch in the Philippine Islands.

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Ornithologisches Jahrbuch, April, 1909, and April and October, 1910.

Papers and Proceedings of the Royal Society of Tasmania, 1908 and 1909.

Parkin, Thomas, An Account of the Shooting Decoy in the Parishes of Beckley and Peasmarsh, Sussex.

Parkin, Thomas, Beauport, near Battle, and its Rookery.

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The Children's Hour: Bird Day numbers, 1910.

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Ticehurst, N. F., A History of the Birds of Kent.

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Zoologica, I., Nos. 2-6.

Zoologist, The, January, 1910.



HIS MAJESTY KING GEORGE V.
(Co-Patron R.A.O.U.)

FROM A PHOTO. BY W. AND D. DOWNEY, LONDON, S.W.



HER MAJESTY QUEEN MARY
(Co-Patron R.A.O.U.)

List of Members of the Royal Australasian Ornithologists' Union.

The notification of any correction, omission, or change of address will be esteemed a favour by the Honorary Secretary.

VICTORIA.

- 1902 ARMSTRONG, W. J. T., Hexham Park, Hexham.
- 1904 ANDERSON, Major, 14 Armstrong-street, Ballarat.
- 1904 AUSTIN, E. G., "Borri Yalloak," Skipton.
- 1901 BARRETT, CHAS. L., *Herald* Office, Melbourne.
- 1902 BRYANT, DR. H. W., Collins-street, Melbourne.
- 1908 BATEY, ISAAC, Drouin.
- 1909 BUCKLAND, LEONARD, Solicitor, Camperdown.
- 1909 BARR, J., c/o Mt. Lyell Mining Co., Queen-street, Melbourne.
- 1910 BELL, THOS., State School, Antwerp.
- 1910 BREW, HENRY, "Dytiscus," 321 Lyons-street, Ballarat.
- 1910 BARRETT, DR. J. W., Collins-street, Melbourne.
- 1901 CAMPBELL, A. J., C.M.B.O.U., 10 Elm-grove, Armadale.
- 1901 CAMPBELL, A. G., Pomonal, *via* Stawell.
- 1901 CHENERY, DR. A., Sale.
- 1905 Curator, The, Public Museum, Warrnambool.
- 1906 CORNFORD, W. H., "Tuerong," Mornington.
- 1906 COOK, L. C., "Holbrook," Poowong.
- 1907 CHISHOLM, A. H., Maryborough.
- 1908 CHRISTIAN, E. J., "Wingi Park," Milloo P.O., *via* Prairie.
- 1909 COLE, C. F., 28 Currajong-road, Auburn.
- 1910 CHANDLER, L. G., 56 Dixon-street, Malvern.
- 1910 CRAWLEY, ROLF, Canterbury-road, Warrnambool.
- 1901 DE LITTLE, E. P., Caramut.
- 1902 DENNIS, G. L., "Eeyeuk," Kolora.
- 1906 DENNIS, R. V., Warncoort.
- 1907 DEASEY, D., "Hollins," Glenhuntly-road, Elsternwick.
- 1908 DOVE, H. STUART, F.Z.S., "Ocean View," Cunninghame.
- 1909 DYER, G. A., 21 Kneen-street, North Fitzroy.
- 1910 D'ALTON, ST. ELOY, Shire Engineer, Dimboola.
- 1908 FORD, H. W., F.G.S., 9 Freeman-street, North Fitzroy.
- 1910 Fisheries and Game, Department of (MAJOR SEMMENS, Chief Inspector), Melbourne.
- 1901 GRAHAM, G., Scott's Creek, Cobden.
- 1905 GRAY, Z., "Gambonia," 190 Bridport-street, South Melbourne.
- 1906 GREENWAY, J., Mansfield.
- 1908 GRIMWADE, E. RUSSELL, c/o Felton, Grimwade and Co., Melbourne.
- 1908 GIBSON-CARMICHAEL, His Excellency SIR THOS., Bart., K.C.M.G., State Government House, Melbourne.
- 1909 GODFREY, R., 70 Avoca-street, South Yarra.
- 1901 HOOD, R. A. D., "Merrang," Hexham.
- 1901 HEDDING, J. W., "Toowong," Wentworth-avenue, Balwyn.
- 1901 HUTCHINSON, MRS. F. H., Tallangatta.
- 1901 HALL, JAS., Solicitor, 17 Queen-street, Melbourne.

- 1901 HILL, JOSEPH A., "Pine Rise," Kewell, *via* Murtoa.
 1901 HARDY, MRS. A. D., "Yarralangi," Studley-avenue, Kew.
 1902 HOPE, DR. W. W., Colac.
 1902 HORNE, DR. G., 59 Heidelberg-road, Clifton Hill.
 1903 HOWARD, MISS, Bridge Hotel, Mordialloc.
 1904 HOWE, FRANK, F.Z.S., 263 Park-street, South Melbourne.
 1906 HILL, GERALD F., 305 Dandenong-road, Windsor.
 1909 HUTCHINSON, REGINALD, Raglan-parade, Warrnambool.
 1908 INGLE, P., "Inglenook," Rosedale.
 1909 ISRAEL, MRS. J. W., Sackville-street, Kew.
 1908 KENDALL, H., Melbourne Veterinary College, Brunswick-street, Fitzroy.
 1901-3 } KERSHAW, J. A., F.E.S., c/o National Museum, Russell-street,
 1910 } Melbourne.
 1901 LINTON, A. F., "Brenda," Maffra.
 1901 LE SOUËF, D., C.M.Z.S., Parkville.
 1903 LINDSAY, MRS. JAMES, "Quamby," Woolsthorpe.
 1905 Librarian, Library of Commonwealth, Melbourne.
 1905 LEACH, J. A., M.Sc., "Eyrecourt," Canterbury.
 1909 LAWFORD, W., Benalla.
 1901 LONG, DR. W. J., "Kent House," 121 Wattle-street, Bendigo.
 1901 MATTINGLEY, A. H. E., C.M.Z.S., "Koonwarra," Barrington-avenue, Kew.
 1901 MANIFOLD, W. T., "Purrumbete," Weerite.
 1901 MACLEAN, C. W., C.E., "Bronte," Strand, Williamstown.
 1901 MANN, S. F., "Lawrenny," Caramut.
 1908 MORRISON, SCOTT, c/o Walker, May and Co., Mackillop-street, Melbourne.
 1910 M'LENNAN, J. P., 34 The Parade, Ascot Vale.
 1905 NICHOLLS, E. BROOKE, Victoria-street, North Melbourne.
 1901 O'SHANNASSEY, P. L. C., Police Station, Cunninghame.
 1901 PIKE, MISS A., "Woorara," 639 Burwood-road, Upper Hawthorn.
 1908 PECK, H. H., 3 St. James's Buildings, William-street, Melbourne.
 1910 PETHERICK, E. A., F.L.S., 254 Albert-street, East Melbourne.
 1901 QUINEY, H., Mortlake.
 1901 RYAN, DR. CHAS., 37 Collins-street, Melbourne.
 1905 ROSS, J. A., Crown Solicitor's Office, Lonsdale-street, Melbourne.
 1908 ROSENHAIN, O., 17 Robe-street, St. Kilda.
 1910 ROSENHAIN, R. O., 17 Robe-street, St. Kilda.
 1901 SIMSON, MRS. J., "Trawalla," Toorak.
 1901 SHEPHERD, G. E., "Malurus," Somerville.
 1901 SMITH, A. J., Port Albert.
 1901 SMITH, J. V., "Bundoora Park," Preston.
 1902 STEPHEN, W. J., 32 Robinson-road, Auburn.
 1905 SMITH, FRANK S., Noorat.
 1909 SUTTON, DR., Rathdown-street, Carlton.
 1909 SCOTT, ANDREW, Elmore.

- 1910 SULLIVAN, A. M., Neill-street, Maryborough.
1910 STONE, A. C., Sale.
1901 TOWNSEND, S. P., "Garrycloyne," Mornington.
1901 TINDALE, T., "Lowlands," Apollo Bay.
1902 THOMPSON, DR., Violet Town.
1903 TURNER, MISS E. J., Domain-road, South Yarra.
1908 THOMPSON, J. M., "Barr Park," Cohuna P.O.
1901 VROLAND, A. W. R., State School, Princes Hill, North Carlton.
1904 WILLIAMS, W. D. C., Surgeon-General, Victoria Barracks, St. Kilda-road.
1908 WILSON, H. W., Teachers' Training College, University Grounds, Carlton.
1909 WILSON, C. W., Scott's Hotel, Melbourne.
1909 WILDES, FRANK, Lang Lang.
1909 WILSON, F. E., 78 Albert-street, East Melbourne.
1906 YOUNG, W., "Drumrossie," Winton North.

NEW SOUTH WALES.

- 1906 AUSTIN, THOS. P., Cobborah Station, Cobborah.
1909 ANGUS AND ROBERTSON, 89 Castlereagh-street, Sydney.
1907 BRENNAN, J., Public School, Cessnock.
1907 BURRELL, H., "La Mascotte," Manilla.
1908 BURRELL, MRS., "La Mascotte," Manilla.
1902 CLELAND, DR. J. BURTON, Bureau of Microbiology, Macquarie-street, Sydney.
1903 COLES, CLIFFORD, Victoria Arcade, Castlereagh-street, Sydney.
1906 CAMPBELL, A. J., Schoolmaster, Bowning.
1910 CHARLTON, HERBERT C., 157 Macquarie-street, Sydney.
1910 CHISHOLM, DR. E. CLAUDE, Riverstone.
1901 D'OMBRAIN, DR. E., 205 Macquarie-street, Sydney.
1909 DOBBYN, DR. E. H., Broken Hill.
1909 EGGER, MAX, Jerilderie.
1910 FERGUSON, DR. E. W., Hospital, Sydney.
1910 FRY, D. B., Australian Museum, Sydney.
1901 GRAY, JOHN E., Kentucky, *via* Cowra.
1909 GILBERT, P., 9 Forbes-street, Redfern.
1909 GUBANZI, CHAS., Box 57, Wagga Wagga (Sandy Creek, near Uranquinty).
1901 HURST, DR. G., "Viwa," Burlington-road, Homebush.
1906 HULL, A. F. BASSET, Box 704, G.P.O., Sydney.
1910 HINDER, DR. H. CRITCHLEY, "Carleton," Liverpool-road, Summer Hill.
1907 JACKSON, S. W., Gordon-road, Chatswood.
1907 KEENE, H., 23 Tupper-street, Marrickville.
1901 LANE, E. H., "Llanello," Orange.
1901 Librarian, Australian Museum, Sydney.
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UNITED KINGDOM AND EUROPE.

Editor *Avicultural Magazine* (D. Seth-Smith, F.Z.S.), "Glengarry,"
Canning-road, Addiscombe, Surrey, England.

Editor *Ibis*, 3 Hanover-square, London, W.

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Editor *Nature*, c/o Macmillan and Co., Fleet-street, London.

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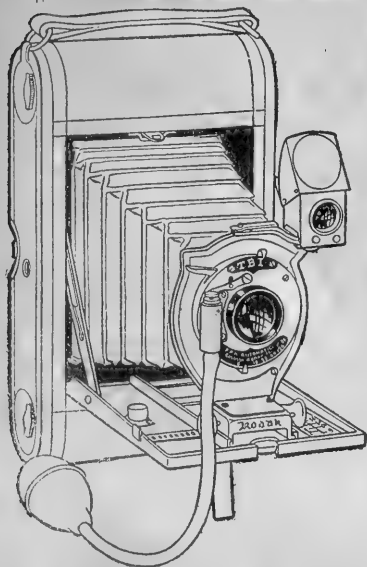
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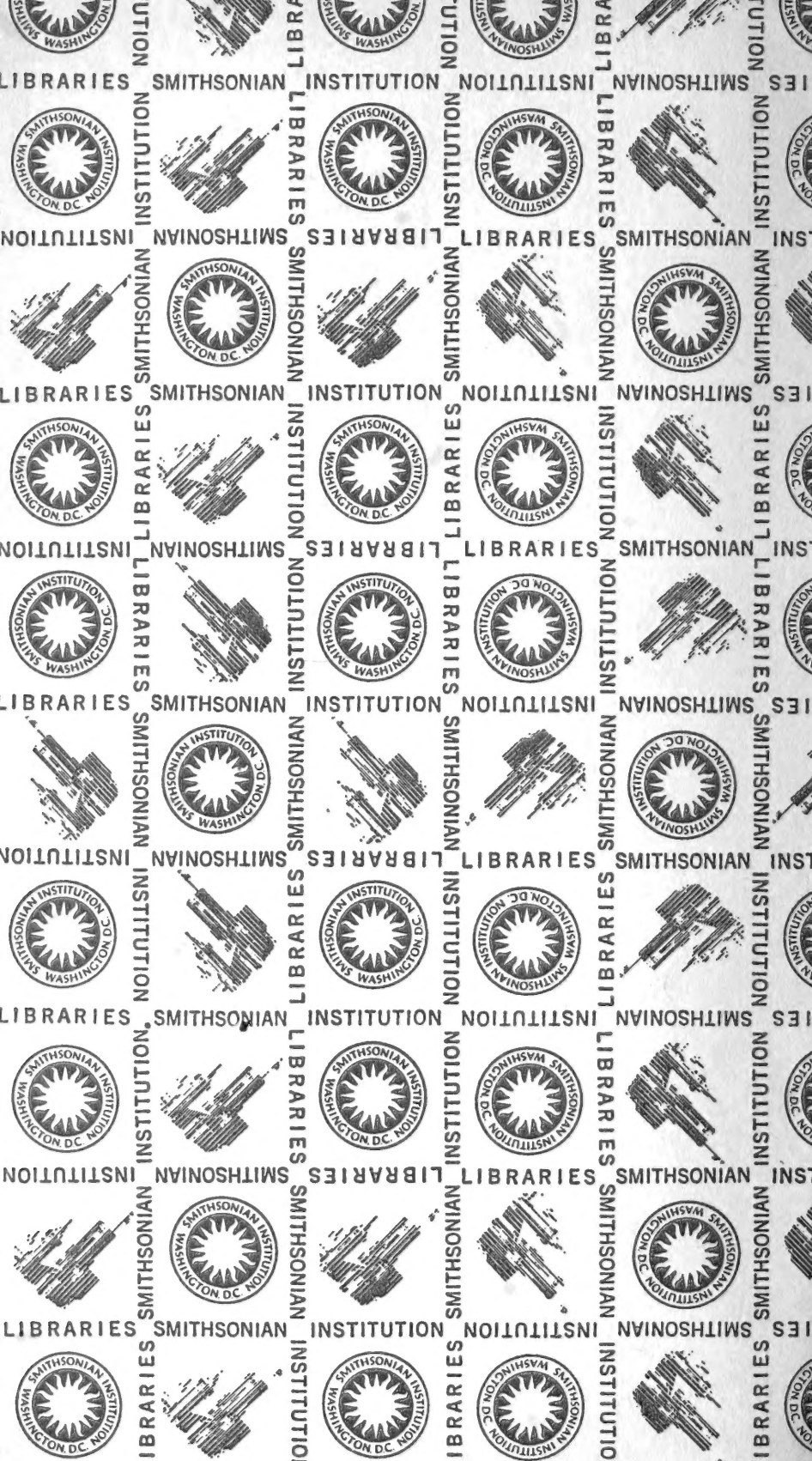
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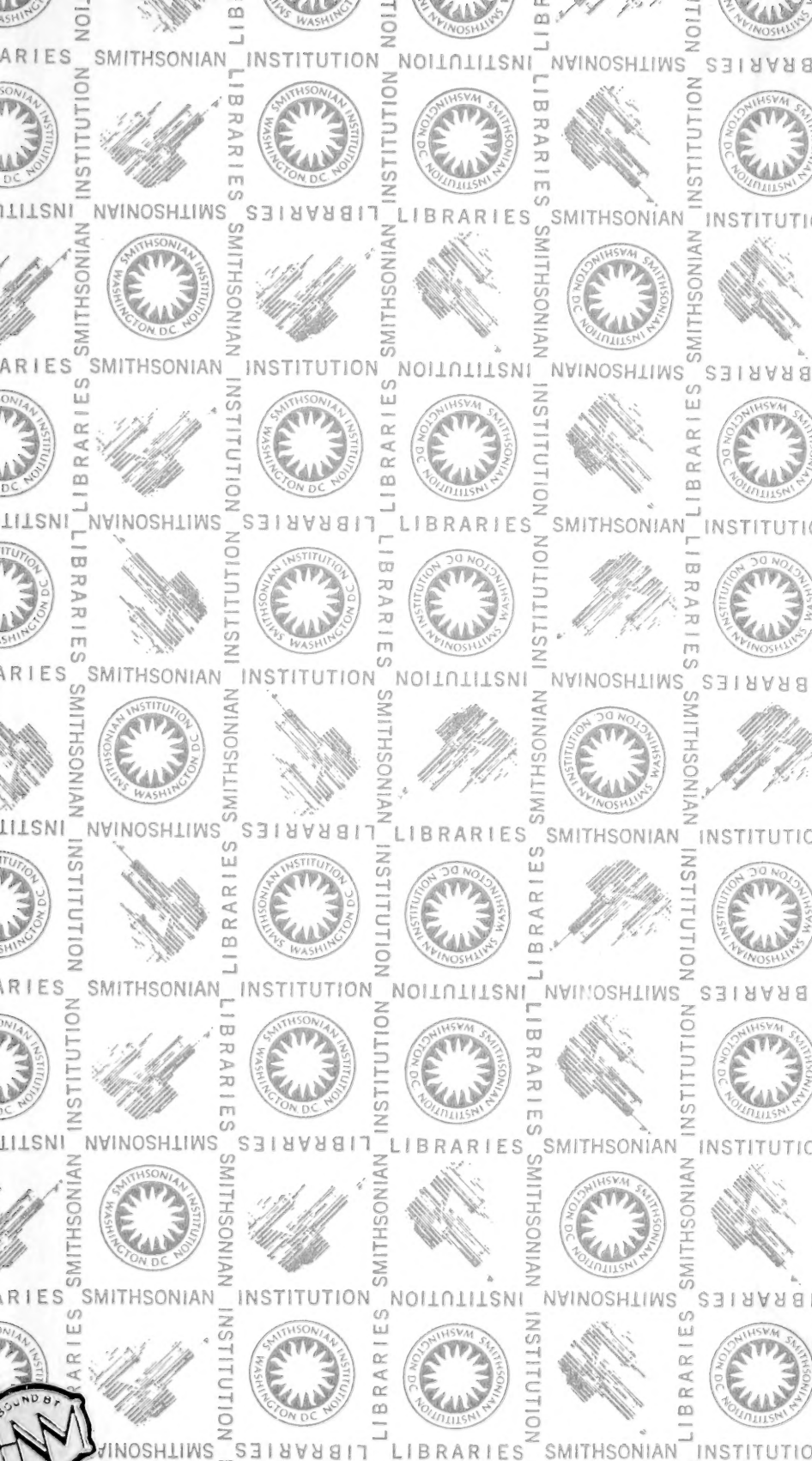
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