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OF THE

Field Naturalists' Club of Victoria.

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Hon. Editor: MR. F. G. A. BARNARD.

The Author of each Article is responsible for the facts and opinions recorded.

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INDEX TO VICTORIAN NATURALIST.

VOL. XIV.

ILLUSTRATIONS.

ERRATUM.

Page 155, line 17—For "Alandidæ" read "Alaudidæ."

THE

Victorian Naturalist.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th April, 1897. Mr. J. Shephard, one of the vice-presidents, occupied the chair, and about fifty members and visitors were present.

REPORTS.

A report of the excursion to Hatherley on Saturday, 13th March, was read by the leader, Mr. J. Stickland, who mentioned that the excursion had been very successful. A large number of specimens, interesting to the student of cryptogamic botany, such as Freshwater Algæ, Diatoms, &c., were found in the Kororoit Creek. A few Protozoa and fossil Foraminifera were also obtained. Phanerogamous plants were represented by about twenty species found in flower.

A report of the excursion to Coburg on Saturday, 10th April, was made by Mr. T. S. Hall, M.A., who stated that the party had examined with much interest the fine examples of columnar basalt and geometrical pavement situated on the banks of the Merri Creek, to the east of the Pentridge Stockade, and had spent some time in following out the geology of the district.

PAPERS READ.

1. By Mr. H. T. Tisdall, entitled "A Botanical Peep into the Rocky Pools of Sorrento and Queenscliff." The author gave a short explanation of the structure of Algæ, and then described the seaweeds which might be found in the first tide-pools left by the receding waves in such localities. He dealt with them in the different groups of unicellular plants, such as Diatoms; those formed of cell filaments, as Cladophora; then those formed of cell plates, as Monastroma; and lastly, those formed of cell masses, as Ulva. A description of the seaweeds likely to be found in a mid-tide pool was then given, the Algæ of the deeper pools being left for a future paper.

The paper was well illustrated by drawings and specimens.

2. By Mr. R. Hall, entitled "The Bird Fauna of the Box Hill District—Warblers." The author dealt with ten species of birds, of which eight were true "warblers," whilst one of the remainder is probably the best warbler in Australia—viz., the Blue Wren. A large amount of attention was directed to the genus Acanthiza, and several well-defined, but generally unnoticed, characters were pointed out by means of specimens of the

different species, which are often much confused. The remarks about nest-building, &c., showed that the author had spent considerable time and patience in making the observations brought forward.

EXHIBITS.

The following were the principal exhibits of the evening:—By Mr. D. Best.—Insects collected during 1896–97. By Mr. A. Coles.—Eggs of the following rare birds, viz.:—Black-breasted Buzzard, Square-tailed Kite, Allied Kite, Letter-winged Kite, Collared Sparrowhawk, Grey Falcon, Black Flcaon, Comb-crested Parra, Banded Stilt, Minute Bittern, and Spiny-cheeked Honey-eater. By Mr. C. French, F.L.S.—Beetles new to science, and described in 1896–97, viz.:—*Megacephala Frenchi*, *M. Spenceri*, *Ceratognathus Gilesi*, *C. Froggatti*, *Aphileus ferox*, *Callirhipis ruficornis*, *Dilochrosis Frenchi*, *Metaxymorpha gloriosa*, *Ischiopsopha Bourkei*, *Homalosoma imperiale*, *Rhytiphora Frenchi*, *Anatasis Muelleri*, *Penthea Spenceri*, *Opsidota æstuosa*, and *Pseudoryctes monstrosus*. By Mr. C. French, jun.—Eggs of Lunulated Wattle Bird, Plain-coloured Acanthiza, and Plumed Ptilotus, from W. Australia. By Mr. G. French.—Dye from *Rhagodia Billardieri*. By Messrs. J. Gabriel and G. A. Keartland.—Terns' eggs from Norfolk Island, comprising—Black-cheeked Noddy, Grey Noddy, and White Tern. By Mr. R. Hall.—Birds, in illustration of paper. By Mr. H. Hill.—Fungus, new to Victoria, *Puccinia sorghi*, on common maize from Seville, Victoria. By Mr. J. A. Kershaw.—Case of Victorian Lepidoptera, collected during season 1896–97, including two supposed new species. By Mr. J. G. Luehmann, F.L.S.—Freshwater Algæ, specimens, and descriptions by O. Borge. By Mr. J. Paul.—Native flowers from Grantville, Victoria. By Mr. F. Spry.—New fossils from Sewerage Works, South Yarra and Yarra Bank. By Mr. W. Stone.—Marine form of Cordylophora from Storm Bay, Tasmania; also, a Hydroid from same locality. By Mr. W. Stickland.—*Cladophora gracilis*, from Kororoit Creek. By Mr. J. Shephard.—Branchipus and Estheria from Brighton. By Mr. H. T. Tisdall.—Mounted Algæ, in illustration of paper.

After the usual conversazione the meeting terminated.

EXCURSION TO HATHERLEY.

On the afternoon of the 13th March, favoured with fine weather, six members set out for Hatherley, *en route* for the Kororoit Creek. A walk of about a mile along the railway line brought the party to the bridge over the creek, and here work was commenced. Reeds grew in abundance at this spot, and the shallow water by the banks afforded a variety of Algæ not commonly found in the vicinity of Melbourne. During the afternoon the party, walking

towards the sea, touched the creek at several points, and finally struck out for the Newport station, thereby reaching town an hour and a half sooner than would have been possible from Hatherley. The material collected showed a rather disappointing paucity of animal life, but there was much for the cryptogamic botanist. Of the Protozoa taken the most interesting was a Zoothamnium, apparently *Z. dichotomum* of Saville Kent. Handsome colonies of this were adhering to a cladophora. A peculiar Vorticella was noted, the breadth of the animalcules being so great in proportion to their length that they presented almost the appearance of a saucer. The common Vaginicola, *V. crystallina*, and the more interesting Thuricola, *T. operculata*, secure in their crystalline sheaths beneath a well-fitting trap door, were found in numbers. The curious hypotrichous animalcule, *Chilodon cucullulus*, was plentiful. The specimens of this were the largest we have ever seen, no doubt owing to the abundant food supply, as they were simply gorging themselves on Diatoms. The few Rotifers taken were all of common species. A large, clear, stony pool afforded the ordinary forms of Entomostraca. Specimens of a Cyclops, however, were noted, showing a pinkish colour to the eye. Under the microscope this was seen to arise from the presence of numerous granules of brilliant carmine colour about the carapace. To determine with certainty the many species of Algæ which lined the banks of the creek would require the knowledge of an expert. Among the filamentous forms we noted, in addition to lovely species of Spirogyra, the much rarer Sirogonium, apparently *S. sticticum* of Great Britain. This grows in whitish-coloured masses, owing to the comparatively small amount of chlorophyll in the cells. Bluish-green filaments, about $\frac{1}{600}$-in. in diameter, appeared to be a species of Lyngbya. Of branching forms we noted a very pretty Cladophora, apparently *C. gracilis*, and, clothing the lower part of the reeds, a Stigeoclonium in great profusion.

Diatoms in great numbers, mostly parasitic, were taken. The older cells of the Cladophora were coated with Cocconeis, probably two species. The Sirogonium filaments gave two species of Synedra, probably *S. ulna* and *S. gracilis*, in plentiful clusters. The Short-stemmed Achnanthes, *A. brevipes*, dotted some of the Algæ. A pretty filamentous form appeared to be *Rhabdonema minutum*. But the most interesting of the Diatoms was found growing in large brown plumose tufts, close to the railway bridge. These were subsequently seen to consist of vast numbers of gelatinous threads, the Diatoms being packed closely side by side longitudinally in these filaments. They could be seen, under the microscope, gliding slowly up and down, passing each other, but not leaving the limits of their filament. The Diatoms measured about $\frac{1}{260}$-in. in length, but are very narrow and

elongated in form. They appeared to correspond best with *Berkeleya fragilis*, of Smith's "Synopsis." A handsome Pleurosigma, measuring $\frac{1}{175}$-in. was noted, but its species not determined. Some earth and shell fragments, taken from the side of the stony pool abovementioned, were found by Mr. F. Barnard to contain an interesting variety of Foraminifera.

A fair number of plants in bloom were noted, several of them being of interest to those members of the party who had not previously collected on the western side of the metropolis. Among those noticed may be mentioned *Mimulus repens*, *Glycine tabacina*, *Craspedia chrysantha*, *Myoporum insulare*, *Convolvulus sepium*, and *Mesembrianthemum Australe*.

The results of this trip show, we think, the advisability of varying the locality of our excursions as much as possible.—W. STICKLAND.

THREE RARE NESTS AND EGGS.

By A. J. CAMPBELL. Communicated by D. Le Souëf.

(*Read before Field Naturalists' Club of Victoria, 8th March*, 1897.)

EDOLIISOMA TENUIROSTRE, Jardine (Jardine's Caterpillar-eater).

The first authenticated nest and egg of this interesting bird were discovered in Queensland, 1882, by Mr. C. C. L. Talbot, and subsequently described by Mr. A. J. North, F.L.S., in the *Records of the Australian Museum*, 1891. Other nests of this species have been found in Victoria this season.

For several seasons Mr. George E. Shepherd noticed these birds in Oliver's Gully, at the back of Mt. Eliza, Mornington Peninsula. During a visit of my son and self to Mr. Shepherd, who lives in the locality, we took the opportunity of exploring the gully, and were fortunate in finding a nest (the second on record) on the 20th November, 1896. But we were singularly unfortunate in losing the egg, which the hen bird broke as she was startled off her shallow nest. However, through Mr. Shepherd's untiring exertions other nests were found (notes of which, I understand, he has placed before this Club), and an egg taken by him on the 12th December now enriches my collection.

Nest.—Small and shallow, composed of very fine twigs (including Casuarina needles) and a few pieces of bark stuck together with spider's web, and outwardly decorated with portions of silvery-grey lichen, a few bits also being inside. Dimensions in inches over all, 3½ ; egg cavity, 2¼ across by ¾ deep.

Egg.—Large, compared with the size of its parent ; lengthened in form, with a sharp-pointed apex, like some of the Thickheads' eggs, notably *Pachycephala olivacea* ; shell fine and slightly lustrous; colour pale or light green (the colour being more beautiful and intense when a specimen is freshly blown), spotted

and blotched nearly over the whole surface with roundish markings of umber and slate colour. Dimensions in inches, 1.34 x 0.88.

PTILOPUS SWAINSONI, Gould (Red-crowned Fruit Pigeon).

During my visit to the "Big Scrub," Richmond River, 1891, I saw many of these beautiful little pigeons, and although I sought diligently for a nest, as in the case of the Rifle Bird, I returned home without it. However, I am again indebted to Mr. W. T. Bailey for sending a nest and egg of the Fruit Pigeon after me. They were taken with some considerable risk and difficulty at a height of about fifty feet from the ground in a Buyong sapling, by Mr. Isaac Foster. Date, 31st November, 1896.

Nest.—A very slight platform, 4 or 5 inches across, composed of dry twigs placed in a slender horizontal fork. The contents may be easily seen through the nest from beneath.

Egg.—Oval in shape, sharply nipped off at one end; texture of shell fine and slightly lustrous; colour white. Dimensions in inches, 1.16 x 0.81.

MEGALOPREPIA MAGNIFICA, Temminck (Purple-breasted Fruit Pigeon).

I am not sure that there is any detailed description given of the nest and egg of this truly magnificent pigeon.

During my visit to the "Big Scrub," New South Wales, November, 1891, a nest of the species was found building, but the operation of scrub-falling in the vicinity caused the birds to desert.

The nest and egg under notice were forwarded to me by Mr. W. T. Bailey, Richmond River. They were taken by Mr. T. Foster on the 2nd February in a "black myrtle," at a height of about 15 feet from the ground.

Nest.—Substantial for a pigeon, slightly concave, almost entirely composed of wire-like tendrils of climbing plants upon a foundation of a few coarse sticks. Dimensions, about 6 inches across by 2½ deep.

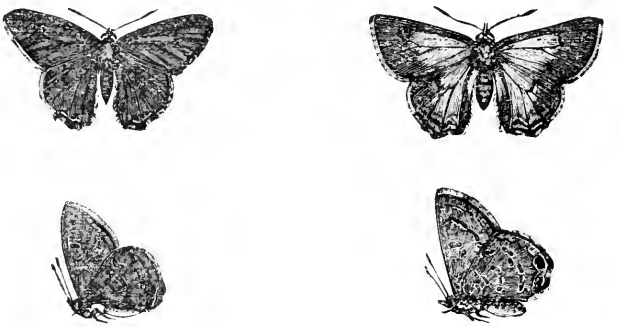
Egg.—Elongated in form and considerably pointed towards the smaller end. Surface of the shell finely granulated; colour white. Dimensions in inches, 1.77 x 1.05. Small, compared with the size of the bird, and, as in the case of most fruit-eating pigeons, a single egg only is laid.

A NEW BUTTERFLY, *LYCÆNA CYRILUS*, N. SP.

By E. ANDERSON AND F. P. SPRY.

THE announcement of a supposed new species among the "blues" of Victoria was made at the February meeting of the Field Naturalists' Club of Victoria (*Victorian Naturalist*, vol. xiii.,

p. 138). As it does not appear to have been previously named, we have decided to name it *Lycæna cyrilus*, and append the following description, with figures (life size), which will enable collectors to identify it and record its geographical distribution.



Male. Female.

MALE.—Upperside.—Uniform shining brown, hind margins black, fringes pale. Posterior wings with two black spots at anal angle, slightly crescentic and separated from black marginal line by a pale blue streak.

Underside.—Pale brown, with a series of spots margined inwardly with black, outwardly by pale brown or whitish; two black spots at anal angle of posterior wing, having an orange blotch above and separated from the margin by a white streak, corresponding to the blue streak on the upper side.

FEMALE.—Upperside.—Costa and marginal area smoky black, a darker black spot at end of cell, very distinct in some specimens, but hardly discernible in others; basal area dark blue. Black marginal line and pale fringe. Posterior wings with similar colouration to anterior, but with two deep black crescentic spots at anal angle, outlined with blue, and indications more or less faint of a series of smaller crescentic markings along hind margin.

Underside.—As in male, but spots usually larger and better defined.

The markings on the underside are so variable that no two specimens seem alike; in the males, especially, they vary from a few scattered black dots in light outlines to large spots almost coalescing into bands. As a means of identification they are almost useless.

This species was apparently first obtained in Victoria some years ago by Mr. J. Kershaw, who had in his collection a female specimen taken at Moe.

In December, 1896, we had the good fortune to procure a

series of both sexes, near Cranbourne, and we have lately heard from Sydney that a male specimen was captured on the wing during January, 1895, near Wentworth Falls, in the Blue Mountains, by Mr. G. A. Waterhouse, Mr. G. Lyell, jun., having seen and identified the insect.

A BOTANICAL PEEP INTO THE ROCKY POOLS OF SORRENTO AND QUEENSCLIFF.

By Henry Thos. Tisdall.

(*Read before Field Naturalists' Club of Victoria, 12th April*, 1897.)

I wish to draw the attention of some of our members to a branch of study which opens a wide field of investigation to students of Nature—I mean the Algæ of Victoria. Mr. Harvey, in his magnificent work on Australian Algæ, has delineated and described a great number of our seaweeds. The late Mr. H. Watts, who was an active member of our Club, took a great interest in our seaweeds, and the specimens which he presented to the Botanical Museum are a great help to a student. The late Baron Mueller's list of Algæ in the 11th vol. of his "Fragmenta" is also a great boon. Since that list was published, owing to the indefatigable exertions of the late Mr. Bracebridge Wilson, of Geelong, a great increase has been made in the known seaweeds of Victoria. But I am quite sure, from the experience I have had during my visits to Flinders, Sorrento, and Ocean Grove, that there is still plenty of scope for further investigation and a good chance for members who would undertake it to find many of these plants which are, if not quite new to science, still unrecorded as being found in Victoria.

As the study of Algæ is not common, I propose to preface my remarks by giving a brief outline of the structure and habit of these peculiar plants. Seaweeds are entirely composed of tiny structures called cells; these are generally quite microscopic, and consist of a bag or sac containing protoplasm, a nucleus, &c. There are seaweeds so minute that they are entirely composed of a single cell. With a good microscope we may find hundreds of these on almost any seaweed we pick up; these are termed unicellular. Again, we may find a number of these cells fastened together by their ends only, like a string of beads; these are said to be cell filaments. If these filaments are also fastened sideways to each other so as to form a thin sheet they are called cell plates; and lastly, if a number of these plates be placed one over another they are termed cell masses. Thus, according to structure, we may divide seaweeds into "unicellular," "cell filaments," "cell plates," and "cell masses." In addition to this cell structure most land plants are provided with long tubes or vessels for conveying nourishment to their various parts, but these vessels are

entirely wanting in seaweeds. Another marked difference between Algæ and land plants is found in the absence of true roots, stems, and leaves. The casual observer may object to this statement, as many seaweeds appear to have all three ; but when examined carefully the apparent roots, stems, and leaves will be found to be only masses of cell tissue, without either the structure or function of these organs.

Structure and form are not the only characters we have to notice. Seaweed derives a good deal of its nourishment from the mineral salts contained in sea water, and these, together with a certain amount of water, are absorbed by the plant ; but a most important ingredient of its food, carbon, can only be obtained by the help of a peculiar green substance termed chlorophyll, which Algæ contain in common with most land plants. Under certain circumstances this chlorophyll is masked or hidden by brown, olive, or red pigments, so that we find seaweeds of many colours. Colour is particularly noticed in Algæ, as with it is usually associated some important characters, such as reproduction, locality, &c. Botanists have therefore divided seaweeds into green (Chlorophyceæ), brown or olive (Phæophyceæ), and red (Rhodophyceæ). With reference to their methods of reproduction, it will be more convenient to explain them in connection with a few special plants as occasion requires.

On visiting the seashore it may be that the tide is in, so that we can only stroll along the edge of the water, and pick up an occasional seaweed drifted in and thrown on the shore by the waves. We ought to place these by themselves, as we cannot be certain of their locality.

After a time the tide begins to recede, and our first rocky pool is accessible. Going down on our knees, knife in hand, we slip the blade under a delicate structure as close to the rock as possible, then place our first find in our bottle.

A common salt-jar filled with seawater will be found very useful for this purpose. If we notice the contents of this pool carefully we shall first observe that most of the seaweeds are of a bright green colour. As the blue Algæ (Cyanophyceæ) are for the most part too small to be easily seen, we may pass them over with the remark that they are either unicellular or form chains of cells, either naked or surrounded by a gelatinous covering. Amongst the mass of vegetation in the pool we get confused, and hardly know where to begin. Tufts of delicate green hair-like plants waving backwards and forwards with the motion of the tide catch our eye ; at the first glance they all appear alike, but soon we can distinguish that some are elongated threads that do not branch ; these are Confervæ. The beautiful branched ones are Cladophora. They are closely allied, and both are formed of cell filaments. From any of the cells of Cladophora gametes may be

produced. These are nearly egg-shaped, marked with a red spot, and have two long hair-like cilia, by means of which they move about. These gametes, which appear exactly alik , pair, and produce a kind of seed called a zygote, from which a new plant arises; this kind of reproduction is nearly the same in all the green seaweeds. Those thin green leaves like lettuce are Ulva—they are formed of a double cell plate; a red variety, Porphyra, was and is greatly used as a food in the Western Hebrides. Berkeley mentions that during the hard winter of 1826 the inhabitants of one large island had absolutely nothing else to eat. Another filamentous plant, with extra large cells, is Chætomorpha ; it may be found in the sandy patches at the bottom of the pool. Near these curious fan-shaped green leaves may be observed. Their structure is very peculiar, being entirely formed of fine filaments incrusted together by carbonate of lime. They are known as Udotea, and are easily distinguished by the hardness of the leaves. This hardness is occasioned by the carbonate. That soft green stalk always branching into two is well worth examining. The surface is like the pile of velvet, and is formed by thousands of tiny tubes radiating from a large central tube. As there are no divisions across the tubes the whole of the Codium, as it is named, must be considered as unicellular. A number of green bulbous-looking plants next claim our attention. Although some of them attain a considerable size, they, like the Codium, are invariably composed of the branching of a single cell, but the tubes are strengthened by crossbars of the same substance as the cell wall. It is really wonderful to see the variety of forms simulated by these plants, which are known as Caulerpa. Some have rhizome-like extensions, which creep along the sand or rock exactly like fern roots. From these arise fronds, some resembling mosses or club mosses, others cacti or yews, &c. About eighty species of these plants are known, but the only method of reproduction observed so far is by the separation of small shoots which break off the parent plant, and afterwards grow into new Caulerpa. All over the bottom and sides of the pool, and, indeed, all over the uncovered rock, thousands of the quaint-looking Hormosira may be seen. They grow in tufts, and are composed entirely of long strings of brown berries ; these berries are really air bladders, and enable the plants to become erect when the tide covers them. The walls of the bladders are fleshy, and contain cavities in which are concealed the reproductive organs These organs, or gametes, are not alike, as in the Cladophora. One kind consists of tiny cells containing zoospores. These escape from the ruptured cell, and swim about in the water by means of their cilia. The other gamete is many thousand times larger, egg-shaped, and enclosed by a sac with two coverings ; the outer covering bursts and the inner one, with its contents, consisting of

eight sphere-like bodies, continues to swell, until finally it ruptures and the spherical oospheres are liberated; they are immediately surrounded by the zoospores, and from their union the seed of a new plant is formed. This method of reproduction is very much alike among all the brown and olive-coloured seaweeds.

If some of the larger seaweeds in the pool be moved aside, a lovely little red seaweed may be found. This is a Polysiphonia, so-called from its curious structure. The stem consists of a large central tube, completely surrounded by a great number of smaller tubes at the top.

If you get a thick stick of macaroni and surround it closely with thin pieces of vermicelli you obtain a very good likeness to the stem of one of these plants. It may be observed that this structure is very different from that of the seaweeds already described. Indeed, in the red Algæ, of which the Polysiphonen may be considered a fair type, the structure and methods of reproduction are of a very much higher order—I mean more closely resembling land plants—than any others. Before leaving the first uncovered pool I must notice the presence of two plants which occur in great numbers, and which puzzled me greatly when I first examined then. One is a grass-like plant often seen covering large sandy patches of the bottom of the pool. These, although growing in seawater, are not considered as seaweeds, but belong to a separate order of higher plants, inasmuch as they have true roots, stems, and leaves, and contain also in their structure the vessels which were mentioned as being peculiar to land plants. The second of these plants is worth examining. It is called Cymodacea, and consists of a long stem with a bunch of thick green leaves. If it is growing on the rock you will find that it has long creeping horizontal stems, firmly fastened to the rock; from these creeping stems the plants arise. But if you discover the same plant growing on sand, take it up carefully and you may perceive a quantity of small pieces of seaweeds fastened round the base; remove these carefully, and find two comb-like anchors, to which the seaweeds were fastened, and two or four fleshy roots which had penetrated the sand seeking for nourishment. These two conditions may be explained by the plant's efforts at reproduction. It has true flowers like land plants, but unless quite uncovered by the tide these seldom produce seed, so the plant grows longer and longer. I have frequently found it from three to four yards long. At last two leaf-like outgrowths are formed at the base of the tuft of leaves. These outgrowths increase in size, and consist of a very stiff skeleton of spines, surrounded by the usual fleshy material. The soft part decays, and thus the plant has two spiny anchors below its leaves. The top of the stem now breaks just below the

anchors, and the top is washed away by the waves. It is very light, and may be carried for a long distance, but in time small pieces of floating seaweed get caught by the anchors, and gradually the Cymodacea gets heavier, and, like an overburdened balloon, it slowly sinks to the bottom. It then puts out the two or four roots and commences a new life.

The description of the plants in our first pool has taken so much time that I shall only just mention the other places where new specimens may be found. In the half-tide pool, among others, the following may be obtained :—Ceramium, Corallina, Polysiphonia, Chorda, and Haliseris. The pool at low water mark will contain Callithamnion, other Polysiphonia, Gegartium, Splachnidium, Zoonaria, and Chorda. The lowest pool can only be visited occasionally, and only during calm weather. The collector should be almost divested of clothes, and should carry a long pole with an iron spade-like ending to loosen the specimens. A bag should be used instead of a glass jar, as one is sure to slip about. In this pool, you will find the ball-like Codium, lovely Ceramium, and immense masses of Cystophora, so closely related to the seaweeds which form the Sargasso seas. After a storm treasures from the vasty deep will be thrown in heaps on the shore, but they must be collected before the next tide draws them back into the ocean. Amongst them we may find occasionally the lovely Claudea elegans, red masses of Rhodymenia, Nothea, Myriodesma, the Ballia with its ever changeful hues from bright green to brown and red, and broken fragments of the huge Macrocystis. Before concluding, I would like to express my gratitude to the officers in charge of the Botanic Museum, and more particularly to Mr. Luehmann, whose courtesy and help was of vital importance to me during my study of the names and characters of the seaweeds I was fortunate enough to find.

If our members would like to hear anything further as to the structure, nourishment, and reproduction of the seaweed in the last three tide pools, I should be only too pleased to give another paper at some future time.

REVIEW.

"Life-Histories of North American Birds," Part ii. By Charles Bendire, Captain and Brevet-Major U.S.A. (retired), Honorary Curator of the Department of Oology, U.S. National Museum—Special Bulletin No. 3.

By the recent issue of Part ii. of Captain Charles Bendire's "Life-Histories of North American Birds" this magnificent work has been advanced another stage. From so wealthy an institution as the United States National Museum at Washington one always

looks for the production of literature of a very superior kind, and is certainly not disappointed while turning over the pages of Special Bulletin No. 3, for it is impossible to speak too highly in its praise. The work is in quarto form, and contains the life-histories of the different species of Cuckoos, Kingfishers, Woodpeckers, Goatsuckers, Swifts, Humming-birds, Tyrant Flycatchers, Larks, Crows, Jays, Magpies, Blackbirds, Orioles, Grackles, &c., &c. It is indeed fortunate that the United States National Museum possesses in Captain Bendire an honorary oological curator to whom the preparation of this vast amount of information has been a labour of love. Most of it is the result of his own observations in the field extending over a period of many years, and he is ably assisted by various correspondents, whose names appear in different parts of the volume. The geographical distribution, habits, and food of each species are fully and accurately given ; also that most difficult part of a bird's history, the sounds of its varied notes, whether of love, alarm, or anger. Especial attention has been paid to the nests and eggs of each species, and of the latter not only have typical specimens been described, but all the known varieties ; and many of them are of the writer's own collecting. The plates of eggs are admirable, and have been reproduced from water-colour drawings made by Mr. John L. Ridgway, of Washington. They are simply perfect, and could not be surpassed. In many valuable ornithological works the chromo-lithographic representations of birds' eggs, although accurate in colour and markings, are flat, and appear like sections, but in the present volume the figures are beautifully worked up, and possess a certain roundness which gives one as much pleasure as looking at the actual eggs. The work is well printed, and ranks among the best contributions to ornithological literature. It is to be hoped that Captain Bendire will finish as far as possible the complete "Life-Histories of North American Birds."—A. J. N. 10th April, 1897.

P.S.—It is my painful duty to add an obituary note to the above review. By the American mail just to hand, 28th April, I have received from Mr. A. K. Fisher, of the U.S. Department of Agriculture, a notification of the death of Captain Chas. Bendire, at Jacksonville, Florida, where he had gone in the hopes of gaining a respite from Bright's disease, from which he had been suffering for some time past. It is not my intention to pass any eulogies here on the late Captain Bendire, although he will be greatly missed by lovers of ornithology in all parts of the world. His kindly nature, exhibited in his communications, is shown all through his works, and the latter form a fitting and enduring memorial of his successful life-work.—A. J. N.

A CATALOGUE OF VICTORIAN HETEROCERA.

By Oswald B. Lower, F.E.S.

Part XXIII.

829. P. porphyryxantha, Lower (Tr. Roy. Soc. S.A., 181, 1893).
Kewell.

830. P. ophiodes, Meyr. (Proc. Linn. Soc. N.S.W., 1,621, 1888).
Gisborne.

*831. P. iosema, Meyr. (*loc. cit.*, 1,618, 1888).
Melbourne.

*832. P. sigmophora, Meyr. (*Eriodyta sigmophora*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, x., 50).
Melbourne, Gisborne.

833. P. pachygramma, Lower (MSS.)
This is *P. chalcoxantha*, Meyr.

*834. P. monophaës, Meyr. (*loc. cit.*, *Œcophoridæ*, x., 38).
Geelong.

835. P. aëtopis, Meyr. (*loc. cit.*, 1,627, 1888).
Fernshaw.

836. P. euxantha, Meyr. (*loc. cit.*, *Œcophoridæ*, x., 39).
Melbourne, &c.

837. P. xanthiella, Walk. (*Œcophora xanthiella*, Walk., B. M. Cat., 693; *Philobota xanthiella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, x., 39).
Melbourne, &c.

838. P. amalodes, Meyr. (*loc. cit.*, 1,626, 1888).
Fernshaw.

839. P. fascialis, Fabr. (Ent. Syst. 644; *Tortrix bimaculana*, Don., Ins. New. Holl.; *Œcophora bimaculella*, Newman, Tr. Ent. Soc. Lond., iii., N.S, 295; *Œcophora bimaculana*, Walk., B. M. Cat. 657; Feld., Reis. Nov., pl. cxxxviii., 48; *Philobota bimaculana*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, x., 40).

*840. P. catachrysa, Meyr. (*loc. cit.*, 1625, 1888).
Melbourne (? Moe).

841. P. dorsvittella, Walk.
Melbourne and Gisborne.

842. P. pulverea, Meyr. (*loc. cit.*, *Œcophoridæ*, x., 43).
Gisborne.

LEISTOMORPHA. Meyr.

843. L. BRONTOSCOPA, Meyr. (*loc. cit.*, *Œcophoridæ*, x., 44).
Sale, Gisborne.

844. L. (?) OCHROCAUSTA, Meyr. (*loc. cit.*, 45).
Melbourne, Gisborne.

COMPSOTROPHA. Meyr.

*845. C. SELENIAS, Meyr. (*loc. cit.*, 46).
Melbourne.

*846. C. STROPHIELLA, Meyr. (*loc. cit.*, 47).
Melbourne.

*847. C. CHARIDOTIS, Meyr. (*loc. cit.*, 47).
Melbourne (? Brighton).

848. C. HEMISPILA, Meyr. (*loc. cit.*, 1636, 1888).
Warragul.

ERIODYTA. Meyr.

*849. E. CONTENTELLA, Walk. (*Œcophora contentella*, Walk., B. M. Cat., 1031; *Eriodyta contentella*, Meyr., Proc. Linn. Soc., N.S.W.—*Œcophoridæ*, x., 49).
Melbourne.

PHILONYMPHA. Meyr.

850. P. ABDUCTELLA, Walk. (*Gelechia abductella*, Walk., B. M. Cat., 650; *Eriodyta abductella*, Meyr., Proc. Linn Soc., N.S.W.—*Œcophoridæ*, x., 51).
Warragul.

PELTOPHORA. Meyr.

851. P. HOLOCYCLA, Lower (Tr. Roy. Soc. S.A., 98, 1894).
Stawell.

*852. P. AMPHITOXA, Meyr. (Proc. Linn. Soc. N.S.W., 1,642, 1888).
Oakleigh.

*853. P. ATRICOLLIS, Meyr. (Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 6).
Gisborne, Melbourne.

*854. P. ARGUTELLA, Zeller (*Œcophora argutella*, Zeller, Hor. Ros., 1877, 391; *Peltophora argutella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 6).
Gisborne, Colac.

855. P. MARIONELLA, Newman (*Œcophora marionella*, Newm., Tr. Ent. Soc. Lond., iii., N.S., 294, pl. xviii., 7; *Peltophora marionella*, Meyr., Proc. Linn. Soc. N.S.W. —*Œcophoridæ*, xi., 8).
Gisborne, Melbourne.

856. P. EUGRAMMA, Lower (Tr. Roy. Soc. S.A., 98, 1894).
Springvale.

*857. P. INCOMPOSITA, Meyr. (Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 8).
Gisborne.

*858. P. THEORICA, Meyr. (*loc. cit.*, 9).
Gisborne.

859. P. AUANTIS, Meyr. (*loc. cit.*, 1,642, 1888).
Melbourne.

860. P. FULVIA, Butler (*Cryptopeges fulvia*, Butler, Ann. Mag. Nat. Hist., 1882, 101; *Peltophora fulvia*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 12).
Warragul, Fernshaw.

861. P. PROXIMELLA, Walk. (*Incurvaria proximella*, Walk., 490; *Peltophora proximella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 13).
Melbourne.

*862. P. PSILOPLA, Meyr. (*loc. cit.*, 15).
Gisborne.

863. P. PRIVATELLA, Walk. (*Cryptolechia privatella*, Walk., 753; *C. latiorella*, *ib.*, 755; *Chezala allatella*, *ib.*, 788; *Peltophora privatella*, Meyr., Proc. Linn. Soc. N.S.W. —*Œcophoridæ*, xi., 17).
Melbourne.

864. P. BALANOTA, Meyr. (*loc. cit.*, 1,643, 1888).
Warragul.

OROPHIA. Meyr.

865. O. CINETICA, Meyr. (*loc. cit.*, *Œcophoridæ*, xi., 18).
Warragul.

PROTOMACHA. Meyr.

*866. P. CHALCASPIS, Meyr. (*loc. cit.*, 19).
Gisborne.

867. P. CARA, Butler (*Zacorus carus*, Butler, Ann. Mag. Nat. Hist., 1882, 103; *Protomacha cara*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 20).
Melbourne.

THALEROTRICHA. Meyr.

*868. T. MYLICELLA, Meyr. (*loc. cit.*, 21).
Gisborne, Melbourne.

PHRYGANEUTIS. Meyr.

ANTIOPALA. Meyr.

SAROPLA. Meyr.

*869 S. HYPEROCHA, Meyr. (*loc. cit.*, 24).
Melbourne.

*870. S. CÆLATELLA, Meyr. (*loc. cit.*, 25).
Melbourne.

PLEUROTA. Hb.

871. P. PROTOGRAMMA, Meyr. (*loc. cit.*, 31).
Colac, Windsor.

872. P. BREVIVITTELLA, Walk. (*Thema brevivittella*, Walk., B. M. Cat., 802; *P. brevivittella*, Meyr., Proc. Linn. Soc. N.S.W.; *P. pyrosema*, Meyr., *loc. cit.*, 34).
Melbourne, Fernshaw, Gisborne.

873. P. CALLIZONA, Meyr. (*loc. cit.*, 33).
Fernshaw.

874. P. ENDESMA, Meyr. (*loc. cit.*, 35).
Fernshaw, Warragul

875. P. GYPSINA, Meyr. (*loc. cit.*, 36).
Fernshaw.

*876. P. CHLOROCHYTA, Meyr. (*loc. cit.*, 37).
Stawell.

*877. P. STASIASTICA, Meyr. (*loc. cit.*, 37).
Gisborne.

*878. P. ARGOPTERA, Meyr. (*loc. cit.*, 38).
Frankston.

ATHEROPLA. Meyr.

COERANICA. Meyr.

879. C. ISABELLA, Newman (*Ecophora isabella*, Newm., Tr. Ent. Soc. Lond., iii., N.S., 295, pl. xviii.; *C. isabella*, Meyr., Proc. Linn. Soc. N.S.W.—*Ecophoridæ*, xi., 40).
Gisborne, Melbourne, &c.

*880. C. ERITIMA, Meyr. (*loc. cit.*)
Gisborne.

EULACHNA. Meyr.

ARISTEIS. Meyr.

*881. A. CHRYSOTEUCHES, Meyr. (*loc. cit.*, 42).
Ringwood.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th May, 1897. Mr. J. Shephard, one of the vice-presidents, occupied the chair, and some forty-five members and visitors were present.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. A. J. Campbell and A. Campbell, jun., were elected members of the Club.

GENERAL BUSINESS.

After the nomination of office-bearers for 1897–98 had been made, Messrs. J. T. Gillespie and R. Hall were elected to audit the accounts for the past year.

Mr. J. G. Luehmann, F.L.S., referred to the delay in announcing any scheme to perpetuate the memory of the late Baron Sir F. von Mueller, K.C.M.G., Government Botanist, and suggested that the Club should raise a sum of money to be invested and provide for a prize to be called "The Mueller Prize," to be given at stated intervals for original work on Australian botany.

The Chairman pointed out that the matter was in the hands of a committee of delegates from different societies, called together by the Royal Geographical Society (Victorian Branch), and that it would be unwise to take any action, in the absence of any information as to what was being done. It was decided to ask the Club's delegates to report at next meeting as to the progress made by the conference.

PAPERS.

1. By Mr. A. Coles, entitled "Notes on the Australian Goshawk." The author stated, as the result of many years observations, that the bird commonly known in Victoria as the Australian Goshawk differed in many respects from the typical *Astur approximans* of Vigors and Horsfield, which was comparatively rare in Victoria, and as he had not been able to obtain any birds showing gradations of plumage between the two types, he considered it sufficiently marked to be worthy of a specific name. The measurements of the bones also pointed to a specific difference.

Considerable discussion took place on the question, and the author undertook to furnish further details at the next meeting.

2. By Mr. H. Bullen, entitled "On the Importance of the Tube-length in the Use of the Microscope." The author pointed out the errors into which young beginners, especially, were likely to fall by obtaining eye-pieces, object glasses, and stands from different makers, and using them indiscriminately, and showed by quotations from makers' catalogues that the various makers had different focal lengths for their glasses, and consequently true definition of objects could not be obtained with apparatus derived from various sources.

Some discussion ensued, which in the main supported the author's contentions.

NATURAL HISTORY NOTE.

Mr. J. Shephard mentioned that a Diatomaceous deposit, evidently of brackish water origin, had been found by Mr. F. Spry, in the course of the sewerage excavations at South Yarra, at a depth of about 30 ft below the level of the River Yarra, and, from the result of a cursory examination, was apparently the same as the well-known South Yarra deposit obtained many years ago by the late Dr. Coates, during the formation of the railway embankment near the same place.

EXHIBITS.

The following were the principal exhibits of the evening:—By Mr. E. Anderson.—Victorian lepidoptera, including fine series of *Oggyris abrota*, *Gastrophora henricaria*, &c., bred this season. By Mr. A. Coles.—Two specimens of Australian Goshawk, and five specimens and eggs of the spotted variety, in illustration of paper. By Mr. C. French, F.L.S.—94 species of American Hawk-Moths. By Mr. J. Gabriel—Shells dredged at Western Port Bay. By Mr. R. Hall.—Eight species of Victorian Robins. By Mr. J. A. Kershaw.—Rare Victorian lepidoptera. By Mr. J. G. Luehmann, F.L.S.—New species of Eriostemon and Mesembrianthemum, from Esperance Bay, W. Australia. By Mr. F. M. Reader.—*Lipocarpha microcephala* and *Brachycome scapiformis*, plants new for N.W. Victoria.

After the usual conversazione the meeting terminated.

We are pleased to welcome home our fellow-member, Mr. G. A. Keartland, naturalist on the ill-fated Calvert Exploring Expedition in North-West Australia, after an absence of about twelve months. Mr. Keartland has made extensive collections of the natural history of that part of the continent, and will doubtless be able to furnish many interesting notes for future pages.

Mr. G. Sweet, F.G.S., accompanied by Mrs. Sweet, has left Melbourne to take part in another attempt to ascertain, by boring, something of the life-history, &c., of the coral animal. The scene of operations is the island of Funa-futi, near Fiji.

A TRIP TO THE BLOOMFIELD RIVER DISTRICT, NORTH QUEENSLAND.

By D. Le Souëf.

(*Read before the Field Naturalists' Club of Victoria, 8th March*, 1897.)

A few days after the trip to Mt. Peter Botte we paid a visit to the Hope Islands, situated eleven miles from the mouth of the Bloomfield River. Leaving Wyalla in the evening, we walked to the river and camped there for the night, starting shortly after daylight next morning in the cutter, but as the breeze was very light we did not reach the islands until midday. The tide being out, we anchored the boat in shallow water and waded ashore; there were two islands, one composed of dead coral and the other of sand, and they were about half a mile apart. The former one was visited first, and we found it to be about three-quarters of a mile long and a quarter of a mile broad, mostly fringed with a dense growth of mangroves. Walking over the dead coral by which the island was surrounded was trying and slow work, as the points were very sharp, and it was practically impossible to walk over it with bare feet. In the small salt-water inlets fish swarmed; there were also many clam shells, and one had to be careful when wading through the water not to put one's foot into them, as they were of course open and resting with their orifice upwards, and the fish being green, looked very similar to seaweed. They have great strength, and if they closed on a portion of one's foot it would be very awkward, as the shells are hard and thick, and difficult to break. When disturbed, the fish quickly closes its shell, squirting out water when they do so. There appears to be two kinds, the smaller one on the sand, and the other, which grows to a great size, in small cavities on the coral, which cavity, as they grow larger, increases in size to correspond with the shell, but in what way the clam enlarges the hole I cannot say. The biggest pair of shells I ever saw are the ones I possess, and they weigh 4 cwt., but what their weight was with the fish in I am unable to state, but it must have been considerable.

Some White and Sombre Reef Herons flew away from where we landed, and a nest of the latter was quickly found with two nearly fully fledged young ones in it, and many other nests were discovered of both birds, but all were old. I do not think that they breed until April, that being the month that Mr. R. Hislop got several fresh clutches of their eggs. At one end of the island Panayan Terns, *Sterna anæstheta*, were noticed flying about in great numbers and in a high state of alarm, and on going there and hunting on the ground, among the scanty vegetation, just above high water mark, we succeeded in finding many of their single eggs, laid on the bare ground under some cover, such as

the thin straggling bushes, or more generally still the roots and leaves of the Pandanus Palms. But the principal bird on the island was the Torres Strait Pigeon, *Carpophaga spilorrhoa*, and they were nesting there in thousands, and we got quite confused when going through the mangroves by the noise the birds made flying off their nests and away through the thick leaves of the trees above, and we were glad to return to the beach out of their immediate neighbourhood ; their nests were everywhere and all sizes, some only a few sticks, but by far the larger majority were much more bulky, being composed of green twigs with the leaves left on, and on the Barnard and other islands where I have found large numbers of these birds nesting I have noticed the same thing, and rarely found a fragile nest, as most other pigeons build. We noticed either one egg or one young one in each nest, and I have never yet seen two, although I have looked carefully. Visitors from Cooktown occasionally come to these islands during the breeding season to shoot pigeons, but it seems great cruelty when practically all are nesting. There was the continual, uninterrupted sound of cooing all day long all over the island, which will give some idea of the great number of birds needed to produce it. A few of the eggs were fresh, but most were sat on, and some of the young pigeons were commencing to fly. Varied Honey-eaters, *Ptilotis versicolor*, were plentiful, and their cheerful note often heard ; a few pairs of Azure Kingfishers, *Alcyone azurea*, were seen, and they nested in the dead hollow branches of the Pandanus Palm, and one pair of Barred-Shouldered Doves, *Geopelia humeralis*, were noticed, and a Northern Fantail, *Rhipidura setosa*. Circling above our heads were a pair of young White-bellied Sea Eagles, *Haliætus leucogaster*, and the nest found on which they had been hatched, situated on a big mangrove tree. On climbing up, remains of terns and other sea birds were noticed, that the young had been evidently fed on ; the parent birds were not seen. On a log near the shore was evidently the favourite feeding place of these birds, as quite a heap of bones, feathers, &c., was found that these eagles had evidently eaten there. There were plenty of crabs among the broken coral and mud under the mangroves, and they often excavated good-sized holes to take refuge in, and the material they had taken out formed a small mound round the entrance. The water was shallow for a long way out and beautifully clear. Close to the shore the sun made the water quite hot. Mr. F. Hislop and the black boy speared a few fish.

The dead coral looks very dirty and portions soon get broken, but most of it is very hard and rough, and heaps of it get washed up on the shore by the action of the waves. There were very few shells and those mostly broken. As the coral grows nearer to the surface of the sea portions get exposed to the hot sun at low tide.

They soon die, but some kinds seem to live in such circumstances longer than others. The branched varieties die first, being more quickly heated through When being rowed in a boat at low tide over the living coral reefs, which perhaps were in some places only about six inches below the surface, the sight was of extreme beauty and interest. It grows very unevenly, and is very difficult to walk over, there often being deep holes of various sizes among it. There were many different kinds, of all shapes, sizes, and colours, and some grew into immense blocks. The green colour seemed to prevail. One plentiful branched variety was pure white, another pink of various shades, and another bright blue, and often near it was seen lying on the bottom blue Star Fish of exactly the same hue as the coral. Another coral was dark red; one variety often predominated over small areas. Among all this extremely beautiful growth various fish were noticed, and their vivid colours harmonized wonderfully with their surroundings. When a coral reef has grown to the level of low water it dies, but still continues to grow all round the edges in the deeper water, and so is continually making the reef larger. Some of the coarser sponges were numerous; their prevailing colour when alive was also like the coral—different shades of green, but sometimes blue or purple; they were of various shapes and sizes, but the cup-shaped variety predominated. On walking over a dead coral reef at low tide it was found to be full of insect life, many of the Fringed Star Fish, Sea Worms, &c., &c., being of beautiful colours. On wading through some shallow water my companion jumped on one side, calling out "Snake!" but on examining it we found a long green and very soft slug, about 2½ feet long, and with a bright-coloured beautiful fringe on one end, round its mouth. One black-coloured eel disdained to run away when approached in the shallow water, but opened his mouth at the intruder as if to scare him away. I have seen the same kind at Singapore, and it is there known as the Coral Eel, and feared by the natives, as it readily attacks them when among the coral. The clear water by the reef was seen to be full of life, which glittered in the bright sunlight. Cowries and other shells were found on the reef.

Towards evening we sailed to the other island and made our camp under a thick clump of Pandanus Palms. This island was almost circular, and all composed of sand and covered with scrub. A small clearing had been made in the centre by some Beche-de-mer fishers, but it was mostly overgrown again, one or two plants of sugar cane and manioc being still left. In the clear water round the island large shoals of small fish were seen, and they kept as near the beach in the shallow water as they could, and looked like a long, broad black band slowly moving forward. Sharks and other larger fish were continually making a dash at

them with open mouth from the sea side, Silver Gulls and terns kept diving down on them from above, and if they went in the shallow water on the reef pelicans were there on the look-out for them, consequently they had a lively time of it in trying to save their lives from their various enemies both above and below. Small sharks were also plentiful, and came as close to the beach as the water would allow them, one I saw being only a foot away from the shore, consequently we did not venture to bathe. Often when a tern seized a fish and flew up with it, a Silver Gull, *Larus Novæ-Hollandiæ*, that had been on the watch would worry it and make it drop the prey before it had time to swallow it, which the gull would then catch before it reached the water, and flying to a neighbouring rock eat it at its leisure. When there happened to be no terns about the gull had to fish for itself, which it did by either diving down from a height or swimming on the water and catching the small fish that happened, unfortunately for themselves, to come within reach. Numbers of Sombre and White Reef Herons, *Demiegretta Greyi*, camped on the island, running about on the ground under the bushes as well as roosting on the trees, and some of their old stick nests were found built on matted vegetation within a foot of the ground; the surface consequently was strongly impregnated with guano, which smelt very strong after a shower of rain. One morning at 4 o'clock, just before daylight, I heard a company of these birds making a considerable croaking noise together, but on my going to their neighbourhood they stopped.

At low tide the reef on which these islands were was left exposed, and it was considerably over a mile long and nearly as wide. A small solitary mangrove tree was growing about the centre of it, which, in the distance, looked like a rock, and on walking over this reef when dry we often noticed in the shallow pools various kinds of slugs, one kind especially being purplish-black and six inches to a foot long. The numerous Fringed Star Fish hide their bodies in the sand and extend their feelers into the water above, and I was puzzled at first, seeing these tenacles waving about in the still water, to know what they belonged to. There are two kinds of Beche-de-mer, but they have mostly been collected by fishermen, and are consequently scarce, as this fishery has been going on for many years. The slugs are half-boiled, dried, and then sent to China, and a large trade used to be done in them. They look like pieces of thick, dark-coloured leather when ready for shipment. We saw two kinds of Sea Snakes swimming on the surface of the water, *Hydrophis Stokesii* and *Hydrophis elegans*. They were about 7 ft. long. Our boatman said the largest he had seen was on the Barrier Reef, and was about 15 ft. long, and the thickness of an ordinary oar. We had been informed by our boatman that we should bring fishing

lines, as we should be able to catch plenty of fish, but we fished and fished and caught nothing. On informing our skipper, he said we should catch plenty just as the tide turned, which it did at 3 o'clock in the morning. Well, at that hour one of our party was up and hard at it, but with no result. We were then informed that we ought to fish over live coral, consequently we got our small dingy and did so, but with no more success than before, only an occasional one being caught, so we came to the conclusion that they did not bite, and gave up trying to catch them. Our boatman then said we were there at the wrong time of the year. He would not be beaten at our, and also his, want of success.

During the night we heard what we thought was a rat running about our tent and gnawing at our bread, and one of us put his hand on the intruder accidentally in the dark, and thought it rather hard for a rat, but did not leave his hand long enough there to make quite sure. We soon found out that it was a good-sized strong crab, *Ocypoda cerathopthalma*, that was making free of our tent and its contents and disturbing our rest. I caught and placed him in an empty tin, but did not mention the fact to the others; and later on, when we arrived at the Bloomfield River, Mr. Anderson camped there for the night in charge of our luggage, and during the night heard strange sounds proceeding from the pile of goods, and he could not make it out, or sleep while it was going on, and it was a long time before he could ascertain the cause, which turned out to be my crab exercising himself in the empty tin. A few Torres Strait Pigeons, *Carpophaga spilorrhoa*, were on this island, but they were not nesting. At daylight in the morning I rambled through the scrub, which was dripping with rain which had fallen during the night, and shot three birds for our breakfast. On returning to the camp I hung my wet clothes before the fire to dry, and as the sky was overcast, I sat on a log on the beach skinning birds, and dressed only in my handkerchief for about half an hour, by which time my things were dry; but during the day I found to my sorrow that the whole of the skin of my body was sunburnt, and in a few days time it all peeled off, and only those who have passed through a similar experience know the pain and discomfort it causes. I only mention this to warn others.

After spending one day on the island we left at daylight on the following morning for the Pickersgill Reef, about 8 miles off, but the breeze being very light it was midday before we reached it. On passing over some shallow water a turtle was observed, but catching sight of us it rapidly swam away. On the sandbank, which is 100 yards long by 50 wide, were large numbers of Indian Terns, *Sterna media*. These birds nest here yearly, and we hoped to have found some of their eggs, but we were too

early. The noise they made was deafening when they all rose screeching into the air. A pair of Caspian Terns, *Sterna Caspia*, also flew away as we approached, and some White Reef Herons and Pelicans. The bank was pure white sand, and the glare in the hot sun considerable. A few logs of driftwood had been washed up by the sea, and at high tide it cannot be much above the level of the water. We were told that grass used to grow on it, but a heavy storm washed it all away, and a good deal of the island too. We picked up some pretty shells and coral, and saw numerous tracks of turtles on the sand, and after staying about an hour set sail with a freshening breeze for the Bloomfield River, which was reached at dusk. Mr. F. Hislop and myself then walked up to Wyalla, over the wet, slippery roads, as heavy rain had fallen a short time previously. It got very dark long before we got to our destination, and my companion deserved great credit for the way he successfully found his way along the small bush track, when for some distance we had to feel our way, the darkness being so intense.

A few days after we went down to the sea coast, about six miles away, to the mouth of a small stream. We got into a boat some two miles up the river and pulled down to the bar. The banks were mostly lined with a dense fringe of mangroves, amongst which were noticed White Ibis, *Threskiornis strictipennis*, Nankeen Night Heron, *Nycticorax Caledonicus*, and one specimen of the Little Mangrove Bittern, *Butoroides Javanica*. This stream was tidal for some distance up, and was the haunt of the crocodile, *Crocodilus porosus*, and these reptiles have on the bank, close to the water's edge, their favourite camping ground, a clear space where they lie sunning themselves; but they are very quick in hearing any unusual sound, and at once slide off into the water, consequently they are difficult to get a shot at or even to see, as where they lie has scrub each side of it, and therefore cannot be easily seen until close to. Mr. F. Hislop shot one shortly before my arrival. He landed some distance above a well-known resting ground, and with care managed to get a shot at its occupant with his rifle. On its carcase being measured, it was found to be exactly 11 ft. long. Round about its lair were the remains of pigs, showing that they were its favourite food, and as these animals were numerous it evidently did not suffer from hunger. I visited a swamp close to the sea shore, and found that the pigs had been systematically through the greater portion of it, rooting it up for the sake of the roots of the rushes with which it was originally covered. In wading about with bare feet in the mud and water, I accidentally trod on a green water snake, but it being quickly released disappeared in the muddy water. A few birds were seen, such as Native Companions, *Grus Australasianus*, Black Duck, *Anas superciliosa*,

White Ibis, White-fronted Herons, *Ardea Novæ-Hollandiæ*, Egrets, *Herodias melanopus*, Red-necked Avocets, and a flock of Barred-shouldered Doves were noticed feeding over the swampy ground. Some old nests of the herons were observed in the trees on the edge of the swamp, but no fresh ones. On this particular shore a great quantity of driftwood has been cast up by the sea, far more than I have noticed elsewhere. There were a few shells. On returning up the river plenty of fish were seen, some of the mullet being very large, and occasionally when passing over a shallow sand bar a Stinging Ray would glide away over the sand. Our black boy was on the look-out for them, but did not succeed in spearing any; he was also bringing back with him a cooked White Ibis, to eat when sufficiently hungry. Bright metallic green blow-flies were plentiful, but their larvæ were deposited in egg form, fortunately, and it was some little time before they commenced to crawl about. When the natives' food gets fly-blown they put it on the fire to destroy the larvæ. Small black mosquitos were troublesome, and a flock of Shining Calornis were observed feeding among the mangroves. We looked out for crocodiles, but none were seen.

Next day I went over to Toolgoor, about four miles, to see Mr. Cochrane. A black boy went with me as a guide. It was an interesting walk, being partly through scrub. One very large mound of a Megapode was passed and photographed. It was about 9 ft. high and 20 ft. in diameter at the base. An Allied Fruit Pigeon was noticed building its frail nest near the end of a thin branch. There being practically no wind in the scrub, pigeons can build their nests on thinner boughs than they can in the open. The Victoria Rifle Bird was heard on several occasions as we passed by their favourite resting place. Overhanging a stream two pairs of Large-billed Gerygones, *Gerygone magnirostris*, had built their nests together, and both nests had eggs in. On passing through a group of Fan Palms we noticed that all the young ones up to the height of 8 ft. had been destroyed by pigs for the sake of the pith they got inside, the outside wood of the larger trees being too tough for the animals to break through. Arriving at Toolgoor I was shown the nest of a Sun Bird, *Cinnyris frenata*, that had two entrances. After the nest had been built, if I remember rightly in an open shed, the cord the nest was built on got turned somehow, and the opening faced the paling fence close to it. As the birds could not get a view of anything that might be approaching them, and being unable to turn the nest back, they set to work and made another opening on the opposite side, out of which the hen bird could put her head when sitting. Another pair of these birds, after hatching and rearing one brood, built another nest in the back verandah, but being frightened away from there they built again

in a neighbouring shed, fastening their nest on to the end of a piece of string that was hanging down. A pair of Australian Goshawks, *Astur approximans*, had built their nest close to the house in a tall eucalyptus tree, and Mr. Cochrane informed me that, on the eggs being taken, they built a new nest, and had laid three more eggs within fourteen days. The second clutch was not disturbed. There were some nicely grown Cocoanut Palms in the garden, and they were bearing well. Mr. Cochrane complained that the Carpet Snakes were often troublesome, and that all his guinea fowls had been taken by them. The birds roosted in a tree close to the house, but the Carpet Snakes used occasionally to climb up the tree at night, catch one of the birds, and that then the snake dropped to the ground with its prey. Several of his fowls and turkeys had also been taken. We paid a visit to the big tree in the scrub on which a large colony of Shining Calornis were nesting, and on picking up a fresh nest that had fallen I found an almost fully-fledged blue-black young one in it. The ground was covered with the seeds of nutmegs which the birds had brought, and some of them still had their bright scarlet covering of mace on. In the same tree a flock of Sulphur-crested Cockatoos roosted, and plenty of their white feathers were lying about the ground. Occasionally when passing underneath a tree in the scrub numbers of small twigs with the leaves on were noticed lying on the ground, and I was informed that they were broken off by the white cockatoos. These birds are, as a rule, very silent when feeding, although a flock of them may be together. In the creek a Brown Water Snake was seen, and on the branch of an old dead tree above a Plotus Bird was resting. A Banks's Cockatoo, *Calyptorhynchus Banksii*, had its nest near by, with a nearly fully-fledged young one in it. The parent birds left their fledgling in the morning, and did not return to it until the evening. As the tree in which the nest was was close to the house, Mr. Cochrane was enabled to keep the bird under his observation, and observed the fact stated. The birds, apparently, only lay one egg, as in the four nests that I have heard of such was the case. Mr. Hislop knew of another nest, and was waiting until the young bird was old enough to take, but the natives, forestalling him, took the young bird and ate it. A large flock of Spine-tailed Swifts were noticed circling above the trees, and occasionally coming low down. It is wonderful the power these birds have on the wing, and I have never yet seen one resting during the day.

We returned to Wyalla the same evening. Next day two native women had a difference of opinion and went at it with sticks, hands, and tongue, like two cats, much to the detriment of one of the combatants' dresses. They were soon separated, but took some time to quiet down. When fighting they never seem

to try to avoid one another's blows. One old black lady had toothache, consequently she went into mourning for it, which consisted in rubbing her face over with white ashes, which made her look anything but beautiful. I had to take her picture without her knowing it. There was a curious old black woman here named Courangie. She was old, small in stature, with crooked legs, and it seemed a wonder how such frail, crooked legs could hold her body up without breaking. She was much looked up to by the natives of her camp, as she was a ventriloquist, and Mr. R. Hislop told me that one evening when he was at the blacks' camp, he noticed this old party quietly leave the camp unnoticed by the other blacks and make her way to a patch of scrub and sit down behind a thick bush. Mr. Hislop had to alter his position a little so as to be able to watch her. After a time she was missed by the natives, as they sat talking round their camp fires. They looked round for her, and not finding her, some of them suggested that the spirits had taken her. The gins and others, being apparently frightened, crowded into the centre of the camp. Then one of the old men called out in a loud voice, "Where are you, Courangie?" Her voice replied, from apparently up in the air toward the north, "The spirits are carrying me away in the air." The natives were now thoroughly frightened, and an old man going to the outskirts of the camp, then called out, "Spirits of ancestors, do not take her away altogether; Courangie, hullo." After a few seconds her voice replied "Ho" (which means here), and it appeared to come from high up in the air, about a mile to the north. The old man kept calling out at short intervals, for about an hour, and the voice always answered him from various points in the distance. At first it sounded a long way off, but gradually drew closer and closer, until at last it sounded just a little way beyond the patch of scrub where she was, and almost immediately afterwards the old woman emerged from the bush behind which she had been hidden. As she advanced she was clawing at the air with both hands, and when she got to the camp commenced clawing the men and boys. After a time they got her to sit down, and questioned her as to where she had been and what she had seen, but her only reply was some incoherent words, and still occasionally clawing at the air. The old men then commenced to warm their hands at the fire and to rub her head. After a few minutes of this performance she stood up and related her experiences, saying that the spirit of a grandfather had taken her away up in the air to a place where a great many spirits were assembled at a cannibal feast. She recognized the spirits of many of her departed relatives and friends, and received their welcome. A fight then arose among the spirits that were strangers to her, wanting to kill and eat her; her friends, objecting, defended her. While they were fighting over the

matter some friendly spirits caught her up and carried her off, and at her wish took her round the district to see the spirits of other departed relatives. These recounted to her some of her misdeeds and those of their enemies, and of the dreadful means by which they had accomplished, or intended to accomplish, their evil designs upon her and their friends, such as the mysterious neck-twisting, &c. She mentioned many of the places she had been to, some of them thirty or forty miles away. While on her journey she heard the old man calling her from the camp and answered him. Next day Mr. Hislop tried to show the blacks how they had been deceived by the old lady, and explained how it was done, but Courangie stuck to her story, and the natives repudiated the idea of their having been duped, and reiterated their belief in the reality of her communication with the spirit world. She strongly objected to her photo. being taken, and quickly disappeared if she saw me with my camera, so I had to take a snapshot of her as opportunity offered, unknown to her.

When in the open forest country several nests of the Superb Fruit Pigeon, *Ptilinopus superbus*, were found. Their nests were always situated in some thick-leaved tree. They were built near the ends of the branches, nearly hidden in the foliage. In every case it was the male bird that was sitting on the nest. Not far from the Bloomfield River a White-headed Asprey, *Pandion leucocephalus*, had built its bulky nest, near the top of a tall eucalyptus tree and difficult to get at; on another tree a Brown Hawk had laid its three eggs on a large bunch of ferns, not making any nest, properly speaking. The season being dry, there was very little water in any of the creeks, and when sitting down by a waterhole in the scrub we used to watch the numerous birds that came to drink or to bathe, such as White headed, Allied and other pigeons, honey-eaters, and various other small birds. We never saw a pigeon take a bath, but many of the other birds did, especially honey-eaters. All the ground and dry creeks in the scrub are covered with dead leaves, and tons weight must be washed down to the sea every wet season. After rain trees and branches fall more frequently than at other times, and at night when the ground is wet phosphorescence in the soil is often very bright, especially when the earth is disturbed. Fire Flies were often seen here, as well as on the higher land, but only in the scrub.

The Torres Strait Pigeons fly very high going and returning from the islands, and during rain they often leave the scrub and settle on the big trees near its edge. Many of the beetles have the habit, when disturbed, of dropping off the leaf they may be on and then remaining apparently lifeless on the ground. They are difficult to find among the grass; at night many of the larger kinds buzz past with great speed and considerable noise. Oc-

casionally in the scrub a large yellow cobweb is noticed, which belongs to a big black spider, *Hephila fuscipes*, with a few yellow markings on it. The web is very strong and sticky, and lizards have been known to have been caught and held by them. I should think that a small bird flying into the web would be easily held. The spider itself is sluggish. Pheasant Coucals, *Centropus phasianus*, were very plentiful, their loud call being often heard. A nest was obtained last year by Mr. Hislop on a thick bunch of ferns growing on a small eucalyptus tree, and occasionally they nest on Pandanus Palms, but, as is well known, they generally build in the long grass on the ground.

I now left on a visit to King Plains, accompanied by Mr. R. Hislop. A packhorse led by a black boy carried our luggage and we walked. The first day's journey was up Stuckey's Gap and along the road towards Cooktown, much of which was through scrub. When passing through some open forest country, an Allied Fruit Pigeon, *Ptilinopus assimilis*, was seen sitting on its nest in a Eucalyptus, which contained a young one, an apparently unusual place for these birds to build, as so far I had only found them nesting in the scrub. An Iguana, *Varanus varius*, which had lately been killed by some travellers in front of us, was found on our track, and our native, carefully wrapping it up in a wisp of dry grass, carried it on for his supper. Passing over a low range covered with stunted timber, a good many Banded Honey-eaters were seen. Our first day's tramp was about twenty miles, and we stayed at a friend's house for the night. In a Mango tree heavily laden with fruit, alongside the verandah, a pair of Yellow Honey-eaters, *Ptilotis flava*, had built their nest, which contained young ones. These birds were locally known as the Canary, and they had a very cheerful note. Dollar Birds, *Eurystomus pacificus*, too were plentiful, with their curious notes, and they were, as usual, very restless and erratic in their movements.

Next day we had another walk of nearly thirty miles before reaching Mr. Gibson's homestead, our destination. On the way we passed numbers of dead cattle, which had died from tick fever. They were mostly near water. Those affected seem to lose all power over their hind-quarters first, and if they attempt to run often fall down. As the season was dry, feed was not plentiful. Many of the cattle were consequently very poor in condition. Those we passed by that were down and almost dead had thousands of ticks on them, which caused the fever. The females when full grown were about the size of a large pea, but the males are very small. The ticks do not perforate the hide, only leaving a very small contused looking wound where they had fastened on. They do not seem to attack human beings, fortunately. In walking through the long kangaroo and other grass, our trousers simply got covered with young and very minute ticks, smaller than

any ordinary pin's head. They crawl up on the stems of the long grass and seem to remain there, catching on anything that may go past. That is one reason why so much of the country has been burnt in this district, so as to kill the innumerable number of ticks on the grass. They were apparently very patchy, as in some places the grass had none on, whereas in other places it was just the reverse. It was a sad sight seeing so many fine beasts lying dead, and two days a week were occupied by those in charge pulling dead beasts away from the waterholes. Those within a certain distance of the house were burnt; the others not. Dingos and wild pigs seemed often to feed on the carcases. It is difficult to realize what damage the ticks have caused in these districts, thousands of dairy and other cattle having died from it, and those dairy cattle that have survived are often no good for milking. On several occasions I saw milking cows brought into the yard, and used to watch the fowls picking the larger ticks off them, jumping up to get those otherwise out of reach, the cattle offering no objection.

On passing by a swamp a pair of Masked Plovers, *Lobivanellus personatus*, were flying about much alarmed, and on looking about three of their little young ones were found, newly hatched. At the edge of one long swamp, about a mile in length, thousands of Whistling Ducks, *Dendrocygna vagans*, were seen, as well as many Magpie Geese, *Anseranas melanoleuca*, Plotus Birds, *Plotus Novæ-Hollandiæ*, Native Companions, White-fronted Herons, Pacific Herons, White, Straw-necked, and Glossy Ibis, Cormorants, White Egrets, &c. It was a wonderful sight to see so much bird life on the various waterholes. Being the dry season the water was not deep, and many of the swamps were much curtailed in size or dried up altogether, and we walked for about two miles over a hard, dried-up swamp, which was very rough and tiring to walk over. The rushes and other vegetation were, of course, all dead. We reached our destination towards evening after a tiring walk. Next day was spent in riding over the run. Near the homestead Square-tailed Kites, *Lophoictinia isura*, were numerous. They were very sluggish in their movements. Whistling Eagles, *Haliastur sphenurus*, too, were seen, and one of their nests found. The little Peaceful Doves were everywhere plentiful, feeding on the ground. We were shown the bower of the Larger Bower Bird, *Chlamydodera orientalis*. It was a large structure, being 3 ft. through the passage. It was built under a thick, overhanging bush. A good-sized heap of small bones of various animals were placed at each end of it. The birds themselves were shy and only one seen. Two snakes, *Dipsas fusca*, were passed, resting on the stems of small trees, about 5 ft. from the ground. They remained perfectly still when approached, and were difficult to catch sight of. I saw an

Iguana up a smooth-barked eucalyptus tree, and it was just about to look into a hole in the trunk of the tree when a Laughing Jackass, *Dacelo gigas*, darted out of the hole with a loud cry and knocked the big lizard off its precarious perch on to the ground. Five Grey Kangaroos, *Macropus giganteus*, were seen, and two Pretty Face or Whip-tailed Kangaroos, *Macropus Parryi*. The latter darted away at great pace through the long grass. In an old Pied Grallina's nest a White-vented Wood Swallow had built its own nest and was rearing its young brood. Magpies, *Gymnorhina tibicen*, were very scarce. Two nests of the Pied Butcher Bird, *Cracticus picatus*, were found, one with eggs and the other with young. There seems to be very little difference between the markings of these birds and the black-throated variety, but their note is very dissimilar, that of the former being a single clear whistle. In the creeks fish were plentiful. I was informed that those caught during the dry season were infested with intestinal worms, while in the wet season they were free from them.

We left next day on our return to Wyalla, and camped during the middle of the day beside a large lagoon or lake. Its average depth during the dry season was 5 ft. We waded through it looking for nests of the Comb-crested Parra, *Parra gallinacea*, but none were found. As the water was full of weeds, water lilies, and rushes, we had difficulty in getting along, and came out scratched all over with the prickly stems of some of the water lilies. The rushes were in places very thick and strong, and at one end of the swamp Lotus Lilies grew luxuriantly with their beautiful scarlet flowers. The water was too deep, fortunately, for the pigs to root it out, which otherwise they would have done. The surface of the more open water was covered more or less with either White or Blue Water Lilies, and the effect was very pretty. Birds were very numerous, including Pigmy Geese, Pelicans, the three kinds of Ibis, White Egrets, Magpie Geese, Ducks, Plotus Birds, &c., &c., and on the banks Masked Plovers and Allied Dottrels were seen. A Papuan Podargus was found sitting on its nest, which contained one egg, and on dissection the bird proved to be the male. The female was roosting in a neighbouring tree, and was not disturbed by the firing of the gun. We found three nests of the Podargus altogether, built on the horizontal branches of the eucalyptus trees in the open forest, and on each it was the male bird that was sitting. Two of the nests had eggs, and one young. In a steep bank several bark nests at the end of the burrows of the Black-headed Pardalote were found, but not quite ready for eggs. The hole was 12 in. long, with a cavity at the end. The Exile Grass Warbler had its beautifully-constructed nest built in a small shrub about 6 in. from the ground. The nest is built of fluff which occurs in the flat weed

when the seeds are ripe, and then the large green leaves of the plant on which the nest is built are sewn together round the nest, the thread being made of cobweb. A Crested Hawk, *Baza subcristata*, was seen, and I have been informed that these birds kill small snakes. A friend also informed me that he had watched Kestrel Hawks feeding their young on small snakes. Dingo tracks were seen on the dusty path, and once two pigs and seven young ones ran away from a dead beast, on which they had been feeding, at our approach, and a Whistling Eagle flew heavily away also. It had evidently been having a meal too.

In a small tree in the open country, and exposed to the hot sun, we were surprised to see two opossums, *Phalangista vulpina*. It was in the middle of the day, and no large trees were near them, only saplings. Our native shot one for his supper, but the other was not disturbed. More than half the trees we passed had a stream of little black ants going up and down them. These insects were exceedingly numerous. Many nests of the Temporal Pomatorhinus were seen, and in one the nest of the White-quilled Honey-eater, and also those of Leach's Kingfishers in the hollow branches. The curious loud noise these birds make is very similar to that of the Channel Bill Cuckoo. King Parrots seem to remain mostly in the scrub during the day, and in the open country in the early morning and evening. We shot one Fan-tailed Cuckoo and one Brush Cuckoo, *Cacomantis insperatus*, and saw one Channel Bill, *Scythrops Novæ-Hollandiæ*. One egg of the Freshwater Tortoise was picked up lying on the ground, and several of their skeletons at the edge of the swamp.

On the second day, when passing through some thin scrub across a creek, some pigs were seen, and one of my companions determined to try and shoot one of the young ones, which, after a little stalking, he managed to, but it was too weighty to bring along, so we informed two miners living near the road of our good fortune, and told them they could have it. They with delight at once went to fetch the dead pig in. Next day, when back at Wyalla, a farmer came along, and we were telling him of our prowess in shooting this, as we thought, wild pig. He then questioned us as to the size and number of them, and on our answering he said, "Bother you, you have shot one of my tame pigs, which I had let out the day before for a run." We said nothing more about the pig after that. After one day's rest I started off, accompanied by Mr. F. Hislop and two natives, to Mt. Finlayson, a mountain not far from Wyalla, about 4,000 ft. high. We left in the afternoon, arriving at our camping ground at dusk. Remembering, from former experience, how numerous the so-called soldier ants were, I slept in my hammock.

Early next morning a start up the scrub-covered mountain was

made, but heavy rain came on, and we were soon soaked through and the scrub dripping. Near the foot of the range, but still about 800 ft. above sea level, we found several nests of the Ashy-fronted Flycatcher, *Heteromyas cinereifrons*. The bird itself was shy, and on only one occasion did we see one leave her nest, when she was promptly secured. The nests were pretty structures, and all those found were built in young Lawyer Palms, either on or near the crown ; only one fresh egg was found in each nest. The birds seemed to choose the thickest patches of undergrowth to build in, and when disturbed darted away among the low bushes, and we did not see one fly into the trees above ; they are in consequence difficult to catch sight of. I have watched a pair hunting about for their insect food on the ground among the dead leaves, and at first thought they were robins of some kind. The habits of the bird, its nest and eggs all agree far more closely with robins than with flycatchers, and I do not know why they should have been called by the latter name. As we got higher up the range the Tooth-billed Bower Bird was heard, and we soon found some of their play-grounds. These birds are very good at mimicking, and it was interesting listening to them imitating the various notes of other birds, even to the Coachwhip. The beautiful clear note of the Brown Thrush, *Collyriocincla brunnea*, was often heard, and also that of Quoy's Crow-Shrike. The Rufous Crow-Shrike, *Cracticus rufescens*, is found in the open country, and has a different note. We found a Tallegalla's mound which contained twelve eggs. Leechesw ere numerous and troublesome; we got one curious striped earth-worm at the height of 2,000 ft. In a creek we crossed over the natives saw a large eel, but lost it under a thick fringe of roots of a tree ; after an interesting but wet ramble we got back to the camp to lunch, which consisted of Tallegalla's eggs. The blacks do not mind how big the chickens may be inside the egg, it is all eaten. After drying our clothes by the fire we started off back to Wyalla, which we reached at sundown.

Next day, 25th November, I started on my return, and bidding adieu to my kind host, Mr. G. Hislop, and his family, went to the Bloomfield River over night, starting a little after daylight in a cutter for Cooktown, a distance of 30 miles. We had a favour-able breeze and reached that town about three o'clock. The next day was spent in looking through Mr. E. A. C. Olive's varied and well-prepared specimens of birds' skins, butterflies, beetles, &c., and fastened up to the wall of his room was the stuffed skin of a Carpet Snake, *Morelia variegata*, which he had lately shot ; its length when alive was 16 ft. The reason he killed it instead of catching it alive was because the reptile when found was high up a tree, alongside a large hornets' nest, and the black boy who did the climbing objected to being in close quarters to

these vicious insects, consequently the snake was shot. These reptiles have the habit of climbing under the eaves of the roof, catching rats if there are any, but if not, taking pigeons, poultry, &c. In a tree not far from the house was found the nest and fresh egg of the Larger Bower Bird, *C. orientalis*. These birds seem to lay one egg more often than two for a clutch.

Early next morning, at 3 a.m., I left in the s.s. *Aramac* for Melbourne.

The following marine shells were collected on the Hope Islands, and have been identified by Mr. J. Kershaw, of the National Museum, Melbourne: — *Obeliscus maculosus*, Lam.; *Strombus variabilis*, Sow.; *S. gibberulus*, Lin.; *S. elegans*, P. (small white var.); *S. urceus*, Lin. (young, light var.); *Ricinula fiscellum*, Chemn.; *Cerithium variegatum*, Quoy; *C. op.* (broken); *Nerita albicilla*, Lin.; *N. histrio*, Lin. (waterworn); *Nassa thersites*; *Nassa coronata*, Brug.; *Pleurotoma carinata*, Gray; *Turbo Japonicus*; *Trochus noduliferus*, Lamk.; *Stomatia* (sp.); *Bulla ampulla*; *Sigaretus* (sp); *Vertagus* (sp., young).

The White-faced Xerophila. — The following facts with reference to the nesting of the White-faced Xerophila, *Xerophila leucopsis*, Gould, seem to me to be worthy of record. For years past several pairs have, along with the common sparrow, occupied portions of the verandah, &c., of a wayside inn at Lake Boga, Swan Hill district. The nest is loosely constructed, rather smaller than that of the sparrow, and generally contains four or five eggs at a sitting, several broods being reared in the season. The birds are generally considered insectivorous, but here they seem quite partial to crumbs and refuse from the house, as well as to the company of man, for one nest was built within a few feet of the business door of the establishment. Had the birds been living among the timber in their natural way dried grass would have been chosen for the nesting material, but in the case under notice a great variety of material was brought together, such as portions of lace veils, wool, cloth, string, grass, and feathers, which often lie about the doors of country houses. Perhaps the most peculiar action of these birds was the choice, last September, by a pair of them, of the end of a loosely rolled up curtain of a waggonette in which to build their nest. The vehicle had not been used for some weeks, but before they could have sat long upon the eggs the waggonette was used for a couple of short journeys on alternate days without the birds being noticed or disturbed. However, five days after, the trap was sent a journey of twenty-two miles, and on its return the curtain was lowered, when, to the surprise of the owner, down fell a nest with five eggs, far incubated, as they contained living chicks. —Robert Hall.

THE HOODED ROBIN.—In a short paper on the plumage of robins (*Victorian Naturalist*, vol. xiii., p. 116) I mentioned, on the authority of Mr. J. A. Hill, that the Hooded Robin, *Petroeca bicolor*, V. and H., rears its first family while in immature plumage. That observer has now furnished me with further details of the nesting, together with the skin of the male bird, which was engaged in paternal attentions during nesting. In this the pronounced black markings of the adult are represented by grey in the young bird, except the interscapulum, which has two longitudinal blotchings of black, the upper tail coverts darker than the grey, but not an intense black, and the scapulars an indefinite white, broadly tipped with grey instead of the strong white of fuller age. All the remaining indistinct whites will doubtless disappear with the next moult, except the under tail coverts, which are already as strong as in the aged birds. The nest was first observed on the 17th September, 1896, and in construction and material did not appear to differ from the usual one of the species. The first egg was deposited between the 22nd and 23rd of September, and a second between the 23rd and 24th of the same month, when the female bird immediately began to sit. These two eggs, typical in every respect, constituted the clutch, and they hatched out on the 10th of October. Thus sixteen to seventeen days were occupied in incubation. The female on each visit was found to be sitting, and on no occasion during the frequent journeys to the nest was the male observed upon the eggs. Thus we are led to believe that the female bird takes upon herself the task of sitting throughout the period. The female, naturally a shy bird, did not show any inclination to leave the eggs when approached, and only when within a foot of her nest would she temporarily leave. The young birds were able to fly in about fourteen days from the time of hatching, but the exact day was not observed.—ROBERT HALL.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.—The second part of Mr. A. J. North's "List of the Insectivorous Birds of New South Wales" has recently been issued. Forty species of birds are referred to, commencing with the Superb Warbler (*Malurus cyaneus*), Ellis, and extending to the Reed Warbler (*Acrocephalus Australis*), Gould. This part contains four plates, eight species being represented thereon in their natural colours.

THE NATURALISTS' DIRECTORY.—The edition of this work for 1897 is to hand, and contains a considerable amount of information useful to collectors and those desirous of opening up correspondence with collectors in other parts of the world. Lists are included of natural history societies, field clubs, magazines and books issued during 1896. Addresses, &c., for insertion in the next issue should be forwarded to the editor, at 170 Strand, London, by 1st of December next.

The Vegetation of Australasia.—The first of a series of articles which will doubtless be of interest to our lovers of plant life appeared in *Knowledge* for March last. It is entitled "On the Vegetation and Some of the Vegetable Productions of Australasia," and is from the pen of Mr. W. Botting Hemsley, F.R.S., F.L.S. The writer proposes to make comparisons between our Australian vegetation and that of other parts of the world. About nine thousand species of flowering plants and ferns have been published for Australia, while Europe possesses about nine thousand five hundred, and the British islands one thousand five hundred. Australia is remarkable for the large number of species of trees and shrubs; for the large number of species of one and the same genus; for the large number of trees and shrubs having brilliantly-coloured flowers and woody seed-vessels, associated with hard grey-green or blue-green foliage; for the large number of species peculiar to the country; and for the very large number of very local species. One of the earliest references to Australian plants is in Dampier's "Voyage to New Holland in 1699," where a few of the plants noticed by that navigator on the north-west coast of Australia are figured. He landed on a small island not far from the present town of Cossack, of which he writes as follows:—"There grow here two or three sorts of shrubs, one just like Rosemary; and therefore I called this Rosemary Island. It grew in great plenty here, but had no smell. Some of the other shrubs had blue and yellow flowers, and we found two sorts of grain-like beans. The one grew on bushes; the other on a sort of creeping vine that runs along on the ground, having a blossom like a bean blossom, but much larger, and of a deep red colour, looking very beautiful." The first of these plants is now known as *Aster axillaris*, F. v. M., and is common all round the western and southern coasts, and extends to Tasmania. The second is the well-known Sturt's Desert Pea, *Clianthus Dampieri*, Cunning. Dried specimens of some of the plants which struck him by their peculiarities were taken to England by Dampier, and are still in existence at Oxford and in the British Museum. He also caused drawings to be made of a number of plants, birds, and animals, which were engraved and published in 1703 in the volume previously referred to. It is somewhat singular that one of our most brilliantly-coloured flowers, the only species of the genus in Australia, should have been the first to be brought under the notice of English botanists. Its cultivation as a garden plant is often attempted, but seldom with any great success. Another species of the genus, *C. puniceus*, is a native of New Zealand, and is of shrubby growth, and does well in cultivation; its flowers, however, are not so brilliant as its Australian congener.

THE

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FIELD NATURALISTS' CLUB OF VICTORIA.

The seventeenth annual meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th June, 1897. The president, Professor W. Baldwin Spencer, M.A., occupied the chair, and some sixty members and visitors were present.

The Chairman welcomed Mr. G. A. Keartland back to the Club, after an absence of 12 months with the Calvert Exploring Expedition in North-west Australia. Mr. Keartland made a few interesting remarks on the trip, and pointed out on the map the route taken by the expedition.

REPORTS.

A report of the excursion to Keilor on Queen's Birthday was read by the leader, Mr. T. S. Hall, M.A., who stated that the party had a very successful outing, many interesting geological specimens being collected.

Owing to the unfavourable state of the weather for dredging on Queen's Birthday, the excursion did not take place.

The hon. secretary reported that a practical meeting had been held on Monday evening, 17th May, when Mr. R. S. Sugars, in the absence of Mr. J. Shephard, gave a demonstration on the "Anatomy of a Land Planarian," which was much appreciated by those present.

Mr. C. Frost, F.L.S., reported, with reference to the memorial to the late Baron von Mueller, that the sub-committee appointed by the delegates of the various societies to draw up a scheme is awaiting the return of the Premier from England in order to ascertain what the intentions of the Government are regarding the matter.

ANNUAL REPORT.

The hon. secretary, Mr. C. French, jun., read the seventeenth annual report, 1896–97, which was as follows :—

"To the Members of the Field Naturalists' Club of Victoria. Ladies and Gentlemen,—Your Committee have much pleasure in presenting for your consideration the report of the seventeenth year of the Club's work, being for the period ending 30th April, 1897.

"It is gratifying to be able to say that the interest in the Club

has been fully maintained during the past year, and that the monthly meetings have been quite up to the standard of former years.

"The membership of the Club remains numerically about the same. Thirteen ladies and gentlemen were elected members during the year. Several members have retired for various reasons, and we unfortunately had losses by death, so that our roll now contains 128 names, in addition to which there are 11 honorary members.

"The most serious loss the Club has sustained since its inception fell upon it during the year, when its valued patron, Baron Sir F. von Mueller, passed away in the midst of his labours; and your Committee feel that, notwithstanding all that has been said and written with reference to the late Baron, they cannot refrain from making further acknowledgment of the many and valued services which he rendered to the Club during the sixteen and a half years of his connection with it as member and patron. Death also removed one of our honorary members, in the person of Mr. T. A. Forbes-Leith, lately resident in England, but well known to many of the older members as an enthusiastic lover of nature's handiwork.

"For the first time in the history of the Club a monthly meeting was allowed to lapse, the October meeting being cancelled as a mark of respect to the late Baron von Mueller.

"Twenty-one papers were read at the monthly meetings, ten of which related to Zoology, three to Botany, three to Geology, and five were descriptive of trips and general collecting. The authors of papers were Messrs. C. C. Brittlebank, W. Fielder, C. French, jun., J. Gabriel, R. Hall, H. R. Hogg, G. A. Keartland, A. E. Kitson, D. Le Souëf, G. E. Shepherd, H. T. Tisdall, and Col. Legge (hon. member). Communicated papers were forwarded by Messrs. A. J. Campbell, F. Reader, and J. H. Wright. In addition to these Messrs. T. S. Hall, M.A., and O. A. Sayce gave accounts of recent science work in their respective departments. Notes for reading and publication in the *Naturalist* were furnished by Baron Von Mueller, Messrs. A. W. Howitt (hon. member), Bullen, Goudie, Hill, Kershaw, and M'Alpine. The Club is to be congratulated on the interesting nature of the papers brought before it, many of which must have entailed a considerable amount of observation in order to enable the facts to be recorded.

"Another volume (the 13th) of the *Naturalist* has been completed and duly forwarded to the members, also to a large number of scientific societies both in the Australian colonies and other parts of the world. Your Committee is deeply indebted to Professor Spencer, Messrs. Ashworth, Campbell, Fielder, Gabriel, Le Souëf, and Shephard for the plates with which their articles

were illustrated, as by such means the value of the Club's journal is much enhanced. It is to be regretted that, owing to the want of space, only three parts of Mr. Oswald B. Lower's "Catalogue of the Victorian Moths" were published during the year; however, the editor hopes that the concluding parts will be published early in the next volume, after which it is proposed to commence a catalogue of the Victorian shells, the list published in vols. iv. and v. having become somewhat out of date. The thanks of the Club are once more due to Mr. F. G. A. Barnard for the care he has exercised in carrying out his duties as editor of the Club's journal.

"The field excursions, which should be a prominent feature of the Club's work, have not been so well attended as your Committee would wish; however, some very enjoyable and instructive outings have been held, and the thanks of the Club are due to those gentlemen who placed their services as leaders at the Committee's disposal. It has been suggested that an outdoor meeting of the members, to take the form more of a social picnic, should be held at some convenient collecting ground near Melbourne during the coming spring, and we trust that our successors will be able to carry the suggestion to a successful issue.

"During the year three meetings for practical work were held, which were well attended. The matters dealt with were:—By Mr. J. Shephard, on "Botanical Section Cutting and Staining;" by Mr. T. S. Hall, M.A., on "Identification of Some Common Rocks;" by Mr. W. Stickland, on "Desmids: their Study and Classification."

"In September last an exhibition of wild flowers was held, when there was a good display of our indigenous plants in bloom. The success of the exhibition was mainly due to the exertions of the late Baron von Müeller, one of whose lasts acts was to secure promises of exhibits from his friends in distant parts of the colony.

"In November last Messrs. French and Frost were appointed to attend, on behalf of your Club, a meeting of representatives of scientific and other societies, called to consider the manner in which the distinguished services to science of the late Baron von Müeller could best be acknowledged and perpetuated. The decision of this Committee (the active work of which has been undertaken by the officers of the Royal Geographical Society, Victorian Branch) is anxiously awaited. It is to be hoped that some definite action will speedly be taken, as there can be no doubt but that any such movement will meet with the cordial support of all workers in science in the various Australian societies.

"The hon. librarian reports that good use has been made of

the Club's library during the year. In addition to the usual periodicals purchased, about 100 volumes and parts of proceedings, &c., have been received as donations from scientific societies, &c. Among these may be mentioned the report of the Horn Exploring Expedition from Mr. W. A. Horn, and five volumes of *Natural Science* from Mr. F. G. A. Barnard. It has been decided to add *Natural Science* to the list of periodicals to be taken by the Club during the coming year, but want of funds has prevented several much-needed text-books being purchased for the use of members.

"The financial statement to be presented by your hon. treasurer shows that the receipts of the past year, including the balance brought forward, amounted to £140 15s. 10d., and the expenditure to £133 3s. 10d., leaving a credit balance of £7 12s. A liability of £24 8s. exists on account of printing, but this is more than covered by arrears of subscriptions which are considered good. A sum of £53 2s. 8d. is still 'locked up' in the Metropolitan Bank. The Committee would urge the early payment of all subscriptions, and thus enable their successors to meet the liability mentioned, and devote something towards the purchase of text-books for the library.

"In conclusion, your Committee would once more urge all who have the interests of the Club at heart to do their utmost to extend its sphere of work, both by the introduction of new members and by doing something to interest and instruct their fellow-members.

"Signed, on behalf of the Committee,

"W. BALDWIN SPENCER, *Chairman.*

"C. FRENCH, JUN., *Hon. Secretary.*

"14th *June*, 1897."

FINANCIAL STATEMENT.

The hon. treasurer, Mr. C. Frost, F.L.S., read the financial statement for 1896–97, which was as follows:—

RECEIPTS.

To Balance, 30th April, 1896 ...		...	...	£6 2 10
,, Subscriptions ...	...	£105 17 0		
,, *Victorian Naturalist*—				
Subscriptions ...	£4 10 6			
Sales, &c. ...	2 6 6			
Advertisements ...	4 10 0			
		11 7 0		
,, Conversazione, May, 1896—				
Donation ...	£1 0 0			
Admissions ...	16 9 0			
		17 9 0		
				134 13 0
				£140 15 10

EXPENDITURE.

By *Victorian Naturalist*—					
Printing	£67	1	0		
Reprints	1	14	0		
Illustrations ...	4	9	6		
				£73	4 6
,, Rooms—Rent and Attendance...				13	1 0
,, Library—Periodicals and Binding				8	1 0
,, Postages, Advertising, &c. ...				15	2 8
,, Collector's Commission ...				2	7 2
,, Printing and Stationery ...				4	1 6
,, Funeral Wreath				2	0 0
,, Conversazione, May, 1896—Expenses				15	6 0
				£133	3 10
,, Balance				7	12 0
				£140	15 10

C. FROST, *Hon. Treasurer.*
18*th May*, 1897.

Audited and found correct.

J. T. GILLESPIE, } *Auditors.*
21*st May*, 1897. ROBT. HALL, }

On the motion of Mr. D. Le Souëf, seconded by Mr. H. T. Tisdall, the report and balance-sheet were received and adopted.

OFFICE-BEARERS FOR 1897–98.

The following office-bearers for 1897–98 were declared duly elected, being the only nominations received:—President, Mr. C. French, F.L.S.; vice-presidents, Messrs. T. S. Hall, M.A., and J. Shephard; hon. librarian, Mr. O. A. Sayce; hon. treasurer, Mr. C. Frost, F.L.S.; and hon. secretary, Mr. G. Coghill.

A ballot for five members of committee resulted in the election of Messrs. E. Anderson, D. Best, J. Gabriel, J. G. Luehmann, F.L.S., and W. Stickland.

On the motion of Mr. T. S. Hall, M.A., seconded by Mr. F. G. A. Barnard, a vote of thanks to the retiring hon. secretary was passed with acclamation.

PAPERS.

1. By Mr. A. Coles, entitled "Additional Notes on the Australian Goshawk."

The author gave a detailed description of the bird referred to in his notes read at the previous meeting, and which he had decided to name *Astur maculosus*, or the Spotted-fronted Goshawk. Specimens of the bird, with its eggs, were exhibited in illustration of the paper.

In the discussion which took place, Messrs. D. Le Souëf, G. A. Keartland, and A. J. Campbell expressed the opinion that further

observation was required before the bird referred to could be considered a new species.

2. By Mr. A. J. Campbell, entitled "Notes on the Pallid Cuckoo."

The author mentioned that eggs of the Pallid Cuckoo have been found in the nests of no less than thirty-two different species of birds, including the introduced English Linnet and Blackbird, and gave many interesting particulars of the recorded occurrences.

Some discussion ensued, Messrs. G. Coghill, A. Coles, G. A. Keartland, and D. Le Souëf mentioning cases which had come under their notice.

3. By Mr. F. M. Reader (communicated by Mr. C. Frost, F.L.S.), entitled "Contributions to the Flora of Victoria, No. 3."

The writer described a new plant belonging to the genus Tillæa, Micheli, which he had named *Tillæa exserta*. It was collected by himself near Dimboola in 1892. It is closely allied to the European *Tillæa muscosa*, L., but differs in many respects. Specimens of the plant were forwarded for exhibition.

NATURAL HISTORY NOTES.

Mr. G. E. Shepherd, of Somerville, Western Port, forwarded a note recording the recent occurrence of the Porphyry-crowned Lorikeet, the Red-kneed Dottrel, and the White-faced Storm Petrel in his district, all being previously unknown there, together with a specimen of each bird for exhibition.

Mr. G. A. Keartland mentioned that the date fixed for the commencement of the close season for opossums was too late, and suggested that the Commissioner of Customs be interviewed on the subject. After some discussion it was decided that the question be left in the hands of a sub-committee consisting of Messrs. A. Coles, D. Le Souëf, and G. A. Keartland to take what action they consider best.

EXHIBITION OF SPECIMENS.

By Mr. A. Coles.—Female specimen of Goshawk, *Astur approximans*, and male and female of Spotted-fronted Goshawk, *Astur maculosus*, and 5 eggs of same. By Mr. A. J. Campbell.—Nests and eggs of foster parents of Pallid Cuckoo, in illustration of paper. By Mr. C. C. Brittlebank.—Original paintings of Victorian orchids, also photograph of Selwyn's Rock, South Australia. By Consul Gundersen.—Minerals from St. Paul Island. By Mr. G. A. Keartland.—Lizards from South Australia. By Mr. F. M. Reader.—Dried plants, *Gahnia lanigera*, new for Victoria, and *Styphelia adscendens*, new for N.W. Victoria; also *Tillæa exserta* (new sp.), from Dimboola, in illustration of paper. By Mr. G. E. Shepherd.—Porphyry-crowned Lorikeet, Red-kneed Dottrel, and White-faced Storm Petrel, from Western Port.

After the usual conversazione the meeting terminated.

DESCRIPTION OF A NEW VICTORIAN GOSHAWK, *ASTUR MACULOSUS.*

By A. Coles.

(*Read before Field Naturalists' Club of Victoria, 14th June*, 1897.)

Many of the members of the Club will remember that some two or three years ago I stated that there had been a mistake made when describing our Goshawks in supposing that the two birds (*i.e.*, the one with the spotted front and the other with the barred breast) were identical, differing only in age. This statement was challenged by several members. Since then, assisted by several of our members, I have done what I could to prove my assertions, and have secured 25 specimens. Among them I have found only two of the supposed adult birds, *i.e.*, with the barred breast, the remaining 23 specimens being the supposed younger birds, having long oval spots down the front of the neck and breast.

I find the whole of the markings of these latter birds differ from the Australian Goshawk, *Astur approximans*, as described by Vigors and Horsfield, in every respect, and in no case do I find any indication of a change of plumage taking place, as has been asserted by others. This can be clearly seen by the birds and their feathers which I have for examination this evening. I have also the bones of the two birds, and in them there is ample proof of their specific difference. If you compare the breast-bones of the birds it will be seen that that of the Australian Goshawk is of a much broader built bird than the "Spotted-fronted;" the bones, however, are of the same length, and it seems to me that if this difference be caused by age it should show both in length and breadth, while the keel extends to the end in the former bird, and is shortened in the latter.

I therefore consider the bird worthy of specific distinction, and propose for it the name *Astur maculosus*. The following is a description of a female bird shot at Blackburn in April last:—

Astur maculosus, Coles, Spotted-fronted Goshawk.

Female.—The bird in general shape and size is very similar to the Australian Goshawk, *Austur approximans*, V. and H.—a little less in length, not so stout in the body, nor as broad in the head, and differing altogether in colour and markings. Length from bill to tail, 19½ inches; length of leg, 9 inches; from knee to toe, 5½ inches; width of foot, 4 inches. Width of wings, 3 feet; from shoulder to point of primaries, 12 inches. Tail, 9 inches, containing 12 feathers. The culmen, or upper mandible, ¾-inch long, ½-inch broad; genys, or lower mandible, ½-inch by ⅛-inch thick; both black, with yellow dash at the base of the lower extending into the upper. Eyes pale yellow, with large black centres. Forehead white, streaked with dark brown and rufous;

crown dark brown and rufous; nape blackish brown and white; scapulars brown, edged with rufous; upper and lower back brown; rump brown, edged with rufous; upper tail coverts same colour; tail leaden brown, with black bars and white tips; cheeks and ear coverts white, closely marked with brown dashes; throat and chest white, with long oval dark-brown spots; breast and belly white, with brown diagonal bars; vent and under tail coverts same colour, with bars much wider apart; under tail whitish slate, with a slight tinge of rufous, with brown bars; thighs dirty white, with close rufous diagonal bars; legs and feet dirty yellow.

The Male Bird is much smaller, measuring 17 inches, but the markings are the same as in the female, though with a little less depth of colour. This species does show some variability in the depth of tint of its colour, some specimens being much darker than others, but the markings are constant throughout.

At last meeting I exhibited the eggs of both birds, which also differ in every respect. These eggs are now in the possession of Mr. G. E. Shepherd, a member of the Club. However, I have a painting of the eggs with me to-night, together with five other eggs of the Spotted-fronted variety, but I have never had or seen more than the one egg of the Australian Goshawk.

Gould, in his work, describes the eggs as follows:—"Eggs, three in number, of a bluish white, smeared over with blotches of a brownish buff, 1 inch 10 lines by 1 inch 5 lines." He also says:—"It might readily be supposed that this bird is very common, and such is in reality the case, for it is one of the most abundant and generally dispersed of the hawks inhabiting New South Wales and Van Diemen's Land." This note can only be accounted for by his confusing the two birds, and is quite in opposition to our experience in Victoria, as it is a difficult matter to obtain here a specimen of the bird he has figured in his book.

A comparison of the eggs I have secured, which were taken at Hopetoun, is as follows:—Australian Goshawk, of a bluish white, with a slight green tinge, with dark reddish-brown spots, 1⅞ inches long by 1⅜ inches full. Eggs of *Astur maculosus* are four in number, of a rounder shape than the Australian Goshawk—1¾ inches long by 1⅜ inches full, of a dull white, with a slight tint of blue, with one or two crooked fine lines of a reddish brown and a few small spots of the same colour.

In conclusion, it will be seen by the feathers on the blackboard that there are fewer bars on every feather of the "Spotted-fronted" than the other variety. The back of the latter bird is of a plain leaden brown, whilst that of the "Spotted-fronted" is of a rich brown, barred all the way down the back, the tail feathers being white at the points, which does not occur in the Australian Goshawk.

A CATALOGUE OF VICTORIAN HETEROCERA.

By Oswald B. Lower, F.E.S.

Part XXIV.

CÆSYRA. Meyr.

882. C. DICHROËLLA, Zeller (*Œcophora dichroëlla*, Zeller, Hor. Soc. Ross., 1877, 389; *Œ. divisella*, Walk., 685; *Cæsyra dichroëlla*, Meyr.—*Œcophoridæ*, Proc. Linn. Soc. N.S.W., xi., 47).
Gisborne, &c.

883. C. KERSHAWI, Lower (Tr. Roy. Soc. S.A., 293, 1893).
Springvale.

*884. C. IOZONA, Meyr. (Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xi., 48).
Melbourne.

*885. C. DISTEPHANA, Meyr. (*loc. cit.*)
Melbourne.

886. C. ANTHODORA, Meyr. (*loc. cit.*, 49).
Gisborne, Fernshaw.

*887. C. BASILICA, Meyr. (*loc. cit.*, 50).
Brighton.

*888. C. TRIPTYCHA, Meyr. (*loc. cit.*, 51).
Melbourne.

889. C. PHÆOCOSMA, Meyr. (*loc. cit.*, xv., 1,655).
Fernshaw.

890. C. CYCLOTOMA, Meyr. (*loc. cit.*, xi., 51).
Melbourne.

*891. C. ZONOSTOLA, Meyr. (*loc. cit.*, 52).
Frankston.

*892. C. OCELLARIS, Meyr. (*loc. cit.*, 53).
Sandringham.

*893. C. ZANCLOTOMA, Meyr. (*loc. cit.*)
Melbourne (Studley Park).

*894. C. ANNULARIS, Meyr. (*loc. cit.*, 54; *Philobota athletica*, Ros. Ann. Mag. N.H., 443, 1885).
Gisborne.

895. C. PERSONATA, Meyr. (*loc. cit.*)
Melbourne.

*896. C. ECLIPTICA, Meyr. (*loc. cit.*, 55).
Ararat.

*897. C. CATOPTRINA, Meyr. (*loc. cit.*, 56).
Melbourne.

*898. C. PARACYCLA, Meyr. (*loc. cit.*, 57).
Gisborne.

*899. C. ACROTROPA, Meyr. (*loc. cit.*, 59).
Melbourne.

*900. C. STENOPTERA, Meyr. (*loc. cit.*, 60).
Mount Macedon.

901. C. PARVULA, Meyr. (*loc. cit.*, 63).
Warragul, Gisborne, Melbourne, &c.

902. C. OCHROCHOA, Lower (Tr. Roy. Soc. S.A., 101, 1894).
Gisborne.

902A. C. NOSERODES, Meyr. (Proc. Linn. Soc. N.S.W — *Œcophoridæ*, xv., 1,658).
Warragul.

EPIPYRGA. Meyr.

BRACHYNEMATA. Meyr.

903. B. CINGULATA, Meyr. (*loc. cit.*, xii., 1).
Stawell.

MICROBELA. Meyr.

*904. M. EPICONA, Meyr. (*loc. cit.*, 2).
Melbourne.

905. M. ALLOCOMA, Meyr. (*loc. cit.*, 3).
Melbourne.

*906. M. MONODYAS, Meyr. (*loc. cit.*, 4).
Melbourne.

HETEROZYGA. Meyr.

*907. H. COPPATIAS, Meyr. (*loc. cit.*, 5).
Gisborne, Melbourne.

OXYTHECTA. Meyr.

908. O. ALTERNELLA, Walk. (*Œcophora alternella*, Walk. B.M. Cat., 682; *Oxythecta alternella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., 6).
Gisborne, Melbourne.

*909. O. HIEROGLYPHICA, Meyr. (*loc. cit.*, 8).
Melbourne.

*910. O. ZONOTELES, Meyr. (*loc. cit.*, 9).
Doubtfully Victorian.

911 O. ACCEPTELLA, Walk. (*Œcophora acceptella*, Walk., B.M. Cat., 694; *E. connexella*, *ib.*, 695; *Cryptolechia abstersella*, *ib.* 762; *Oxythecta acceptella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., 10).
Melbourne.

CREPIDOSCELES. Meyr.

*912. C. EXANTHEMA, Meyr. (*loc. cit.*, 13).
Melbourne.

OCYSTOLA. Meyr.

913. O. HEMICALYPTA, Meyr. (*loc. cit.*, 17).
Melbourne.

914. O. OXYPTERA, Lower (Tr. Roy. Soc., S.A., 101, 1894).
Stawell.

915. O. HEMISEMA, Meyr. (Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., 19).
Melbourne.

*916. O. OXYTORA, Meyr. (*loc. cit.*, 20).
Melbourne.

917. O. MALACELLA, Meyr. (*loc. cit.*)
Gisborne, Fernshaw.

918. O. CALLIXANTHA, Meyr. (*loc. cit.*, xv., 1,663).
Warragul, Fernshaw.

919. O. ACROXANTHA, Meyr. (*loc. cit.*, xii., 22).
Warragul.

*920. O. ANTHERA, Meyr. (*loc. cit.*, 22).
Ringwood.

*921. O. PSAMATHINA, Meyr. (*loc. cit.*, 26).
Melbourne.

*922. O. PYRAMIS, Meyr. (*loc. cit.*, 29).
Brighton.

923. O. ILLUTA, Meyr. (*loc. cit*, 30).
Melbourne.

*924. O. MONOSTROPHA, Meyr. (*loc. cit.*, 31).
Gisborne.

*924A. O. HOMOLEUCA, Meyr. (*loc. cit.*, 32).
Melbourne.

*925. O. GLACIALIS, Meyr. (*loc. cit.*, 33).
Melbourne.

*926. O. CRYSTALLINA, Meyr. (*loc. cit.*)
Sandringham.

927. O. PAULINELLA, Newm. (*Œcophora paulinella*, Newm., Tr. Ent. Soc. Lond., vol. iii., N.S., 297, pl. xviii.; *Ocystola paulinella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., 34).
Gisborne, Melbourne, &c.

*928. O. NEUROTA, Meyr. (*loc. cit.*, 38).
Gisborne, Sale.

HAPLODYTA. Meyr.

929. H. THORACTA, Meyr. (*loc. cit.*, *Œcophoridæ*, xii., No. 399). Fernshaw.

*930. H. HETEROPLA, Meyr. (*loc. cit.*, No. 400). Colac.

MACHÆRITIS. Meyr.

931. M. CALLIGENES, Meyr. (*loc. cit.*, No. 402). Fernshaw.

*932. M. GRAMMOPHORA, Meyr. (*loc. cit.*, No. 403). Melbourne.

*933. M. SAMPHORAS, Meyr. (*loc. cit.*, No. 406). Sale.

*934. M. ÆGRELLA, Meyr. (*loc. cit.*, No. 410). Melbourne.

PROTEROMICTA. Meyr.

LEPTOCROCA. Meyr.

935. L. SANGUINOLENTA, Meyr. (*loc. cit.*, No. 419). Gisborne, Melbourne, &c.

GUESTIA. Meyr.

*936. G. PELADELPHA, Lower (Tr. Roy. Soc. S.A, 101, 1894). Melbourne (at light).

ŒCOPHORA. Zeller.

937. Œ. ANTHEMODES, Meyr. (*loc. cit.*, No. 432). Warragul, Fernshaw.

938. Œ. OCHROMA, Meyr. (*loc. cit.*, No. 433). Melbourne.

939. Œ. PSEUDOPRETELLA, Stt. Melbourne, &c.

*940. Œ. EREMÆA, Meyr. (*loc. cit.*, No. 438). Melbourne.

*941. Œ. LYMPHATICA, Meyr. (*loc. cit.*, No. 441). Colac.

*942. Œ. SULFUREA, Meyr. (*loc. cit.*, No. 443). Gisborne.

*943. Œ. EURRHOA, Meyr. (*loc. cit.*, No. 446). Gippsland.

CROSSOPHORA. Meyr.

*944. C. THETIAS. Meyr. (*loc. cit.*, No. 472). Near Melbourne.

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FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th July, 1897. The president, Mr. C. French, F.L.S., occupied the chair, and owing to the inclement weather only some 35 members and visitors were present.

REPORTS.

Mr. J. Shephard made a few remarks on the visit to the Biological School Museum, University, on 19th June, stating that, thanks to Professor Spencer, M.A., a most instructive and enjoyable afternoon had been spent.

The hon. librarian reported the receipt of the following publications as exchanges, donations, &c. :—"Proceedings of the Academy of Natural Sciences of Philadelphia," 1895, part ii. ; "Proceedings of the Linnean Society, New South Wales," 1896, part iv. ; "Guides to Growers," No. 31, and "Tuberculin Test," from the Department of Agriculture, Victoria ; "Thirteenth Annual Report Field Naturalists' Section of Royal Society of South Australia ;" "Annual Report of the Secretary for Mines, Victoria," 1896 ; "Contributions to a Knowledge of the Arachnidan Fauna of Australia," Nos. 1, 2, 3, 4, 6 and 7 ; and "The Insect Fauna of Funafuti," from the author, Mr. W. J. Rainbow.

GENERAL BUSINESS.

It was decided, on the proposition of Mr. J. Gabriel, seconded by Mr. O. A. Sayce, "That an extraordinary general meeting be held on Monday evening, 9th August, 1897, at 7.45, to consider and amend Rule No. 6 in such a way that all members who are only in arrears for the current year (payable in advance) may be entitled to vote at the annual election of office-bearers."

The Chairman drew attention to the proposal of the committee of adding, when printing the list of members of the Club, particulars of the branch of study followed by each individual, and, in commending the usefulness of such a list, reminded members that the hon. secretary required the new information at once.

PAPERS.

1. By Mr. H. T. Tisdall, entitled "A Botanical Peep into the Rocky Pools of Sorrento and Queenscliff," part ii.

The author entered into a most interesting description of the Algæ found in the half-tide and deeper pools in those localites, and, with the aid of drawings, paintings, and mounted specimens, enabled members to follow him closely. The parasitic plant *Notheia anomala*, which springs from the conceptacle of *Hormosira*, was mentioned as calling for closer investigation as to its life-history; while the strong *Macrocystis pyrifera*, that acts as a buoy to warn navigators, and is said to be the highest plant in the world, growing to 800 feet or over, was described from its commencement as a tiny spore.

The author deplored the waste of material here as compared with older countries in that our drift seaweed is not made use of as manure, and pointed out the economic value of *Porphyra*, *Chondria*, *Gelidium* and other Algæ.

Some discussion ensued, in which Messrs. Barnard, T. S. Hall, M.A., J. G. Luehmann, and the Chairman joined.

2. By Mr. J. Shephard, entitled "A New Rotifer, *Lacinularia elliptica*."

The author described a new Rotifer found during a recent Club excursion to Heidelberg, which is a further exemplification of the necessity of carefully examining all material obtained on such occasions. The paper was illustrated by drawings and mounted specimens under the microscope.

3. By Mr. J. G. Luehmann, F.L.S., entitled "The Flowers of Fig Trees."

The author, in a conversational manner, with the aid of drawings and specimens, gave a demonstration on the construction of these hidden flowers, which proved most interesting.

4. By Mr. J. A. Kershaw, entitled "Note on *Pieris perimale*, Don." The writer pointed out that the butterfly, generally known as *P. scyllara*, Macl., but with a long list of synonyms, is really only a variety of *P. perimale*, Don., an already named and common species.

NATURAL HISTORY NOTES.

Mr. J. G. Luehmann, F.L.S., read a note received from Dr. A. Morrison, now of Perth, W.A., with a list of uncommon plants collected near the mouth of the Yarra and at Werribee, which rarely occur on the eastern side of Melbourne. Some discussion ensued on the occurrence of plants commonly found in the Mallee, near Melbourne, and Mr. T. S. Hall stated that similar plants had been collected at the mouth of the Little River by the Rev. J. S. Hart.

Mr. C. M. Maplestone reported having found six species of orchids in flower within 30 yards of one another on a roadside at Eltham.

Mr. T. S. Hall, M.A., read a note on an uncommon seal,

Lobodon carcinophaga, caught at Portland in 1894, and again recently at St. Kilda. This species is known as the "Crab-eating" or "White Antartic Seal," and has not previously been recorded so far north.

Mr. A. Coles contributed a short account of a case of longevity in the Butcher Bird in captivity, and exhibited the skin of a bird that had been caught before 1870, and had lived until June last.

The Chairman announced that Mr. H. T. Tisdall had promised to present the Club with mounted specimens of the Algæ mentioned in his paper, for which he was unanimously accorded a vote of thanks.

EXHIBITION OF SPECIMENS.

The following were the principal exhibits of the evening :—By Mr. A. Coles—Skins of two Butcher Birds, *Cracticus torquatus*, one 3 years and the other 28 years old, in illustration of his note. By Mr. C. French, F.L.S.—Coloured drawings of life-history of *Agarista contorta*, by Mr. C. C. Brittlebank. By Mr. C. French, jun.—Rare eggs of Regent Bird from Queensland, first time exhibited in Victoria. By Mr. J. Gabriel—Shells dredged at Western Port. By Mr. R. Hall—Short-billed Smicrornis skins, nest and eggs ; Little Cormorant, *Graculus melanoleucus*, skins, eggs, and photograph of a rookery. By Mr. Jas. A. Kershaw—Specimens of butterfly, *Pieris perimale*, Don., from New South Wales and Queensland, in illustration of his paper. By Mr. J. G. Luehmann, F.L.S.—Hydroida collected by the late Mr. H. Watts, and recently determined by Professor Kirchenpauer. By Mr. F. M. Reader—Dried plants from the Wimmera, *Lepidosperma longitudinale*, Lab., *Poa syrtica*, F. and M., both new for N.W. Victoria. By Mr. J. Shephard—Mounted Rotifers, *Lacinularia elliptica*, in illustration of his paper, also fossil diatoms from South Yarra. By Mr. H. T. Tisdall, in illustration of his paper—A volume containing 170 species of Victorian seaweeds, being vol. xxviii. of his "Flora Victoriensis ;" 16 mounted Algæ and coloured drawings of 104 diatoms copied from a microscopic slide of J. D. Möller.

After the usual conversazonie the meeting terminated.

ORCHIDS NEAR ELTHAM.—I found last month, on a bank on the side of the old road between the Plenty River and Eltham, within a distance of thirty yards or so, the following orchids in flower :—*Pterostylis nutans*, *P. aphylla*, *P. concinna*, *Corysanthes pruinosa*, *Acianthus exsertus*, and *Prasophyllum despectans*.—C. M. MAPLESTONE. 12th July, 1897.

EXCURSION TO KEILOR.

On the 24th of May a party of four met at Spencer-street a little before 11 o'clock. We had not decided whether to take the train to St. Albans and walk across the plain to Keilor, or to go to Essendon and there engage a cab which would carry us out to the township. As we found our party a small one, we decided on the former alternative. When we reached St. Albans we found that the open basaltic country, dreary at the best of times, was not a very pleasant place with a strong northerly gale blowing. Having previously noted that the direction in which we wanted to go bore N. 37° E. from the station, we took a compass observation and began our march. After about a couple of miles we reached the road leading down into Green Gully and across it to Keilor. Going down the hill, we soon found ourselves below the level of the volcanic rock which forms the great expanse of the Keilor Plains. Immediately under this occurred a sheet of quartzite, the sand which formed the bed having been by some means cemented together by silica. This rock proved to be very hard, but a few chips were broken off, and three of the excursionists puzzled over its nature for some time, but at last hit on its composition. This bed of quartzite was observed to be fairly horizontal in position, and its outcrop made the hill somewhat steep where it occurred. In a small gully under this bed was found a large outcrop of clay. As the leader again declined to give any information as to its nature, the rest of the party had perforce to spend some time in its examination. One of them called to mind that it resembled clays which occurred in the Royal Park cutting, which had been there proved on a previous excursion to be the product of decomposition of the Older Volcanic rock. Further evidence was soon found, and later on a quarry in the hard bluestone showed our determination to be correct. On going down the creek, traversing the hill-side at a slightly lower level than before, a patch of limestone was found. So closely did the creamy colour of this rock accord with that of the decomposed basalt, that it was not until some fossils were noted that it was pronounced to be limestone. Fossils of a readily identifiable nature were scarce, but it was seen that the limestone consisted almost entirely of polyzoa and foraminifera. Towards the top of this five-foot band the beds grew more gritty, and were overlain by sands cemented together and stained a red ochre colour by oxide of iron ; above this again lay the quartzites, and, capping everything, the youngest bed of all, the Newer Basalt. A little further down stream it was found that the limestone had disappeared, and that the iron-stained sands were thicker. A search for fossils in the loose blocks that strewed the hill face soon resulted in the finding of some casts or prints of fossils in the rock. These were of Eocene age. After lunch

in a sheltered spot, an aneroid reading was taken in the bed of the stream beside the bridge, and the depth of the valley found to be about 150 ft. The road up the other side of the valley was then followed, and in a cutting iron-stained sands passing up into fawn-coloured sands and quartzites were again observed overlying the irregular surface of the Older Volcanic rock. When the top of the hill was reached we found ourselves once more on the level of the plateau. A detour was then made to the eastward, and at a locality marked on the geological map a search was made for graptolites. A fair number of specimens were found, though the variety of forms proved to be very small. They were pronounced to be of Upper Silurian age, but their identity has not yet been established. A start was then made for home, and after a five-mile tramp from here we reached the Essendon railway station, having safely escaped collision with the numerous bicyclists, and with shoulders sore from the weight of our spoils. In conclusion, it may be mentioned that the Essendon station is 146 feet above sea level, that at St. Albans 218 feet; and the aneroid gave the plateau at Green Gully and at the Keilor Church as 254 feet, and the bed of the creek at the bridge 100 feet above the sea.—T. S. HALL.

NOTES ON THE BIRD FAUNA OF THE BOX HILL DISTRICT.

By ROBERT HALL.

(*Read before Field Naturalists' Club of Victoria, 12th April*, 1897.)

IN continuation of my notes on the bird fauna of the Box Hill district read before the Club some months ago, and published in the last volume of the *Victorian Naturalist* (vol. xii., pp. 127–143), I wish to bring under your notice the birds to which the group-name of "Warblers" can be applied. These, in my district, number no less than ten of the twenty-two Australian species, though one of them here included is structurally not a true warbler; but many field observers will doubtless agree with me in considering the Blue Wren, *Malurus cyaneus*, Ellis, almost the finest warbler we have, from a vocal point of view.

The Emu Wren, *Stipiturus malachurus*, Lath., has lately been excluded from the list of "Warblers," but is included here, being of similar habit, &c., to the last-mentioned species.

A third species, the Reed Warbler, *Calamoherpe Australis*, Gould, seems also to have come under an act of separation. It is a fine warbler, and, although during day and night always to be found in the reed-beds, is generally referred to as one of the Sylviinæ, or inhabitants of the woods. All along the eastern coast of Australia this species may be found, while a second

species inhabits the western portion of the continent, no representative having yet been recognized in the intervening space, where few reed-beds exist.

With this brief allusion to my inclusion of these three doubtfuls, from an anatomist's point of view, in my field observations I will at once proceed to that most familiar of hedge birds, the Yellow-rumped Geobasileus, *Geobasileus chrysorrhœa*, Q. and G. This little tit or so-called "yellow-tail," to city people the most familiar of country native birds, is of a small size and even appears to attract more notice than the Ground Lark or proper Pipit. The chrome-yellow of the upper tail coverts, with apex of each rectrice barred with black, makes this little grey bird a distinctly prominent one. The markings are only noticeable when the birds, finding themselves disturbed on the feeding ground, rise upon wing and with blended voices alight in the acacia. They quickly return to the grass and appear to have little fear of man. With the aid of their tiny feet the birds move rapidly along the ground in search of insects.

This one of ten species of a genus peculiar to Australia puts aside its gregarious habit about July, and enters upon the work of nest-building, a structure that is generally placed within nine feet or rarely over twelve feet from the ground. The house is one-chambered, dome-shaped, and with cuplike cavity fitted to each above for the non-sitting bird, when the shades of night have fallen and the food of this species has retired. Occasionally two chambers will be formed, without an upper cavity, one lined with care, the other not so, and no dependence can be placed upon which will be correctly finished.

I believe the cuckoo's actions will finally settle the matter, for if the "parasite's" egg be deposited in one cavity before laying of eggs of the rightful owner, the Geobasileus will place its eggs in the other, with the result that the cuckoo will not be hatched.

In the case where a one-chambered nest has become utilized by the stranger, the "tit" may cover the introduced coloured egg with a lining of feathers, and so prevent incubation; but this is not generally resorted to, and the strongest chick becomes the sole surviving member of the group. At another time the cuckoo may be "unfortunate" in the deposition of its egg within the cup-shaped cavity of the nest, after which it will naturally remain unhatched, but this is of rare occurrence.

Last season I observed a double nest—a semi-detached house—built in the whin, both perfect externally, but the inner one with its entrance facing the bush—an unusual position—finished internally. The whole was new, and the outer one contained an egg of the Narrow-billed Bronze Cuckoo, the inner a clutch of the Geobasileus. The birds appeared to be in excellent plumage, and were probably old enough to remember the disappointment of one or two past seasons, in so much as related to the hardship

of rearing an uncongenial bird. As with previous cases, the foreign egg remained unhatched, and this gave the smaller bird an opportunity to rear its young without the stronger opposition of the well-known fighting character. Rarely do small birds add a second nest of the same nature. Mr. Romanes has noted this inclination in the Common Wren of Europe, and individual cases are elsewhere quoted.

The "yellow-tail tit" of the boys builds its nest not only in hedges, but against the trunks and larger branches of various trees, and, as has been previously noted, to the sticks of the lower portion of Crows' or Ravens' nests, without any interest in the blue or white eyes of their black neighbours. The parasitical Mistletoe (Loranthus) is also resorted to, as well as the Wattle.

A case of two clutches of eggs placed in the same nest, and being sat upon by two birds, is quite unusual. The eggs numbered six, and one male bird appeared to feed the sitting ones with insects. That two birds sat upon the eggs was proved by the flight of both from the nest upon approaching it. How this state of matters would have developed I cannot say, as observations were interrupted by the wilful destruction of the nest. The disposition of this species is certainly a friendly one. A young neighbour of mine one evening caught a family of this tit, comprising the parents and three young ones, and transferred them along with the nest to a wire-faced box, where they were carefully kept and fed for fourteen days, at the conclusion of which they were allowed their freedom. Each evening, for three weeks, they returned to the box to roost, and doubtless would have continued the custom had not the innocent-looking cat of the house preyed upon the five in the late hours of the night.

In further evidence of the goodnature of this bird, I may say that, having extracted the eggs from one nest, I kept them away for nearly twenty minutes, and then returned two of the three with indented sides, less a cuckoo's egg that was with them. The bird gracefully, with agitation, returned to its eggs and I believe brought the young out, according to evidences seen on my return to the nest a few weeks later. I know it sat upon the eggs for days after the occurrence.

Our nearest allied bird to *G. chrysorrhœa* is the Buff-rumped Geobasileus, *G. reguloides*, V. and H., easily known from the former by its absence of white markings on the forehead and the fainter colour of the upper tail coverts. It is numerous in this locality and well dispersed over the country lying south-east of an imaginary line between Spencer's Gulf and the Fitzroy River, in Queensland. Both species are popular friends of tillers of the soil, but rarely are they recognized as two species. *G. reguloides*, by its habit of hanging to gum-trees, is generally confused with

the Striated Acanthiza, but when it is associated with *G. chrysorrhœa* the two are also considered as one. The differences of manner and markings are quite evident when once shown. Even in the newly fledged of both species there is no room for a difficulty, for the conspicuous markings of the adults are upon the young before leaving the nest. The best reference plate of this species is to be found in Diggles's "Birds of Australia."

This restless bird has quite a different series of notes to the previous one, the calls being sharp, high, regular, metallic, and it associates in flocks in the eucalyptus, flying quickly, with a less jerky motion than that of *G. chrysorrhœa*. The position of the compact and artful nest varies from a bracken 18 inches from the ground to a sapling, with occasionally a hedge as an environment. It is built according to circumstances but always upon the same plan. The architecture will only vary in the material, and feathers where obtainable will form a favourable inner wall. One of my friends tells me of four nests observed by himself in a forest near Camperdown, which were built, so far as the main portion was concerned, with sheep's wool and grass, and rabbit's fur for the internal lining. In our suburban districts the soft bark of trees is largely used, with feathers. The eggs are laid each alternate day and three is a usual number for a sitting, sometimes four. The period of incubation is 18 days, and time from breaking of shell to departure from nest 19 or 20 days, and, like the former species, it is vigorous, and capable of first flight equal to that made by the parents.

Mr. George Graham, of the Heytesbury Forest, having more than ordinary interest in nature, has written to me of a fact showing evident persistence on the part of a pair of birds to rear a family. The first brood was breakfasted on by a fox, which naturally left nobody at home. The second clutch of three eggs would not hatch out on the sixteenth day of sitting, so a third clutch of equal number was placed upon these, with material between, which hatched out on the eighteenth day from laying of latest eggs.

Our next species, and the smallest member of its genus, is the Striated Acanthiza, *Acanthiza lineata*, Gould, W.*, peculiar to Tasmania and our continent. It is the well-known "Hanging Tit," from its manner of scampering through the "gum" foliage most of its time in search of food, by being suspended from leaves at the extremities of the branches. The Melbourne district contains three groups of "tits," in popular nomenclature—one found in the trees, which includes this species, *A. pusilla*, and *A. nana*; a second preferring the ground, its representative being the Chthonicola, or "Ground Tit," by local designation; and a third of "go-betweens," represented by the Buff and Yellow-rumped Geobasileus. The nest of *A. lineata* is well woven, small in comparison with the unwieldly mass of *G. chrysorrhœa*,

made of dry grass, lined with brown and white hair of the cow. This is typical here, but the divergence is as great in the material as with other species. The typical dome form, with side entrance, never varies, according to my knowledge of the matter. Only once have I been able to watch the times of laying of eggs, and then they were deposited on each successive day.

The Little Brown Acanthiza, *A. pusilla*, Lath., W.*, is a bird you will often enough find located in the Melaleuca, and although it is very small and difficult of observation in the thick foliage of creek or upland timber, its pleasant and varied voice will help you to trace its whereabouts. The notes are liquid and musical, pitched with variety, and extensive, heard to advantage when one is near, for its mellow voice is not strong enough to penetrate beyond the distance of a few yards. In a single case communicated to me by the naturalist already referred to, the time of laying of three eggs was forty-eight hours apart, and the young remained in the nest eighteen days. From five nests of this species a fox extracted the young birds, and it has become a pest to the observer and to young Laughing Jackasses, *Dacelo gigas*, which it will snatch from low stumps.

The Little Acanthiza, *A. nana*, Vig. and Hors., should perhaps be recorded as an occasional visitor rather than as a resident of the district. From its close general resemblance to the other Acanthizæ, it is difficult to distinguish among the foliage. It has a note different from the others, and is less numerous than in the Wimmera district.

We now come to a group of four Warblers, two of which, of different genera, Cisticola and Calamoherpe, are scantily represented, while one of the other two, Malurus, is abundant in the district. The three genera are characterized by different habits. The Grass Warbler (Cisticola), is found only in rank grass, where trees are absent; the Reed Warbler (Calamoherpe), is found only among reeds, which in the district are comparatively scarce; while the Superb Warblers (Malurus) are generally found in high grass and undergrowth among timber.

The Rufous-headed Grass Warbler, *Cisticola ruficeps*, Gould, is the smallest of these particular warblers, and is of a tawny colour, with linear dark variations. Walking through long, rank grass, with large, brownish butterflies rising and flitting in the foreground, one is quite uncertain whether the bird is a butterfly or not as it gently and slowly leaves the grass stems for a tardy flight of some fifty yards, but as it reaches the clear horizon the difference is noted. Flitting high in air, its melodious warble, though having only two notes, does not seem to jar upon our ears, however often repeated.

While Dr. Ramsay's "List of Australian Birds" gives us four distinct species of this genus, the "British Museum Catalogue,"

vol. vii., p. 269, regards them as a single species, *C. exilis*, *C. ruficeps* being catalogued as a species occupying N.E. Africa.

On the 12th of December last I obtained a skin of a female *C. lineocapilla* which had mated with a male of *C. ruficeps*. The nest is a grassy, domed, side-entranced structure, appended to the long sheathing leaves of dry grass tussocks up to three feet from the ground, with richly-coloured blue eggs hidden from view. Owing to the wariness of the builders, the nests are difficult to procure, for you may lay in cover a considerable time before the strategy of the bird in wending its way among the tussocks before arrival at the nest is discovered.

(To be continued).

NOTES ON THE PALLID CUCKOO.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 14th June, 1897.)

In the proper season the Pallid Cuckoo, *Cuculus pallidus*, Lath., may be either seen, or heard by its melancholy cry, in nearly every part of Australia and Tasmania. It may be considered migratory in its movements; and, according to the kind of season in certain quarters, appears in greater or less numbers. For instance, during the periods of great drought in the interior and Queensland, decidedly more of these birds visit, say, Victoria, or the seaboard country.

In the south, the first Pallid Cuckoo of the season is generally heard about the middle or end of August, or the beginning of September. However these would appear, as far as my observations go, to be preceded by silent birds of the same species, which may be seen about the timber or perched on fences or on telegraphic wires about the beginning of August. Why these forerunners should be silent, or whether they are all one sex, has not been ascertained.

The first Pallid Cuckoo's egg is deposited in the selected foster-parent bird's nest about the middle or towards the end of September. October and November constitute the chief laying time, while a few birds lay during the beginning of December. When summer is ended, or about the end of March, all the Pallid Cuckoos—old and their young—retire northward.

Whether the Pallid Cuckoo lays more than one egg (it probably does) is not definitely settled, but its single and beautiful flesh-coloured egg is found in various insectivorous or semi-insectivorous birds' nests in Queensland, as well as the southern provinces, including Tasmania.

Among the foster-parents, Gould mentions the various Ptilotes and Melithrepti (Honey-eaters), but we possess no data to show

that he should have included the Maluri (Wrens) and Acanthizæ (Tits) for this particular cuckoo.

The following is an enumeration of the foster-parents of the Pallid Cuckoo, as far as are known at present, the majority being now recorded for the first time, namely :—

Vernacular Name.	Scientific Name.	By Whom First Recorded or Reported.
White-plumed Honey-eater	Ptilotis penicillata ...	A. J. C.
Yellow-tufted ,,	P. auricomis	Dr. Ramsay
Yellow-faced ,,	P. chrysops	,,
Fuscous ,,	P. fusca	,,
Yellow-throated ,,	P. flavigularis	A. E. Brent, Tas.
White-eared ,,	P. leucotis	C. French, jun.
Lunulated ,,	Melithreptus lunulatus ...	Dr. Ramsay
Brown-headed ,,	M. brevirostris	G. E. Shepherd
Black-headed ,,	M. melanocephalus ...	A. E. Brent, Tas.
Strong-billed ,,	M. validirostris	,,
Wattle-Bird	Acanthochæra carunculata	L. Palmer
Brush Wattle-Bird ...	A. mellivora	A. J. C.
Spinebill	Acanthorhynchus tenuirostris	A. J. C.
Friar Bird	Philemon corniculatus ...	Messrs. Barnard, Q.
Minah	Myzantha garrula ...	A. J. C.
Brown Honey-eater ...	Glycyphila ocularis ...	Messrs. Barnard, Q.
New Holland Honey-eater	Meliornis novæ-hollandiæ	G. E. Shepherd
Hooded Robin	Petroeca bicolor ...	J. T. Gillespie
Dusky ,, ...	P. vittata	F. H. Reed
Oriole	Oriolus viridis	A. J. C.
Rufous-banded Thickhead	Pachycephala rufogularis	Messrs. Brittlebank
White-throated ,,	P. gutturalis	,,
Black and White Fantail	Rhipidura tricolor ...	,,
Brown Flycatcher ...	Microeca fascinans ...	H. Lau, Q. (Oct., 1868)
Leaden-coloured Flycatcher	Myiagra rubecula ...	G. E. Shepherd
Wood Swallow	Artamus sordidus ...	J. T. Gillespie
White-browed Wood-Swallow	A. superciliosus ...	A. Campbell, jun.
Masked Wood-Swallow ...	A. personatus ...	G. E. Shepherd
White-rumped Wood-Swallow	A. leucogaster	Messrs. Barnard, Q.
Harmonious Thrush ...	Collyriocincla harmonica	Messrs. Brittlebank
Magpie Lark	Grallina picata	J. Sommers
Caterpillar-catcher ...	Lalage tricolor	A. J. C. and G. E. Shepherd.

It will appear from the foregoing list of foster-parents of the Pallid Cuckoo that the Honey-eaters are the most favoured tribe, but in every case birds that construct an open nest are selected.

To the list must be added the introduced birds, the Greenfinch, *Ligurinus chloris*, and Blackbird, *Turdus merula*, for Mr. Charles French, jun., writes me :—"An egg of the Pallid Cuckoo was taken in the nest of the Greenfinch at Albert Park (near Melbourne) on the 24th November, 1894. I also found an egg of the Pallid Cuckoo some time ago in the nest of the English

Blackbird in the same park." I had heard previously of the Greenfinch being a foster-parent, which is remarkable, seeing that the finch is a seed-eater, or nearly so. However, although the egg is deposited in the finch's nest, we have no evidence that it rears the young cuckoo.

Among Mr. J. T. Gillespie's cuckoo notes for 1893, a season when these birds were plentiful, are the following relating to the Pallid Cuckoo :—

"28th October, at Springvale.—Single egg of Pallid Cuckoo in nest of Wood Swallow, *Artamus sordidus*. Saw birds previously building their nest, which was afterwards apparently deserted.

"9th November, at Dandenong Creek.—Nest of Lunulated Honey-eater, *Melithreptus lunulatus*, containing 2 eggs and an egg of Pallid Cuckoo.

"11th November, at Springvale.—From Hooded Robin's, *Petræca bicolor*, nest (found building the previous week) took egg of Pallid Cuckoo.

"25th November, at Springvale.—In White-plumed Honey-eater's, *Ptilotis penicillata*, 1 egg and an egg of Pallid Cuckoo.

"3rd December—Took Pallid's egg from nest of Greenfinch (introduced bird). Finch afterwards laid 4 eggs."

At a meeting of the Royal Society of Victoria, held November, 1894, I read the following note on the occurrence of the egg of the Pallid Cuckoo in the nest of the Magpie Lark (Grallina) :—

"My friend, Master John Sommers, of Cheltenham, presented me with a nest taken in the locality, on the 24th September, 1894, containing a set of 5 eggs of the Grallina, together with an egg of the Pallid Cuckoo, *C. pallidus*. This is the first instance, as far as I am aware, of an egg of this cuckoo having been found in the nest of a Grallina."

In the cuckoo's egg, incubation was further advanced than in the other eggs.

Occasionally two cuckoos' eggs are found in the same nest. Here is one of Mr. Charles French's, jun., notes thoughtfully sent to me—"White-throated Thickhead's, *Pachycephala gutturalis*, nest, containing 1 fresh egg of Thickhead and 2 fresh eggs of Pallid Cuckoo. Locality, Dandenong Ranges. 9th September, 1895."

Usually it seems that the cuckoo's egg is the first deposited in the nest, and, not unfrequently, before the completion of the nest, as the finding of a Pallid Cuckoo's egg underneath the warm lining of a Lunulated Honey-eater's nest attests. Once Mr. G. E. Shepherd found an egg of the Pallid Cuckoo sticking through the bottom of a White-plumed Honey-eater's nest, the egg being plainly visible from the ground.

The fact that the cuckoo, after laying its egg, carries it in its mouth till deposited in the nest of a foster-bird, is now generally admitted. Here is a proof:—The late Mr. H. A. Smith, of Batesford, near Geelong, informed me that on one occasion he shot a Pallid Cuckoo, and removed from the back of its throat or gape an egg, which was fractured by the bird's fall. Evidently the unfortunate bird had laid the egg, and was in the act of conveying it to some suitable nest.

It is probable that the Pallid Cuckoo lays its egg first upon the ground, and possibly early in the morning, because that is the time generally when these birds have been flushed from the ground. In his daylight rambles Mr. Shepherd has frequently disturbed on the ground a cuckoo with suspicious movements.

Mr. W. A. Milligan furnished me with the somewhat remarkable note that in Gippsland he had observed an adult Pallid Cuckoo feeding a young bird of its own kind. Mr. Milligan noticed no other birds about at the time. Miss Ada Fletcher, Tasmania, writing to the *Australasian*, 30th May, 1896, states:—"I myself have seen a full-grown Pallid Cuckoo feeding a young one of the same species. The young one, when flushed, flew feebly, and I judged it had only recently left the foster-parents' nest." These notes suggest interesting questions. Do cuckoos sometimes assist the foster-parents in feeding the young, or had these particular youngsters lost their foster-parents?

I am inclined to believe that many birds, by instinct, feed young cuckoos, whether they be the rightful foster-parents or not. Only last season Master B. E. Bardwell watched a young cuckoo, probably a Pallid or else a Fantailed, being fed by a Scarlet Robin, *P. leggii*, and then, immediately, by a Spine-billed Honey-eater. The little Honey-eater appeared not only to put its long bill, but head also, well into the mouth of the youthful cuckoo. It is hardly likely that the Spinebill was trying to retrieve for itself the bait placed by the robin in the throat of the cuckoo.

With reference to the two last statements, namely, that young cuckoos are sometimes fed by old cuckoos, as well as by birds other than the proper foster-parents, we have further proof in the published remarks of Dr. Ramsay in New South Wales.

Following the same plan as in the case of the Bronze Cuckoos, the Messrs. Ramsay succeeded in procuring two young Pallid Cuckoos from eggs which they (Ramsays) had left in the nest of the Yellow-tufted Honey-eater, *P. auricomis*, and thus first established the parentage of the strange eggs.

The cuckoo's egg is hatched about the twelfth or fourteenth day, when the young cuckoo—a little, fat, helpless creature—is scarcely larger than its foster brethren. However, growing rapidly, it soon fills up the greater part of the nest, and its un-

fortunate companions, either smothered by its weight or starved to death through its greediness, are thrown out by their parents.

Dr. Ramsay proceeds to say: —

"On the 30th October last (1864) we found two unhappy young birds, which had been hatched in company with a cuckoo in a nest of *Ptilotis auricomis*, tossed out and lying upon the ground just under the nest. These were, of course, quite dead, and appeared to have been about three or four days old.

"During the months of October and November, it is no uncommon sight to see the smaller birds feeding the young of cuckoos. Even the little Acanthizæ, which I believe are never the foster-parents, at least of the Pallid Cuckoo, join in supplying the wants which are easily made known by their continued peevish cry, stopping only when being fed, or when their appetites are appeased.

"While walking towards home through a half-cleared paddock, I was not a little surprised, upon hearing the cries of a young cuckoo, to see a pair of adult birds of the same species, *C. pallidus*, flying after it, settling beside it, and apparently paying it great attention. Several times they flew away, but returned to it again, and, from their actions I feel convinced that they were feeding it, although, much to my regret, I was unable to obtain a view sufficiently close to make sure of the fact."

I may mention, in reference to the throwing-out business, some persons suppose that the cuckoo throws out an egg or eggs of the foster parent to make room for its own. This has not been proved with regard to the Pallid Cuckoo—indeed, it has been disproved by the fact that the cuckoo's egg is frequently deposited first, or even before the nest is completed, and that full clutches of the foster-bird's have been taken together with the cuckoo's egg. On the other hand, it is probable that some of the foster-birds throw out cuckoo's eggs. When taking a White-shouldered Caterpillar-catcher's, *Lalage tricolor*, nest at Somerville with Mr. Shepherd, we found a broken egg of the Pallid Cuckoo underneath upon the ground—circumstantial evidence, I think, that the egg had been deposited by the cuckoo in the Caterpillar-catcher's nest, and thrown overboard by the latter bird. There is no record of any cuckoo's egg having actually been taken from a Caterpillar-catcher's nest, but Mr. Shepherd has seen a Caterpillar-catcher feeding a young Pallid Cuckoo.

In concluding these brief and somewhat scattered observations on the Pallid Cuckoo, I have to thank my many friends for their field observations, especially Mr. G. E. Shepherd, who, fortunately, has been so favourably situated that he has been enabled to observe Pallid Cuckoos' eggs in no less than nineteen different species of nests—a record which any field naturalist may well be proud of.

NOTES.

An Uncommon Seal.—In January, 1894, a seal was caught at Portland and presented to the National Museum by Mr. G. M. Snowball. The skeleton and stuffed skin have been mounted, and have been on view for some time, and the species has been identified as *Lobodon carcinophaga* by Sir Frederick M'Coy. A specimen of the same species came ashore at St. Kilda, near Kenney's Baths, last week; but instead of an attempt being made to capture it alive, it was knocked on the head and killed. The Museum specimen is white, with a very faint tinge of yellow, while the present specimen is a beautiful glossy pure white. Its length from snout to tail is 7 feet 4 inches. The body is marked on each side by a long, deep scar, running upwards and forwards from the tip of the manus. Mr. Borchegrevink lays stress on the occurrence of scars on the seals which he noticed far south, and seems inclined to ascribe them to an unknown carnivorous foe. Is it not possible for seals to injure one another in this way when fighting? In the description of the genus in Gray's "British Museum Catalogue" the whiskers are stated to be waved. This is, however, not the case in either of the specimens mentioned, though on a superficial examination it might be thought to be so. In reality the hairs are much flattened and spirally twisted (not coiled) on their own axis, and a wavy appearance is thus produced. This species, the Crab-eating Seal, or White Antarctic Seal, is said to be very common in the pack ice, but does not seem to have been noticed as far north as Australia before 1894, and perhaps the occurrence of a second specimen is worth recording.—T. S. Hall. 12th July, 1897.

Longevity of the Butcher Bird.—An interesting Natural History item came under my notice recently, in connection with the life in captivity of a Butcher Bird, *Cracticus torquatus*, Lath., commonly referred to as the "Whistling Jackass." As far back as 1868 or 1869 (a record of the exact date not having been kept, it is only certain that it was before 1870), two young birds were taken from the nest on the Currup Currup Pre-emptive Right, near Mornington Junction railway station. Great care was taken of them, and they thrived well in captivity, becoming great pets, on account of the readiness with which they learned to talk and to whistle tunes. One of the birds turned out to be a male and the other a female; the latter layed her eggs fairly regularly as the season came round, the usual number of eggs being four, though occasionally she laid five, and rarely six. After the latter event she was, as a rule, a little seedy, owing, no doubt, to the extra tax upon her strength. Both the birds did extremely well in captivity, as is evidenced by the fact that the male bird lived until the 12th of June last (1897). It can thus be seen that this bird was 28 or 29 years of age. It is further interesting to note that the female bird is still alive and well. The known age of these birds

affords a good opportunity of noting the aged plumage of this species. It will be seen that the darker feathers of the head and back have become quite black, and the lighter ones of the chest and breast quite white, with a half-collar round the neck. The food of the birds has been raw meat, curds, eggs, and insects, such as flies, crickets, white grubs, beetles, ants, and ants' eggs. In the same locality this species has frequently been kept in captivity for periods of five to ten years, but the above-mentioned pair are of special interest on account of their age.—A. COLES. 17th July, 1897.

UNCOMMON BIRDS.—For at least twenty-five years I have been a close observer of both the resident birds and those species which pay annual or irregular visits to my district, but until the present season I had not seen either of the three species sent for exhibition this evening—viz., the Porphyry-crowned Lorikeet, the Red-kneed Dottrel, or the White-faced Storm Petrel. The latter bird was shot in March last in a bush paddock, distant some eight or nine miles from the sea-coast. A friend was out quail shooting when his dog "stood" to a bird. It rose and flew, and after shooting it my friend remarked that it was quite different from any bird he had seen before, and kindly forwarded it to me. The finding of this bird under such unusual circumstances seems to show that some kinds of sea-birds at times leave their native element and take excursions on land, as on one occasion I saw an adult specimen of the Hoary-headed Grebe on dry land, many miles from any water, and apparently in good health.—G. E. SHEPHERD. Somerville, 14th June, 1897.

A NEW USE FOR SPIDERS.—"When Kirby and Spence wrote their chapter on "Direct benefits derived from Insects," and recorded the use of insects for food, the use of honey from bees for the same purpose, the use in medicine, and the arts and manufactures of blister beetles, insect galls, Coccidæ furnishing lac, wax insects, and the silkworm, the time had hardly arrived for the extensive collection of ants for the manufacture of formic acid, or for their pupæ as food for song birds, and we feel sure that they could hardly have anticipated an industry in connection with an allied class of creatures which has recently sprung up both in France and Pennsylvania, and which consists of the farming of spiders for the purpose of stocking wine cellars, and thus securing an almost immediate coating of cobwebs to new wine bottles, giving them the appearance of great age. This industry is carried on in a little French village in the Department of Loire, and by an imported Frenchman named Grantaire, on the Lancaster Pike, four miles from Philadelphia. This Frenchman raises *Epeira vulgaris* and *Nephila plumipes* in large quantities, and sells them to wine merchants at the rate of $10 per hundred." *Bulletin, No. 7, new series, page 82, U.S. Depart. of Agriculture, Division of Entomology*, 1897.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th August, 1897. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and some forty members and visitors were present.

REPORTS.

Mr. O. A. Sayce reported that a meeting for practical work had been held on Monday evening, 26th July, when the Rev. W. Fielder gave a demonstration on the elements of histology. He showed the general type of epithelium cells found in animals, and handed mounted specimens to those present.

Mr. D. Le Souëf reported that, at the desire of the sub-committee appointed to consider the question of a close season for opossums, he had written to the Minister of Customs asking that the close season should be from 1st June to 31st December in each year, but so far had received no reply.

A report of the Club's excursion to the Collingwood quarries, on 17th July, was read by the leader, Mr. T. S. Hall, M.A., who stated that about a dozen members and friends attended, and many beautiful and interesting specimens of zeolites had been obtained.

The hon. librarian reported the receipt of the following donations during the past month :—"Annual Report of Trustees of Australian Museum," 1896; "Transactions Royal Geographical Society of Australasia," vol. xiv.; "Transactions Royal Society of South Australia," vol. xxi, part 1; "Proceedings Royal Society of Victoria," vol. x. (new series), part 1; "Fourteenth Annual Report of Trustees of the Public Museum of Milwaukie, U.S.A.;" "Proceedings Royal Society of Tasmania," 1896.

SPECIAL BUSINESS.

In the absence of Mr. J. Gabriel, Mr. J. Shephard moved—"That the following words be added to Rule 6 :—'But notwithstanding this, a member whose subscription is in arrears may vote at the annual election of office-bearers and committee provided that the subscription of such member be not more than the current year in arrears.'" The motion was seconded by Mr. E. Anderson, and led to some discussion. On being put to the vote, the requisite two-thirds majority necessary for the alteration of a rule was not secured, consequently the motion was lost.

PAPERS.

1. By Mr. R. Hall, entitled "Notes on the Birds of the Box Hill District."

The author continued his remarks on the habits of the birds of his locality, dealing with the group of Honey-eaters, and illustrating his remarks with an interesting series of specimens.

Mr. A. J. Campbell, in the course of some remarks on the paper, pointed out the value of local work, such as that brought before the Club by Mr. Hall.

2. By Mr. A. J. Campbell, entitled "Notes on the Fantailed Cuckoo."

In this the author gave a list of the various foster-parents of the Fantailed Cuckoo so far noted, and mentioned their habits. He entered into the question of how the cuckoos deposit their eggs in nests with very small openings, such as the Acanthizas.

In the discussion which followed, Mr. D. Le Souëf said that he had noticed, during a recent excursion in Croajingolong, a large number of nests, each containing a young Fantailed Cuckoo, and in nearly every instance only one of the young birds of the rightful owner had been left with it.

3. By Mr. J. G. Luehmann, F.L.S., entitled "On a Species of Pluchea from Western Australia."

The author stated that on closer inspection he found this to be a variety, and not a new species. He then gave a description of the genus Pluchea, and cited it as one having some of the most interesting features of the order Compositæ.

NATURAL HISTORY NOTES.

Mr. D. Le Souëf read a note on the Pied Crow-Shrike, or Butcher Bird, *Cracticus picatus*, Gould—describing its note, habits, nest, and eggs. Mr. Le Souëf also drew attention to the skin of the White-faced Robin, *Pœcilodryas albifacies*, Sharp—exhibited, the first which had been obtained in Australia. The bird was shot recently at Somerset, Cape York, by Mr. H. G. Barnard, and previously had been found only in New Guinea, from whence the type specimen was described.

Mr. G. A. Keartland contributed a note describing some rare eggs, several of which—notably the Great Palm Cockatoo—were exhibited for the first time.

EXHIBITS.

The following were the principal exhibits of the evening:—By Mr. F. G. A. Barnard.—Zeolites, from Corporation Quarries, Clifton Hill. By Mr. A. Coles.—Pair of Collared Plain Wanderers, *Pedionomus torquatus*, Gld. By Mr. C. French, F.L.S.—Coloured illustration of *Attacus hercules*—rare Atlas Moth, North Queensland—drawn by Mr. C. C. Brittlebank. By Mr. C. French, jun.—Clutch of Comb-crested Parra's eggs, from New

South Wales. By Mr. R. Hall.—Birds and eggs, in illustration of his paper. By Mr. G. A. Keartland.—Eggs of Great Palm, Western Black, Banksian Black, Leach's Black, Western Long-bill and Long-bill Cockatoos; Red-winged Lory; Yellow-collared, Ground, Blue-banded Grass, Rock, Orange-bellied, and Elegant Grass Parrakeets; Scaly-breasted Lorrikeet; and Pied and Red-throated Honey-eaters. By Mr. D. Le Souëf.—Skin of White-faced Robin, from Cape York; eggs of Pied Butcher Bird, from North Queensland. By Mr. F. M. Reader.—Dried specimens of Orchids: *Orthoceras strictum*, R. Br., and *Prasophyllum Australe*, R. Br., from Dimboola, new for North-west Victoria.

After the usual conversazione the meeting terminated.

EXCURSION TO COLLINGWOOD QUARRIES.

On 17th July, about a dozen members and friends attended the Club excursion to the Collingwood quarries. These extensive quarries belong to the Melbourne corporation, and the material from them is used for macadamizing the roads. The rock, a fine-grained basalt, is generally spoken of as "bluestone," and forms a part of an extensive series of flows which border Melbourne on the north and west. The rock has been removed to a depth of 120 ft. over a large area, so that the excavation is rather an imposing one. On the southern side of the quarry the bottom of the flow has been reached, and the old land surface has been exposed, but to the north of this a further excavation of about 30 ft. has not yet pierced the basalt, so that the old surface was very uneven. The former soil, where exposed, is very sandy, and of a dark, almost black colour. It contains fragments of wood, but nothing identifiable was found. As is usual in black sands and clays of this nature, iron pyrites is found in fair quantity, the sulphur of the pyrites being derived from the organic matter in the soil. The percolation of rain water through this deposit has in part oxidized the pyrites, and we have thus formed a basic sulphate of iron, known as copiapite, which forms pale yellow patches through the dark soil. In other places the oxidation has proceeded still further, and bright red stains of iron rust are deposited by the little runnels of water.

To geologists, however, perhaps the chief point of interest in the quarry is the zeolites which occur in the cavities of the basalt, for there appears to be no locality anywhere where finer crystals of these beautiful minerals can be obtained. Beautiful as they are, they are but decomposition products of the original minerals contained in the basalt. Without going too deeply into the matter, basalt may be looked at as composed in the main of two distinct minerals, which are felted together to form a tough rock. These two minerals are a dark ore known as augite, and a paler one, usually in long needle-like crystals, known as felspar. Now

there are many different kinds of felspar, each with a name of its own, and all differing in chemical composition and in crystalline form. Still they are closely enough allied to render their grouping under the one term, felspar, advantageous. They are all known to chemists as highly complex silicates. The species of felspar which occurs in basalt contains silicates of alumina, lime, and soda, the proportions of which vary within certain fairly well-defined limits. Usually in our lava-flows the crystals are too small to be seen by the naked eye, but at some localities, as at Malmsbury, they are as coarse as chopped grass. Felspars are hard, and scarcely acted on by the usual acids of the laboratories, but the long continued action of the comparatively weak carbonic acid carried down by rain water will in time decompose them. All the soluble parts will eventually be washed away, and the insoluble residue, combined with water, forms clay. During the progress of this decomposition other minerals will be formed, which, under favourable conditions, may be deposited in cavities in the rock. A common mineral yielded in this way by decomposing basalt is carbonate of lime, which may be temporarily stored away under many forms. Thus at Collingwood one of the forms of carbonate of lime, known as arragonite, is deposited in sheaves of brilliant needles, which glint and sparkle in the sunlight. Another form, known as calcite, occurs in truncheon-like masses with roughened surfaces, and stained brown by a small amount of iron in it. The amount of iron may be increased, and the resulting mineral may entirely fill a cavity in the basalt, as in the case of the banded, almond-shaped masses so common at Riddell's Creek.

The handsomest of all the minerals of the quarry, however, are the zeolites. Like felspars, they are complex silicates, but unlike felspars they contain a considerable amount of water. If heated before the blow-pipe they easily fuse, and the escaping water boils and bubbles, and hence the name, which means the boiling mineral. Owing to great variability in their composition, their classification is very difficult chemically, so that they are grouped on their crystalline form. It will probably be enough to mention the commoner ones, such as phacolite, mesolite, and phillipsite. The cavities in which the finest specimens occur are often peculiar, and are found deep down near the quarry floor as well as nearer the surface. The spaces are such as would be left in an egg-cup if we put into it an egg somewhat too large to fit closely. But in the quarry these spaces are turned the other way up, so that we may come across a dome-shaped mass about as large as the top of one's head, and on this mass the zeolites and carbonates occur. There is usually a mossy, velvet-like coat of arragonite crystals, with here and there one of the truncheon-shaped calcite crystals of a dark brown colour. Scattered about

are minute translucent pearls of mesolite, with perhaps a few brilliant gleaming crystals of phillipsite and great compound crystals of phacolite, a centimetre in diameter, and looking like rose-cut diamonds.

We happened to visit the quarry at a time when fine specimens were common, and loaded ourselves with as much as we could conveniently carry away.—T. S. Hall.

NOTES ON THE BIRD FAUNA OF THE BOX HILL DISTRICT—*Continued.*

By Robert Hall.

(*Read before Field Naturalists' Club of Victoria, 12th April*, 1897.)

The Warbler finding peace and plenty in the reeds is *Calamoherpe Australis*, Gould, Reed Warbler, and anglers, who love the birds or not, know well its merry, active voice as it scampers everywhere amongst the surging ways of its stately forest, now here, now there, and always full of song. The nest is unique, anchored well to three or four reeds, high up from the water below, open at the top, and with three or four inconspicuous eggs, which is almost unnecessary, as the deep, ruggedly-lined bowl of the nest is sufficient to hide eggs with a much less protective colour.

In the bracken and heath country is occasionally seen the Emu Wren, *Stipiturus malachurus*, Lath., one of those reserved forms that carefully hide themselves and nests from prying eyes. It is not capable of strong flight, but has rather an enfeebled one, and the peculiarity of its plumage lies in the looseness of the tail feathers, there being no barbules to render firm the barbs, which are the conspicuous resisting material of true feathers. In this respect they bear a likeness to certain feathers of the Emu.

We now come to a small bird peculiar in more respects than that of being the only species of a genus found nowhere but in Australia.

The Little Field Lark, *Chthonicola sagittata*, Lath. (W.), which has been previously mentioned as the local "ground tit," thereby implying its habitat and manner of spending most of its time. The general colour is olive green boldly bearing sagittate markings, and the dimensions are roughly speaking less than those of our house sparrow. The song of the bird is a single harsh note when feeding as well as two or three pleasant and gentle high-pitched notes. The young assume the garb of the parents (which is similar in both sexes) within a few weeks. This I judge from the difference in call and attention during feeding time shown by the old birds.

How very carefully the nest is concealed is only known to those who have sought for it, and one might hunt for days without

success unless the system necessary to the finding of ground birds' nests is adopted. Patience is the virtue ever to be commended. Under a small cluster of leaves of any native shrub, and with the upper portion closely mimicking its surroundings, a dome-shaped, side-entranced nest is placed upon and partly in the ground, and of material loosely put together yet with symmetry. The eggs, which are laid each alternate day, are carefully overlaid with a uniform dark chocolate layer, and nature has certainly provided ample protection to the bird through its distant colours; to the nest in the manner of its position, and, if as these two were not sufficient, to the eggs in similarity of shade to their surroundings. Even a fox, that finds the Sericornis' nest and devours its contents, will need to use more than its powers of sight to be successful in its raid upon the young of the Chthonicola.

If only the Superb Warbler (Blue Wren), *Malurus cyaneus*, Ellis, could speak to you, without self-praise, of its winning ways, I certainly would be relieved of the undertaking, but as this, in other lands so-called "tit-mouse," is next upon my list, I will commence by stating that this tiny piping bird is associated with our neighbourhood throughout the year, when we recognize the typical shrub bird, to be seen at all times.

If you would view the wren at home with its "children," you must needs be very quiet, for then only will you see the group slowly travelling along the ground and undergrowth in one direction, feeding and chatting, the only two duties that at a particular time seem to bear interest to them. It is then you may see six to twelve birds; if fully alive to the situation this is easy; if the leading bird assumes flight, then the others will follow in Indian file, pass a given point, and faithfully keep together, though perhaps the last of the colony may be late. Mr. Gould, who has very nicely described the birds, finds a difficulty in attempting to mimic by words the melodious notes, and, one would say wisely, refrains. There are first the notes of rollicking fun of the summer bird, secondly the grand oratorio of the male in spring when he is leading a charming competitive life, and thirdly the series of thrilling squeaks when the young have ventured into a gambol upon the tree-tops which would be quite out of place for those of mature years.

The female in nesting time will sometimes call as if a tragedy was taking place, and if, comparatively speaking, such a noise was to be heard among the human group, immediately there would be a rush of excited beings to the scene of unusual behaviour. Through this bird's peculiar crying and imaginary troubled notes such was the impression made on my mind when basking in the sun for a few minutes, and sitting upon the top rail of a fence listening to the varied voices of a score of birds in and about a thicket. It is in September that the flocks have become broken

in ranks, and the instinct to build their houses, a pair assisting each other, is born.

Wrens are sensitive. A few seasons past I remember taking one of the three eggs from the nest, and the bird felt so much hurt that it did not return to its duty—at least, this is my view of the matter, comparing it with other birds' actions. In November of last year a nest had been deprived of its eggs, and the bird did not again lay in it, but, strange to say, in three days the old nest was removed gradually, and rebuilt in the same paddock.

During winter months it is not unusual to count a dozen of which only one bird is in livery, or a group of six ordinary brown birds foraging along a creek bank ; but it is quite apart from the ordinary to count twenty-seven sombre-coloured birds in one break of thicket, with a possible three or four more. In June last I was favoured with a sight of this vast group of what our boys call the "blue tit," when the leader flew away with nineteen as immediate followers in single file, and the remainder, feeling themselves disbanded, with very little hesitation followed in pursuit of the first contingent. There were no blue birds ! Where were they ? This almost made me think that the male bird does lose its livery. The commencement of nest-building varies according to the season, but you may safely look for the workers at their toil in September, after which the vivacity of the mother is toned, easily noticed as it rises with trembling pinions from its group of three or four nestlings. The nest is invariably placed within three or four feet of the ground, domed, and year after year with little divergence from the type. One nest placed in grass overhanging a pond in our garden was the cause of a fatality, as after its first essay in flight I found one young bird in the water. Occasionally an egg of the Narrow-billed Bronze Cuckoo will be deposited in a nest of this species, and my notes refer me to a case where the nest was deserted by the rightful owner as soon as the migratory bird placed its red-spotted, elongated oval egg therein. Soon after a spider watched its opportunity, and spun a web across the entrance of the house, which proved formidable enough to stay the proceedings of all other claimants.

The persistence of the wren in rearing one brood in a season was regularly brought under my notice, the circumstances causing me great concern on their account. The birds built four nests consecutively, each being taken by certain boys as they travelled along the creek on their Saturday morning's visit for vandalism. The Warblers kept to the same hedge and built a fifth time, but in a more secret spot, close to the ground, amongst the strong growth, where they sat upon three eggs in a nest that was only in parts finished. The usual nest is not a slovenly piece of organization, such as could be put together in a few hours, as a wood-swallow might do hers, but of a uniformity and compactness with

beauty of finish which could only be concluded after another three days of busy work.

I am able to make a record of another "nearly matured misfortune," as a Narrow-billed Cuckoo placed an egg in this fifth nest. Not that I wanted this last egg, but out of sympathy for the blue wren, I took it away, and consoled the two or three parties concerned, and with the additional thought that the spring-nomadic bird was no further interested in the matter unless possibly in the assembly that would meet for migration at a later date.

Wrens enjoy fun, especially with the young, and as there appears to me to be very little humour in a juvenile cuckoo, what a contrast a brood in unity must be to one containing a stranger. Fourteen days are occupied in incubation and the young fly from the nest on the ninth to tenth day after "hatching out," and as the eggs (three or four) are deposited on each successive day there is uniformity in the stages. The food supply of one district being richer than another will aid a quicker development, but where insect larvæ are fairly plump the industry of the parents will always quickly supply the regular and constant wants in infantry of this interesting nature.

My notes on the Warblers can hardly be called complete without a few remarks about a sturdy little bird that is better known to cryptogamic botanists than to other collectors who are not devoted to ornithology, because it is only while you are hunting quietly in that particular nature of timber which yields mosses and lichens abundantly that one is likely to become thoroughly acquainted with the White-fronted Sericornis, *Sericornis frontalis*, V. and H. (W.)

My last visit to the timber frequented by the Sericornis and other forms enabled me to witness a little scene which showed me the forms of gallantry on the part of the male Sericornis in his courtship are as intense as with the most chivalrous of other birds. How those two males courtesied before the lady bird you could not realize without a goodnatured smile, bowing deeply, stately and continually as competition alone in the majority of cases forces one or more to do. How the anxious matter terminated I do not know; doubtless the knight of better points won the day and the other went afield for a second trial of his strength.

The call and notes of the bird are sharp, clear, and decisive, and the activity it displays leads it quickly from place to place, principally under cover, but occasionally to one or other bush track when all is quiet.

The place of habitation for its young is lodged among the coarse grass or overhanging twining plants on creek banks. The moist spots are sought, and preference is given to them at all times. During September of last year I found on the Altona

beach a nest made of seaweed, placed in a dead branch almost enveloped in the aquatic weeds.

By my wish a correspondent, having the opportunity in the Heytesbury Forest, gave his attention to the nidification, and made the following observations upon this bird, finding it to be one of the earliest nesters in his district. Before any sign of a nest was shown, a Sericornis placed a few grasses together in a thick-leafed bush, and continued to increase the mass for thirty minutes, when it discontinued and gave vent to a number of grating notes to make up for lost vocal time, and appealed to its mate, who had been hopping about branches close by watching the operation, for a recognition of its work. This was at 11 a.m., and it then adjourned work until 6 a.m. the following morning, when one hour's work was given to the nest, during the whole of which time a series of peculiar grating calls was given forth, and nothing more was done until the same hour of the third morning (18th September, 1896), when the roomy cell of homogeneous plant matter received the addition of an inner wall of another grassy material (mainly old withered leaves). The bird now made an alteration in the time-table, and during the fourth, fifth and sixth mornings laboured from about an hour before noon to an hour after, working leisurely throughout the time until the lining was completed. On the seventh day the first egg was laid; colour—brownish purple spots and short streaks on a ground of lighter similar shades. The second egg was deposited on the ninth day of the month, and the third egg on the eleventh. On the fourteenth the bird had set itself to the task of incubation.

In regular visits to four nests the eggs were found to be laid each forenoon early; the young birds hatched out on the twenty-third day from time of laying third egg, and the young were able to fly on the fifteenth day from the breaking of the shell. The family immediately begins a nomadic life, and the locality of the nest is left to other birds before the morning of the following day. During time of incubation the sitting bird leaves the nest to feed at early morning and evening, and at night returns with a small feather or some downy plumage, so that gradually the internal layer of its house is completed to its satisfaction.

In six nests observed in that district, two were lined with the fur of rabbits, the others with feathers; all were inclined, with the entrance protected from above, and all faced the north-east, which is the fine weather quarter at that period of the year. It was noticeable that the intelligence of the birds led them to build the external portion of their dome nest during rain or early morning, when the wiry grasses were pliable, and the wet softened material could be the more easily adjusted to the required shape, while the inner layer was constructed at midday, when the material was drier.

ON THE SYNONYMY OF *PIERIS PERIMALE*, DON.

By J. A. Kershaw.

(*Read before Field Naturalists' Club of Victoria, 12th July*, 1897.)

The long list of synonyms belonging to this butterfly, which is generally known as *Pieris scyllara*, Macl., shows the confusion that has been created owing to the variability of this species, and we can hardly be surprised that earlier authors, working under the disadvantage of having only an odd specimen or two from which to decide, should have given a new name to what proves to be merely a variety of an already named and common species.

Butler, in the "Ann. Nat. Hist.," vol. xvii., p. 231, 1896, recognizing the confusion existing in the synonymy of this species, endeavours to set us right, but adopts Boisduval's name, *lanassa*, who also uses *perimale* for the variety of this species ("Voy. Astro. Lep.," p. 56, 1832), and places it under the genus Huphina. I will not attempt to decide whether or not this genus should be adopted, but simply use the one adopted by the majority of entomologists. Butler, at the conclusion of his paper, gives a list of the synonymy of this species, as he says "corrected to date," but omits from it the name *perimale* and *scyllara*. It is by the latter name that this species is most generally known to Australian collectors, and has been adopted by Miskin in his "Synonymical Cat. of Lep. Rhop. of Aust."

Butler evidently regards *perimale* as a distinct species, but whether he regards *scyllara* as a separate species or has overlooked it altogether I cannot say, as he makes no mention of it whatever. I think, however, the latter must be the case, as he mentions, when speaking of the variations, that "the under surface of the secondaries and apex of primaries may be white, yellow, whitey-brown, or earthy brown, but the upper surface only varies in the number of white spots on the black border." This embraces the principal variations of the species and includes both *scyllara* and *perimale*, the type of the former of which, according to Macleay, has the under surface of the secondaries white.

Miskin in his catalogue places *perimale* in his list of synonyms, and adds a footnote stating that "*perimale* of Donovan is the rather uncommon varietal form, with the under side of secondaries uniform light brown; hence his name cannot be adopted for the species." This, coming from such a well-known authority, is surprising, and altogether opposed to the recognized rule by which the older name takes precedence. Being a variety does not alter the fact that it is still the same species, and being the older name by more than twenty years entitles it to precede the other names.

It is unnecessary to give here a list of the synonymy of the

species as it has already been published, but I give below the three earlier names, to show their relationship to each other :—

Pieris perimale, Don. (*Pap. p.*), Ins. N. H., t. 20, f. 1 (1805).

P. scyllara, Macl., King's Surv. Aust., ii., App., p. 459, n. 139 (1827).

P. lanassa, Bois., Sp. Gen., i., p. 477 (1836).

I may add that I have specimens of the *perimale* type, having the under side of secondaries light brown, which show the dark submarginal band and others which show no traces of it. Donovan's figure shows this band very distinctly. The under side of another specimen is yellowish brown on the costa and apical angle of primaries and the whole of secondaries with the exception of very indistinct traces of the darker submarginal band, while others vary from yellow to nearly white. The number of white spots in the dark border, both on the upper and under surface, varies considerably. Some specimens show as many as seven in the primaries, while others as few as two, and in the secondaries from one to three and four. On the under surface they vary in a similar way, but in the form with the brown secondaries they are usually absent altogether, some specimens, however, showing indistinct traces of one or two.

PIED CROW-SHRIKE, OR BUTCHER BIRD, *Cracticus picatus*, Gould.—I noticed this bird on several occasions when at King's Plains, about thirty miles from Cooktown, North Queensland. They are very similar in appearance to *C. robustus*, but are smaller, and have a totally different note, and it is possible the two varieties may be found in the same country, although I did not notice any *C. robustus* near Cooktown myself, but they are plentiful at Rockhampton. The bird is found in the open forest country, and I only heard it utter one note, a single clear, low whistle, uttered slowly. Gould, on Gilbert's authority, states that it utters a loud discordant note, but, personally, I only heard the one sound mentioned. A pair of them had their nest in a large eucalyptus tree, about 200 yards from the house I was stopping at, and they did not appear very shy, and were easily approached within shooting distance. These birds were not very plentiful, and seem to consort in pairs. They build an open nest, outwardly composed of sticks, and lined with small twigs and rootlets, and it is generally placed high up in a large eucalyptus tree. The bird will sometimes sit close on the nest until the climber is within a few feet of her, as occurred when the native went up the tree for the eggs I am now describing, and she then only flew a short distance to a neighbouring tree, where I was enabled to secure her. The external diameter of the nest is 6 in., and the internal $3\frac{1}{2}$ in.; external depth 4 in., internal 2 in.

The ground colour of the egg is olive-green, with dark brown markings of varying intensity, and occasionally a few small black ones, a few of the lighter appearing as if beneath the surface. The spots are principally on the larger end. The clutch of three, before referred to, I took on 18th December, 1896. They measure—A, 1.16 x .86; B, 1.15 x .87; C, 1.14 x .84.—D. Le Souef, Royal Park, 9th August, 1897.

Rare Eggs.—The following particulars regarding three species of the eggs exhibited by me at the Club's meeting to-night may be of interest to oologists. Great Palm Cockatoo, *Microglossus aterrimus*, Gmel. This egg is a dull, chalky white, surface somewhat rough, with a few small excrescences. Length, 2.12 x 1.55 in. Taken early this year in North-East Australia. Pied Honey-eater, *Certhionyx leucomelas*, Cuv. Although eggs believed to belong to this species have been already described, I have recently had ample opportunity of verifying the correctness of my labelling, as I not only found the nests, but shot the birds from them, and took the eggs, in Western Australia. Description—Ground colour, dirty white, or pale stone colour, plentifully spotted with dark-brown and pale slate colour, the latter appearing as if beneath the surface of the shell. Size, .8 x .64 in. Red-throated Honey-eater, *Conopophila rufigularis*, Gould. I exhibit four clutches of these eggs for the purpose of showing the extent of variation in colour, markings, and size. No. 1 clutch—Fleshy-white ground, heavily blotched with red, especially at the larger end. No. 2 clutch—Ground colour, dull white, sparingly spotted with dark brown at the larger end. No. 3 clutch—White ground, finely freckled with red. No. 4 clutch are much smaller than the others, perfectly white, and finely spotted with black at the larger end. I not only took these eggs myself, but had previously watched the birds building their nests on many occasions, as they were all found close to our camp, otherwise I should be inclined to think they belonged to different species.—G. A. Keartland. 9th August, 1897.

A New Use for Spiders.—The note which appears under the above heading in last month's *Naturalist* might have passed without criticism—in spite of the fact that it comes from America—had the writer omitted to give the names of the spiders said to be employed by the wine merchants. *Epeira sclopetaria* (*E. vulgaris*) and *Nephila plumipes* are both common in temperate North America, where they spin large orb-shaped webs in the open, but could not be induced to spin webs amongst bottles stored in a cellar. That spiders could be utilized in the manner indicated I have no doubt, but certainly not either of the species named. Some species, common enough in Victoria, would do the work admirably, but nothing less than a Royal Commission shall induce me to give their names.—C. Frost.

A CATALOGUE OF VICTORIAN HETEROCERA.

By Oswald B. Lower, F.E.S.

Part XXV.

ARTIASTIS. Meyr.

945. A. TEPIDA, Meyr. (*loc. cit.*, xv., 1,674).
Melbourne.

OCHLOGENES. Meyr.

DISSELIA. Meyr.

*946. D. ALEUROTA, Meyr. (*loc. cit.*, xii., No. 476).
Melbourne.

MACROBATHRA. Meyr.

*947. M. MESOPORA, Meyr. (*loc. cit.*, No. 481).
Melbourne.

*948. M. CHRYSOTOXA, Meyr. (*loc. cit.*, No. 480).
Melbourne, Gisborne, Warragul, &c.

*949. M. HEMINEPHILA, Meyr. (*loc. cit.*, No. 483).
Melbourne, Trafalgar.

950. M. DESMOTOMA, Meyr. (*loc. cit.*, No. 484).
Melbourne.

*951. M. MELANOMITRA, Meyr. (*loc. cit.*, No. 485).
Gippsland.

*952. M. TRITHYRA, Meyr. (*loc. cit.*, No. 486).
Near Oakleigh.

952A. M. PARACENTRA, Lower (Tr. Roy. Soc. S.A., 182, 1893).
Gisborne.

*953. M. EURYLEUCA, Meyr. (*loc. cit.*, No. 487).
Melbourne.

954. M. ALTERNATELLA, Walk. (*Gelechia alternatella*, Walk., 644; *Macrobathra alternatella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., No. 492).
Melbourne (Ascot Vale).

*955. M. CONSTRICTELLA, Walk. (*Gelechia constrictella*, Walk., 647; *Macrobathra constrictella*, Meyr., Proc. Linn. Soc. N.S.W.—*Œcophoridæ*, xii., No. 500).
Melbourne.

956. M. CERAUNOBOLA, Meyr. (*loc. cit.*, No. 501).
Melbourne.

957. M. NEPHELOMORPHA, Meyr. (*loc. cit.*, No. 504).
Melbourne.

958. M. MYRIOPHTHALMA, Meyr. (*loc. cit.*, No. 506).
Melbourne.

SATRAPIA. Meyr.

959. S. THESAURINA, Meyr. (*loc. cit.*, No. 508).
Melbourne.

FAMILY—GELECHIADÆ.

This family, which is well represented in Australia, has received but little attention as regards classification; consequently the following must only be considered as an incomplete part. Mr. Meyrick has given a good number of MS. names, many of which are here appended. I have described a few myself which I considered new. Most of Walker's species of *Gelechia* belong either to the *Œcophoridæ* or *Xyloryctidæ*. There is no doubt that when Meyrick revises this group there will be a substantial increase in numbers.

PALTODORA. Meyr.

960. P. ORTHOCROSSA, Meyr. (MSS.)

ARISTOTELIA. Hb.

961. A. MONOSTROPHA, Lower (MSS.)

GELECHIA. Hb.

962. G. THERMOCHROA, Lower (Tr. Roy. Soc. S.A., 169, 1893).
Gisborne.

963. G. MACROPLACA, Lower (*loc. cit.*, 170, 1893).

964. G. CENTROSEMA, Lower (*loc. cit.*, 171, 1893).

965. G. STROPHIOPEDA, Lower (*loc. cit.*, 105, 1894).
Gisborne.

966. G. CANNANELLA, Meyr. (MSS.)
Gisborne, &c.

967. G. VARIANELLA, Walk.
Gisborne.

968. G. ZYGOSEMA, Meyr. (MSS.)
Gisborne, &c.

969. G. PETRODES, Meyr. (MSS.)
Melbourne.

970. G. HELIOCHRYSA, Meyr. (MSS.)
Melbourne.

971. G. LIVIDELLA, Lower (MSS.)
Gisborne.

972. G. MESOCHRA, Lower (Tr. Roy. Soc. S.A., 107, 1894).
Melbourne.

973. G. HÆMASPILA, Lower (*loc cit.*, 107, 1894; *Gelechia nana*, Lower, *loc. cit.*, 107).
Melbourne.

974. G. MICROPA, Meyr. (MSS.)
Gisborne.

975. G. OBELISCOTA, Meyr. (MSS.)
Gisborne.

976. G. CERAMICA, Meyr. (MSS.)
Gisborne.

977. G. DELTODES, Lower (Tr. Roy. Soc. S.A., 169, 1896).
Gisborne.

978. G. CALLICOMA, Meyr. (MSS.)
Gisborne.

979. G. SOLANELLA, Bdv. (*Bryotropha solanella*, Bdv., J.B., Soc Cent. Hort., 1874; Meyr., Proc. Linn. Soc. N.S.W. 113, 1879).
Melbourne.

NOTHRIS. Walk.

980. N. DENTATA, Meyr. (MSS.)
Gisborne.

COPIDOSTOLA. Meyr.

981. C. DIMORPHA, Meyr. (MSS.)
Gisborne, Grampians.

YPSOLOPHUS. Fab.

BRACHYACMA. Meyr.

ANARSIA. Zeller.

982. A. INODES, Meyr. (MSS.)
Gisborne.

PSORICOPTERA. Stt.

I have a species doubtfully referable to this genus.

CROCANTHES. Meyr.

983. C. GLYCINÆ, Meyr. (MSS.)
Gisborne.

984. C. PRASINOPIS, Meyr.
Gisborne and Ararat.

MAGOSTOLIS. Meyr.

MACRERNIS. Meyr.

ATASTHALISTIS. Meyr.

AUTOSTICHA. Meyr.

CLEODORA (?) Meyr.

LAVERNA (?) Stt.

POGONIAS. Meyr.

985. P. EURYPLACA, Lower (Tr. Roy. Soc. S.A., 171, 1893).
Gisborne.

986. P. HELIOTRICHA, Lower (*loc. cit.*, 109, 1894).
Gisborne.

987. P. CAPNOPA, Lower (*loc. cit.*, 109, 1894).
Gisborne.

988. P. TRISSODESMA, Lower (*loc. cit.*, 109, 1894).

FAMILY—ELACHISTIDÆ.

*This family, like the *Gelechiadæ*, requires revision. Mr. Meyrick, some years ago, gave a *résumé* of the family in "Transactions of the New Zealand Institute," from which I am enabled to give an outline of the Victorian Genera. Many of the names are manuscript.

STATHMOPODA. Stt.

989. S. MELANOCHROA, Meyr. (MSS.)
Melbourne, &c.

990. S. CROCOPHANES, Meyr. (MSS.)
Melbourne.

991. S. CALLICHRYSA, Lower (Tr. Roy. Soc. S.A., 184, 1893).
Melbourne.

PTILOCHARES. Meyr.

992. S. TRISSODESMA, Meyr. (Proc. Linn. Soc. N.S.W.)
Melbourne.

LOZOSTOMA. Meyr. (1,047, 1886).

993. L. COMPTELLA, Walk. (*Tinea comptella*, Walk., B. M. Cat., 1,007).
Melbourne, &c.

994. L. STERIODETA, Meyr.
Melbourne.

995. L. SCALÆNA, Meyr.
Gisborne.

996. L. PROTODOXA, Meyr.
Gisborne.

*Since writing the above I notice that Mr. Meyrick has recently read a paper before the Linn. Soc., N.S.W., in which a complete revision of this family is given, but as it is not yet in the printer's hands I cannot make use of it.

THE

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th September, 1897. Mr. C. French, F.L.S., the president, occupied the chair, and about forty-five members and visitors were present.

CORRESPONDENCE.

From Mrs. D. Sullivan, Moyston, intimating her desire to dispose of the herbarium formed by her late husband, Mr. D. Sullivan, F.L.S., which contained many valuable specimens, and asking the assistance of the members in the matter.

REPORTS.

A report of the Club's excursion to Black Rock on Saturday, 21st August, was read by the leader, Mr. J. Shephard, who stated that a fair number of members attended, and had a very enjoyable ramble. A visit was paid to some swampy land, where abundance of pond life, especially Volvox, was obtained, also some early embryonic forms, probably of Lepidurus. No botanical specimens of interest were noted.

A report of the Club excursion to Tunstall on Saturday, 11th September, was read by the leader, Mr. G. Coghill, who stated that an interesting botanical outing had resulted, and regretted that so few members were able to avail themselves of the Rev. J. J. Halley's invitation to tea.

On the motion of Messrs. Shephard and Barnard, a vote of thanks was given to Mr. Halley for his hospitality on the occasion.

Mr. Shephard reported that a meeting for practical work had been held on Monday evening, 23rd August, when the Rev. W. Fielder continued his course on the elements of histology, dealing with the microscopic structure of the alimentary canal, which proved most interesting.

The hon. librarian reported the receipt of the following donations, &c., during the past month :—"Journal and Proceedings of the Royal Society of New South Wales" for 1896; "Journal of the Bombay Natural History Society," vol. x., No. 5; the *Geelong Naturalist* for August; "Records of the Australian Museum," vol. iii., No. 2; "Description of Some New or Little Known Birds' Eggs from Queensland," by D. Le Souëf; *Nature Notes*,

August, 1897; five French pamphlets descriptive of ants, wasps, and bees, by Charles Janet, and Lee's "*Vade Mecum*" (purchased).

ELECTION OF MEMBERS.

On a ballot being taken, Mr. Cecil Ryan was duly elected a member of the Club.

PAPERS.

1. By Mr. C. French, F.L.S., entitled "Notes on a Trip to Brisbane."

The author briefly noted the more striking contents of the Botanical Gardens and Queensland Museum, Brisbane, and also referred to the work being done at the Australian Museum, Sydney, and by the Government Entomologist of New South Wales.

In the discussion which followed Mr. C. Frost gave a short description of the manner of producing the casts of snakes at the Sydney Museum, so highly spoken of by Mr. French. Mr. Le Souëf stated that the casts are now made of a more plastic material than at first adopted, thus giving even more lifelike results.

2. By Mr. W. H. F. Hill, "Notes on Some Victorian Case Moths," Part I.

The author gave a detailed description of four Victorian Case Moths—viz., *Metura elongata*, Saunders; *Etometa ignobilis*, Walker; *Clania tenuis*, Rosen.; and *Clania Lewinii*, Westwood—with their life-histories and an account of the method of constructing their "cases." The water-colour drawings by which the paper was illustrated were especially admired.

Professor Spencer congratulated Mr. Hill on the work he had done, as evidenced in his paper.

Mr. E. Anderson differed from the author as to the time of emergence of the Lictor Moth, his experience being that it came out about 5 or 6 o'clock in the evening. He also mentioned the almost incredible swiftness of flight of the male Physicidæ.

Mr. A. Coles and Mr. G. Shepherd confirmed Mr. Hill's praise of the Silver-eye, *Zosterops cærulescens*, for its destruction of insect pests.

NATURAL HISTORY NOTES.

Mr. D. Le Souëf read a note describing the habitat, nest, and eggs of the White-headed Fruit Pigeon, *Carpophaga Norfolciensis*, Lath., of N.E. Australia.

Mr. G. A. Keartland drew attention to the recent notices in Melbourne papers of an application to extend the close season for quail, which he hoped would be granted, in which he was supported by Mr. A. Coles.

Mr. A. E. Kitson read a note describing his observation of

Rosella Parrots eating the scale insects on the oaks in the Fitzroy Gardens.

Messrs. R. Hall, C. Frost, and the president spoke on the matter, the latter saying it was time something to the credit of the Rosella Parrot could be advanced.

Mr. A. J. Campbell contributed a note on the Large Brown Petrel, *Priofinus cinereus*, Gmel., with a description of its eggs, and stated that the Night Parrakeet, *Geopsittacus occidentalis*, had been reported from the Mallee, Victoria

Mr. C. M. Maplestone reported some early occurrences of orchids, &c., near Eltham.

EXHIBITS.

The following were the principal exhibits of the evening :—By Mr. F. G. A. Barnard.—Graptolites, from Keilor excursion ; Lhotzkya (native shrub) in bud, habitat Grampians. By Mr. A. Coles.—Pair Tippet Grebe, *Podiceps Australis*, young and old, the former without tippet. By Mr. C. French, F.L.S.—Australian Lepidoptera—*Epinephile Rawnsleyi*, *E. Helena*, *E. Joanna*, *Hyblæa purea*. Coleoptera—*Rhytiphora latifasciata*, *Penthea* (n. sp.), N.W. Australia ; and photographs of Queensland scenery in illustration of his paper. By Mr. R. Hall.—20 species North Australian bird skins. By Mr. W. H. F. Hill.—Living specimens of *Phreatoicopsis terricola*, from Otway Forest, and coloured drawings in illustration of his paper. By Mr. A. E. Kitson.—Mounted specimen of Rosella Parrot (with enlarged upper mandible), oak twigs infested with scale, showing state before and after the parrots had visited them, in illustration of note. By Mr. F. M. Reader.—Dried plants from Dimboola, *Calocephalus lacteus*, Less., *Thelymitra epipactoides*, F. v. M., new for N.W. Victoria. By Mr. J. Shephard.—Embryo Lepidurus (under microscope).

After the usual conversazione the meeting terminated.

CONTRIBUTIONS TO THE FLORA OF VICTORIA. No. III.

By F. M. Reader, F.H.R.S. Communicated by C. Frost, F.L.S. (*Read before Field Naturalists' Club of Victoria*, 14*th June*, 1897.)

Tillæa exserta, sp. nov., F. M. Reader.

A dwarf, slightly decumbent or erect annual, from under ½-inch to about 2 inches high, usually of a reddish hue ; oftener simple than branched. Leaves short, $\frac{1}{16}$ of an inch long, ½ line broad, very concave, thick, broadly oblong, obtuse, connate at the base. Flowers pentamerous, solitary or a few together, mostly short-pedicellate, developed pedicels often recurved, spreading. Sepals ovate, hardly acute. Petals broadly lanceolate,

¼ of an inch long, from whitish to a deep red colour, about as long as the sepals. Hypogynous scales obliterated. Carpels ½ line long, truncate, abruptly short-pointed by the style; finally erecto-patent and much exserted; each carpel usually containing two seeds. Seeds minute, about $\frac{1}{48}$ of an inch long, narrow ellipsoid, brownish, shining, faintly striate.

Flowering October.—Sandy desert, Lowan, Dimboola shire, 1892 (rare), F. Reader.

In general appearance the simple forms of this species resemble *T. verticillaris*; when branched it is not unlike *T. macrantha*; in colour, however, it recalls *T. purpurata* and *T. pedicellosa*, with which latter species it may be found associated. It differs from *T. verticillaris* chiefly in the leaves being broader, more concave, blunt; in the petals being as long as the sepals; in the truncate, abruptly short-pointed carpels being twice as long as the calyx; and in the ellipsoid, faintly striated seeds. The seeds of *T. verticellaris* are broader and faintly rugular-striate.

This new species is closely allied also to the European *Tillæa muscosa*, L., but the petals and carpels exhibit distinct specific characters. *T. exserta* may readily be distinguished from other species by the truncate and abruptly short-pointed carpels being twice as long as the calyx. In a growing state, and seen through a magnifying lens, the striking rugosity and translucency of the whole plant remind of *T. verticillaris* and *T. macrantha*, but this peculiarity is much more developed in *T. exserta*, and giving the plant a beautiful and distinguishing character.

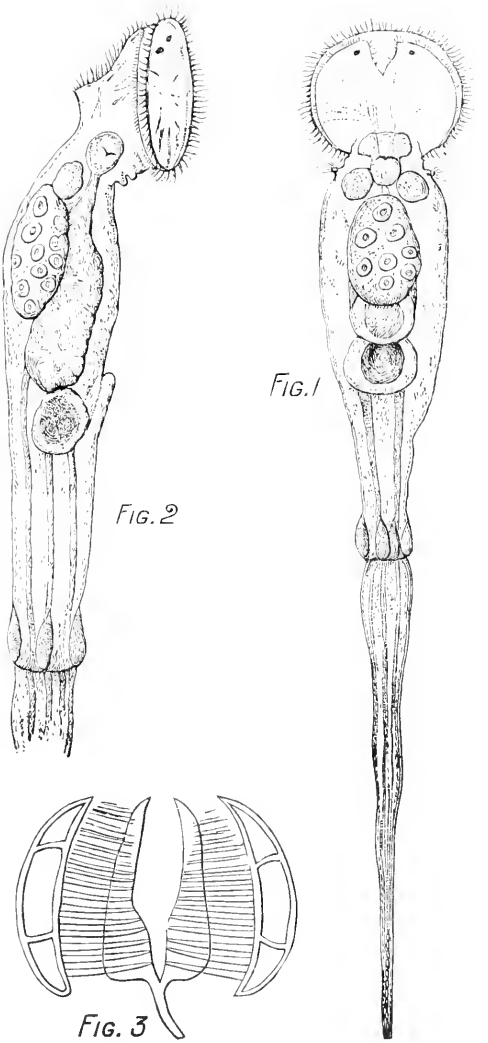
The late Baron von Mueller, knowing the advantages I had of studying this plant in a growing state, suggested that the difference between it and *T. verticillaris* could best be recorded from living plants. I accordingly forwarded to him a description, accompanied by excellent sectional drawings executed by Mr. J. P. Eckert, of Minyip; this, however, after further research, has required some slight modifications, which are embodied in the present description.

A NEW ROTIFER—*LACINULARIA ELLIPTICA*.

By J. Shephard.

(Read before the Field Naturalists' Club of Victoria, 12th July, 1897.)

On 12th December, 1896, during the Club excursion to Heidelberg, a Rotifer was found which appears to be new, and I now propose to describe and name it as *Lacinularia elliptica*. A shallow lagoon near the Yarra was found rich in Rotifera, particularly the colonial forms. Free-swimming clusters were very numerous, and a large number were obviously *L. natans*, and this nearly caused the oversight of the subject of this paper. This



J. Shephard, del.

Fig. 1.—Ventral view (drawn from preserved specimen).
Fig. 2.—Lateral view (from life).
Fig. 3.—Trophi.

LACINULARIA ELLIPTICA

(NEW ROTIFER).

species is often met with in quantities, and it is now evident that more than two or three specimens should be examined before concluding that only one species is present. Happening to take home a few colonies, examination revealed that two species were present. *L. natans* undoubtedly, and a form on a cursory examination resembling it sufficiently to suggest the hypothesis of its being a stage in the development of *L. natans;* but careful examination brought out decided points of difference.

L. elliptica, as I name it is in free-swimming colonies of elliptical form, each colony possessing a distinct and substantial axis, to which the individuals are attached. When a colony is broken into two portions by the axis parting, as happened in mounting some of the specimens, the animals, being so closely packed, spread out and over the broken end, and the cluster then appears a smaller but complete colony as before. Possibly the colonies multiply in this way, the axis increasing in length until separation between two portions of it is effected. Surgeon Thorpe, R.N., F.R.M.S., describes and names *Lacinularia racemovata* ("J. R. M. S.," 1893, p. 150), agreeing in the form of the cluster with *L. elliptica*, but differing in the features of the individuals. The axis or trunk of the colony is as thick as the body of an individual Rotifer, and when the animals are detached shows distinct scars at the points of attachment, in this particular resembling *L. pedunculata*, described by me in the *Victorian Naturalist*, vol. xiii. (1896), p. 22.

L. elliptica would be well simulated if the peduncle of a young colony of *L. pedunculata* was cut, and the colony set free. The new form has surrounding the axis a matrix of adhering gelatinous tubes, very transparent and easily overlooked. The body of an individual is of the usual elongated form, the corona being circular, and its plane is placed at an angle with the lateral plane of the body; but when living the corona is thrown back so as to bring the mouth to the front, and the corona is then brought parallel with the length of the body. A dorsal gap in the ciliary wreaths could not be detected. Two minute antennæ are seen when the ventral aspect is viewed, placed very laterally and about the level of the mastax. The neck is about half the width of the corona, and from it the body expands to nearly the width of the corona, and then gradually tapers away to a narrow foot which shows no expansion at its extreme end, and appears as though broken off the axis of the colony. This tapering is, however, interrupted at the middle of the length by a definite constriction and a slight swelling on either side of it. Two eyes are present, placed below the secondary wreath, possessing clear lens-like and red pigmented portions. The trophi do not show any departure from the type of the genus. Of the internal organs the mastax and gastric glands show no peculiarity; the

alimentary tract is distinctly divided into stomach and intestine. Just above the constriction which marks the commencement of the peduncle is a ring of strongly developed foot glands, probably accounting for the amount of material in the axis of the colony. These glands are very marked, and together with the constriction differentiate the species from all others of the genus I am acquainted with. The species more nearly resembles *L. racemovata* (Thorpe) than any other, the points of agreement being the form of the colony, position of the eyes and antennæ—taking the ventral figure given by Thorpe—differing in the form of the corona, the trophi, and most markedly by possessing the constricted trunk and strong foot glands, Surgeon Thorpe's figures showing no trace of these features.

Mr. W. Stickland has very kindly drawn on wood and engraved the figures.

The specific characters may be summed up as follows:—Clusters elliptical, with well-developed axis; gelatinous adhering tubes. Corona circular, slightly wider than body. Dorsal gap absent, or very minute. Antennæ, two, minute, ventral, but wide apart. Body constricted at commencement of peduncle. Foot glands strongly developed. Dimensions:—Individuals, length .65 mm., breadth .085 mm.; corona, .1 mm. across; trophi, .032 mm. across; ova, .09 x .047 mm. Habitat—Heidelberg, Victoria.

A PEEP INTO THE ROCKY POOLS OF SORRENTO AND QUEENSCLIFF.

Part II.

By Henry Thos. Tisdall.

(*Read before the Field Naturalists' Club of Victoria, 12th July*, 1897.)

The green seaweeds which I described in my last paper as being the principal denizens of the first pool uncovered by the receding tide are not so common in the half-tide pool. The lovely Padinæ, with their changeful hues of green, grey, and purple, immediately catch the eye. They grow on the rocks on the sides of the pool, and seem to have a gentle undulating movement, even in the most placid water.

If we lift up some of those great olive-green masses of seaweed we shall find beneath them fronds of Ceramium. These are thread-like, jointed, and constantly forking into branches, the tips of the filaments curling towards each other in a curious manner. Under a low power the filaments appear like net-work of pink and white, while the joints are almost transparent.

Some species of Ceramium are quite scarlet, and the fertile

fronds are covered with capsules containing seeds, and called favellæ. These favellæ are generally surrounded by hair-like leaves, which curl around them in such a manner as to give them the appearance of a rosebud with scarlet sepals. If a transverse section of a branch be examined tetraspores will be found, forming a complete whorl around the centre, but beneath the surface. Upwards of nine species of Ceramium were found by the writer at Ocean Grove, but only two of these in the half-tide pool; the remainder grow in deep water, and were obtained as drift after a storm. While we have been examining the seaweeds of this pool the tide has been receding, and we can pass on to those pools that are uncovered at low water mark. At the bottom of this hole we may see quantities of Hormosira—that is, the bladder wrack, described in my first paper. If examined closely, curious little seaweeds may be seen growing out of the conceptacles of the air bladders. This is a parasitic plant, *Notheia anomala*, and it is only found on Hormosira. Now this is a very curious phenomenon. In the first place Notheia belongs to the division of seaweeds termed Fucaceæ, none of which (except this) are parasites. It is only found on Hormosira, which also belongs to the Fucaceæ, and lastly it springs from the reproductive organ of that plant, namely, the conceptacle. Harvey, in the fourth volume of the *Phycologia Australica*, says:—"The Notheia grows constantly from the spore cavity of the Hormosira, and its fronds, however different in aspect, have just so much affinity in development with those of Hormosira that one is tempted to guess at the possibility, at least, of this parasite being an abnormal proliferous growth from the hymenium of the nobler species. Were the occurrence of Notheia rare, such a view would be strengthened; but it is far too common along a great extent of coast, and far too regular in its development to favour such an opinion, in the absence of direct evidence of its truth." Here there is a problem for some of our members to elucidate. Professor Harvey had not our advantages of observing this plant in its native home season after season. I therefore trust that any of us who live or spend any time by the sea may take every occasion of watching the development of this seaweed. It is easily found, and as the Hormosira is firmly fixed to the rock, the same plant can be noted time after time.

In this pool the brown seaweeds are to be found in abundance, amongst others the smaller species of Sargassum. These require careful attention to perceive them, for Mr. Bracebridge Wilson, in his list of Victorian Algæ, published 1866, only enumerates two as being found by him during his dredging operations in Port Phillip Bay and Bass Straits; while the late Baron von Mueller, in the eleventh volume of the "Fragmenta," mentions the names of only four as being found in Victoria. Since that time (1880)

the number of specimens in the Botanic Museum must have been wonderfully increased, as I was able to identify no less than sixteen separate species. These were nearly all found by me amongst drift at Ocean Grove, on the morning after a severe storm. On the rocky sides and bottom of the pool brown fan-shaped seaweeds, Zoonaria, may be observed; they are very beautiful, and vary greatly in habit, *Z. nigricans* forming an entire thin leaf fastened almost sessile to the rock, and marked with zones of different shades. In other species of Zoonaria the frond becomes more and more divided until in one, *Z. canaliculata*, it forms a mass of branching threads, putting one in mind, except from its brown hue, of Cladophora. I was fortunate enough to discover nine species of this genus. They are very easily identified in consequence of their woolly roots and zone-like markings. Their only mode of reproduction seems to be by spores, which grow on separate spots on the frond, each lot making a kind of sorus formed of spores and specialized hairs called paranemata. From the outside rocks one may gaze down into the deep water formed by the rush of the tide between neighbouring rocks. This is the home of the Laminariaceæ. One can see them forced backwards and forwards with the swift current, now floating gracefully with the stream, then a furious returning eddy takes them suddenly up, and, lifting their huge fronds to the surface, dashes them against the rocks.

Nothing but these extraordinary plants could stand the violence of the waves. They are fastened so strongly to the solid rock that only the destruction of the rock itself can remove them, while their long thin stems are stronger than the stoutest rope. We have only two genera, neither of which is found in Europe—*Macrocystis pyrifera* and *Ecklonia radiata*. Darwin, in his "Journal of a Voyage Round the World," speaking of Terra del Fuego, mentions Macrocystis thus:—"The plant grows on every rock from low water mark to a great depth, both on the outer coast and within the channels. I believe, during the voyage of the *Beagle*, not one rock near the surface was discovered which was not buoyed by this floating weed. The good service it thus affords to vessels navigating near this stormy land is evident; and it certainly has saved many a one from being wrecked. I know few things more surprising than to see this plant growing and flourishing amidst those great breakers, which no mass of rock, let it be ever so hard, can long resist. The stem is round, slimy, and smooth, and seldom has a diameter of so much as an inch. A few taken together are sufficiently strong to support the weight of the large loose stones to which, in the inland channels, they grow attached; and yet some of these stones were so heavy that, when drawn to the surface, they could scarcely be lifted into a boat by one person."

The *Macrocystis pyrifera* is certainly the highest plant in the world, for Harvey says it has been estimated at from 500 to 1,200 feet long, but he thinks an average of these, say 800 feet, would be correct. As the stem increases new leaves are constantly formed at the apex, the old leaves never being renewed, so that in time it becomes a huge brown vegetable rope crowned by leaves. The leaves are lacerated in a peculiar manner. At first the terminal leaf is very broad and splits up into ribbons, commencing near the edge furthest from the stem; these ribbon-like leaves form long petioles, which swell out into air bladders and thus support the plant.

The reproduction of this enormous vegetable is effected in the very simplest manner. At its base, on the rock, a few small radical leaves make their appearance. On these may be observed small cloud-like patches. These, when viewed under a good lense, turn out to be ovoid transparent spores closely packed with hairs, both interspersed amongst them and completely surrounding them. No reproductive organs have been observed on the main plant, so that the longest vegetable in the world comes from a spore that can barely be distinguished by the naked eye. Other large plants which may be seen are Cystophora. These are anchored to the bottom, waving their great arms abroad and lashing themselves to ribbons against the rocks.

If the larger seaweeds be carefully examined immense numbers of diatoms may be found adhering to them.

These microscopic plants are unicellular, and are completely covered by beautifully marked frustules, as they are termed. Frustules are formed of silica, and are really complete shells, each plant having two shells, the edge of one shell fitting over the other in the same manner that a lid fits over a box. Where the two edges overlap is termed the girdle. The chlorophyll in diatoms is completely masked by a matter called diatomen, which changes it into a rich brown colour. The mode of reproduction is peculiar. Each half of the plant separates slightly from the other and each produces a bud. These buds grow until each is equal in size to the half that produced it. One old half and a bud then separates from the rest, and thus we have two new plants from one old one. Amongst the brown seaweeds we find a near approach to the structure of land plants. Most other Algæ are formed from the simple cell, either as unicellular, cell filaments, cell plates, or cell masses, but in Fucus and allied plants, although there are no actual vascular bundles, still there is a difference of tissue, the central cells being elongated and loose, whilst the outer ones are close and short. Here, also, we see the nearest approach, in appearance at any rate, to roots, stems, and leaves, these organs being entirely wanting in seaweeds.

But it is the morning after a storm that the seaweed collector has

his real chance of becoming acquainted with these strange plants. He must, however, rise betimes, before the treasures washed up by the storm are again taken back into the depths slowly and surely by the succeeding tides. Suppose we are in time, behold the whole shore strewn with heaps of seaweeds—seaweeds quite unknown to us before—growing as they do in the vasty deep. Green, brown, olive, pink, scarlet, black, and even white seaweeds are lying absolutely in thousands. We hardly know where to commence—what to notice!

Let us examine one of the commonest red seaweeds: it is named Callithamnion. The form is thread-shaped, branched; in some instances the roots form a mass of fibres. I picked up twenty different species of this family. They are all beautiful, generally of a bright red or scarlet.

Although the red seaweeds do not attain the size of the olive or brown ones, still they do attain a considerable size, and the delicacy of their texture places them in the front rank for beauty.

Few plants in land or water can compare with the lovely *Claudea elegans* of Bass Strait.

A common method of reproduction amongst red Algæ is by special cells borne either in the branches or in slight enlargements on the edge of the frond. These cells usually break into four and produce bright and red motionless spores, which are known as tetraspores. From these new plants arise.

The other method of reproduction is by special organs called antherids and procarps. The antherids are borne at the ends of special branches, and produce pollinoids, which are simple globose cells, that float about in the water as pollen grains do in the air. The procarp is also borne on a special branch. It consists in its simplest form of a single cell, the cystocarp, with a long hair-like prolongation, which is termed a tricogyne. The floating pollinoid attaches itself to the tricogyne, and their union fertilizes the cell, which in time produces not one, but several, new plants.

But it is time to return to our storm-tossed seaweeds and notice how their prototypes are utilized in other parts of the world. If this seadrift were on the shores of Europe, hundreds of carts would be at work removing them to manure several kinds of crops, principally potatoes. Then, again, that red-leaved Ulva (Porphyra), is used as food in the west of Ireland and Scotland under the name of laver. A close relative of one of our red seaweeds, *Chondrus crispus*, is called Carrageen, or Irish Moss, and is largely employed in the preparation of jellies and blanc manges. That olive-green Halymenia embraces a species, *H. palmata*, which is used in Kamschatka to make a fermented drink, and in Ireland the same plant is utilized in a sweetmeat preparation.

This beautiful Gelidium is well worth notice; it is edible, and

makes splendid jellies, but the most interesting thing about it is that in China and the East Indian Islands it is used by swallows for the construction of their nests. The following extract is taken from Burnett's "Outlines of Botany":—"It has been estimated that 242,400 lbs. of birds' nests, worth in China nearly £300,000, are annually exported from the Indian Archipelago." The nests are dried and packed in small boxes. The nests, according to Mr. Crawfurd, are obtained in deep and damp caves, and are most esteemed if taken before the birds have laid their eggs. The finest nests are the whitest. They are taken twice a year, and, if regularly collected, the produce is very equal, and the harvest very little, if at all, improved by being unmolested for a year or two. The high price is, of course, occasioned by the danger and difficulty of obtaining the nests. Some of the caverns are extremely difficult of access, and the nests can only be collected by those who have been brought up to the work. In one place the caves are only to be approached by a perpendicular descent of many hundred feet by ladders of bamboo and rattan, above a sea rolling violently against the rocks. When the mouth of the cavern is attained, the perilous office of taking the nests must often be performed by torchlight, by penetrating into the recesses of the rock, where the slightest trip would be instantly fatal to the adventurers, who see nothing below them but the turbulent surf making its way into the chasms of the rock.—*Shirley Hibberd.*

We noticed before the different colours of the seaweeds, and that these differences must have been occasioned to a certain extent by the depth of the water in which they grew. And we may now further notice that the structure, reproduction, and colour are closely related. First let us distinctly understand that all the colours are only a masked tinting of the all-pervading green chlorophyll. In shallow water we find steel blue unicellular plants, reproducing by division (Cyanophyceæ); also green seaweeds, either filamentous or formed of cell plates, and reproducing by spores or gametes (Chlorophyceæ). In deeper water, brown seaweeds formed of cell masses and reproducing by antheridia and oospheres (Phæophyceæ); and, lastly, red seaweeds growing in deep water, with a more complicated structure, and reproduced by pollinoids and cystocarps.

ORNITHOLOGICAL NOTES.

Brown Petrel (*Priofinus cinereus*, Gm.)

The Large Brown or Great Grey Petrel frequents the southern seas, being most numerous between the 30th and 55th degrees of south latitudes. Gould, on his voyage to and from Australia,

obtained many specimens of the bird. This makes it more inexplicable why his figure ("Birds of Australia," folio, vol. vii., pl. 47) was not coloured truer to life. The bird is made to appear grey instead of light brown.

Gould remarked that the powers of flight of this fine sea-bird are exceedingly great, and in flying over the ocean it often mounts higher in the air than any other member of its group, and descends again with the utmost eagerness to seize any fatty substance thrown overboard. Its actions and flight differ slightly from those of the other petrels, and more resemble those of the albatrosses.

According to Professor Hutton, the Brown Petrel is very common at sea from May to August, but retires to Kerguelen Islands and other places to breed in September and October. Each pair burrows horizontally into the wet peaty earth from 2 to 18 feet. At the end of the hole they form a large chamber and construct in the centre of it a nest similar, except in size, to that of an albatross, in the hollow top of which the female lays her white egg. The bird seldom leaves its burrow during the day, and from the habit of flying by night is called the Night Hawk by sealers. Its cry resembles the bleating of a lamb.

The Brown Petrel is considered one of the best divers of its tribe. Sometimes it poises in the air for a moment at the height of about 25 feet above the water, and closing its wings takes a header into the waves. However, under water the bird uses its wings much in the same manner as when flying.

I have lately received eggs, accompanied with a skin (specimens here exhibited to-night) of the Brown Petrel, from Macquarie Island, where they were collected by Mr. Joseph Burton. Macquarie Island is an exceedingly rough and rugged place, almost devoid of vegetation, situated 860 miles south-east by south from Hobart. It is about 20 miles long by about 7 miles broad, its greatest height being 1,600 feet above sea level.

In three specimens of eggs the shape is inclined to oval, more or less compressed at one end; texture of shell close and somewhat fine; surface very slightly glossy; colour pure when first laid, but soon becomes soiled with brownish earthy stains. Dimensions in inches:—(1) 2.8 x 2.04, (2) 2.79 x 1.98, (3) 2.73 x 1.96.

Night Parrakeet (*Geopsittacus occidentalis*).

It has been reported that this remarkable parrot has been seen in the Mallee. Whether it has always existed in that locality, or whether it has been driven there by the recent severe drought experienced in its more central domains, is a matter of conjecture.

A. J. Campbell.

13th September, 1897.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 15th November, 1897. Mr. C. French, F.L.S., the president, occupied the chair, and about 80 members and visitors were present.

CORRESPONDENCE.

From the Hon. Sec. Australasian Association for the Advancement of Science, enclosing programmes of the meeting to be held in Sydney in January, 1898.

REPORTS.

The hon. librarian reported the receipt of the following donations to the library:—"Transactions of the New Zealand Institute," vol. xxix., 1896, from the Institute; "Proceedings of the Linnean Society of New South Wales," vol. xxii., parts 1 and 2, from the Society; "Botanical Contributions to the Flora of Queensland," by F. M. Bailey, F.L.S., from the Department of Agriculture, Brisbane; and "Ornithological Papers," by Mr. A. J. North, from the author.

Owing to the inclement weather, the excursion to Werribee, arranged for Saturday, 23rd October, did not take place.

A short report of the social picnic held at Beaumaris on Saturday, 30th October, was given by Mr. F. G. A. Barnard, who stated that it had been a great success. Over 50 ladies and gentlemen, members and friends of the Club, had sat down to tea, after which some time was spent in recitations, music, and singing, the party returning by special tram about 9 p.m. Hopes were expressed that such a gathering might become an annual event.

A report of the Club excursion to Frankston on Tuesday, 9th November, was given by the leader, Mr. C. French, F.L.S., who said that a really profitable outing had been spent. Among the plants obtained were—*Drosera binata*, *D. glanduligera*, *D. pygmaea*, *Lycopodium laterale*, *Comesperma calymega*, and *Sebaea albidiflora*. Insects were somewhat scarce; among those obtained was a larva of the butterfly *Hypochrysops delicia*, taken on a blackwood sapling. Specimens of *Epinephile abeona*, the Mountain Brown, were seen, but not captured.

GENERAL BUSINESS.

A report on the progress of the Mueller Memorial Fund was made by Mr. C. Frost, F.L.S., who stated that the committee of the Club had withdrawn its delegates from the original Memorial Committee, and had joined with the Royal and other societies in

forming a new committee to carry out the proposal. Professor Spencer, M.A., stated that a public meeting had been held that day, which had been very enthusiastic. Numerous promises of support had been given, and an executive committee elected, by whom the various proposals for perpetuating Baron von Mueller's labours will be considered. It is hoped that sufficient funds will be available to provide (1) for the erection of some form of statue, and (2) for the endowment of a medal, prize, or scholarship, to be associated with Baron von Mueller's name, and to be awarded from time to time in recognition of distinguished work in the special branches in which he was most deeply interested, and which shall be open to workers throughout the Australian colonies.

PAPER.

By Mr. D. Le Souëf, entitled "Ancient Animal Life."

The author gave an interesting epitome of the various discoveries which have been worked out, and by means of numerous limelight views of restorations of the larger forms of animal life enabled those present to obtain some idea of the shape and size of the creatures inhabiting the earth in primeval days.

NATURAL HISTORY NOTE.

Mr. J. G. Luehmann, F.L.S., stated that among some plants recently forwarded to him by Mr. W. H. Williamson, of Lillimur, was the male plant of *Xerotes juncea*, F. v. M., of which only the female plants had hitherto been found; also a Tillæa, which, along with *T. adscendens*, Nees., had been included by Bentham under *T. verticillaris*. He, however, considered them to be three distinct species.

EXHIBITS.

The following were the principal exhibits of the evening:—By Mr. A. Coles.—The Little Australian Eagle, *Aquila morphnoides*, Gould, with four eggs. By Mr. C. French.—Fine specimen of Eaglehawk, *Aquila audax*, Lath., from Wimmera; drawings of life-histories of Queensland Lepidoptera. By Mr. C. French, jun.—Rare eggs of Australian Dottrel and Pratincole, from interior of New South Wales and South Australia. By Mr. J. Haase.—Larvæ of butterfly *Xenica achanta*. By Mr. F. M. Reader.—Dried specimens of *Shœnus nanus*, Benth., from Arapiles, new for Victoria. By Mr. G. E. Shepherd.—Masked Barn Owl, *Strix Novæ-Hollandiæ*; eggs of Swamp Harrier and Black-throated Grebe.

After the usual conversazione the meeting terminated.

AUSTRALIAN GRASSES.—Mr. F. M. Reader, Dimboola, Victoria, is working up the genera Stipa and Aristida, and is desirous of obtaining specimens of any species of them, or of any grass, from all parts of Australia, in order to obtain material for complete comparisons.

NOTES OF A TRIP TO BRISBANE.

By C. French, F.L.S.

(*Read before the Field Naturalists' Club of Victoria, 13th September*, 1897.)

In the following notes, hastily put together, an attempt is made to give some account of my recent trip to Brisbane, and such objects of natural history which I was able to observe in the very limited time I had at my disposal. I have a few photographs of the scenery around Brisbane, also one of an incident which occurred in connection with the *Victoria regia* growing in the open air at the Botanical Gardens. I was unable to spare time for collecting, but owing to the kindness of old entomological friends in Brisbane and Sydney I was able to bring back some 2,000 odd specimens of insects of various kinds; and these, or a portion of them, may be seen at any time in my office.

I left Melbourne for Sydney and Brisbane on 12th June, having been chosen by the Victorian Department of Agriculture to represent this colony at the Brisbane Fruit-Growers' Convention. Arriving in Sydney on Sunday morning at 9 a.m., I found my old friend Mr. W. W. Froggatt, Government Entomologist for N.S.W., awaiting me. After lunch we visited the Australian Museum, which, fortunately for lovers of natural history, is open to the public on Sundays, the Sydney people being evidently too dense to distinguish the difference (as we do here) in the crime between visiting the Zoo on Sunday to see a living monkey and going to the National Museum to see a specimen of a similar animal who has had the misfortune to have been removed from this planet. I noticed a great change in the Sydney Museum since I was there 18 years ago. The change is marvellous, and the collection of specimens in spirits, birds, and marine objects, to say nothing of the splendid casts of snakes, will ever be remembered by me. As I was especially anxious to see the Paradise Birds, I had to defer this pleasure until my return from Brisbane; so I will pass on to the Northern railway station, at which I booked for Brisbane, arriving there at midnight on the Tuesday following.

The journey up to Brisbane is most interesting. First the magnificent Hawkesbury River has to be crossed, then onwards to Newcastle; after this the gradients in the line become steeper, until, at an elevation of 4,500 feet, Ben Lomond railway station is reached, where the temperature may be described as freezing, or next door to it. Rapidly descending, we are twice pulled up by the steam brakes, and upon turning out of our sleeping cars to ascertain the cause found that the "boxes" had become heated; and after over half-an-hour had been spent with the steam hose we started off again. We had not got much beyond

the Queensland border, however, when we were pulled up again, and a repetition of the "hot boxes" had again to be put up with. By this time it was getting near daybreak, and, although very cold, I "turned out" to see the surrounding country, which, as you approach Toowoomba, is simply magnificent. This line, which is narrow-gauge, climbs up hill and over dale, sometimes crossing vast chasms, other times ascending to an altitude of over 3,000 feet and then down again, and upon looking out of the carriage windows the engine, first on one side of you and then on the other, is plainly visible. The line takes the most marvellous turns, and must have been a most expensive one to build; and to those who have never travelled on a similar line a great treat is in store for them when they visit Brisbane by railway. Having passed through the rich Darling Downs, magnificent country, we arrived at Brisbane, and although we had notified our coming, the hostess and everyone else were in bed, so we were on the point of camping on the verandah until daylight, when a friendly head was poked out of the window, and, having explained our position, we were kindly allowed to come in, and had the doubtful privilege of having to retire supperless to bed.

At daybreak (the day here I found breaks a good hour earlier than in Melbourne) I got up and went for a stroll in the gardens. The morning (although winter here) was hot, and upon entering the gardens I could at once realize, that which before I had only read of, what a tropical country must be like. Here were clumps of bamboos 60 feet high, with a diameter in some of the stems of 10 inches, and on an island grew magnificent plants, 40 feet odd in height, of the Traveller's Tree, Ravenalia, the water from which some of us for curiosity tasted, but did not relish, although the natives of Madagascar, also travellers who have visited that island, speak highly of its uses, especially when water is scarce.

The palms here are something to be remembered, *Hyophorbe Verschaffelti*, *Oreodoxa regia*, Sabal, &c., growing in the greatest luxuriance, the latter's leaves I am sure being as much, or more, than a man could carry. We were too early, or perhaps too late, to see the *Victoria regia* in all its glory, but it flowered here last season, being the first time this truly magnificent water-lily has flowered out of doors in Australia. On the leaf, which was 6 feet across, the infant son of the Governor, Lord Lamington, was photographed. Passing along towards the plant sheds one sees grand plants of Cocos plumosa, one of the most elegant of the palm family; also the Oil Palm, *Elaeis Guineensis*, the plant from which most of the palm oil, so largely used in commerce, is made. One of the most singular trees in these beautiful gardens is the Sausage Tree, *Kigelia pinnata*, from Nubia, where the plant is held sacred by the natives, the foliage of the tree being arborescent, and below this the sausage-like fruits hang suspended.

One of the features here are the splendid plants of Poinciana, also the Poinsettias, which, with their magnificent crimson bracts, could be seen for a mile distant. It would take me a long time to tell you what I saw in this charming spot, and to one who had for years been accustomed to grow stove-plants, such as Crotons, Ixoras, Marantas, &c., in artificial heat, the pleasure of seeing the same kinds of plants growing in the open air must naturally cause wonder and surprise. Coffee trees, too, were here in full berry, and appeared to me to take the place of the hollies of the old land. But here I must stop, and can only say that Nature has done a lot for Brisbane, the river running alongside the gardens nearly the whole way, although this in itself is not altogether an unmixed blessing, as during the great flood, I was informed by Mr. M'Mahon, the curator, portion of the gardens was 20 feet under water; hence it is that many trees, the Moreton Bay pines especially, have suffered greatly. Having, as I said before, spent an hour or two in the gardens, the real business part of the trip had to be attended to, and for a whole fortnight we were kept at it from 9 a.m. till 10 p.m. Still the early morning visit to the gardens was one at least of the great pleasures of our visit.

Having a few hours to spare, I paid a visit to the Brisbane Museum, where I saw many things of interest, the ethnological collection from New Guinea being especially fine. I also met Mr. H. Tryon, who is Entomologist to the Department of Agriculture, and with him spent a profitable time amongst his collections. Unfortunately, Mr. F. M. Bailey, Government Botanist, was at Cape York, so I did not see him; but his son was very good, and showed me anything I wished to see, including his fine herbaria of Queensland plants.

I was much struck by the absence of wild flowers about Brisbane, as, although we made several short trips into the country, only one plant, a Flindersia, was seen in bloom. Birds were also scarce, and of insects I saw none, save a few butterflies which were sailing about in the gardens of the Acclimatization Society, and in which, by the way, some of the finest specimen plants in Brisbane are to be seen. Brisbane contains many ardent entomologists, and the many pleasant hours which I spent with them will not soon be forgotten.

Before leaving Brisbane we went to Redlands Bay, a lovely spot, and at which place I had my first sight of a pineapple plantation. Picture to yourself miles of these plants, all in full bearing, and bananas in endless numbers. I was greatly struck with the rich soil here, but as the captain of the steamer—the latter kindly lent by the Government—was anxious to get back before dark, we were only able to make a hurried examination of the place. Our last trip was to Woombye, on the Northern line, about 60 miles from Brisbane, which place I had been

recommended by Professor Spencer to visit. Woombye is a beautiful place, teeming with vegetation, and is the home of palms, Staghorn Ferns, Rifle and Regent Birds, &c.; I saw two of the latter, both young ones. This must be a veritable paradise for the naturalist. In the scrubs about Woombye the Whipstick Palm, *Kentia monostachya*, grew in profusion, but failed, in my opinion, to equal the magnificent tree ferns in our own gullies. The Lawyer Palms (Calamus) are common here, and may be seen climbing up to the tops of the trees in the jungle. Here, too, are immense clusters of Staghorn Ferns, and these, together with epiphytal orchids of the genus Cymbidium, &c., were perched high up in the forks of the trees. The Wonga Pigeon is not uncommon here—the whole being, as I have before remarked, a delightful place for a naturalist. The scrub leeches, however, are here in great force, while the whole place is moist and teems with tropical vegetation, and which in the proper flowering season must look lovely. One of the sights on this line is the celebrated Glasshouse Mountain, an immense mass of rock 800 or 900 feet in height, and partly cone-shaped. Some of the New Zealand and South Australian delegates paid a visit to the Blackall Ranges, and returned quite delighted with their visit. The rare butterfly, *Epinephile Rawnsleyi*, is found in this district, but it was too early for many insects to be about. The next day we had to visit the Exhibition, where the Mining Court and the exhibits from the Agricultural Department were worth coming a long distance to see. Our stay in Queensland was now drawing to a close, and visions of the papaw, jack-fruit, custard apples, mangos, and other tropical fruits were constantly introducing themselves upon us; so, having bade adieu to our kind entertainers, we left for Sydney, where we arrived after a railway journey of 28 hours.

Upon arrival in Sydney a visit was made to the Botanic Gardens, where the Curator and Government Botanist, Mr. J. H. Maiden, F.L.S., an old friend, received me very kindly; and great are the improvements noticeable here since my last visit. I fancy the Sydney gardens must be one of the show gardens of the world, as all is luxuriance and beauty, and many of the plants of tropical Australia and elsewhere appear to thrive as well here as at Brisbane, or even further north. The Australian Museum was again visited, and I had the pleasure of meeting, for the first time, Mr. R. Etheridge, F.G.S., the Curator, who kindly showed me many objects of interest. I also saw Mr. A. J. North, one of the oldest members of our Club, and by him was shown the collection of birds, &c., with which I was greatly pleased, especially with their splendid arrangement, and hardly knew which to admire most—the mounted specimens or the rich type collections, admirably arranged as to gradations of species, with

notes, &c., &c. The Paradise Birds are very fine; two especially —*Paradisornis Rudolphi* and *Schegelia respublica* (which I hope shortly to add to my collection of these birds, now numbering 23 species)—greatly pleased me. The insects, now in charge of Mr. W. J. Rainbow, are slowly but surely being put in order and added to, and one cannot help envying this Museum, with its fine staff of scientific workers, whilst the Cook and Banks relics must interest everyone. I was much amused at seeing the collecting bottle formerly used by the great botanist and traveller, the late Sir Joseph Banks, it being in appearance not unlike one of the earthenware "water monkeys" commonly used in houses.

As my time was getting short, I paid a hasty visit—all too short for me, at any rate—to the fine Technological Museum, and last, but not least, to the Macleayan Museum, so ably presided over by my old friend Mr. G. Masters, a Victorian of the early fifties. The Macleayan collection of insects generally is undoubtedly the finest in Australia; and the munificent donations to the Sydney University and other public institutions testify for all time to the liberality of the late Sir W. Macleay, the father of Australian entomology. At the office of Mr. Froggatt, the Government Entomologist, I saw much of interest, especially the fine series of ants, scale insects, Brachyselidæ, and other insects of economic importance. The breeding cages also contained many specimens—the dreaded fruit-fly, amongst others. I was very pleased with the life-history collections, also with the practical nature of the work which I saw going on.

A hurried trip to the rich Parramatta district brought my most pleasant visit to a close, and reluctantly I left Sydney, its proverbially beautiful harbour, and its rich natural history treasures. When in Sydney I had the pleasure of meeting our old club mates, Messrs. A. H. Lucas, M.A., and T. Steel, F.L.S., and with them spent my last evening in Sydney, reaching Melbourne again on the 5th July.

A MUELLER MEMORIAL.

A FUND has been started to establish a permanent national memorial to the late Baron von Mueller. An influential general committee, with the Mayor of Melbourne as its chairman, and an executive committee, under the chairmanship of Sir John Madden, have been formed, while Professor Spencer and Mr. W. Wiesbaden have consented to act as joint hon. secretaries.

The committee of the Field Naturalists' Club hope that the members will contribute as liberally as possible to the fund, and also bring it under the notice of their friends. The hon. secretary, Mr. G. Coghill, will be pleased to take charge of contributions and hand them over to the Memorial Committee.

NOTES.

Lyre Birds' Tails.—A Melbourne furrier was charged at the District Court on 1st November last with having in his possession, and offering for sale, Lyre Birds' tails. It may not be generally known that the *Game Act* renders persons buying, selling, or having in possession flesh, skin, or feathers of protected native birds, liable to prosecution. In this case the offender was fined 10s., with 10s. 6d. costs. It is stated that other prosecutions are likely to follow.

Victorian Freshwater Fish.—Specimens of the smaller Victorian freshwater fish are desired by Mr. J. Douglas Ogilby, Australian Museum, Sydney.

The Production of Aigrettes.—The use of Egrets' plumes as ornaments for the headgear of ladies has lately received severe condemnation at the hands of bird lovers, on account of the destruction of the nesting birds, and the cruel starvation of the young which follows the present mode of obtaining the aigrettes. The *Ibis*, the journal of the British Ornithologists' Union, states that the demand for ladies' aigrettes has instigated attempts to keep Egrets in captivity, and so produce these much-coveted feathers without unnecessary cruelty; and in a recent number of the Bulletin of the French Acclimatization Society an account is given of a visit paid to an establishment near Tunis, where a large number of White Egrets are kept in a large enclosed aviary furnished with trees and water. The conditions are so natural that they nest there, rearing two broods in each year, in April and June. They are fed very cheaply on horseflesh, the young birds at first requiring small fishes, with which the mother feeds them. The precious side-plumes are shorn twice a year, in May and September, the best plumes being those of May. The value and lightness of these beautiful feathers may be gathered from the fact that each bird supplies only about 110 grains weight of plumes in the year, which are worth about 1½ guineas.

CORRESPONDENCE.—THE BLIGHT FLY.

To the Editor of the Victorian Naturalist.

Sir,—While engaged botanizing the other day, and enjoying that instructive pastime, I was bitten by that terrible pest the "blight fly," the result being severe swelling of both eyes, suffering of pain and blindness for two or three days, with consequent loss of sleep and time while the effect of the bite lasted. Can you or any of your readers give me any information concerning this fly, or suggest any remedy, preventive or curative? —I am, yours, &c., SUFFERER.

[The orchid enclosed in your letter is *Chiloglottis Gunnii*.—Ed. *Vict. Nat.*]

A CATALOGUE OF VICTORIAN HETEROCERA.

By Oswald B. Lower, F.E.S.

Part XXVI.

CASTORURA. Meyr.

BATRACHEDRA. Stt.

997. B. arenosella, Walk.
Melbourne, Gisborne.

COSMOPTERYX. Hb.

ELACHISTA. Tr.

LIMNŒCIA. Stt.

998. L. phragmitella, Stt. (an introduced species).
Melbourne (near railway station, Spencer-street).

ENDROSIS. Hb.

999. E. lacteella, Schiff. (an introduced species).

I have several other genera of this group, but the above, I hope, will suffice for classification.

Family—PLUTELLIDÆ.

The remarks in reference to the two former families are equally applicable here.

PRAYS. Hb.

YPNOMEUTA. Latr.

ENŒMIA. Zeller.

CERATOPHYSETIS. Meyr.

THYRIDECTIS. Meyr.

PLUTELLA. Schrk.

1000. P. cruciferarum, Zeller (the Cabbage Moth).

EUTORNA. Meyr.

1,001. E. fabulicola, Meyr. (MSS.)
Melbourne, &c.

1002. E. tricasis, Meyr. (MSS.)
Gisborne.

GLYPHIPTERYX. Hb.

This genus is usually considered typical of the family *Glyphipterygidæ*, but as Mr. Meyrick has merged them into the *Plutellidæ* I follow this arrangement.

*1003. G. CYANOCHALCA, Meyr. (Proc. Linn. Soc. N.S.W., 185, 1887).
Melbourne.

*1004. G. CYANOPHRACTA, Meyr. (*loc. cit.*, 186, 1882).
Stawell.

1005. G. AMBLYCERELLA, Meyr. (*loc. cit.*, 189, 1882).
Warragul.

1006. G. ACINACELLA, Meyr. (*loc. cit.*, 193, 1882).
Warragul.

*1007. G. CHRYSOLITHELLA, Meyr. (*loc. cit.*, 229, 1880).
Gisborne, &c.

1008. G. COMETOPHORA, Meyr. (*loc. cit.*, 231, 1880).
Melbourne, Gisborne.

1009. G. SABELLA, Newm. (Trans. Ent. Soc. Lond., N.S., iii., 229; Meyr., Proc. Linn. Soc. N.S.W., 237, 1880).
Mount Alexander Range.

*1010. G. METEORA, Meyr. (*loc. cit.*, 237, 1880).
Gisborne.

1011. G. CHRYSOPLANETIS, Meyr. (*loc. cit.*, 238, 1880).
Melbourne, Gisborne.

*1012. G. LEUCOCERASTES, Meyr. (*loc. cit.*, 239, 1880).
Gisborne.

*1013. G. PALÆOMORPHA, Meyr. (*loc. cit.*, 242, 1880).
Gisborne, Brighton, &c.

APISTOMORPHA. Meyr.

*1014. A. ARGYROSEMA, Meyr. (*loc. cit.*, 247, 1880).
Near Sandringham.

PHRYGONOSTOLA. Meyr.

1015. P. EUTHYBELEMNA, Meyr. (*loc. cit.*, 250, 1880).
Melbourne, &c.

ÆOLOCOSMA. Meyr.

*1016. A. MARMARASPIS, Meyr. (*loc. cit.*, 225, 1880).
Gisborne.

EUPSELIA. Meyr.

1017. E. MELANOSTREPTA, Meyr. (*loc. cit.*, 223, 1880).
Melbourne, Gisborne.

*1018. E. THEORELLA, Meyr. (*loc. cit.*, 222, 1880).
Melbourne.

*1019. E. SATRAPELLA. Meyr. (*loc. cit.*, 222, 1880).
Gisborne, &c.

*1020. E. CARPOCAPSELLA, Walk. (B. M. Cat., 998; Meyr., Proc. Linn. Soc. N.S.W., 219, 1880).
Melbourne.

HYPERTROPHA. Meyr.

1021. H. CHLŒNOTA, Meyr. (*loc. cit.*, 1042, 1880).
Melbourne, &c

1022. H. TORTRICIFORMIS, Gn. (*Heliodes tortriciformis*, Gn. Noct., vi., 198, part ix., p. 13; *Orosana desumptana*, Walk., Tortrices, 460; *Anthœcia diritiosa*, *ib.*, Suppl., 77; *Hypertropha thesaurella*, Meyr., Proc. Linn. Soc. N.S.W., 1880, 209; *H. tortriciformis*, *ib.*, *loc. cit.*, 806, 1886).
Melbourne &c.

SMAËTHIS. Leach.

CHOREUTIS. Hb.

1023 C. BJERKANDRELLA. Thunb. (Meyr., Proc. Linn. Soc. N.S.W., 215, 1880).
Melbourne, &c.

FAMILY—TINEIDÆ.

NEMOTOIS. Hb.

1024. N. SPARSELLUS, Walk. (*N. sparsella*, Walk., 506; *N. sparsellus*, Meyr., Proc. Linn. Soc. N.S.W., 483, 1893.)
Melbourne.

1025. N. ORICHALCIAS, Meyr. (*loc. cit.*, 484, 1893; (?) *Adela laurella*, Newm., Tr. Ent. Soc. Lond., N.S., iii., 290).
Melbourne, Gisborne.

1026. N. TOPAZIAS, Meyr. (*loc. cit.*, 485, 1893).
Melbourne.

ADELA. Latr.

SENTICA. Walk.

1027. S. OPPOSITELLA, Walk. (B. M. Cat., 507; *Œcinea Felderi*, Lep., 29, pl. ix.; (?) *Lampronia discistrigella*, Walk., 487; *Sentica oppositella*, Meyr., Proc. Linn. Soc. N.S.W., 488, 1893).
Melbourne.

CTENOCAMPA. Meyr.

TALÆPORIA. Hb.

NARYCIA. Stph.

XYSMATODOMA. Zeller.

1028. X. STELLARIS, Meyr. (*loc. cit.*, 493, 1893).
Melbourne.

*1029. X. MAURELLA, Walk. (*Tinea maurella*, Walk., 483; *X. maurella*, Meyr, Proc. Linn. Soc. N.S.W., 493, 1893).

*1030. X. PROTORNA, Meyr. (*loc. cit.*, 495, 1893).
Sale.

*1031. X SAXOSA, Meyr. (*loc. cit.*, 496, 1893).
Melbourne.

*1032. X. ADELOPIS, Meyr. (*loc. cit.*, 496, 1893).
Gisborne.

*1033. X. GUILDINGI, Scott (*Conuca Guildingi*, Scott, Aust. Lep., 27, pl. ix.; *C. irrorea*, Feld., Reis. Nov., pl. cxxxviii., 39, 40; *X. Guildingi*, Meyr., Proc. Linn. Soc. N.S.W., 497, 1893).
Melbourne. (Doubtfully Victorian.)

1034. X. HELIOCHARES, Meyr. (*loc. cit.*, 498, 1893).
Melbourne.

1035. X. RETICULATA, Meyr. (*loc. cit.*, 499, 1893).
Fernshaw and Melbourne.

*1036 X. APOCHROA, Meyr. (*loc. cit.*, 501, 1893).
Brighton.

*1037. X. HAMALITHA, Meyr. (*loc. cit.*, 502, 1893).
Melbourne.

*1038. X. BASIFERANA, Walk. (*Sciaphila basiferana*, B. M. Cat., 350; *X. basiferana*, Meyr., Proc. Linn. Soc. N.S.W., 503, 1893).
Kewell.

*1039. X. CATAPHRACTA, Meyr. (*loc. cit.*, 540, 1,893).
Melbourne.

1040. X. CHARACOTA, Meyr. (*loc. cit.*, 1893).
Melbourne.

LEPIDOSCIA. Meyr.

1041. L. COMOCHORA, Meyr. (*loc. cit.*, 509, 1893).
Melbourne.

*1042. L. STRIGULATA, Meyr. (*loc. cit.*, 510, 1893).
Gembrook.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club, and Special Exhibition of Wild Flowers, *in memoriam* of its late patron, Baron von Mueller, was held in the Royal Society's Hall on Monday evening, 11th October, 1897. Mr. C. French, F.L.S., the president, occupied the chair, and about 120 members and visitors were present.

CORRESPONDENCE.

From Mr. G. A. Keartland, with reference to the proposed extension of the close season for quail, suggesting that the close season should be from 1st September to 1st April instead of from 1st August to 1st March, as at present.

It was decided that Messrs. Best, Campbell, Coles, and Keartland be appointed to wait upon the Minister of Customs and urge the adoption of this suggestion.

REPORTS.

A report of the Club's excursion to Cheltenham on Saturday, 25th September, was given by the leader, Mr. J. G. Luehmann, F.L.S., who stated that there was a good attendance of members, who spent an enjoyable afternoon. Several devoted themselves to pond-life with very fair results, while the botanists were successful in obtaining *Pultenæa dentata*, *Polypompholyx tenella*, *Lyperanthus nigricans*, *Caladenia congesta*, and a large number of other spring flowers.

A report of the Club excursion to Ringwood on Saturday, 9th October, was read by the leader, Mr. C. French, jun., who stated that the attendance was small, but the result in a botanical sense was good. About twelve specimens of orchids, including *Caladenia suaveolens*, *Pterostylis barbata*, and *Thelymitra ixioides* were found, besides a large number of the usual spring flowers, as well as *Candollea despecta*, *Utricularia dichotoma*, and *Phylloglossum Drummondi*.

ELECTION OF MEMBERS.

On a ballot being taken Messrs. J. B. Luffman and J. A. Wood were duly elected members of the Club.

ADDRESS.

Instead of the usual papers Mr. C. A. Topp, M.A., LL.B., F.L.S., delivered an address with reference to the career of the late Baron von Mueller, which was as follows :—

"As to-day is the first anniversary of the death of an old friend and familiar figure at this annual wild flower show of the Club, it has been thought appropriate that a few words should be said in memory of our former beloved and respected patron, Baron von Mueller, who took so kindly an interest in these exhibitions, who, on these occasions, placed at the disposal of the youngest and least learned among us the best stores of his botanical knowledge, and who afforded the members of our Club, whenever any question of difficult identification arose, the aid of his unequalled experience and memory.

"I have been asked to speak some few words expressive of our appreciation of our old friend and fellow-member, from my connection for the last three or four years of his life with the department of which he was so great an ornament. It will not be expected that I should be able to add anything new to the notices which have appeared during the past twelve months of Baron von Mueller's life and work, or that I should now give a detailed account of either. I can only bear witness to the unwearied zeal with which the great botanist carried out the routine and attended to the business of his office, to his punctuality and thoroughness in correspondence, his readiness to supply information and advice to correspondents in other countries in regard to the economic uses of our indigenous plants, and the pride he took in the successful cultivation in other parts of the world of our useful timber-trees and valuable forage plants.

"In regard to this latter characteristic, Professor M'Owan, the writer of a notice in the *Cape Argus*, mentions how 'Von Mueller prided himself, not unworthily, upon having been the means of dotting the treeless plateaux of the Cape with the varied species of eucalyptus, and its sandy flats with the golden wattle;' he says that our old friend's 'most characteristic letters were those expressing his enthusiastic delight at the success attending the acclimatization of *Atriplex nummularia* from his little packet of half a dozen seeds.' I may myself add that in several of the late Government Botanist's letters to me he drew my attention, with pardonable and justifiable pride, to the extensive culture and great benefit derived from the dispersal of another salt bush (*A. semibaccata*) over the alkaline plains of portions of California.

"Mr. W. Botting Hemsley, in an article in *Nature* last year, dwelt upon this characteristic of Baron von Mueller, and upon his devotion to what may be called the utilitarian aspects of botany in the following words :—'Mueller was much more than a botanist and geographer; he was always a promoter, and often

the originator, of movements for the scientific, social, and material welfare of the country he had made his home, and in spite of his not being a practical horticulturist, he did more probably than any other person to promote the commercial—that is to say the useful—development of cultural industries in Australia, and more than any other person in the diffusion of useful Australian plants in other parts of the world; he had probably a wider correspondence than any living botanist, and few are the establishments that have not been in some way benefited by him. The value of his work consists largely in the fact that he did exactly the kind of work that was required in a young country for its material as well as for its moral development.'

"Baron von Mueller was in many respects fortunate in his life. After having shown as a lad a strong taste for botanical studies in Schleswig-Holstein, the delicate state of his health drove him to the shores of Australia, whose genial climate restored him to such robustness as allowed him to work unremittingly at his favourite studies, enabled him for several years to undergo not inconsiderably physical hardship, both in the hot climate of the north of the continent, and in the cold and snows of our Australian Alps, and allowed him to die in harness at the ripe age of seventy-two. Not only was the Baron fortunate in possessing sufficient strength, aided by most temperate and abstemious habits of life, to spend fifty years in the continuous prosecution of somewhat laborious work; but he was fortunate in receiving a position, when still a young man, which enabled him to devote his life to his special study, and which placed him for many years in a most favourable position for widening his knowledge, obtaining botanical information, and publishing the results of his work.

"It is well known how eagerly, how zealously, and how indefatigably Baron von Mueller availed himself of his opportunity, and how, not content with utilizing the funds granted by Parliament to the Government Botanist's Office, he spent freely from his own salary in the purchase of books, and in subsidizing private collectors.

"For the first three or four years after his official appointment Dr. Mueller had what must have been to him the keenest of pleasures—the exploration of a new botanical region in our own Australian Alps, and a glance through the key of Victorian plants will show how well he employed his opportunity, name after name of our alpine plants having been given by him as their first discoverer and describer. In 1855 Dr. Mueller also accompanied the Gregory Expedition for the exploration of Central and Northern Australia, and so had unequalled facilities for studying a nearly unknown portion of the flora of the continent—facilities which, it need not be said, he utilized to the utmost. Baron von Mueller showed how

highly he esteemed the advantages of seeing plants in their native regions, and himself collecting them by making two trips many years later to Western Australia, one in 1867, and one in 1877, although at the time of the latter excursion he was over 50, and might reasonably have been excused from exposing himself to the discomforts and privations of rough bush travelling.

"In one respect our late Government Botanist was not so fortunate as in those to which I have referred. He had not what he must have keenly desired—the pleasure and distinction of writing the history of Australian plants. Though in 1861 he must have been far and away the botanist who had the most complete and most practical knowledge of the Australian flora, he yielded his claim to George Bentham, and afforded the latter every assistance in the production of the 'Flora Australiensis.' This, as has been well observed, 'showed a fine trait in Baron von Mueller's character. No doubt the preparation of such a work had long been the dream of his scientific life, and his labours had been continuously directed towards its accomplishment for many years. It should always be remembered to his honour that in this trying position he stood aside, effacing himself and his natural claims to be considered.'

"It is one of Baron von Mueller's claims on our admiration and affectionate remembrance that he united in an uncommon degree a devotion to two branches of botany not usually associated; while he possessed a thorough knowledge of the systematic botany of the phanerogams, and was delighted to discuss exhaustively the claims of genera to be regarded as distinct or to be united, the affinity and grouping of genera and orders, and the relation and sequence of species, he also devoted no small amount of time to economic botany, and was the author of the most popular and widely-read of recent treatises on this subject, "The Select Plants;" and as early as 1853 he recommended as a new industry the distillation of oil from eucalypti, and a few years later advocated the planting of trees of this genus in Europe and other parts of the world for forest purposes, so that as a result of his advocacy, and that of Ramel, Thozet, and others, various species are now found extensively planted in South Europe, Algeria, the Transvaal, New Zealand, India, Jamaica, California, Mexico, and South America.

"Certainly we may look back on the career amongst us of Baron von Mueller as one in most respects worthy of the admiration and imitation of those of our young students who are fired by the noble ambition of extending the boundaries of knowledge in some branch of science, of applying its teachings to increase the well-being of society, and of earning the praise of their fellow-men. I have placed the love of fame last among the motives for leading the nobler life—some may be disposed to say this love is

of too strong a personal and self-regarding nature to deserve encouragement or commendation; but surely such a view is inconsistent with observation of the life and writings of the most eminent of mankind. As the poet, who perhaps of all poets had the highest aim in life and the strongest sense of duty, says—

> "'Fame is the spur which the clear spirit doth raise
> That last infirmity of noble minds,
> To scorn delights and live laborious days.'

"The love of fame, as well as a strong sense of duty, was no doubt a guiding motive in the life and work of the famous botanist whom we commemorate to-night; would that such an ardent desire for the praise of those who have earned, by their own distinction, the right to award it were more common amongst us, provided it led to and were accompanied by the same high ideal of life, the same unwearied industry, the same temperance and self-denial, the same liberality to the needy, the same love of country and mankind as the Baron exhibited and carried out in his life!

"Here among the wild flowers, which von Mueller loved so well, some of which would no doubt bring back memories of his early hardships when he was winning his spurs by his botanical explorations of the dry north-west of this colony, and the adjoining territories of South Australia, others of which would bring to mind his solitary wandering over the alpine and sub-alpine plateaux of the Australian Alps, and the more luxuriant valleys of East Gippsland, we shall do well, forgetting the foibles which, like all of us the Baron no doubt had, and which the very simplicity and openness of his character rendered perhaps more conspicuous—we shall do well, I say, to treasure the fine example he set (when so many were engaged in a mad rush to gain wealth, and to squander it on ignoble pleasures) of single-minded devotion to science, and of enthusiasm to utilize its teachings for the benefit of his fellow-colonists, and to cherish the memory of the first Government Botanist of Victoria."

The president and Mr. J. G. Luehmann referred to the excellent way in which Mr. Topp had spoken of Baron von Mueller's life-work, and, on the motion of Messrs. Barnard and Luehmann, a vote of thanks was unanimously accorded to him.

NATURAL HISTORY NOTES.

Mr. G. E. Shepherd read a note on the actions of a White-eared Honey-eater, *Ptilotis leucotis*, Lath., which had followed him while riding, and plucked hair from his horse's back to use in the construction of its nest.

Mr. A. E. Kitson reported having seen a large rabbit a few months ago on the Kosciusko Plateau, at an elevation of nearly

7,000 feet, a region which is deeply covered with snow and ice for several months of the year.

EXHIBITS.

The exhibits of the evening consisted chiefly of wild flowers, which are recorded in a separate article. By Mr. A. Coles.—An Australian Goshawk, *Astur approximans*, undergoing change of plumage, the tail showing four of the *old* feathers of a light brown colour, and eight *new* feathers of a dark leaden colour, the same change being noticeable in each wing. There is, however, no sign of the supposed change on the breast from spots to bars, the bird being perfectly marked with bars from the bill downwards, thus tending to prove the evidence already produced (see *Vict. Nat.*, xiv., p. 43) that this bird never has a spotted breast. By Mr. G. E. Shepherd.—Nests and Eggs of Brush Wattle-Bird, *Anellobia mellivora*, Lath.; Frontal Shrike-tit, *Falcunculus frontatus*, Lath.; and Emu Wren, *Stipiturus malachurus*, Lath.; all taken at Somerville.

After the usual conversazione the meeting terminated.

EXHIBITION OF WILD FLOWERS.

THE exhibition of wild flowers usually held in the spring by the members of the Field Naturalists' Club was this year so arranged that it might serve to commemorate the first anniversary of the death of Baron von Mueller, late Government Botanist of Victoria, one of the patrons and earliest members of the Club. In order that the large number of personal friends of the deceased botanist might share in the commemoration, the Club offered to receive and take charge of wreaths or other floral designs of wild flowers, and afterwards place them upon Baron von Mueller's grave. Accordingly the exhibition was held in conjunction with the October meeting of the Club in the Royal Society's Hall on Monday evening, the 11th October, when there was a splendid display of the floral wealth of Australia; for besides Victoria and New South Wales, Western Australia also contributed to the success of the exhibition.

Owing to the large number of exhibits sent in, and the short time available for arranging and naming, it is impossible to give a complete list of the specimens of the various exhibitors.

Wreaths and floral designs were contributed by the Mueller Botanical Society, Perth, Western Australia, a wreath of everlastings; Miss Georgina King, Homebush, Sydney, a crown composed entirely of flowers of *Boronia floribunda*; Mrs. and Miss Williamson, Chiltern; Mrs. Galsworthy, Beaconsfield; Misses Wise, Sale; Mrs. C. French, jun.; Mrs. J. G. Luehmann; Miss Cochrane; Mr. and Mrs. Perrett, Clayton's Road; Messrs. J. West, Phillip Island; A. J. Campbell, and G. French.

A splendid collection of native flowers from the neighbourhood of Sydney was contributed by Miss Hynas, B.A. ; Messrs. J. H. Maiden, F.L.S., Botanic Gardens ; R. T. Baker, F.L.S., Technological Museum ; J. J. Fletcher, M.A., B.Sc., Linnean Society ; C. Hedley, F.L.S., Australian Museum ; and A. G. Hamilton, Mount Kembla; together with Professor Spencer, Messrs. A. H. S. Lucas, M.A., and T. Steele, F.L.S.—members of the Field Naturalists' Club of Victoria, then in Sydney. The collection comprised some 60 species, including *Boronia floribunda, B. serrulata, Philotheca Australis, Daviesia alata, Callicoma serratifolia, Darwinia fascicularis, Lambertia formosa, Grevillea sericea, G. punicea, Hakea dactyloides, Telopea speciocissima, Goodenia heterophylla, Styphelia triflora, S. microphylla, Woollsia pungens, Sowerbæa juncea, Actinotus helianthi, Macadamia* sp., *Dendrobium tetragonum, D. speciosum,* and *Diuris aurea.*

Mr. W. R. Guilfoyle, F.L.S., contributed about fifty species of Australian wild flowers grown at the Melbourne Botanical Gardens, including many handsome grevilleas, acacias, &c. ; the Castlemaine Ramblers' Club, a collection of local flowers, including *Eriostemon obovalis, Grevillea rosmarinifolia, G. Alpina,* &c. Flowers were contributed by Mr. C. French, F.L.S., from Cheltenham ; Mr. J. G. Luehmann, from Sandringham ; Mr. D. Best, from Cheltenham ; Mr. C. Frost, F.L.S., from Mitcham ; by Mr. C. French, jun., and C. Walter, from Ringwood and Cheltenham ; Mr. J. E. Shepherd, from Somerville, including *Sprengelia incarnata,* var. *alba,* and *Epacris obtusifolia* ; Mr. F. G. A. Barnard, 30 species from Plenty Ranges, including *Eriostemon correifolius, Baeckea diffusa, Tetratheca ericifolia, Dampiera stricta,* also *Helichrysum obcordatum, Dilwynia cinerascens,* &c., from Yan Yean ; Mr. A. E. Kitson, from Benalla ; Mr. J. Paul, from Grantville ; Mr. A. Purdie, M.A., from Bendigo ; Miss Cochrane, from Ringwood, including *Pterostylis barbata*; Misses Wise, from Sale, including *Correa speciosa* (red variety), *Caladenia Cairnsiana, Caleya major.*

Besides those mentioned, the Victorian flowers included *Hybanthus filiformis, Pittosporum phylliroides, Comesperma volubile* (white flowers), *Boronia polygalifolia, Eriostemon myoporoides, Lasiopetalum Baueri, L. Schultzenii, Sphærolobium vimineum, Pultenæa villosa, Acacia calamifolia, A. retinodes, Bauera rubioides, Calycothrix tetragona, C. Sullivani, Leptospermum myrsinoides, Melaleuca Wilsoni, Pommaderris subrepanda, Helichrysum elatum, Candollea despecta, Dampiera Brownii, Prostanthera rotundifolia, Epacris longiflora, E. microphylla, Stypandra glauca ;* also about 30 species of orchids, including *Thelymitra epipactoides, Prasophyllum elatum, P. fuscum, Pterostylis pedunculata, Caladenia suaveolens, C. latifolia, C. Menziesii,* and *Lyperanthus nigricans.*

On Tuesday morning, the 12th October, most of the loose flowers were made up into wreaths by the Misses French, Haase, and Kleiser, and Messrs. C. French and C. French, jun., the flowers not required being forwarded to the Melbourne Hospital. In the afternoon Messrs. C. French, F.L.S. (president), J. Shepherd, C. Frost, F.L.S., J. Gabriel, G. Coghill, and C. French, jun., conveyed the wreaths and designs, twenty-seven in all, to the St. Kilda Cemetery, and arranged them on Baron von Mueller's grave, thereby completing the memorial proceedings organized by the Club and enabling the contributors to show their respect and love for the memory of the deceased botanist.

DESCRIPTION OF THE EGG OF THE WHITE HEADED FRUIT PIGEON, *CARPOPHAGA NORFOLCIENSIS*, LATH.

By D. Le Souef.

These birds frequent the dense scrubs that are found in the coastal districts of North-East Australia. They are shy, and not often seen, and seem to go about either singly or in pairs. The egg of this bird is apparently the only one of the Australian Fruit Pigeons' which has not yet been described. During my visit to the Bloomfield River district in 1894, one of the black boys in Mr. Hislop's service, named Bamboo, brought in an egg which he said belonged to this bird; he found it on 23rd November. Last year, when I was again visiting the same district, we found another nest, on 28th November, with one egg in, slightly incubated. The parent bird was disturbed off the nest. The nest was the usual fragile structure, composed of a few sticks, and being 3½ inches in diameter; it was built near the end of a branch of a scrub tree and overhanging a watercourse, being about fifteen feet from the ground. The eggs are an elongated oval, one having a point on the smaller end. They are pure white and slightly lustrous. The two taken measure—(1) 1.38 in. x 1.4 in.; (2) 1.36 in. x 1.4 in.

NOTES ON THE FANTAILED CUCKOO.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 9th August, 1897.)

The smaller sized Fantailed Cuckoo, *Cuculus flabelliformis*, Lath., like the Pallid Cuckoo, enjoys a range over Australia and Tasmania, arriving at and departing from its southern limits about the same time as the latter bird does. However, a few stragglers of the Fantailed species remain to winter in Victoria, as some of my notes attest. Also in Tasmania individuals have been observed during winter.

From about the end of September to the beginning of Decem-

ber includes the laying season of the Fantailed Cuckoo. The eggs are almost invariably deposited in domed or covered-in nests of certain little insectivorous birds. But there are a few notable exceptions (four instances) of open nests having been selected.

Here follows a list of foster parents of the Fantailed Cuckoo known up to the present, namely :—

Vernacular Name.	Scientific Name.	By Whom First Recorded or Reported.
Tasmanian Tit	Acanthiza diemenensis ...	Rev. H. T. Hull
Little Brown Tit	A. pusilla	Dr. E. P. Ramsay
Striated ,, ...	A. lineata	,,
Little Yellow ,, ...	A. nana	,,
(?) Buff-rumped Tit ...	Geobasileus reguloides ...	,,
Long-tailed Wren ...	Malurus gouldi	A. J. C.
Blue ,, ...	M. cyaneus	Dr. E. P. Ramsay
Variegated ,, ...	M. lamberti	,,
Sombre Scrub-Tit ...	Sericornis humilis ...	A. J. C.
White-fronted ,, ...	S. frontalis	T. Brittlebank
Large-billed ,, ...	S. magnirostris	A. J. C.
Little Field Lark ...	Chthonicola sagittata ...	Dr. E. P. Ramsay
White-eared Honey-eater	Ptilotis leucotis	C. French, jun.
Black capped ,,	Melithreptus melanocephalus	A. E. Brent
Wood Swallow	Artamus sordidus	,, (Nov., '96)
Dusky Robin	Petrœca vittata	,,

We are indebted to Dr. Ramsay for much original information in reference to our cuckoos. He patiently watched their eggs in various nests, thus enabling him to identify the species when hatched. The result of his labours, together with coloured plates of four of the most familiar eggs, may be found embodied in the "Proceedings of the Zoological Society" (London), 1865 and 1869, from which I quote at length :—

"Among those species, the nests of which are favoured by visits from this 'parasite,' is *Acanthiza pusilla*, from a nest of which in September, 1863, we took no less than four eggs—two laid by the rightful owner of the nest and the other two by cuckoos. One of these was a very fine specimen of *Chalcites basilis*,* the other an egg of the present species, *Cacomantis flabelliformis*. The entrance to this nest was greatly enlarged, being in width fully 2 inches, and the hood which usually conceals the entrance (which is near the top of the nest and not generally wider than 1 inch across) was pushed back to such an extent that the eggs were rendered quite visible.

"I have now before me ten nests of the Acanthizæ and four of Maluri, the former comprising *Acanthiza lineata*, *A. nana*, *A. pusilla*, and what at present I believe to be that of *A. reguloides*; the latter, *Malurus cyaneus* and *M. lamberti*.

* Probably *plagosus* is intended.—A. J. C.

"Now, having compared the greatly enlarged entrances of those nests from which we have taken cuckoos' eggs with the entrances of those which did not contain the egg of a cuckoo, and which we took as soon as the bird had laid its full number of eggs for a sitting, I cannot but feel convinced more than ever that the eggs of these parasites are laid in the nests and not deposited in any other manner.

"The average width of the entrances of the nests of *Acanthiza lineata* which have not been visited by a cuckoo is 1 inch, while those which have contained cuckoos' eggs vary from 2 to 2½ inches. In addition to the nests of *Acanthiza pusilla* we have known this cuckoo *(C. flabelliformis)* deposit its eggs in the nest of *A. reguloides (?)* and *Chthonicola sagittata.*"

However valuable are Dr. Ramsay's other notes, I must in the interests of research and truth combat his idea that the eggs of cuckoos are laid in the nests and not deposited *in any other manner*. How can the Fantailed Cuckoo, a bird about 9 inches long, including a tail 5 inches, enter the small covered or dome-shaped nest of, say, a Tit, Acanthiza, the longest exterior diameter of which is only 4½ inches? The side entrance, that hardly admits of one's finger, may be enlarged by the cuckoo thrusting its head in.

In my published remarks, read before the Field Naturalists' Club of Victoria, 1883, on our Cuckoos, I ventured the opinion that our cuckoos (particularizing four species), after laying their eggs somewhere, convey them in their bills to the nest of the chosen foster parent. Since then I noticed an interesting article on "The Architectural Tastes of Birds," by M. Oustalet, of France, in which is stated:—

"The cuckoo watches the moment when the mother quits the nest, then laying its egg, seizes it by its mandibles, passes it into the throat with the agility of a conjuror, and flies to deposit it delicately in the stranger's nest."

We also have the statement of another eminent ornithologist, Dr. Sharpe, of the British Museum, who says:—

"The fact of the cuckoo carrying her egg in her bill to deposit it in the nest of her victim is now generally admitted."

If such be possible with the European cuckoo, why not with our Australian species also? The following note received from Mr. Wm. P. Best, Branxholme, Victoria, is, I think, conclusive evidence on the subject as far as this species is concerned:—

"In the season of 1888 I shot a Fantailed Cuckoo. It was almost the first bird I had seen or heard in the season. On dissection it proved a specially interesting specimen, as in its ovary I found a nearly perfect egg, and in its gizzard another egg, which, though much broken, was evidently an egg of the same species, probably of the same bird. The season was a late one, and the

conclusion I drew was, that the bird had carried the egg about for a considerable time, and, being unable to find a suitable nest, had simply swallowed it."

By permission I quote the following notes from the diary of the Rev. H. T. Hull, Tasmania :—

"6th October, 1877.—Found nest of *Acanthiza diemenensis*, with egg of *Cacomantis flabelliformis*. The three eggs of Acanthiza were all dented, as if the larger egg had been roughly deposited on the top of them."

"15th November.—Found nest of *Acanthiza diemenensis*, two eggs broken, with young far advanced, but dead ; fresh egg of cuckoo, *flabelliformis*."

During my own visit to Tasmania, October, 1883, the overseer at Ridgeside brought under my notice a nest of the Tasmanian Tit, Acanthiza, in a gorse hedge, from which he had just abstracted the egg of the Fantailed Cuckoo. The building of the nest had apparently just been completed, and was used first by the cuckoo. And, strange to relate, although the entrance of the nest was enlarged by the overseer to abstract the cuckoo's egg, the enlargement did not offend the little Tit, because three days afterwards she laid her first egg, and my subsequent visits to the nest proved that she finished her complement.

Another note I made on the mainland during an excursion of the Field Naturalists' Club reads thus :—"15.10.92—Wandong.—Egg of Fantailed Cuckoo in Tit's, Acanthiza, nest with one egg of the Tit. Eggs could be seen from outside. Evidently the entrance had been somewhat enlarged, possibly by the head of the cuckoo when depositing the egg."

Perhaps I should have placed a query against the Large-billed Scrub-Tit, Sericornis, as a foster-parent of the Fantailed Cuckoo, for, although the parasitical bird's eggs I found in the "Big Scrub," Richmond River, New South Wales, resembled those of the Fantailed Cuckoo, they were slightly different to those taken from Acanthizas' nests in Victoria and Tasmania.

The following letter appeared in the *Victorian Naturalist*, December, 1891, above the name of C. French, jun. :—

"A friend of mine living near Oakleigh informs me that one day, when out collecting, he came across a nest of the White-eared Honey-eater, *P. leucotis*, ready for eggs, and on visiting the same nest the following day, it contained an egg of the Pallid Cuckoo, *C. pallidus*, which he left, thinking the Honey-eater would lay shortly ; but on his return the third day he found that the egg of the Pallid Cuckoo had been thrown out of the nest by the Fantailed Cuckoo, *C. flabelliformis*, and she had laid an egg in the nest. The Honey-eater deserted the nest. This is the second time my friend has noticed this same proceeding."

This is an exceedingly interesting note, for rarely does the

Fantailed Cuckoo deposit its egg in an open nest. However, three other instances were observed by Mr. A. E. Brent, Tasmania, where the Fantailed Cuckoo is particularly partial to the covered nests of Sericornis, *S. humilis*. They occurred respectively in the open nests of the Black-capped Honey-eater, *M. melanocephalus*, the Dusky Robin, *P. vittata*, and the Wood Swallow, *A. sordidus*.

The following is Mr. Brent's note about the Dusky Robin's nest:—"I took a set of Dusky Robin's eggs from a nest built on a stump near home. In passing the place some days afterwards, I pointed it out to a friend. Going forward and inspecting the position, he exclaimed, 'Here is a find!' Upon going up to the nest too I found a beautiful specimen of the egg of our Fantailed Cuckoo. There is no doubt about this bird having deposited her egg there after I had robbed the nest."

In Tasmania a fresh egg of the Fantailed Cuckoo was found deposited on a bare stump. Doubtless it had been laid there by the bird, which was probably disturbed before it could convey it away to some suitable nest.

This cuckoo, as shown in Dr. Ramsay's statement, has been known to deposit its egg in a nest containing other species of cuckoo's egg. Here is a couplet from Mr. Brent's Tasmanian field notes which he kindly furnished me with:—

"I had the exceptionally good fortune to find a nest of our little Browntail, Acanthiza, containing two eggs of the parent bird, together with one egg each of the Fantailed, Bronze, and Narrow-billed Bronze Cuckoos—a nice lot, and all fresh."

"In December last (1895) we came across a nest of the little Browntail in some short bushes, containing two eggs of the Acanthiza and one of the Bronze Cuckoo. Having nothing to carry them home in, we left them for three days, and upon returning for them we found the nest contained only one Acanthiza's egg, one Bronze Cuckoo's, and also one Fantailed Cuckoo's; the other shell of the Acanthiza's egg we picked up just outside of the nest."

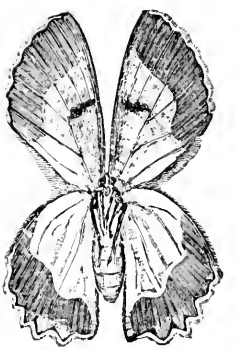
DESCRIPTION OF A NEW VICTORIAN MOTH.

By J. A. Kershaw.

This moth, belonging to the Geometridæ, does not appear to have been yet described; I have, therefore, named it *Pseudoterpna singularis*, from the peculiar position assumed by it when resting.

Pseudoterpna singularis, n. sp.—Male and female.—Head and thorax grey, face whitish. Palpi white, blackish laterally; terminal joint moderate, rather slender; antennæ dark grey;

Upper Side.



Under Side.

PSEUDOTERPNA SINGULARIS (N. SP.)

abdomen grey, irrorated with black, with three or four ferruginous dorsal tufts, each tuft with a few central grey hairs. Fore-wings elongate, costa nearly straight, rather abruptly angled at base; hind-margin rounded, waved, somewhat oblique; grey, darker towards hind-margin. Two slender black transverse lines, first from about ¼ of costa to ¼ inner margin, twice outwards curved (not dentate); a rather indistinct short transverse linear dark-grey discal spot; second line from nearly ¾ of costa to about centre of inner margin, sharply dentate, irregularly curved. A fairly large distinct ferruginous spot near hinder angle, and another, less distinct, about middle of second line; a fine black hind-marginal line. Cilia dark grey, lighter at base. Hind-wings elongate, hind-margin unevenly rounded, crenate, colour as in fore-wings, but first line and discal spot absent. Immediately beyond the dentate line are three distinct, fairly large ferruginous spots—first, on costa, sometimes very indistinct; second, about middle; and third, towards anal angle. Beneath, whitish; in fore-wings a large dark-greyish discal suffusion; a very distinct transverse black discal spot, extending to lower angle of cell, and a very broad blackish band, extending to hind-margin. Hind-wings with the blackish band connected with hind-margin, excepting about middle. Inner margin of black band, both in upper and lower wings, waved.

Expanse—Male, about 1 inch 6 lines; female, about 1 inch 11 lines.

Locality—Narracan, Gippsland. Taken in February and April. Type in National Museum collection.

The great peculiarity in this moth, by which it can be immediately recognized, is the singular manner in which it places its wings when at rest. Instead of resting with the wings spread out in the usual way, it throws its fore-wings forward, with the costal edges just about touching each other, the base of the costa of each wing being rather abruptly sloped off to allow space for the head. The antennæ are placed straight forward along the edge of the wings, and the hind-wings are thrown backwards in a line with the abdomen. The insect rests in this manner with the body and wings closely appressed to the surface on which it alights, and gives to it a rather peculiar appearance. A favourite resting place is the sheltered side of an old fence or paling shed, and the colour of the moth and its surroundings so closely assimilate that it is almost impossible to distinguish it even when closely searching for it, and affords another striking instance of protective resemblance. My father, Mr. W. Kershaw, who has had the opportunity of seeing the moth on the wing, informs me that it seems to fly in the ordinary manner, and not as we might be led to imagine, with the fore-wings thrown forward and the hind-wings backwards, as in the resting position,

and when it alights it moves its wings up and down once or twice in the manner usual to most of the species of this group, and then places them in the position as explained above. This is the first instance that has ever come under my notice in which the perfect insect adopts this singular position when at rest, and it would be most interesting to learn if anyone else has noticed any other instance of this peculiarity ; so far I have been unable to find anyone who has done so. Why it should rest in this manner and not in the ordinary way I have been unable to form any idea, unless it serves as an additional means of protection from its numerous enemies ; but one would think that, as it chooses as its resting places situations in which the surroundings so closely resemble its own colour, and resting so closely against the object as to form nothing to attract the eye, it was already sufficiently protected. I should not be at all surprised to find that somewhat similar instances occur amongst some of the closely allied Queensland forms, although I have been unable, so far, to find any reference to it. In the "Proc. Linn. Soc. N.S.W., 1888" (p. 833), Meyrick records an instance in which a new species of Hesperiadæ from Western Australia, *Exometœca nycteris*, Meyr., "sits on a twig with the wings directed perpendicularly forward (as in a bat), projecting on the side of the under-surface of thorax, so as to enclose the legs, whereas in the ordinary species of the family they are usually directly reversed—carried erect over the back."

My best thanks are due to Mr. Ernest Anderson for kindly furnishing the illustration.

Parrots and Scale Insects.—The oaks in the Fitzroy Gardens are at the present time being injured by a species of scale insect, *Planchonia quercicola*. Various means, such as cutting off the branches, spraying the trees, &c., are being used to extirpate the disease, but they do not appear likely to be successful. As in other cases, Nature, however, seems to have provided a remedy. In this instance it is in the form of the well-known Rosella Parrot, *Platycercus eximius*. The other day I noticed a number of these birds running their bills round the twigs and small branches of several oaks, and, watching them carefully for some time, saw that they confined their attention exclusively to these portions of the trees. The buds were not interfered with in any way, and it was easily seen that not a single one was broken off while the birds were scraping the stems clean and burrowing in the small forks for the clusters of insects which usually exist there. In order to obtain further evidence I climbed one of the trees, and, examining the branches where the birds had been feeding, found that numerous twigs were

partially or wholly stripped of the insects, while other twigs in the same group were completely covered with them. On several following occasions I saw the birds acting in the same way, and, failing absolute proof, have no doubt in my own mind that they were really destroying the disease.—A. E. KITSON. 13th September, 1897.

WHITE-EARED HONEY-EATER.—The following curious action on the part of a bird seems worthy of being placed on record. Early last month, when searching on horseback through some thick scrub for nests, I noticed that I was being persistently followed by a female White-eared Honey-eater, *Ptilotis leucotis*, Lath., which I conjectured was looking for nesting material. I therefore dismounted, tying my horse to a neighbouring sapling, stood some 8 or 10 paces off, to watch the bird. She quickly alighted on the animal's back behind the saddle, and commenced to pull vigorously at the hair, shifting once or twice to escape the switch of the tail. The male bird meanwhile alighted in a neighbouring bush, and cheered her up with an occasional "choke-up," "choke-up." Having plucked sufficient hair to carry conveniently, she darted off, and disappeared in the distance. Accordingly, moving on in the direction taken, I again tied the horse to a tree, and had not long to wait for her return, when she again filled her mouth with hair and flew off, this time, however, but a short distance, as I was now close to the nest, which I easily found in the scrub. On revisiting the nest four days afterwards I found her sitting upon her two eggs, and one of the Pallid Cuckoo.—J. E. SHEPHERD, Somerville, 9th October, 1897.

LIZARDS.—The following letter by Mr. J. M. Whistler, Borganup, Western Australia, is taken from the *Australasian* of 23rd October, 1897. He says:—"In a recent issue you gave a description of the 'Frilled Lizard,' and appear to regard it as the only existing species which can run on its hind legs. There is a lizard very common in the country about Roeburne, W.A., which generally uses that mode of locomotion, and can travel for 20 yards quite as fast as a rabbit. I have seen a strong, active cat, which lived chiefly on lizards, easily left behind by one which wriggled out of its clutches. The average length of a full-grown specimen is about 18 in. I have seen one or two which were quite 2 ft. It has no frill, and seldom uses its forelegs except when climbing trees. The colour is grey, and on each side of the back is a narrow yellow stripe, commencing with a width of $\frac{1}{8}$ in. at the neck, and tapering away to the tip of the tail. The general shape is the same as that of the Long-tailed Guana, and it has the same trick when at rest of raising its fore-quarters and nodding its head up and down. The head is $1\frac{1}{2}$ in. long, the body about

5 in., and the tail, which tapers to a very fine point, makes up the remaining length. The hindlegs are long, widely set, and strong, with long clawed feet. When starting to run, the lizard rises its long tail in a sweeping curve, thus lifting its body off the ground, folds its forelegs across its breast, and starts off at a surprising rate, scattering small stones, sticks, and sand by the powerful action of its strong hindlegs. The favourite amusement of these little reptiles in the heat of the day is to drop to the ground from the bough of a tree, often a height of quite 12 ft., and then rush to the trunk, scamper up it, and repeat the performance. They are delighted if they can drop on anyone lying under the tree, and will do it again and again unless hunted to a distance. I was sleeping beneath a scraggy cajeput one burning noontime, when one of the little nuisances dropped on my throat. A few minutes after it came down with better aim on the bridge of my nose, which was sunburnt and sore, and I had to hunt it quite away. Fortunately it was only a half-grown one. Another time, when lying lame in the verandah, one dropped on me several times from the rafters, and at last I had to call the cook to drive the little beast away from the house. No doubt they were attracted by the flies which were buzzing over me."

New Carenid Beetles.—In the "Proceedings Linnean Society of New South Wales," vol. xxii., part i. (1897), Mr. T. G. Sloane describes twenty new species of Carenid Beetles from various parts of Australia, mostly submitted to Mr. Sloane by Mr. C. French, F.L.S., in whose collection the type specimens are contained. Of the new species five are Victorian.

Eggs of Pied Honey-eater.—As some doubt exists as to the locality from whence the eggs of *Certhionyx leucomelas*, exhibited by me at the August meeting of the Club, were obtained, I desire to state that the eggs in question were given me by Mr. Cowle, of Central Australia. They correspond, however, exactly with those taken by me when with the Calvert Exploring Expedition in Western Australia, and which had afterwards to be abandoned along with the rest of the collections in the desert.—G. A. Keartland.

Lacinularia Elliptica—A Correction.—The words "described by me in the *Victorian Naturalist*, vol. xiii. (1896), p. 22," in lines 24–25, page 85, of last month's *Naturalist* should be struck out, having been inadvertently inserted.—Ed. *Vict. Nat.*

Bees.—H. Friese, 5 Siebererstrasse, Innsbruck, Austria, author of "Bees of Europe" (published by Friedlander, Berlin), is working on the "Bees and Humble Bees of the World," and is anxious for Australian correspondents.

THE

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th December, 1897. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 30 members and visitors were present.

REPORTS.

A report of the Club excursion to Somerton on Saturday, 20th November, was read by the leader, Mr. F. G. A. Barnard, who stated that the principal objects secured were coleopterous larvæ, obtained chiefly in the branches of trees torn off in the severe gale of the previous evening.

A report of the Club excursion to Black Rock on Saturday, 11th December, was read by the leader, Mr. H. T. Tisdall, who stated that though it was nearly high tide a fair number of algæ were obtained, including one, *Caulerpa sedoides*, which is especially rare. He was very pleased with the prospects of the locality, and hoped another excursion would be arranged for a time when the tide would be low.

Mr. Stickland stated that a meeting for practical work had been held on Monday evening, 22nd November, when the Rev. W. Fielder continued his course, his subject being "Histology of the Nervous System."

ELECTION OF MEMBERS.

On a ballot being taken, Mr. Alex. Fraser, 39 Queen-street, was duly elected a member of the club.

PAPERS.

1. By Mr. G. E. Shepherd, entitled "On the Nidification of the Emu Wren, *Stipiturus malachurus*."

The author described the finding of nests of this bird on several occasions and exhibited a nest with its immediate surroundings intact to show members the extreme density of the undergrowth in which they build and the difficulty of detecting the nest.

In the discussion which followed Messrs. Le Souëf and Campbell joined, and it was mentioned that Mr. Shepherd was the only member of the Club who had been successful in finding the nest of the Emu Wren.

2. By Mr. A. J. Campbell, "Description of the Egg of the Short-tailed Albatross."

The author, besides describing the egg, gave some notes on the Albatrosses and their breeding-places, and concluded by giving notice of the following motion for next meeting:—"That the Tasmanian Government be approached with a view to having the Albatrosses on Albatross Island protected by law." Mr. Le Souëf and the chairman expressed their thanks to Mr. Campbell for bringing this matter forward, and considered the motion to be deserving of the Club's support.

3. By Mr. A. J. Campbell, "Notes on the Bronze Cuckoos."

In this paper the author gave the names of the various foster parents of the "Narrow-billed Bronze" and "Bronze" Cuckoos, as far as at present recorded or known to him, with some interesting general notes on these birds.

NATURAL HISTORY NOTE.

The chairman stated that Mr. G. A. Keartland, while in Western Australia, had discovered a new tree on the Fitzroy River, which had been named *Gardenia Keartlandi* after him by Professor Tate.

EXHIBITS.

By Mr. F. G. A. Barnard.—Lizard, *Gymnodactylus platurus*, from Mossman River, North Queensland. By Mr. A. Coles.—Clutches of eggs of *Ephthianura albifrons*, *E. aurifrons*, and *E. tricolor*. By Mr. C. French, jun.—Rose-breasted Robin, nest, and eggs; Downy Pycnoptilus; old nest of Mountain Thrush, with Polypodium ferns growing from it; rare orchid, *Sarcochilus parviflorus*, collected in Dandenong Ranges, November, 1897. By Mr. Jos. Gabriel.—Rare birds' eggs from Dandenong Ranges: *Pycnoptilus floccosus*, *Erythrodryas rosea*, and *Rhipidura rufifrons*. By Mr. Jas. A. Kershaw.—Young larvæ of moth, *Arrhodia lasiocamparia*, Gn., reared from eggs. By Mr. F. M. Reader.—*Pterostylis concinna*, R. Br., Dimboola, and *Cyperus gracilis*, R. Br., Lake Hindmarsh, both new for N.W. Victoria. By Mr. G. E. Shepherd.—Nest of Emu Wren, in illustration of paper; two eggs of White-shouldered Campephaga, taken with Pallid Cuckoo's; eggs of Narrow-billed and Fantailed Cuckoos taken in nest of Blue Wren with two eggs of the wren, from Somerville.

After the usual conversazione the meeting terminated.

VICTORIAN BOTANY.—A census of the plants of the Cape Otway Forest has recently been issued by Mr. G. Hitchcock, F.L.S., F.R.A.S., of Flinders School, Geelong, who has also published a similar list for the Geelong district.

NOTES ON THE BIRD FAUNA OF THE BOX HILL DISTRICT—*Continued.*

HONEY-EATERS.

By Robert Hall.

(*Read before Field Naturalists' Club of Victoria, 9th August*, 1897.)

In the ornithology of this continent the honey-eating family is found to be the largest in number of species.

That eminent ornithologist, Mr. John Gould, was very happy in claiming for the Meliphagidæ the place in the avi-fauna of Australia held by the eucalypts in the flora. Plant and animal are closely associated, for where a quantity of flowering gums are growing, so surely will be the honey-eaters represented by one or more species. When there are not any blossoms on certain trees the birds will seek others further afield, or, if necessary, will subsist on insect life until such time as Nature provides the nectar-pots for a dual purpose.

The question of what constitutes the family of Meliphagidæ is an open one, rendered so by the varied opinions held by five leading systematists of London. The bone of contention is whether the Zosterops, of which there are 88 species known, should or should not be included in the family. Dr. Gadow, in "The British Museum Catologue of Birds," vol. ix., favours their entry. Of honey-eaters with generally recognized definition there are some 150 known species confined to the Australian and New Zealand regions, though with scanty representation in the latter. With one exception, they are altogether placed in these areas, and it is not so very surprising that this wanderer should get from Lombok to the Island of Bali; rather the wonder is that the north-west boundary of geographical range should be so faithfully kept by the birds.

If you hold the view that the Silver-eyes (Zosteropinæ) should form a part of the family, then the two regions named will lose the family as one peculiar to the areas, for it then starts its most western line of habitation in South Africa, and works northward to China, and south from there to New Zealand, closely traversing the intermediate countries.

The first Zosterops described was from a specimen obtained in New South Wales, and the largest species now occupies the small island of Norfolk.

If we include the Silver-eyes, of which there are six species in Australia, we find our continent with Tasmania to total seventy-five species. Thirty-seven of these are recorded as Victorian, fourteen of which, according to my observations, occur in the district under review.

The White-plumed Honey-eater, *Ptilotis penicillata*, Gould (W.), is rather less familiar than the yellow-faced species. It is

an active bird with a strong call—whit, whit, whit, wheat—given with celerity. It is particularly chivalrous in the spring. Besides being a honey-eater it is a bold warrior, attacking insects in the air above its woody haunts, and not travelling, as do many of the family, in continuous search for the honey-laden flowers that alone seem to nourish them. Rather than bow to the cold order of winter to "move on," it keeps to its summer post, and changes the diet of the warmer months to one of insects during the winter. Even though this species passes much of its time amongst the tree-tops, it will often prefer to place its cup-shaped nest within a few feet of the grass in a melaleuca, eucalypt, or other shrub convenient for its purpose—sometimes 4 feet, more often 14 feet, and occasionally 40 feet from the ground.

Ptilotis chrysops, Lath. (W.),* the Yellow-faced Honey-eater, is a well-known orchard bird, for in nearly every large garden one or more suspended nests will be found in the season. It builds early and lays late. In February I have observed unfledged young; in November, nests containing eggs of the Pallid and Bronze Cuckoos. Although particularly inquisitive itself, a close observation by a stranger into its nest is considered an extraordinary intrusion, and it will then flutter and screech at a distance. If upon the ground, it will try to decoy you away, much in the manner of the Ephthianura. There is a general likeness between this species and the Singing Honey-eater, *Ptilotis sonora*. Both have the prominent marking of yellow on ear coverts, but the latter has a dark line above them, in contrast to what appears to be a dark line below them in *P. chrysops*. This bird spends much of its time in fly-catching, and quite half of it when the fruit has been gathered. If the winter season starts cold it will commence its nomadic life, and such places as the mountain localities it will quit regularly.

Another foster-parent of the Pallid Cuckoo is *Ptilotis leucotis*, Lath. (W.),* the White-eared Honey-eater. To see a pair of this small species showing the kindest attentions to the large bird in passing insects from bill to bill is amusing. If you have never seen the act you doubtless have heard of it, and can imagine it as extremely ludicrous. The call of the bird is varied, and at one time similar to that of the Striated Pardalote, but more powerful. One note of the Pardalote's three is left out, and in lieu of saying "Pick it up," once or more repeated, the Honey-eater calls "Pick up," followed by "twite twite," more quickly than the introductory part. The nest is placed generally within a few feet of the ground, and the eggs are not typical of the family, being whitish more than salmon tint.

One of the most beautiful of honey-eaters is the Horseshoe or Tasmanian, *Meliornis Australasiana*, Shaw (W.) Not that it is highly coloured, but the arrangement of the ashy-grey with the

jugular markings gives the bird a charm. If not on heath-fields it may be seen in their environment, but only under favourable food circumstances, as we consider it one of the rarities. The nearest habitat is between Box Hill and Mordialloc, and what I should consider the home of the bird is to the south-east, in the Grantville district, where heaths abound, bordered as they are by sea and mountain, and where sand-flies can form a part of its diet.

A large and very ordinary honey-eater is the Wattled, *Acanthochaera carunculata*, Lath. (W.) * It is a sale-bird at our poulterers', in and out of *Game Act* season. In Tasmania there is a close ally, and as its wattles are twice the length—viz., one inch, or half an inch longer than the Victorian species—the adult birds are quickly recognized irrespective of wattle coloration. There are two other so-called wattle birds, Brush and Lunulated, but as they bear no wattles the differences in this respect are sound.

This species has a wide vocabulary, from an unpleasant jugular noise to one pleasant in a limited degree. When the young begin to call there is little to choose between that of the practised larynx and the one undergoing the tediousness of a lesson. The length of the youthful bird as it leaves the nest is nine (9) inches, while that of the parent is 15 inches, and this difference will give anyone critically inclined in the study of music an opportunity to further investigate. As the tail grows there is still a variation in the general plumage, it being light brown on the young where the adult shows a tendency to white.

On the 16th May, 1896, Tunstall was the scene of a gathering of its forces for migration. Several hundreds, if not thousands, of birds were flying, grouped overhead, doing what I believe to have been the gathering of their forces. A young friend told off for special duty as a day watcher saw these birds return in company at 3 p.m., after being away since 9 a.m. They then made a short circuit, returned, and then flew off not to return. However, all the birds of this species did not join the main body, as I saw, six weeks later, two which were on familiar ground and looked to be in good health.

A bird somewhat like the previous one (in the distance) is the Friar Bird or Leatherhead, *Philemon corniculatus*, Lath.; but a nearer acquaintance with it in the higher foliage will reveal the only featherless-headed bird in southern parts. To get a good knowledge of it one must go further into the timber than Box Hill proper.

The Spine Bill, *Acanthorhynchus tenuirostris* (W.),* Lath., with a close ally in Western Australia, is a honey-eater more familiar to us, as in a certain garden, almost throughout the year, it is to be observed, suspended to flowers laden with nectar or flitting

in search of them. Plants from different zones, discriminately placed in a garden, will keep a pair of this species about the same spot for the year, or years; and the graceful actions of this beautiful bird would almost convert the horticulturist into a zoologist for the time being. Mr. Gould does not draw our notice to an exquisite series of notes in springtime; but such they are, and I liken them to the "Pretty Dick" of the canary—sweeter, fuller, and given three to six times, quickly and consecutively. Another call is a single, uninteresting note, and this is probably what the celebrated ornithologist describes in disparaging terms. When indulging in a gambol the wings may be heard to continuously flap, and they carry only for a short distance. The three last months of the year are favourable for nesting, but in cold districts the month of February is not considered too late for egg-laying. In the Australian Alps, in a valley below Mount St. Bernard, I took the eggs as late as 3rd February; and when I also withdrew the pendent nest because the builders had hazel irides instead of vermilion, they merrily built another a few yards away, and, I believe, successfully raised a little brood of two, only a week late on previous arrangements. Before taking this nest the birds pulled many of the feathers out and strewed them in the branches above as a sign of evacuation, which happened the following day. In this district, on 10th November of last year, a pair removed the twigs from a nest of the Pied Grallina and built their own with them. Nature has not debarred this slender-tongued bird from hunting for insects along the ground, which it does in company with the tits and robins while waiting the time of epacris and banksia blooms.

Although this district is unsuited to the Warty-faced Honey-eater, *Meliphaga phrygia*, Lath., it may be noticed once or twice in a year, and then just at the commencement of spring, when it might be expected to search for twigs and build a cup-shaped nest, after the manner of its ancestors; but so far I have not yet found one. Following the creeks to the west of Melbourne is more likely to be productive of good observations, for there it builds, and others may build against its house if they so wish. At Myrniong, in January, the Red-browed Finch had placed its domicile a few inches below the Honey-eater's, or *vice versâ*; however, they lived on good terms, to the best of my knowledge—grain-eater and honey-eater. The brood of one species would be two; of the other, six. I can guarantee good behaviour on the part of the young finches, but I am not as educated as I would like to be with regard to the young honey-eaters' dispositions.

The noisiest of all southern Honey-eaters is the Garrulous, *Manorhina garrula*, Lath., W., and yet it is scarcest here. They

do not care for the mountains or their chilly atmosphere, an objection likewise shown by perching birds in general. This bird seems to bear the same disagreeable relation to the naturalist abroad as the Vanellus mentioned by Mr. Darwin whilst traversing La Plata country. Both follow you in the search, acquaint the fauna of your presence, and have the very nasty habit of talking loudly just when one would be glad to be quit of them.

Closely connected to this species is the Bell Bird, *Manorhina melanophrys*, Lath. In 1895 and 1896 a young friend at Bayswater advised me of seeing the greenish-hued birds, and hearing the single calls, which are like the notes of a cattle bell. The young birds have the unruly tongue of the Garrulous, and gambol amongst the foliage of the "gums" without any reserve. It seemed to me during a late tour in the Grantville locality that the adult birds owned the bell note, and were more reserved, keeping to the scrub. Otherwise their ways are similar to the well-known Garrulous. Beyond Bayswater to the south two or three little flocks were seen. Laying season appears to be early and late, and the nest is characteristic of the family.

The *Ptilotis fusca* (Gould), Fuscous Honey-eater, bears a likeness to the more ordinary white-plumed. While the post-auricular feathers are yellow in *P. fusca*, they are pure white in *P. penicillata*, and this is a key for regular specimens. *P. fusca* has a strong interest in nectar-laden, low-growing flowers.

Melithreptus brevirostris, V. and H., the Short-billed Honey-eater, is a particularly active bird amongst the stems and foliage of our yellow box and other gums, where it gives voice to a series of loud and frank notes.

The Lunulated Honey-eater, *Melithreptus lunulatus*, (*) Shaw, includes *M. chloropsis* of Gould (Brit. Mus. Cat., vol. ix.) If not the most active of the family, there is little to choose from between its speed in flight and the one greater. It is an acrobat, and falls from one bough to another without any change of form to do so; and if, while in the pendent position, it be easier to make a somersault in order to arrive safely a few inches below, it does so, and proceeds to the business of providing provender or engaging in battle without loss of time. The nests are neatly made and cup formed. One I found to be almost completely lined with a layer of sheep's wool, and ornamented exteriorly by wool—borrowed, stolen, or rightfully taken from a house near the tree in which the nest was carefully hidden upon the higher twigs of the highest bough. A lofty position is not always chosen, but you would not be successful if you formed a rule to look low. Eucalypt trees seem to satisfy them, both as regards food and position for nest. Fruit strongly tempts young and old alike, both native and introduced kinds; but it is a considerable time

before they care to investigate trees bearing fruits they have not been accustomed to.

By including the genus Zosterops in the Meliphagidæ a cry will surely rise from the oologists. After many years of careful and laborious research it has been proved by the specialists that the Zosterops, without exception (as far as I am aware), lay blue-green eggs, while amongst the Honey-eaters the salmon tint prevails.

Oologists have for a champion Professor Newton, who, seeing no special reason why the sub-family Zosteropinæ should be placed with the family Meliphagidæ, leaves it an open question. Following the classification adopted by the British Museum in this class, I will include the Grey-backed Zosterops, *Zosterops cærulescens*, Lath. (W.),* as a wanderer throughout southern Australia, and a bird which requires further study from an economic point of view.

The family flocks are generally eight in number, and as they travel through the orchards a slight warfare is made upon them, for in spring and summer they feast upon small fruit, in winter apples. To use an orchardist's expression, "they have quite gone over to the enemy of late years, and we must deal with them accordingly." Certainly its taste for commercial fruits is cultivated when opportunity stares it in the face; but what about the good which I am inclined to think it does? I remember seeing a Silver-eye hunting along a branch of a tall pear tree. An insect fell from its hiding place, and simultaneously the bird swooped perpendicularly in time to catch the lesser form, and with a right-angled movement escape the ground, to which it was unpleasantly close. A set strain of music by the bird, reminding one of the Reed Warbler, *Acrocephalus Australis*, is occasionally blended with its call note.

I have observed the callow young as late as 10th February, 1895, at the head of the Ovens River, where spring is late in appearing. The eggs are laid on alternate days, and at an early age the young assume the general plumage of the adult, and then go through the detail of the seasonal changes.

Although this species concludes the local list, there is a visitor in quantity at present and throughout the winter located in the principal gardens of the city. It is the Singing Honey-eater, *Ptilotis sonora*. A pleasant trill is the better part of its musical execution, and its guttural notes remind one of the use of a pestle in a metallic mortar. You may quickly detect it as a bird more slim than the well-known greyish native Miner, streaked on the breast and elongated tail.

The Honey-eaters are of a family whose acquaintance is well worth cultivating, and a first introduction we may so easily obtain from those unsurpassed works of Mr. John Gould, whose artist wife has put much "life" into that portion done by her, and which remains a noble memorial of two great workers.

A CATALOGUE OF VICTORIAN HETEROCERA.

By Oswald B. Lower, F.E.S.

Part XXVII.

1043. L. TYROBATHRA, Meyr. (*loc. cit.*, 511, 1893).
Melbourne, Gisborne.

1044. L. PALLEUCA, Meyr. (*loc. cit.*, 513, 1893).
Fernshaw and Mount Macedon.

ERIOCOTTIS. Z.

MESOPHERNA. Meyr.

*1045. M. PALUSTRIS, Meyr. (*loc. cit.*, 515, 1893).
Gisborne.

1046. M. CASTELLA, Walk. (*Prays castella*, Walk., B. M. Cat., 551; *Mesopherna castella*, Meyr., Proc. Linn. Soc. N.S.W., 515, 1893).
Melbourne.

1047. M. ISOMACRA, Meyr. (*loc. cit.*, 516, 1893).
Melbourne.

ACRIDOTARSA. Meyr.

IPHIERGA. Meyr.

ARDIOSTERES. Meyr.

*1048. A. MORETONELLA, Walk. (*Tinea Moretonella*, Walk., Suppl., 1,812; *Ardiosteres Moretonella*, Meyr., Proc. Linn. Soc. N.S.W., 519, 1893).
Melbourne.

SCARDIA. Tr.

1049. S. AUSTRALASIELLA, Don. (*Tinea Australasiella*, Don., Ins. N. H.; *T. cossuna*, Lew., Ins. N.S.W., 19; *T. clathrata*, Feld., Reis. Nov., pl. cxl., 30; *Scardia Australasiella*, Meyr., Proc. Linn. Soc. N.S.W., 521, 1893).
Gisborne, Melbourne, &c.

1050. S. INCONCISELLA, Walk. (*Tinea inconcisella*, Walk., B. M. Cat., 474; *Scardia inconcisella*, Meyr., Proc. Linn. Soc. N.S.W., 522, 1893).
Melbourne.

*1051. S. CLONODES, Meyr. (Proc. Linn. Soc. N.S.W., 523, 1893).
(?) Melbourne.

*1052. S. CELSELLA, Walk. (*Tinea celsella*, Walk., 482; *T. adjunctella*, *ib.*, 1,006; *S. celsella*, Meyr., Proc. Linn. Soc. N.S.W., 524, 1893).
Melbourne.

*1053. S. PRIMÆVA, Meyr. (*loc. cit.*, 525, 1893).
Melbourne.

MIMOSCOPA. Meyr.

BLABOPHANES. Zeller.

1054. B. MELIORELLA, Walk. (*Tinea meliorella*, Walk., 483; *T. œcophoroides*, *ib.*, 1,005; *T. vivipara*, Scott, Trans. Ent. Soc. N.S.W., i., 33, pl. iv.; *B. meliorella*, Meyr., Proc. Linn. Soc. N.S.W., 527, 1893).
Melbourne, Gisborne, &c.

1055. B. ARGILLACEA, Meyr. (*loc. cit.*, 528, 1893).
Gisborne, Melbourne.

1056. B. ETHELELLA, Newm. (*Tinea ethelella*, Newm., Trans. Ent. Soc. Lond., iii., N.S., 288; *T. rectella*, Walk., 482; *Blabophanes namuella*, Feld., Reis. Nov., pl. cxl., 44; *B. ethelella*, Meyr., Trans. N.Z. Inst., 97, 1887).
Melbourne, &c.

1057. B. FERRUGINELLA, Hb. (*Tinea ferruginella*, Hb.; *Blabophanes ferruginella*, Meyr., Trans. N.Z. Inst., 97, 1887).
Melbourne, &c.

TRICHOPHAGA. Rag. (see below).

TINEA. Linn.

*1058. T. MONOZONA, Meyr. (Proc. Linn. Soc. N.S.W., 533, 1893).
Melbourne.

1059. T. FUSCIPUNCTELLA, Hw. (*Tinea fuscipunctella*, Hw., Meyr., Trans. N.Z. Inst., 100, 1887; Proc. Linn. Soc. N.S.W., 534, 1893).
Melbourne, &c.

1060. T. PELLIONELLA, Linn. (Meyr., *loc. cit.*, 535, 1893).
Melbourne, &c.

†1061. T. TAPETIELLA, Linn. (*T. tapetiella* (*tapetzella*, Linn.), Meyr., Trans. N.Z. Inst., 98, 1887; Proc. Linn. Soc. N.S.W., 535, 1893; *T. palæstrica*, Butler, Proc. Linn. Soc. Lond., 404, 1877).
Melbourne, &c.

1062. T. PYROTRICHA, Meyr. (Proc. Linn. Soc. N.S.W., 536, 1893).
Melbourne.

*1063. T. AMAURODES, Meyr. (*loc. cit.*, 536, 1896).
Melbourne.

† Now referred to *Trichophaga*, Rag.

1064. T. DIAPHORA, Meyr. (*loc. cit.*, 537).
Melbourne.

*1065. T. EREBOCOSMA, Meyr. (*loc. cit.*, 537).
Melbourne.

1066. T. TRIDECTIS, Meyr. (*loc. cit.*, 538, 1893).
Melbourne.

1067. T. CHAOTICA, Meyr. (*loc. cit.*, 538).
Fernshaw.

*1068. T. TRYPHERA, Meyr. (*loc. cit.*, 541).
Melbourne (Caulfield).

*1069. T. SPODINA, Meyr. (*loc. cit.*, 543).
Doubtfully Victorian.

*1070. T. MONOPHTHALMA, Meyr. (*loc. cit.*, 543, 1893).

1071. T. NECTAREA, Meyr. (*loc. cit.*, 546, 1893).
Melbourne.

CHRYSORYCTIS. Meyr.

*1072. C. XYSTIDOPHORA, Meyr. (*loc. cit.*, 548).
Melbourne.

1073. C. FRAUDULENTA, Ros. (*Tinea fraudulens*, Ros., Ann. Mag. N.H., 437, pl. xi., 12, 1885; *Chrysoryctis fraudulenta*, Meyr., Proc. Linn Soc. N.S.W., 549, 1893).
Melbourne, &c.

*1074. C. TYRANNICA, Meyr. (*loc. cit.*, 549).
Gisborne.

1075. C. IRRUPTELLA, Walk. (*Œcophora irruptella*, Walk., 686; *Chrysorycta irruptella*, Meyr., Proc. Linn. Soc. N.S.W., 550, 1893).
Melbourne.

*1076. C. PURELLA, Walk. (*Incurvaria purella*, Walk., 491; *Chrysorycta purella*, Meyr., *loc. cit.*, 551).
Ararat.

*1077. C. HYPOCRITICA, Meyr. (*loc. cit.*, 551).
Melbourne.

1078. C. OCHRANTHES, Meyr. (*loc. cit.*, 552).
Trafalgar.

*1079. C. MELIPHANES, Meyr. (*loc. cit.*, 553).
Melbourne.

TINEOLA. H.S.

*1080. T. BISELLIELLA, Hum. (Meyr., *loc. cit.*, 554, 1893).
Melbourne, &c.

MACRAEOLA. Meyr.

DEMOBROTIS. Meyr.

*1081. D. ANAGLYPTA, Meyr. (*loc. cit.*, 556, 1893).
Stawell.

ENDOPHTHORA. Meyr.

MYCHONOA. Meyr.

DRYADAULA. Meyr.

CHOROCOSMA. Meyr.

COMODICA. Meyr.

1082. C. ACONTISTES, Meyr. (*Erechthias acontistes*, Meyr., Proc. Linn. Soc. N.S.W., 266, 1880; *Comodica acontistes*, *ib.*, *loc. cit.*, 562, 1892).
Melbourne.

*1083. C. AELLOPHORA, Meyr. (*Erechthias aëllophora*, *ib.*, *loc. cit.*, 562, 1892).
Stawell.

1084. C. MYSTACINELLA, Walk. (*Tinea mystacinella*, Walk., B. M. Cat., 1006; *Erechthias mystacinella*, Meyr., Proc. Linn. Soc. N.S.W., 263, 1880; *Comodica mystacinella*, *ib.*, *loc. cit.*, 562, 1892).
Melbourne.

EREUNETIS. Meyr.

1085. E. SYMMACHA, Meyr. (Proc. Linn. Soc. N.S.W., 564, 1893).
Melbourne.

*1086. E. IULOPTERA, Meyr. (*loc. cit.*, 260, 1880; *ib.*, *loc. cit.*, 565, 1892).

† *ERECHTHIAS.* Meyr.

EURYTELA. Meyr.

HIPPIOCHAETES. Meyr.

HIEROXESTIS. Meyr.

*1087. H. OMOSCOPA, Meyr. (*loc. cit.*, 567, 1892).
Sale.

TIMŒA. Walk.

1088. T. BIVITTATELLA, Walk, 521. (*T. costella*, *ib.*, 521; *Manliana astrictella*, *ib.*, 1012; *Timœa bivittatella*, Meyr., Proc. Linn. Soc. N.S.W., 568, 1892).

† This genus as now defined is confined to New Zealand.

THUDACA. Walk.

1089. T. CRYPSIDESMA, Meyr. (*loc. cit.*, 572, 1892).
Melbourne.

1090. T. OBLIQUELLA, Walk. (825; Meyr., Proc. Linn. Soc. N.S.W., 575, 1892).
Gisborne, Melbourne.

1091. T. TRABEATA, Meyr. (*loc. cit.*, 578, 1892).
Melbourne.

DASCIA. Meyr.

1092. D. SAGITTIFERA, Meyr. (*loc. cit.*, 579, 1892).
Melbourne.

ACMOSARA. Meyr.

ZELLERIA. Stt.

1093. Z. PROTEROSPILA, Meyr. (*loc. cit.*, 584, 1892).
Melbourne.

MACARANGELA. Meyr.

HESTIAULA. Meyr.

TONZA. Walk.

NEMATOBOLA. Meyr.

1094. N. ORTHOTRICHA, Meyr. (*loc. cit.*, 292, 1892).
Sale.

HARPEDONISTIS. Meyr.

1095. H. GONOMETRA, Meyr. (*loc. cit.*, 594, 1892).
Warragul.

THEREUTIS. Meyr.

AMPHITHERA. Meyr.

CATERISTIS. Meyr.

DIPLOTHECTIS. Meyr.

BEDELLIA. Stt.

1096. B. SOMNULENTELLA, Zeller (Meyr., *loc. cit.*, 170, 1880).
Melbourne.

ARCTOCOMA. Meyr.

BUCCULATRIX. Zeller.

LITHOCOLLETIS. Hb.

ORNIX. Tr.

EPICEPHALA. Meyr.

GRACILARIA. Hw.

1097. G. XANTHOPHARELLA, Meyr. (*loc. cit.*, 141, 1880).
Stawell.

1098. G. CALICELLA, Stt. (Meyr., *loc. cit.*, 150, 1880).
Melbourne.

1099. G. EUMETALLA, Meyr. (*loc. cit.*, 160, 1880).
Melbourne.

1100. G. LACINELLA, Meyr. (*loc. cit.*, 164, 1880).
Gisborne.

1101. G. ALYSIDOTA, Meyr. (*loc. cit.*, 161, 1880).
Melbourne.

CORISCIUM. Zeller.

LEUCOPTERA. Hb.

LYONETIA. Hb.

PHYLLOCNISTIS. Zeller.

ATALOPSYCHA. Meyr.

STEGOMMATA. Meyr.

1102. S. LEPTOMITELLA, Meyr. (Proc. Linn. Soc. N.S.W., 172, 1880).
Melbourne.

1103. S. SULFURATELLA, Meyr. (*loc. cit.*, 172, 1880).
Melbourne, Gisborne.

CROBYLOPHORA. Meyr.

1104. C. CHRYSIDIELLA, Meyr. (*loc. cit.*, 178, 1880).
Melbourne.

OPOSTEGA. Zeller.

*1105. O. STIRIELLA, Meyr. (Proc. Linn. Soc. N.S.W., 175, 1880).
Melbourne, Frankston.

NEPTICULA. Zeller.

This part practically concludes the catalogue for the present. In the near future I will give further additions. I estimate that the number of species to be enumerated will reach quite 3,000. Although the period of publication has been somewhat protracted beyond my original intentions, I hope that it has not proved wearisome to our readers. As I before stated in my opening remarks, this catalogue is simply the nucleus of something better to follow. If it, however, serves the purpose for which it is intended I shall be more than satisfied with the attempt. In conclusion I would like to thank each and all of those friends who have so kindly helped in the compilation.

Broken Hill, *October*, 1897.

SYSTEMATIC ARRANGEMENT OF GROUPS AND FAMILIES.

1. Castniidæ
2. Agaristidæ
3. Syntomididæ
4. Zygænidæ
5. SPHINGINA
6. BOMBYCINA
7. Hepialidæ
8. Cossidæ
9. Zeuzeridæ
10. Psychidæ
11. Limacodidæ
12. Arctiadæ
13. Hypsidæ
14. Liparidæ
15. Bombycidæ
16. Notodontidæ
17. Saturnidæ
18. Strophidiadæ
19. GEOMETRINA
20. Hydriomenidæ
21. Monocteniadæ
22. Desmobathridæ
23. Sterrhidæ
24. Geometridæ
25. Selidosemidæ
26. NOCTUINA
27. PYRALIDINA
28. Epipaschiadæ
29. Pyralididæ
30. Musotimidæ
31. Hydrocampidæ
32. Botydidæ
33. Scopariadæ
34. Crambidæ
35. Galleridæ
36. Phycitidæ
37. Oxychirotidæ
38. Pterophoridæ
39. Alucitidæ
40. TORTRICINA
41. Tortricidæ
42. Grapholithidæ
43. Conchylidæ
44. Xyloryctidæ
45. Œcophoridæ
46. Gelechiadæ
47. Elachistidæ
48. Plutellidæ
49. Tineidæ

INDEX TO GROUPS AND FAMILIES.

NOTE.—The figures in ( ) denote page in the reprinted catalogue, the other figures the volume and page of original publication in the *Victorian Naturalist*.

THE

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FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 17th January, 1898. The president, Mr. C. French, F.L.S., occupied the chair, and some 25 members were present.

REPORTS.

A report of the Club excursion to Heidelberg on Saturday, 15th January, was read by the leader, Mr. J. Stickland, who mentioned that a lot of promising-looking material was obtained, but, so far, time had not allowed its proper examination. However, numerous species of Protozoa and some Rotifers had been noted.

The hon. secretary reported that the meeting for practical work was attended by the usual number, and that the evening had been devoted to the study of "The Glands," under the direction of the Rev. W. Fielder.

GENERAL BUSINESS.

Mr. D. Best mentioned that the Rev. W. Fielder had been appointed lecturer on biology at Trinity College, and voiced the opinion of members in congratulating such an enthusiastic worker on his appointment.

PAPERS.

1. By Mr. R. Hall, entitled "The Bird Fauna of the Box Hill District—Larks, &c."

The author continued his notes of personal observations in the field of the occurrence, habits, &c., of the birds mentioned, and the value of his and similar work was cordially endorsed by those who spoke on the paper.

2. By Mr. J. G. Luehmann, F.L.S., entitled "Botanists of the 16th Century, illustrated by their Works."

In this the author gave an account of the botanists of that period, mentioned their various published works, and handed round for inspection several of the principal ones. An informal discussion followed, aided by references to the books and examination of the plates, more especially in regard to the names of several common plants that have been continued in the present system of nomenclature. Mr. Luehmann promised to continue the subject in future papers.

3. By Mr. F. M. Reader, entitled "Contributions to the Flora of Victoria, No. 4."

This consisted of the technical description of an orchid discovered and named by the author, as new to science, *Prasophyllum fusco-viride.*

NATURAL HISTORY NOTE.

Mr. D. Best read a note on the life-history of the longicorn beetle, *Scolecobrotus Westwoodii*, in connection with his exhibit of the beetle and the branches in which the larvæ had grown to maturity.

EXHIBITS.

The following were the principal exhibits:—By Mr. F. G. A. Barnard.—Bifurcated frond of Tree Fern, *Dicksonia Antarctica* (cultivated), also portion of frond of Queensland Ribbon Fern, *Ophioglossum pendulum*, Linn., showing fructification. By Mr. D. Best.—Specimens of beetle, *Scolecobrotus Westwoodii*. By Mr. A. Coles.—Egg of the Black-breasted Buzzard, *Gypoictinia melanosterna*, from New South Wales; also four specimens of the cuckoo *Eudynamus Flindersi*, from Queensland. By Mr. C. French, F.L.S.—Exotic butterflies (Papilionidæ), including ten species of the genus Ornithoptera. By Mr. C. French, jun.—Rare eggs of *Sterna melanauchen*, Black-naped Tern, from North Queensland. By Mr. J. Haase.—Victorian skippers, *Hesperilla Donnysa* and *H. flammeata*, *Trapezites idothea*, and the scarce *T. Andersoni*; also larvæ of the butterfly *Xenica Hobarti*, reared from eggs. By Mr. F. M. Reader.—Orchid, *Prasophyllum fusco-viride*, in illustration of his paper. By Mr. G. E. Shepherd.—Rare eggs of Crested Hawk from New South Wales, and White-eyed Duck from Macorna, and also egg of Brush Cuckoo found in nest of the Scarlet-breasted Robin with two of the latter's; also adult and young male specimens of Brush Cuckoo.

After the usual conversazione the meeting terminated.

EXCURSION TO BLACK ROCK.

This excursion, which took place on Saturday, 11th December, was fairly attended. On arriving at Black Rock we were rather disgusted to find that it was almost high tide. However, by means of long sticks we were enabled to get a fair lot of representative sea-weeds. The commonest was the green, thin *Ulva latissima*; its broken lettuce-like leaves were strewn all along the shore, as well as lining the few tide pools that could be reached. Two distinct species of Cladophora were also found growing on the rocks. Mixed with these were the slimy masses of Enteromorpha; this is a curious plant, forming tufts of long, green, hollow hairs. The attention of the party was next directed to the long, soft fronds of *Caulerpa Brownii* and *Codium elongata*. These are apparently alike, but their structure is very different, the caulerpa being really unicellular although so very complex; it is easily dis-

tinguished by its long creeping stems, which give off at intervals bright-green, upright, cylindrical, branching fronds. They feel like soft velvet, only rather slimy. Harvey says that their reproduction is still unknown. Although they have absolutely no division walls in their structure, they have a system of vegetable beams and rafters which keeps their outside walls in position. The Codium has the same soft, slimy feel, and is green and cylindrical, but there the likeness ceases, being multicellular, the inside of the stems being solid. From the solid centre spring thousands of tiny hairs like the pile of velvet; between, or rather growing on these hairs, or ramuli, as they are called, are thousands of zoospores from which new plants arise. Another Caulerpa (very rare), *C. sedioides*, was also found; it consists of branching fronds bearing bright-green air bladders. The tide was so very high that it prevented the party from obtaining many specimens of really local plants —these, of course, must be found growing on the rocks, or their exact locality cannot be determined. It is to be hoped that another excursion may be settled for some Saturday when a low tide may be reckoned on, for the members of the party were tantalized by seeing thousands of plants growing on the rocks, but entirely beyond reach. Black Rock is evidently a well chosen ground under favourable circumstances. It would be very interesting to follow out the different families that grow in pools left by the retiring waves, commencing with those that are first uncovered, and in which will be found many kinds of green seaweed (Chlorosperma). Gradually, as one explores seaward, the green will be seen to give place to olive-green, brown, and even almost black seaweeds. In the lowest tide pools, or under some of the larger brown seaweeds, may be obtained a number of the red seaweeds. However, our party had to content itself by dragging out masses of seawrack, from amongst which quite a number of good specimens were obtained. The delicate fronds of *Callithamnion Griffithsia*, Areschougia, and Plocamium were mixed up with great masses of different kinds of Fucacea. No less than six of these last were obtained, including Sargassum, Sierococcus, Cystophira, Hormosira, and Ecklonia. The broad, serrated fronds of Ecklonia were especially noticeable. Other brown seaweeds were Myriodesma, Haliseris, Myriocladia, and Zonaria. A few pieces of the white, coral-like Amphora were mixed up amongst the long branches of brown Cystophora, and the serrated edges of a beautiful bright red Phacelocarpus were entwined amongst the long, nearly black, grass-like fronds of Melanthalia. A great number of leaf-like fronds were found, but although somewhat resembling the smaller species of Lenormandia, we were inclined to think that they belonged to some land plant. Only one species of Gelidium was obtained; this was a green variety, *G. glandufolium*. It is particularly necessary to see if

this seaweed is common on the shores of the Bay, as it may become a useful article of commerce; it is very plentiful at Barwon Heads after a storm. Some of our party turned their attention to zoology. Several egg bags belonging to sharks and dogfish were obtained, and a rather uncommon specimen of nudibranch mollusc was found on one of the rocks, as well as several varieties of Diatoms and Hydroids.

After thoroughly working out the narrow fringe of shore that could be reached under the circumstances, the party turned its attention to the maritime plants growing at the bases of the steep rises towards Beaumaris, where the following plants were found in flower:—*Lobelia pratioides*, *Apium prostrata*, *Goodenia geniculata* and *ovata*, *Calocephalus Brownii*, and *Atriplex cinereum*.

Altogether it was a most enjoyable and interesting trip, and the members returned to town thoroughly satisfied with their outing.—H. T. Tisdall.

NOTES ON THE NIDIFICATION OF THE EMU WREN.

By G. E. Shepherd.

(Read before the Field Naturalists' Club of Victoria, 14th December, 1897.)

As but little is known concerning the nidification of that beautiful and most interesting bird the Emu Wren, *Stipiturus malachurus*, Lath. (V.), I shall endeavour to give some information regarding its nesting habits, some of which, at least, I hope will be new to members and others taking an interest in oology.

In the first place I may say that the birds are far from rare, though the eggs are exceedingly so—a fact no doubt, due to the extreme difficulty experienced in finding the nest. In October, 1892, I found my first nest in the following curious manner. I had noticed a White Egret flying along the edge of the tide on the shore of Western Port Bay, and being anxious to secure the bird, I commenced stalking through the scrub fringing the foreshore. Whilst so engaged I flushed an Emu Wren from a thick Salonica bush, and discovered the nest, situated in the thickest part of the foliage, and containing three eggs, which were nearly hatched. Possessed of the knowledge thus obtained, I made repeated and persistent efforts to again find a nest, but without success until September, 1895, on the 14th of which month I succeeded in finding a nest containing two fresh eggs. This nest I also found accidentally through riding across a shallow swamp fringed with stunted ti-tree, from amongst which I saw the bird flutter, and after a short search discovered the nest. Two days afterwards I discovered another nest in a patch of thick, low scrub. In this instance three eggs were taken, somewhat incubated, one of which broke when being blown. Unfortunately

I was not successful in finding any nests last season, though I made diligent search.

Owing to the absence of bush fires last summer the birds were more numerous this spring than for some years, hence I devoted all my spare time during the latter part of September and the whole of October in searching for their nests. On 26th September I found a nest in which were three eggs slightly incubated. The nest was placed at a height of 18 inches from the ground among low dense scrub in a swampy locality. On the same date I also discovered the nest exhibited to-night, which the birds deserted, probably owing to my disturbing their nesting operations, as I saw the female within a few feet of the nest. This nest I have brought with as much surroundings as possible, and it will, I think, enable all interested to get a fairly good idea of the situations favoured by these birds for nesting. In this instance a space of two feet separated the nest from the ground, and in every instance coming under my notice the nests are situated among scrub, thick, low, and dense, and matted together with the wiry creeper as in the case of the nest exhibited. I subsequently found one nest and three fresh eggs; also, two nests, containing three and four eggs respectively, both the latter sets being nearly hatched; besides two others containing young birds.

As all the nests were at a considerable distance from my home, I had no opportunity of watching them for more than a brief period, which, however, enabled me to observe the female return to the nest on two occasions, and take her place upon the eggs. This she apparently does by "backing" into the nest, hence her long tail sticks outwards through the entrance and over her head, a conclusion forced upon me (even without the necessity of eye-witnessing) from the extreme length of the tail and size and shape of the nest. The eggs are somewhat large for the bird, and, like many other species, differ considerably in their markings. Nearly all of those taken by me may be likened to the eggs of *Malurus cyaneus*, but considerably smaller. The nest is much more compact than the Blue Wren's, smaller, and much better finished, besides being more artfully concealed. As Gould has truly remarked, the bird's powers of flight are but feeble; hence it depends mainly upon its wonderful activity upon the ground as a means of escape from danger, and the dense undergrowth found in the localities it frequents.

In the year 1863 Mr. E. P. Ramsay has described in the *Ibis* the finding by himself of a nest two years previously on Long Island, containing three eggs. This nest, he states, was concealed under a wind-bent tussock, near the ground, and was so loosely constructed that great care had to be exercised to prevent it falling to pieces on removal. His experience differs somewhat from mine, as all the nests I have found have been placed from

eight inches to three feet from the ground, and are decidedly well-built, compact structures. These birds have probably few natural enemies, their diminutive size making them unworthy the notice of the larger birds of prey. Their extinction, so far as my district is concerned, is at most a matter of a few years, as increased settlement, and the consequent burning of all scrub-clad areas, will ultimately exterminate them. The usual clutch is, in all probability, three eggs, and as I have, so far, never found a nest late in the season I am inclined to the belief that but one brood is reared in each year. I have never found the birds among crops or in cultivated areas, though they may frequent such places if adjacent to their natural habitat.

NOTES ON THE EGG OF THE SHORT-TAILED ALBATROSS.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria, 13th December*, 1897.)

Of the fifteen species and varieties of albatrosses inhabiting the globe, twelve of them fly the ocean wastes of the Southern seas, therefore most of them occur in Australian or New Zealand waters. The remaining three species are found in the North Pacific Ocean.

The Short-tailed Albatross, *Diomedea albatrus*, belongs to the northern birds, and is supposed to range as far south as the seas of the northern part of Australia. This fine bird resembles the Wandering Albatross, from which it may be distinguished, as Gould points out, by the shortness of its tail and by the truncated form of the base of the bill.

There is a halo of romance surrounding this family of great oceanic birds, chiefly, I think, on account of the weirdness or sublime isolation of their breeding homes. These are, for instance, the island of Tristan d'Acunha, with its mist-enveloped mountain peak 8,000 feet above sea level; Prince Edward Island, where snow in midsummer (December) covers its sharply-shaped mountains; islands of the Crozet Group, towering from the water's edge in great basaltic cliffs and hills to a height of 4,000 feet; and Kerguelen's Land, or Captain Cook's Islands of Desolation (whither two of our field naturalists, Messrs. H. Gundersen and Robert Hall, have gone). Islands capped with towering conical peaks (6,000 feet high), sheltering a glacier, although very imposing, are, according to navigators, severe and sterile, with a dismal climate—rain and snow even at midsummer—and where gales are said to rage for three weeks out of four. Surely this region must be one of the "Chambers

of the South" from whence arise Meteorologist Wragge's classical storms. Coming nearer Australian shores we have Campbell Island, a complete contrast to Kerguelen; for, although a full degree nearer Antarctica, Campbell Island is verdure clad almost to its central peak—Lyall Hill, 1,355 feet above the sea—and girt about the base with Ironwood, so called; thick with dark green foliage and stems gnarled and twisted by many a gale; while at our own door is the Albatross Rock of Flinders, bald and bleak, breaking the swell of the Southern Ocean near the north-west corner of Tasmania, where our members—Messrs. D. Le Souëf, H. P. C. Ashworth, and Gabriel—landed so recently.

Such places are some of the breeding haunts of the albatrosses.

The Short-tailed Albatross, however, breeds in northern latitudes. The eggs I have received through the agency of Mr. Alan Owston, Yokohama, Japan, were taken on Bonin Islands, where the eggs are laid at the end of October and the beginning of November. It is most interesting to note that, although these months are the fall of the year in the Northern Hemisphere, they correspond with the laying season of the albatrosses in the south, thus proving, I think, that the Short-tailed Albatross was once a dweller with or sprang from the southern birds, and became isolated in the north.

Nest.—None, the egg being laid on the bare ground.

Egg.—Clutch one. Lengthened, or a longish oval in shape, more compressed at one end; texture of shell coarse and strong; surface rough, with just a perceptible trace of gloss; colour, dirty or yellowish-white, more or less ingrained or stained with earth, and with a rusty-coloured or rufous-brown cap of freckled or blotchy markings on the larger end. In addition, some examples have, here and there over the rest of the shell, dull purplish-brown spots. Dimensions in inches—(1) 4.67 x 2.9; (2) 4.65 x 2.95. A smaller example in Dr. Charles Ryan's collection measures 4.26 x 2.63.

We are all more or less interested in these splendid sea-birds—the albatrosses—and it behoves us especially as a Naturalists' Club to see that the "rookery" at our own door is protected. Bird-oil is a valuable commodity, worth £20 per ton, and the teeming numbers of birds on some of the southern islands are attracting commercial attention. A company is at present working Macquarie Island.

Nothing would be easier than for an enterprising party to swoop down, some autumn season, upon Albatross Rock and boil down the birds there, both old and young. So, for the sake of a few barrels of oil, the only species of albatross peculiar to Australia would be, if not altogether, well-nigh annihilated.

NOTES ON THE BRONZE CUCKOO.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria, 13th December*, 1897.)

The familiar Bronze Cuckoo, *Chalcites plagosus*, Lath. (its egg also being bronze-coloured), is migratory over the whole of Australia and Tasmania.

The whistling note of the Bronze Cuckoo is usually first heard in the vicinity of Melbourne during the season in August. I have a record one year when I heard this bird as early as the 3rd of that month. Of course, the majority of these cuckoos arrive during September, a few laying by the end of that month, while the general laying season includes the months of October, November, and December.

In selecting a foster parent for its offspring the beautiful Bronze Cuckoo generally chooses the covered-in nests of the Acanthiza (Tit) tribe, but other species of dome-shaped or secluded nests are chosen, while I have a record of only three instances where open nests were selected. The following is the list of foster birds known :—

Vernacular Name.	Scientific Name.	By Whom First Recorded or Reported.
Yellow-rumped Tit ...	Geobasileus chrysorrhoea	Gould
Buff-rumped ,, ...	G. reguloides	E. P. Ramsay
Little Brown ,, ...	Acanthiza pusilla	,,
Striated ,, ...	A. lineata	,,
Little Yellow ,, ...	A. nana	,,
Tasmanian ,, ...	A. diemenensis	A. E. Brent
Western ,, ...	A. apicalis	A. J. C.
Banded Wren	Malurus splendens ...	Gould
Blue ,, ...	M. cyaneus	,,
White-throated Scrub-Tit	Sericornis citreogularis ...	A. J. C.
Large-billed ,,	S. magnirostris	H. Lau
White-throated Fly-eater	Gerygone albigularis ...	H. Barnard
Brown ,, ...	G. fusca	A. J. C.
Red-browed Finch ...	Ægintha temporalis ...	A. J. North
Brown Tree-Creeper ...	Climacteris scandens ...	G. Bateman
*Short-billed Fly-eater ...	Smicrornis brevirostris ...	E. P. Ramsay
*Emu Wren	Stipiturus malachurus ...	,,
Scarlet-breasted Robin ...	Petroeca leggii	A. J. C.
White-fronted Bush-Chat	Ephthianura albifrons ...	J. Sommers
Orange-winged Tree-Runner	Sittella chrysoptera ...	G. E. Shepherd

To the foregoing list may be added that troublesome introduction, the House Sparrow, an apparently deserted nest having been taken near Warrnambool, which contained an addled egg of the Bronze Cuckoo—date Christmas, 1893. In New Zealand, also, I believe an egg of a Bronze Cuckoo was found in a

*I have included these as foster birds under this species, although Dr. Ramsay does not make it clear to which of the two Bronze Cuckoos they should belong. *Vide* P.Z.S., 1865 and 1869.

sparrow's nest, which contained likewise three legitimate eggs. One November my son Archie observed a sparrow chasing a cuckoo from the verandah of our house, where sparrows were nesting.

The Tree-Creeper (Climacteris), as a foster bird, is mentioned on the evidence of the late Mr. Gilbert Bateman, a trapper, whose suspicions were aroused by seeing a Bronze Cuckoo emerging from a hole in a tree. An examination proved that the cuckoo had deposited its egg among the rich red-coloured clutch of the Tree-Creeper. The nest was not far down, and could be seen from the entrance of the hole.

While in the "Big Scrub," New South Wales, in several instances I abstracted the eggs of this Bronze Cuckoo from the bulky nest of the Yellow-throated Scrub-Tit, *Sericornis citreogularis*, together with the larger eggs of the rightful owner. Only once did I take the strange egg in the nest of the other Scrub-Tit, the Large-billed, or *S. magnirostris*, also so common in this locality, as Mr. Lau did in the South Queensland scrubs.

As these nests are similarly constructed, and frequently near each other, I thought it remarkable that the cuckoo should select one in preference to the other.

In the West the Bronze Cuckoo eggs I there found were in nests with clutches of the Western Tit, *Acanthiza apicalis*. I also noticed these birds feeding a young cuckoo.

While in a forest near Cape Leeuwin during October, 1889, I made the following curious entry in my field book:—

"Four or five Bronze Cuckoos in shining coats making a great stir in a low tree, chasing each other and all the while making melancholy, tremulous, whistling noises. Anxious to ascertain the cause of the disturbance, I approached too close to the little company, which immediately departed to another tree."

Occasionally two Bronze Cuckoos' eggs were deposited in the same nest. I find that under date 2nd November, 1886, I took a pair of bronzy coloured eggs from a nest of the Yellow-tailed Tit (Geobasileus), near Doncaster, Victoria. Mr. C. French, jun., recorded in the *Victorian Naturalist* a similar instance that came under his observation during the season 1889.

Other species of cuckoos' eggs are occasionally found in the same bird's nest with that of the Bronze Cuckoo, as Mr. Brent's note quoted under the Fantailed Cuckoo, and the following remarks by Dr. Ramsay, prove.

"From a nest of *Acanthiza nana*," Dr. Ramsay says, "I remember taking, in the year 1855, no less than six eggs. Among them were three Bronze Cuckoos'—two of *Chalcites plagosus* and one of *C. basalis*. In November last (1864) we took another nest of the same species, containing one of each variety. In this instance one of the eggs of *C. plagosus* was

embedded below the lining of the nest, and had evidently been laid just before the nest was completed, as is not infrequently the case. The other egg, which was a specimen of *C. basalis*, my brother Percy placed in a nest of *Acanthiza lineata*, which he had found on the previous day, and left for such an occasion. On returning to it about a week afterwards we found the young cuckoo had been hatched. After a lapse of seven days the bronze feathers were just beginning to appear, and in about a week or ten days more the young bird was able to fly, the bronze on the wings, head, and back now showing plainly.

"Now, as the apertures of the nests of the Acanthiza are exceedingly small, a question naturally arises whether the Bronze Cuckoo lays its eggs in the nest or places them there by some other means.

"To this I can only answer that the apertures of those nests which have contained cuckoos' eggs are nearly twice as wide as the openings of those nests which we have taken before the cuckoo's egg has been deposited in them. This is more easily noticed in the nest of *A. lineata*, of which the aperture is very small and nearly covered over with a hood."

NOTES ON *SCOLECOBROTUS WESTWOODII*, Hope.

This is a longicorn beetle, for which a collector may, as in my case, look almost in vain for years, for in all my experience I have taken but a single specimen in the open, and yet, when its habitat becomes known, it is fairly common. Why it is so rarely taken is rather difficult to explain. My surmise is that the beetle, when it emerges, remains on the upper branches, and sooner or later becomes food for birds. This would also account for neither the dead beetle or its remains being found round the butts of the trees. In colour it is of a light brownish-grey, and in length from 12 to 16 lines. It breeds mostly in the Yellow Box, *Eucalyptus melliodora*, and if the branches blown down by the strong equinoctial gales of August or September be examined, it will be noticed that the lower ends present the appearance of having been eaten away, with the exception of a very small portion, thus rendering them easily liable to be broken or blown off. This eating away is done by the powerful mandibles of the larvæ or grub of the beetle, but for what exact purpose I cannot say. The grub, which when extended averages one and a half to two inches in length, and is of a dirty white or slaty colour, enters the branch at nearly its thinnest portion, and then tunnels its way down two, three, four, and sometimes even a greater number of feet, when for a reason of its own it eats away round the branch until only a small support is left, as mentioned

above. Sometimes the grub remains in the branch blown down, sometimes in the other portion, in which latter case it is very difficult to obtain without the aid of an axe. My specimens have all been secured from the blown down branches, and the beetle generally emerges about the following August or September. All that is necessary is to place the wood in a box with a glass front and a fine gauze or wire back. Of course I have not been successful with every larva I have taken, many unfortunately dying, owing to the sap of the wood drying up so quickly.

In examining the branch, if the tunnel is open it is more than likely there is no grub in it, but should it be plugged up then it is almost certain to be there. In a branch where there is a grub a careful examination will reveal several very small holes, from which, presumably, the casts or gnawings of the grub are ejected; at all events, if a grub is followed down, the tunnel will always be found clean and clear, wherein it altogether differs from the grubs of the numerous species of Phoracantha—also longicorn beetles—which seemingly eject nothing, but leave all their casts behind them, and when found are in a chamber just sufficiently large to hold them. It is wonderful the long tunnels some of the grubs of the longicorn beetles will make, and if one wants to form an idea of the rapidity with which they work, let him get a branch containing a grub of *Scolecobrotus Westwoodii*, place it on a table at night, and in the morning he will see thrown out a pile of little oval pieces of wood that will fairly astonish him. How often do we hear people speak of the many branches blown down by the wind—blown down they certainly are, but there would not be a fourth of the number were it not for the grubs of Scolecobrotus and other longicorn beetles.

With the beetles are examples of the branches from which I have bred them. The single specimen of beetle differs from the others in being much rougher, but I fancy it is only a variety, although a rare one, for it is the only specimen I have taken. I found the larva in a piece of dry wood which I accidentally picked up when out collecting, and scarcely hoped or expected to find anything in it.

D. Best.

OBSERVATIONS ON *XEROTES SORORIA*, F. v. Mueller.

By J. G. Luehmann, F.L.S.,

Curator of the National Herbarium.

Some time ago I received from Mr. H. B. Williamson, of Hawkesdale, a specimen that had been collected by Miss

Burkhill at Lillimur, near the South Australian border, and which I took at first for *Xerotes juncea*. Upon closer examination, however, I find it to be a variety of the imperfectly known *X. sororia*. It may be of interest to give a description of the male plant, the only form collected.

XEROTES SORORIA, F. v. M., var. TERES.

Stock tufted, surrounded by sheathing scales. Leaves or barren shoots rush-like, attaining about a foot in length, terete, stiff, slightly striate, glabrous. Flowering scapes about 3 inches long, simple or slightly branched, with thin pale shining scales below the flowers. Flowers pale coloured, in small clusters or singly disposed along the spike, sessile within small scarious bracts. Outer perianth-segments ovate, almost hyaline, shining; inner segments slightly longer, ovate, free to near the base like the outer ones, very turgid and fleshy in the middle and lower part. Stamens: The three opposite the outer perianth segments on very short filaments, the other three sessile and attached to the centre of the inner segments. Rudimentary pistil present.

ANTS AND APHIDES.—A small species of ant, commonly distributed in the Mallee, has a curious habit of keeping in close confinement a rather large mealy aphis, which feeds on the stems of young eucalypts. Round and over these aphides the ants construct a domed covering of particles of bark, grass, &c., which serves the double purpose of imprisoning the aphides and excluding other ants. Some of these coverings appear to be entirely closed, while others have an opening left in the edge; this doorway is, however, constantly guarded by a pair of ants, which continually move about in the open space, and seem much impressed with the importance of the duty assigned to them. Each enclosure contains generally from three to a dozen aphides, and about the same number of ants. Upon making a breach in some of these structures, for the purpose of observation, I have noticed that many of the "live stock" were immediately seized by the ants and forcibly removed to a place of safety. The ant under notice is about a quarter of an inch in length, and is of a uniform dark reddish-brown colour, and forms its ordinary habitation under logs, or in old rotten stumps, and sometimes in the ground. Several other species of ants are very assiduous in their attendance on the various aphides, Tetigonidæ, and coccids, but the above is the only kind I have noticed that uses such extraordinary means to secure a monopoly of the much-prized "honey-dew." —J. C. GOUDIE. Birchip, 28th January, 1898.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th February, 1898. Mr. J. Shepherd, a vice-president, occupied the chair, and about 50 members and visitors were present.

REPORT.

A brief report of the excursion to Nar-Nar-Goon on 26th January was given by Mr. D. Best, who stated that, doubtless owing to the exceptionally hot and dry season, insect life, usually very plentiful in the district, was exceedingly scarce, and nothing of note was captured.

GENERAL BUSINESS.

In pursuance of notice, Mr. A. J. Campbell moved—"That the Tasmanian Government be approached with a view to having the Albatrosses on Albatross Island protected by law." This was seconded by Mr. D. Best, and, after some discussion, carried. On the proposition of Mr. D. Best, Messrs. Campbell, Le Souëf, and Coghill were deputed to interview the Premier of Tasmania, at present in Melbourne, and represent the Club's wishes to him.

PAPERS.

1. By Mr. W. H. F. Hill, entitled "Notes on the Terrestrial Isopod, *Phreatoicopsis terricola*, Spencer and Hall."

The author supplemented the description of this crustacean recently read before the Royal Society of Victoria with some field observations on its colour, habits, and localities where found.

2. By Mr. G. A. Keartland, "Ornithological Notes from Central Australia," part ii.

The author continued his interesting notes on the birds seen in Central Australia while travelling with the Horn Exploring Expedition, pointing out the localities of their occurrence on the map, and in many cases exhibiting the eggs in illustration of his remarks.

The paper gave rise to some discussion as to the distribution of some of the birds mentioned, in which Messrs. Campbell, Coles, Le Souëf, and others took part.

3. By Mr. A. J. Campbell, entitled "Discovery of the Nest and Eggs of the Australian Snipe, *Gallinago Australis*."

The author gave a brief account of the bird, which has been known to science for nearly a century, but its nest and eggs were unknown until last year, when, through his instigation, Mr. Allan

Owston, of Yokohama, succeeded in finding the nest and eggs on the slopes of Mt. Fujiyama, Japan, about 2,500 feet above sea level. Some account of the bird's migrations was given, their residence in Victoria being from about the middle of August to the middle of following March.

Some discussion followed, in which Messrs. Barnard, Keartland, Le Souëf, Coles, and others joined.

NATURAL HISTORY NOTES.

Mr. A. J. Campbell read a note reporting the finding of the Large-billed Scrub-Wren at Cape York, North Queensland, and at Loch, Victoria, thus considerably extending its recorded range.

Mr. A. J. Campbell also contributed a note on the Large-billed Shrike-Robin, *Eopsaltria magnirostris*, Ramsay, of which he recently received eggs from Richmond River district, N.S.W.

Mr. J. G. Luehmann, F.L.S., read a note on a new Polygala from Western Australia.

The Chairman drew attention to the frames of mounted and named Algæ presented to the Club by Mr. H. T. Tisdall, and thanked him for them. Mr. Tisdall stated in reply that the Algæ were typical specimens from outside Port Phillip Heads, which he had prepared for exhibition at the recent meeting of the Australasian Association for the Advancement of Science in Sydney, and that he hoped to be able at some future date to present a series typical of the Algæ of Port Phillip Bay. Mr. Coghill referred to the excellence with which all Mr. Tisdall's work was done, and the example thus placed before all workers in natural history.

EXHIBITS.

By Mr. T. T. Brittlebank, per Mr. C. French, F.L.S.—Oil paintings of Australian birds by Mr. E. J. Cox, Clarence River, N.S.W. By Mr. A. J. Campbell.—Eggs of Australian Snipe; skins (male and female) and eggs of Large-billed Shrike-Robin, skin of Large-billed Scrub-Wren (new for Victoria). By Mr. A. Coles.—Two eggs of Australian Cassowary from Queensland. By Mr. C. French, jun.—Clutch of eggs of Tasmanian Swamp Quail, Tasmania. By Mr. T. S. Hall, M.A.—*Phreatoicopsis Australis*, in illustration of Mr. Hill's paper. By Mr. G. A. Keartland.—Eggs of Black Falcon, Short-winged Podargus, Spotted Nightjar, Owlet Nightjar, White-breasted Swallow, Red-backed Kingfisher, Black-faced Wood Swallow, and Red-lored Pardalote, in illustration of paper. By Mr. Mattingley.—Eggs of Crocodile *C. sporosus*, from Mungalla, Herbert River, Queensland. By Mr. G. E. Shepherd.—Eggs of Yellow-necked Bittern and Noisy Pitta from New South Wales, and Black-capped Sittella from Kewell, Victoria.

After the usual conversazione the meeting terminated.

NOTES ON THE NARROW-BILLED BRONZE CUCKOO.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria, 13th December*, 1897.)

The Narrow-billed Bronze Cuckoo, *Chalcites basalis*, Horsf., is found throughout Australia, including Tasmania.

The arrival of this bird in southern parts is concurrent with the tide of the other cuckoos, its laying season commencing about the end of September and continuing into December. There is a noteworthy fact in connection with the two common Bronze Cuckoos frequenting the southern parts of Australia. The one that lays the olive or bronze-coloured egg invariably, or with few exceptions, deposits its burden in dome-shaped or covered nests, while the Narrow-billed (the species now under notice) chooses either dome-shaped or open cup-shaped nests as receptacles for its red-speckled egg.

As far as my data go, the following species are among the foster birds of the Narrow-billed Bronze Cuckoo :—

Vernacular Name.	Scientific Name.	By Whom First Recorded or Reported.
White-shafted Fantail ...	Rhipidura albiscapa ...	G. E. Shepherd
Blue Wren	Malurus cyaneus	E. P. Ramsay
Long-tailed Wren ...	M. gouldi	—
Orange-backed Wren ...	M. melanocephalus ...	H. Barnard
Black-backed ,, ...	M. melanotus	A. J. North
White-winged ,, ...	M. leucopterus	A. J. C.
Yellow-rumped Tit ...	Geobasileus chrysorrhœa	,,
Buff-rumped ,, ...	G. reguloides	E. P. Ramsay
Tasmanian ,, ...	Acanthiza diemenensis ...	—
Striated ,, ...	A. lineata	A. J. North
Little Yellow ,, ...	A. nana	E. P. Ramsay
Little Brown ,, ...	A. pusilla	,,
Scarlet-breasted Robin ...	Petroeca leggii	A. J. North
Red-capped ,, ...	P. goodenovii	A. J. C.
White-fronted Scrub-Tit	Sericornis frontalis ...	A. J. C. (Kent Group)
Yellow-throated ,, ...	S. citreogularis	Hermann Lau
Large billed ,, ...	S. magnirostris	,,
Short-billed Tree-Tit ...	Smicrornis brevirostris ...	A. J. North
Rufous-headed Grass-Warbler	Cisticola ruficeps	G. A. Keartland
White-fronted Bush-Chat	Ephthianura albifrons ...	J. T. Gillespie
Field Lark	Calamanthus campestris (?)	C. French, jun., and party
New Holland Honey-eater	Meliornis novæ-hollandiæ	A. J. North
White-cheeked ,, ..	M. sericea	E. P. Ramsay
White-eye	Zosterops cœrulescens ...	A. J. North
Red-browed Finch ...	Ægintha temporalis ..	E. Cornwall
Orange-winged Sitella ...	S. chrysoptera	G. E. Shepherd

It is unusual to find two species of cuckoo in the same foster bird's nest. Once I found a nest of the Tit, *Geobasileus chrysorrhœa*, containing three eggs, besides an egg each of the two Bronze Cuckoos. If these two lively youngsters had been hatched, I suppose it would have been a case of "the survival of the fittest." However, Dr. Ramsay can go one better. In 1856, from a nest of the Little Tit, *Acanthiza nana*, he took no less than six eggs—three belonging to the Tit and three to the Bronze Cuckoos—two of *C. plagosus* and one of *C. basalis*.

As we saw in our observations on the Fantailed Cuckoo, Mr. A. S. Brent can go one higher still as far as cuckoos' eggs are concerned, for in a little Tasmanian Tit's (Acanthiza) nest, he took the eggs of no less than three species—namely, the Fantailed, Bronze, and Narrow-billed Bronze Cuckoos.

Exceptions always seem to prove the rule. Cuckoos, being insectivorous, usually deposit their eggs in the nest of a bird used to similar diet. But here we have a partly graminivorous bird a would-be foster parent. Mr. Ed. Cornwall related to me how he once found a Finch's nest containing the fresh egg of the Narrow-billed Cuckoo. But the strange part of the affair was that the nest also contained the body of the finch, which apparently had been dead some weeks.

To the Messrs. Brittlebank I am indebted for first-hand information relating to many of the foster parents of various cuckoos. I was present with them at one of our enjoyable outings at the Werribee Gorge, 11th October, 1890, when we found the egg of a Narrow-billed Cuckoo in the nest of the New Holland Honey-eater.

During the visit of the expedition of the Field Naturalists' Club of Victoria, November, 1890, to the Kent Group, we discovered for the first time the egg of the Narrow-billed Cuckoo in the nest of the White-fronted Scrub-Tit, *Sericornis frontalis*.*

As in the case of the other Bronze Cuckoo, two eggs of the Narrow-billed are occasionally taken in one nest. Here is a curious note from Mr. G. E. Shepherd. At Somerville, 1896, twice he took a Blue Wren's nest containing a clutch of two eggs, together with a Narrow-billed Bronze Cuckoo's egg, and on examination a second cuckoo's egg was found embedded in the grassy material of the nest.

That cuckoos sometimes deposit their eggs in the foster-bird's nest before its construction is complete is again illustrated by the fact that after removing a pretty clutch of eggs from a Blue Wren's nest I discovered between the grassy folds of the nest the well-known red-sprinkled egg of the Narrow-billed Bronze Cuckoo.

* *S. gularis*, Legge, *Victorian Naturalist*, 1896.

Bearing on this point, I possess further evidence from Mr. Wm. P. Best, Branxholme, who wrote some time ago :—"I am of opinion that occasionally the Broad-billed Bronze Cuckoo deposits its egg in the Acanthiza's nest before that bird has laid its eggs, and that when this happens the Acanthiza covers the strange egg with a thick layer of feathers. I have found several cuckoos' eggs thus covered with a dense layer of feathers in every instance ; the lining of the nest has been much in excess of what is usually found. It also seems to me that the cuckoo's egg hatches in somewhat less time than the other eggs in the nest. I have been unable to verify this, however. What I have noticed is that in nests where a cuckoo's egg is found that egg is always in a more forward state of incubation than the others, and where I have found a young Cuckoo there have (or nearly) always been eggs broken (not young birds) under the nest."

It will be observed that the eggs of the two little Bronze Cuckoos, *C. plagosus* and *C. basalis*, are totally dissimilar in colouring, notwithstanding that the respective reputed parents are almost exactly alike, both in colour and size. Both wear coats of glorious golden-green. However, the Narrow-billed may be distinguished, as its name implies, by its slightly smaller and narrower bill, more mottled plumage on the throat and chest—not so barred as in the other variety—and by several (6) of the tail feathers being rufous or chestnut-coloured at their base. The young of both species on leaving the nest are hardly to be separated from each other, but at about three months old they possess the same characteristic markings as their parents. It would be of great interest if some of our oologists could explain the apparent anomaly in the colouration of the eggs, for experience teaches us that in nearly every genus the true typical egg of each species is not without characteristic resemblance.

With reference to the supposed ousting by the young cuckoo of its foster brethren, I do not think it applies in all cases, if at all, because if we consider, say, the Pallid and Fantailed Cuckoos, their rapid growth in size, compared with the smaller foster family, the latter would be soon crushed or starved out of existence; moreover, the nest could not contain them all. In any case there appears an all-wise provision in the plans of their Creator for the maintenance of their (the cuckoo) species, for it may be readily understood that it occupies the whole time of a pair of tiny foster parents to satiate the rapacious maw of their large foster chick, without being encumbered with a brood of their own offspring.

NOTES ON THE BIRD FAUNA OF THE BOX HILL DISTRICT—*Continued.*

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 17th January,* 1898.)

There are always two larks within our cleared lands—the one common throughout the year, the other nomadic; at all events, it is away singing elsewhere a part of its time. The first I refer to is the Pipit, or Ground Lark, the other the Bush Lark. I fancy I have recognized a Cincloramphus in the direction of Spring Vale, but, not having secured its skin, leave it out for the present.

Our Ground Lark, or Meadow Pipit, *Anthus Australis*, V. & H. (W.)*, scarcely needs a mention, as it has spoken for itself, I may safely venture to say, to each one of you. The larks appear to differ from the pipits in the bills of the latter being more slender, and notched, so that our familiar Ground Lark should always be honoured with its more appropriate title of Pipit. The nest is invariably placed upon the ground, and the birds prefer the same place to the air. For five minutes together you may keep the slim-footed runner moving in and out, seldom essaying flight for more than a few seconds, until, finding you are intent upon annoying it, away it flaps with the wind for 100 yards or more. If it wishes to enter an adjacent field, and pass houses *en route*, it will rise quickly into the air, fly high, and fall rapidly into the new pasture, favoured with the wind if present. If a quarrel arises between the smallest number that can make a quarrel, a long, rapid, and zig-zag flight follows, little in accord with the usual short, unventuresome flutter.

The golden rule of the Pipit is to escape from danger by rapid, even running along the ground, not divulging its presence by any motion of flight. When trouble has subsided, and without any loss of time, an attack is made upon the nearest insect that is weighty enough to be of valuable consideration.

The congregations of this bird, in the season when most birds agree to associate in flocks, is seldom more than ten to twelve in a flock upon the ground. Beyond this period the pairs, by themselves or with their young, are seen by daylight almost in any green or brown field, or heard at nightfall when other birds are making straight for home by all the rural short-cuts known to them. A direct flight of, say, 25 yards, will occupy about five seconds, while a run in a straight line of 15 yards will take about the same time. Wherever a dry channel offers itself the bird will use it for escape by running; and in this way I noticed, some time ago, a young White-fronted Ephthianura trying to evade observation and make its escape. By way of comparison, both

feign well an injury or youthful weakness to distract your attention from the nest of eggs or young that these parent birds have been forced to leave owing to your presence. I fear their decoy hopes are not as advantageous to them as "silence is golden" would be, for the nest would seldom be found were it not for their own aid in rising from the nest and plainly saying by their action, "There it is." All you have now to do is to look for it within the limited bounds prescribed for you.

The young are early models of the old. Before leaving the saucer-shaped nest of grass material the outer two rectrices are white, each with a central longitudinal dark line, and this before these feathers are an inch in length. The little birds early learn to catch the worms, which appear after a heavy rainfall in such plenty that juvenile Pipits soon find themselves doing well in business.

The Bush Larks, of which the more familiar is Horsfield's, belong to the family Alandidæ (a great songstress), which is most strongly represented in America, the land of singing birds, with the champion of all—the mocking bird.

The only specimen obtained by myself corresponds with Dr. Sharpe's description for *Mirafra secunda*. This bird somewhat resembles the Pipit, but as it has a rather coniferous bill, and is of shorter dimensions than the Pipit, the difference is always observable in any season of plumage, and even in the field with a close view, which is about the only one you can get of the bird when upon the ground, as it so closely assimilates with it. The song of the bird is comparable with recognized singers of quality, and with the Black Fantail, *Saudoprocta motacilloides*, V. & H., it sings at night, but with a greater variety of music than that of the Fantail. On or about the longest day of the year, when the setting of the sun and the rising of the moon are comparatively close together, about nine o'clock in the evening many birds seem to have lost their reckoning, for they whistle and sing, warble and call quite apart from their ordinary course of nightly movements.

Placing the classification of Australian birds by Dr. Ramsay alongside that of Dr. Sharpe, I find the former shows one species of this genus while the latter recognizes two, with the following key for the latest edition (*M. secunda*):— Eyebrow tawny-buff, shoulder of wing almost entirely rufous, the median and greater coverts showing scarcely any black bases to the feathers. It is with this description that the local one agrees, rather than with *M. Horsfieldi*, Gould.

Other than the two mentioned familiar ground birds is a third species. The Striated Field Lark, *Calamanthus fuliginosus*, V. and H. (W)., here is an uncommon bird, preferring the marshy low growth of the sea border to the rough grassy flats of the

interior, but at home in both. Between Grantville and the southern part of Lang Lang it is plentiful, and nearer Melbourne, between Yarraville and Altona, you may at almost any time obtain a variety of skins if they are needed for scientific purposes. The bird, from a little bush top, sings sweetly, merrily, and continuously, with its brownish tail erect and restless. The tail appears by its movements to be an extraordinary appendage to the bird, for besides other actions you learn its intended course of flight by the placement of the tail in the opposite direction to that course which it intends to pursue. Certainly one action is quickly consequent upon the other, but unlike the Superb Warbler in its manner of set-off, that of lowering its long tail to the plane of its body on the first flight motion.

Another species, as nearly terrestrial as is possible, is the White-fronted Ephthianura, *Ephthianura albifrons*, J. and S. (W.), associating in flocks in southern Victoria between February and July upon the high grass and low bushes of open country, uttering its "tang," and becoming as pugnacious as many other birds before the end of July. This is one of four very beautiful and conspicuous species of a genus peculiar to Australia, all of which build their nests at the base of herbs or grasses, or some 18 inches from the ground amongst bushes. The birds are early builders, make a cup-shaped nest, deposit three eggs (one each successive day), and induce the young to leave the nest on the twelfth day from hatching out. The young are not born the same day, but with 24 hours' difference in time. If an egg does not develop it lies in the nest for weeks, perhaps until decay sets in, and long after the nest is unused by the owners. Both sexes take part in incubation and in the rearing of the young, the male taking as keen an interest in being a canopy for the new-born as the mother bird. Here is another foster-parent for the Narrow-billed Bronze Cuckoo. In December of last year I found an egg of the wanderer unsuccessfully foisted upon a pair of Ephthianuras, for it had either been placed or ejected on the wide edge of the nest, and there it lay uncared for.

For three successive seasons two pairs of this species built their nests at the bases of two tussocks of grass. I believe them to be the same birds throughout the time, for there were thousands of other tussocks in the vicinity that could have been utilized for the same purpose, without any special effort on the part of the birds—at least, so far as my knowledge of such matters led me to conclude.

Of the universally dispersed Fringillidæ, including 559 species, the most southern members are the well-known Red-eyebrowed Finch, or Waxbill, and the Spotted-sided Finch, or Diamond Sparrow. However, in a recent classification of finches by Mr. Oates, it is mentioned by Mr. Lydekker, B.A. ("Royal

Natural History"), that Australia, strangely, is without finches. Thus our twenty-two species are elsewhere placed in this case, but retained under other systems of classification.

In early spring the migration of the Red-eyebrowed Finch, *Estrilda temporalis*, Lath., south into this district is noted by seeing small flocks of fifteen or twenty birds flocking into the creek bushes, their gentle chirps conveying their thanks for warm weather and sunshine upon the fields familiar to most of them. They do not begin house-building at once, for it is in October and November that I have observed their bulky nests placed a dozen feet from the ground in high shrubs. This little bird, 4 inches long, delights in building a nest 9 inches high by 12 inches broad, of coarse grass, and more like that of a sparrow, also a finch. Into this conspicuous nest it places five to eight small white eggs, and carefully tends the rising generation, which differ from their parents in not having the crimson bill and patch over eye. The upper tail coverts are similar to the old birds' before leaving the nest. This little hard-billed bird cleanses itself by bathing in pools, and, with the necessary care, upon a tree-trop or a lateral branch, preens its feathers to its satisfaction. Below the Dargo plateau of North Gippsland I remember seeing, as late as 2nd February, 1895, more than a dozen nests, all built in dead bushes some 10 ft. from the ground. This was the last note of the season, and flocks, in timber born, were everywhere hurrying along the creeks.

The Spotted-sided Finch, *E. guttata*, Shaw, inhabits the larger timber, feeds upon the ground preferably, and builds a loosely constructed nest in the high branches of a eucalyptus. In matured plumage the effect of the blotch of red, while quickly passing under a grove of wattles, is a striking one. Certainly I thought a tropical stranger had come amongst us when I saw it for the first time on the wing.

Of true Babbling Thrushes we have four of twenty-three Australian species, and a strange group they will seem to form to those who know the Calamanthus and Cincloramphus, as the latter is also placed here. Among them are the Scrub Robins (Pycnoptilus), Coach-whip Bird, Striated Field Lark (Calamanthus), and the Spotted Ground-Thrush, *Cinclosoma punctatum*, Lath. (W.) This last bird associates in small flocks or in pairs upon the ground in the vicinity of gravel beds where present, and when it rises for flight the course is an undulatory one. In April little flocks are seen; some fifteen to twenty birds assemble. It is much more difficult to secure than a quail. If a species of quail rises it does so near you, and the experienced gunner kills the bird; but the thrush, which flies also quickly, with a burr, rises so far ahead that a shot, fired otherwise than at random, serves only the pur-

pose of frightening other birds and disturbing the general peace. The nest is placed upon the ground, and the complement of eggs is two. In November I have found them, with the assistance of the sitting bird, for it will leave the nest as you are approaching with the feign of broken wing, as adopted by other ground birds, including the European Lapwing.

The Mountain Thrush, *Geocichla lunulata*, Lath. (W.), is a bird of similar habitat, with a preference for moist land, such as low on creek banks. It is well distributed, and the most familiar of the three species known in this continent. The nest is a bulky one, placed off the ground, and the eggs are laid as early as July, in company with the Lyre Bird of moister districts.

Amongst the southern spring and summer residents is the Australian Oriole, *Mimeta viridis*, Lath. I have noted its arrival in August, and a call peculiar to it, but similar to the Black-faced Graucalus, is henceforth heard, with a reduction in autumn and a departure by winter. The bird also has two harsh, powerful notes, made quickly in succession. The Oriole pitches its voice at a higher key to start with than the Graucalus, which commences with a squeak, then continues in a similar manner to the voice of the Oriole. One call of the young is like that of the "Rosella." There is a divergence between the Orioles of the mainland and those of the Malay Archipelago, as noted by Mr. Wallace, and interesting as a case of protection. The two species of the islands unconsciously mimic the Leatherheads (Philemon), and thus lead birds of prey to believe they have to deal with the pugnacious Leatherhead instead of the sombre and harmless bird under notice.

At a certain time of the year each district is generally visited by the Australian Raven, *Corone Australis*, Gould (W.), a bird different to the White-eyed Crow in so far as it has hazel eyes and darker tips to feathers. In January (after breeding) it may be seen flying high looking for the spots most favourable to the nourishing of its body. Such places as where offal from slaughter-houses is being placed in orchards are particularly favoured. Its palate may be sensitive, but I would not think the digestive organs were. It is certain some ferment works rapidly, for if you carry a bird just shot under these conditions for a mile, the disposition to carry it any further is lost, and the bird is dropped for the ants and flies.

In the Swan Hill district I have noticed great flocks of this species and the White-eyed Crow catching worms on the edges of swamps as the waters subside. Ravens are classified amongst singing birds, as previously mentioned. Structurally this is correct, but where do we hear the music, beyond the continuous din of its caw, caw? I have seen one without its black pigment, so that we have a white specimen of a Raven,

which it is almost impossible for anyone to define, as there is enough difficulty when in the normal state.

It is not improbable that the Crow comes here in some portion of the year, but I have not yet seen it. Professor Newton has remarked that with the exception of New Zealand and South America, the crow is mostly omnipresent.

In a sub-family of Corvidæ is placed the White-winged Chough, *Corcorax melanorhamphus*, Vieill., generally known as the jay. The true jays (Garrulus) are distributed in the northern hemisphere. The Chough is not a regular tenant of our woods, but I have always noticed it when in the hilly country beyond Bayswater. The mud nest, in composition similar to the Magpie Lark's (Grallina), but of larger proportions, will weigh from eight to twelve pounds, exclusive of the eucalypt branch to which it is appended. This only Australian species mostly frequents the timbered lands of low altitude, while the nearest allied form lives in mountain country.

In the adjacent hills I have observed a nest at approximately 1,000 feet above sea level.

Our next species is the little Swallow Dicæum, *Dicæum hirundinaceum*, Shaw, now known as Flower-pecker, through the consideration given it by Colonel Legge and Mr. Campbell. In India the bird is recognized as Flower-pecker, and as Australia has but a single species a southern "follow-on" is adopted. Dr. Sharpe has consigned both the Pardalotes and this to live upon good terms in the family Dicæidæ. Its attachment is to the mistletoes, seeking them in trees that bear the parasites, and passing other vegetation for them. In gullies and gorges to the north-west of Melbourne (such as at Myrniong), the birds will build their purse-like nests, and remaining undisturbed will rear a comely brood. The notes of the bird are fairly strong, with a lisp, and sound like "seek-er, seek-er, seek-er," repeated. The eggs bear interest in their uniform white and most uninteresting appearance, as being the product of a beautiful bird using a dark-cavity nest.

Of Tree-Creepers and Tree-Runners we have three species: *Climacteris leucophæa*, Lath. (W.), White-throated Tree-Creeper, much better known here than *C. scandens*, the brown species; and *Sittella chrysoptera*, Lath. (W.), Orange-winged Tree-Runner. The Sittellæ go in small flocks of about eight, fly heavily when pressed for time, and appear more like solid bodies in flight than light bird forms. Of two specimens shot 25th July, 1896, in a clump of timber, the male had a yellow band at the base of upper mandible; this I take to be a sign of immaturity, as the sexes, according to Mr. Gould, are alike in this respect in the adult stage. When the male had lost its mate it flew round for some considerable time, calling "twit, twit," and remained rest-

less while looking for insects upon the tree stems to which it resorts.

During a summer day of the past year, while accompaning friends along a portion of the Werribee River, Victoria, we took part in a play in which the principal act was performed by members of the Tree-Runner genus. Our first interest was in a grub that lay quiet in the Sittella's mouth, as we were inquisitive enough to know whether the old bird had any objection to our looking on at the anticipated feeding of the young. We were not kept waiting long for the information, but we were for the results. Ten minutes or more that bird continued to fly from bough to bough, and finally decided to creep down the main stem to a crevice in the bark in which was carefully hidden a young and fully fledged bird, temporarily secreted. It was fed, and one of us took hold of it; what followed in part may be easily anticipated. There was an uproar by the young bird, followed by three old birds, and all became as tame as are the Fantails. The graceful flying and nearness of their repeated approaches astonished us, showing an inclination to rest upon our hands, just with that instinctive feeling that tells one exactly when to retire for safety sake. These delicate advances on the part of three adult birds instead of two were followed by three more of the same species joining the group, but keeping at a distance. These latter were young birds. The adult Sittellas rested in the air with a full expansion of the golden-colored wings, as if for the time from their wild habits tamed, and for moments perched within a few inches of the hand that held the young. The whole scene now was one of blended animation—timber and birds—with the flying forms passing between and over the four members who constituted our party. The birds soon sought the higher branches, and we faced the ascent of a steep and rugged hill.

ORNITHOLOGICAL NOTE.

The Extension of Localities of the Large-billed Scrub-Wren (*Sericornis magnirostris*).

Hitherto this modest-coloured bird has only been recorded for the eastern coastal region, from Rockingham Bay in the north to the district of Sydney in the south, where it is considered rare. During a collecting trip undertaken for some Melbourne naturalists, Mr. Harry Barnard found the Large-billed Scrub-Wren at Cape York, Queensland, season 1896–7, while Mr. A. C. Smart has kindly lent me, for examination, a skin of this species which he shot from a small family at Loch, South Gippsland, Victoria.

No doubt these two localities are the respective limits, north and south, of the geographical distribution of the species.

14th February, 1898. A. J. Campbell.

THE

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FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th March, 1898. The president, Mr. C. French, F.L.S., occupied the chair, and about 50 members and visitors were present.

REPORT.

A report of the excursion to Willsmere, on Saturday, 26th February, was read by the leader, Mr. W. Stickland, who stated that, despite the heat, seven members attended, and many interesting specimens of pond life were obtained.

LIBRARIAN'S REPORT.

The hon. librarian reported the receipt of the following donations to the library :—"Proceedings Linnean Society of New South Wales," part 3, 1897, from the Society; "Transactions of Royal Society of South Australia," vol. xx., part 2, from the Society; "Census of Plants of Geelong District," by G. H. Adcock, F.L.S., from the author; *The Wombat*, January, 1898, from the Geelong Science Society; "Report of Smithsonian Institute," July, 1894, from the Institute; "Bulletin of American Museum of Natural History," vol. viii., from the Museum; "Proceedings of Nova Scotian Institute of Science," vol. ix., part 2, from the Institute: "Proceedings of Academy of Natural Science of Philadelphia," 1896, part 3, from the Academy; "Proceedings of Boston Society of Natural History," vol. xxvii., 12 parts, from the Society; "Chicago Academy of Science Annual Report," also "Bulletin No. 1," from the Academy; also 6 parts publications by Field Columbian Museum, Chicago, from the Museum; and "Nature Notes," for January and February, 1898, from the Selborne Society, London.

ELECTION OF MEMBERS.

On a ballot being taken Messrs. Arnold E. Rodda and John Boyes were unanimously elected members of the Club.

GENERAL BUSINESS.

The hon. secretary reported that the deputation appointed to interview Sir Edward Braddon, Premier of Tasmania, with reference to the protection under the law of that colony of the Albatrosses on Albatross Island, had been favourably received by him, and, at his request, had afterwards submitted their views to him in writing.

PAPERS.

1. By Mr. T. S. Hall, M.A., entitled "What's in a Name?"

The author briefly stated the present system of zoological nomenclature, and offered some remarks on the question of priority, and pointed out the trouble caused to workers by the publication of manuscript names.

In the discussion which followed Mr. J. G. Luehmann gave some account of botanical nomenclature, and Mr. J. Shepherd congratulated the author on the practical manner in which the question had been brought before the meeting.

2. By Mr. J. F. H. Haase, entitled "Life-History of the Butterfly, *Xenica achanta*, Don."

The author, having succeeded in rearing the perfect insect from the egg, was able to place on record, for the first time, descriptions of the larvæ and their habits, with particulars as to the duration of the different stages.

Mr. J. Kershaw and others complimented the author on his careful observation, and trusted that the paper would be the precursor of other life-histories.

EXHIBITS.

By Mr. A. Coles.—African Kingfisher, with bill measuring four inches in length. By Mr. C. French, F.L.S., on behalf of the Entomological Branch of the Department of Agriculture, 132 species of Australian Coccidæ or scale insects, 32 species of which have been only recently described; also, *Ceratitis Tryoni* and *Halterophora capitata*, both being amongst the worst enemies of the fruit-grower, the latter species of fly having been reared from peaches introduced into Victoria from New South Wales. By Mr. C. French, jun.—Longicorn beetles, *Uracanthus triangularis*, very destructive to the black wattles in the vicinity of Melbourne; also eggs of the following birds:—Spalding's Orthonyx, Queensland; Red-kneed Dottrel, Riverina, N.S.W.; Ground Graucalus, Emu Plains, N.S.W. By Mr. R. Hall.—A living fern, Asplenium, sp., from Kerguelen Island. By Mr. G. A. Keartland.—Skins of Many-coloured Parrakeet, Red-winged Lory, Oriental Pratincole, Pheasant Coucal, Banded Myzomela, Black-cheeked Falcon, Uniform-coloured Honey-eater, Red-backed Warbler, Red-throated Honey-eater, Yellow Honey-eater, Keartland's Honey-eater, Black-tailed Tree Creeper, Red-tailed Finch, Phaeton Finch, Painted Finch, and Sulphur-crested Cockatoo, all from North-west Australia. By Mr. F. M. Reader.—Dried specimens of *Cynoglossum Australe*, *Crantzia lineata*, *Schoenus nitens*, *Loysia pungens*, and *Styphelia rufa*, from Wimmera, all new for north-west Victoria. By Mr. A. E. Rodda.—Eggs of Pectoral Rail. By Mr. G. E. Shepherd.—Eggs of Blood-stained Cockatoo, Australian Dottrel, and White-fronted Falcon.

After the usual conversazione the meeting terminated.

CONTRIBUTIONS TO THE FLORA OF VICTORIA.

No. IV.

By F. M. Reader, F.R.H.S. Communicated by C. Frost, F.L.S.

(*Read before Field Naturalists' Club of Victoria, 17th January*, 1898.)

Prasophyllum fusco-viride, sp. nov., F. M. Reader.

An orchid belonging to the section Genoplesium of the genus Prasophyllum. Tuber almost kidney-shaped. Stem from 5 inches to about a foot high; leafless at the time of flowering, excepting a rudimentary leaf of 3 to 5 lines, situated near the inflorescence. Flowers in a spike or raceme of ½ to 1½ inches; very small and hardly opening. Sepals green below, towards the apex blackish brown or brown. Lateral sepals gibbous and united below, lanceolate, about ⅛ of an inch long. Dorsal sepal $\frac{1}{12}$ of an inch long, concave, broadly ovate, acute. Paired petals purplish, linear, shorter than the lateral sepals, ⅔ of a line long. Labellum dark purplish, articulated at the end of the claw-like basal projection of the column, ovate-oblong, shortly recurved at the pale end. Inner plate with two ridges, occupying the greater part of the lamina, darker than the transparent margins and vanishing towards the apex. Lateral appendages of the column slightly longer than the gynostemium, dark purple, acutely bifid at the end. Rostellum from a rough callous darker base ending in a broad transparent expansion. Anther pale and apiculate, longer than the rostellum. Pollinia sulphur-yellow. Fruit shortly oblong, oblique.

Flowers April to August. Mallee fringe, Lowan, Dimboola shire; Miss Felice Reader, 1892 (rare). Mr. C. Walter found this species farther north shortly after the plant was discovered near Dimboola.

This orchid approaches Fitzgerald's *P. viride*, but the yellow triangular labellum and green flowers of the latter readily distinguish it from that species. From *P. ansatum* it differs in the lateral sepals being gibbous at the base, the petals being without a gland, and the labellum being broader and articulate, &c. In *P. nigricans* the flowers are larger and darker and the lateral sepals are tipped with a gland, &c. *P. transversum* is devoid of the claw and furnished with a short ovate-acuminate labellum. In *P. laminatum* the flowers are reddish, the sepals non-gibbous at the base, and the labellum is trapezoid. From *P. rufum* this new species differs in the colour of the flowers, in the sepals being gibbous at the base, and in the broader labellum. *P. densum*, *intricatum*, *reflexum*, *eriochilum*, *Woollsii*, and *fimbriatum* are all characteristic of the ciliate (more or less) labellum. *P. fusco-viride* differs from *P. densum* also in the colour of the flowers, the broader labellum, and in the sepals, petals, and labellum being

without glands. In *P. intricatum* the flowers are red-brown, the sepals all equal in length, and the lateral ones tipped with a gland. In *P. reflexum* the flowers are also red-brown, and the lateral sepals united for half their length. *P. eriochilum* is furnished with a hairy surface of the labellum. In *P. Woollsii* the sepals are red-brown. From *P. fimbriatum* this new orchid differs in the labellum being non-ciliate, in the absence of the fringe of hairs, and the colour of the flowers, and from *P. Dixoni* it is distinguished by the darker flowers, by the broader dorsal sepal, the narrower paired petals, and the shape of the labellum.

NOTES ON THE TERRESTRIAL ISOPOD, *PHREATOICOPSIS TERRICOLA*, Spencer and Hall.

By W. H. F. Hill.

(Read before the Field Naturalists' Club of Victoria, 14th February, 1898.)

When the description of this crustacean by Professor W. Baldwin Spencer and Mr. T. S. Hall, M.A., appeared in the "Transactions of the Royal Society of Victoria," vol. ix. (new series), none but spirit specimens were available to work upon, so I thought that some short account of such characters as were observable only in the field, although of minor importance when compared with the systematic description, would nevertheless be of some interest. As such the following notes are brought forward :—

Colour.—Frontal portion of head, yellow. Body, faint bluish white and translucent, usually darkened by earthy material in the digestive organs. Legs and other appendages white and semi-translucent. Posterior dorsal edges of some segments about the middle and towards the end of the body usually yellow. This character is very variable, and occurs in adult specimens most markedly, but is often visible in the young. The integument is colourless and almost transparent. The yellow colouration before mentioned fades out of spirit specimens, which become opaque, and vary from creamy white to grey, according to the amount of earth in the body.

Habits.—The animals live in permanent ramifying burrows from a few inches to more than a foot in depth, which they widen out, particularly in contact with buried boulders, logs, and stumps, into small irregular chambers. These frequently hold water and mud, in which the animals lie. They make no effort to swim when placed in a basin of water.

Casts, somewhat similar to those of earthworms, are scattered through the burrows and chambers. I doubt whether there is, as a rule, permanent communication with the surface ; at any

rate there is no well-defined entrance, with heaped up casts, as found at the burrows of *Engæus*, sp.

I traced one burrow upwards to the surface, where it opened out under some vegetable *débris*, leaving unsettled the question of the removal of the excavated material. In burrowing, the earth is loosened by the strong spine-shaped terminal joint of the first limb.

The following diary entries, referring to specimens found, appear to show that, after living in the burrow of the parents for some time, the young start off on their own account, and spread out over a considerable area :—

"22nd August.—One adult and nine young about half-inch long in one chamber, under a large stone ; two smaller sized adults in communicating burrow.

"29th August.—Two large adults and four young about three-quarter-inch long, in a terminal chamber containing mud.

"31st October.—One adult and nineteen young from three-tenths to four-tenths of an inch long in a double chamber, under a large stone.

"31st October.—Ten half-grown specimens from an area of several square yards, within six inches from the surface."

The largest specimens were taken from deep burrows, and usually singly.

Their movements are not graceful, at any rate when alarmed. The alternate flexion and extension of the body necessary when using the uropoda as a means of propulsion increase the tendency which the animals have to roll over sideways, and although this may make but little difference when supported by the sides of the burrows, it is an impediment to easy and rapid movement when out in the open air.

This lateral instability is in part compensated for by the ease with which they can right themselves, using chiefly the fourth and fifth legs, the articulation of which favours their use for this purpose.

If picked up they either coil up or else, by rapidly bending and straightening themselves, strive to escape, often producing a distinct creaking stridulation, apparently connected with the motion of the pleon.

Locality.—Specimens were found commonly through the parishes of Olangolah, Barramunga, and Weeaproinah, in the county of Polwarth, from the northern edge of the Beech Forest through to Gardiner's. As this includes a considerable area of typical Beech Forest country, the animal has no doubt a much wider range than the three parishes mentioned. I have been told that specimens have been found so far north as the junction of the Gellibrand and Love's rivers.

ORNITHOLOGICAL NOTES FROM CENTRAL AUSTRALIA.

Part II.

By G. A. Keartland.

(*Read before the Field Naturalists' Club of Victoria, 14th February*, 1898.)

Early in 1896 I intimated to the committee of this Club my intention of reading a series of notes on the bird-life of Central Australia. In doing so I hoped to be able to convey a certain amount of information concerning the feathered denizens of tropical Australia, and at the same time to describe any peculiarities observed amongst those birds to which most of our members are strangers. This intention was delayed owing to the fact that before the first paper appeared in the *Naturalist* (vol. xiii., p. 58) I was called away on the Calvert Exploring Expedition across the Great Desert of Western Australia, of which I may have something to say in the future. In order to make my notes as complete as possible, I purposed taking the whole of the birds noted in their ornithological sequence. Therefore my first paper dealt with the raptores, but, as I omitted one, I shall begin with it now.

Black Falcon, *Falco subniger*, Gray.—Whilst near the Petermann Range, and again at Owen Springs, I had opportunities of seeing these birds frequently. Although reputed to be very courageous in the pursuit of their prey, they carefully avoid the approach of man, and my native companion gave me to understand that it was only waste of time to follow them along the rocky hills at the places named. I wished afterwards that I had taken his advice, as the birds appeared to know the killing powers of my gun to a nicety, and carefully kept at a respectful distance. Since then, however, Mr. Jas. Field has succeeded in sending me a beautiful clutch of two of their eggs. They are oval in form, the fleshy-white ground colour being almost obscured by fine freckles and dark red spots and blotches. The nest bears a strong resemblance to that of the Brown Hawk, *Hieracidea berigora*, and is built of small sticks in the forked branch of the eucalypt.

Short-winged Podargus, *Podargus brachypterus*, Gould.—These birds are fairly numerous in the West M'Donnell Ranges, where they easily procure an ample supply of food amongst the nocturnal lepidoptera which frequent the gorges in the ranges. The birds closely resemble *P. strigoides* in colour and markings, but are about one-third less in size. Their habits are also similar, and when reposing on the stout limb of their favourite tree with outstretched head they are easily mistaken at a short distance for the stump of a branch. Messrs. Field and Cowle have each sent me a sample of their eggs, which are perfectly white, oval in shape

and somewhat glossy. Their nests are usually placed on a stout branch, and consist of a few fine twigs formed into a circle to prevent the eggs rolling off.

Spotted Nightjar, *Eurostopodus guttatus*, Vig. and Hors.—Whilst in the spinifex country or near rocks these birds frequently visited our camp at night, being attracted by the numerous insects which were flying towards the fire. Whilst in pursuit of their prey they frequently alight on the ground, but so far as I am aware never perch on a tree. Their soft feathers are much appreciated by other birds for nest lining, and it is surprising how many are used by the Maluri and Acanthizæ for that purpose. The Spotted Nightjar passes the day in rocky or stony country, and always on the ground. Messrs. Cowle and Field have forwarded samples of their eggs, which are a pale yellowish green with a few blackish-brown spots sparingly scattered over the whole of the shell. The bird makes no nest, but deposits its single egg on the bare ground.

Owlet Nightjar, *Ægotheles Novæ-Hollandiæ*, Vig. and Hors.—The question has been asked, How many species of this genus exist in Australia? and whether *Ægotheles leucogaster* is entitled to be considered a separate species. I think not, and for the following reasons :—It is now over thirty years since I obtained my first specimen within five miles of Melbourne, and since then many skins have passed through my hands, from a careful examination of which I have arrived at the above conclusion. A specimen shot at Oakleigh by Mr. W. P. Henderson was a beautiful steel-grey, with a perfectly white breast. Another killed at Heidelberg was inclined to brown on the upper parts, and the white had almost disappeared from the breast. Those obtained on the Horn Scientific Expedition in Central Australia were almost rufous brown above, and pale brown or dirty white beneath. Sex does not appear to have any influence on colour with these birds. The Owlet Nightjar is certainly one of the most useful of our nocturnal birds, and if they were as numerous as they are widely dispersed, it would be greatly to the advantage of our fruit-growers. Some time ago my attention was called to a pair of these birds which had been noticed for several nights darting and fluttering amongst the pear and apple trees in an orchard in one of our suburbs. An examination of the trees revealed the presence of Codlin Moths. As the food of the Nightjar consists of nocturnal coleoptera and lepidoptera, there is no doubt they were engaged in a good work. The Owlet Nightjar passes the day in the hollow limb of any convenient tree, and at breeding time deposits three or four white eggs on the rubbish at the bottom of the spout. The shells of the eggs are very hard, and when two or three are rolled together they make a ringing noise as though constructed of china.

Welcome Swallow, *Hirundo neoxana*, Gould.—Although these well-known birds are so numerous in the southern and eastern parts of Australia, and are somewhat migratory, still some of them remain in the same localities the whole year. I have a well-authenticated instance of a pair of birds, one of which was marked, remaining at Heidelberg for 5 years. In Northern Territory or Central Australia they are very rare, being only seen once during my stay there of nearly four months. They appear to give place to the White-breasted Swallow.

White-breasted Swallow, *Cheramœca leucosternum*, Gould.—Whilst the Welcome Swallow prefers the eastern and southern portions of the continent the White-breasted Swallow makes its home in the dry, hot, and sandy portions of Central and Western Australia. A few may be seen in the dry parts of Victoria and New South Wales, but their home and breeding place is undoubtedly in the localities indicated. Unlike the Welcome Swallow, which builds its mud nest under a bridge, verandah, or overhanging rock, in which it deposits its four spotted eggs, the bird under notice tunnels into the sandy bank of a creek or river, or forms a receptacle for its three or four pure white eggs in the crevice between rocks. Several of these tunnels, which I examined on the Finke River in July, 1894, penetrated to a distance of over two feet, at the extremity of which a small chamber was formed. As I was too early for their eggs, I am again indebted to Messrs. Cowle and Field for several clutches, all of which are pure white and somewhat glossy.

Fairy Martin, *Lagenoplastes ariel*, Gould.—The Fairy Martin is no doubt very widely dispersed over the whole of Australia. Whether it leaves the continent soon after the young are reared or simply migrates northward to avoid the cold and moisture of our winter is somewhat doubtful, but it is certain that I took a number of their eggs during an excursion of this Club near Bacchus Marsh in the month of November, and that on visiting the locality again a few weeks later I discovered that the birds had all disappeared. In May, 1894, I saw large flocks of them near Charlotte Waters, which is close to the southern boundary of Northern Territory. In June, 1897, numbers of them were seen near Cue, in Western Australia, and at the Fitzroy River, also in Western Australia, but much further north, they were numerous in December.

Red-backed Kingfisher, *Halcyon pyrrhopygius*, Gould.—There are few birds in Australia which have such a wide range as the species under notice. It is solitary and silent in habit during most of the year, but as mating time approaches either male or female may be seen perched on the topmost branch of some favourite tree, where it gives forth one single note many times repeated. In course of time the vocalist is either joined by

or goes in search of one of the opposite sex. After repeating this practice several times the pair usually start housekeeping in a hollow branch or hole tunnelled in a bank. After four or five round, glossy-white eggs have been deposited and duly hatched, the offspring are fed on small lizards, grubs, and grasshoppers. Although the Red-backed Kingfisher is partial to the vicinity of water in hot weather, in order to gratify its taste for bathing, in winter I saw many of them in scattered mulga scrub or open forest far from water.

Black-faced Wood Swallow, *Artamus melanops*, Gould.—One of the first, and certainly the last, birds noted during the wanderings of the Horn Scientific Expedition in Central Australia, was the Black-faced Wood Swallow. Whilst loading our camels preparatory to make a start from Oodnadatta, several pairs were seen perched on the few stunted trees near camp. They appeared to be very affectionate towards each other, and when not engaged gliding or soaring past the camels in pursuit of flies were always close together, preening each other's feathers. They were found throughout the journey, but after breeding time was past they congregated in flocks for some time. Like *Artamus sordidus*, they are local in their habits. Their open saucer-shaped nests are usually placed in the horizontal forked branch of any convenient tree. The four eggs which constitute a full clutch vary considerably in colour. Whilst some are heavily blotched with bright red on a fleshy white ground, others are marked with patches of dark brown and slaty-grey on a dirty white ground. Although strong on the wing the Black-faced Wood Swallow is seldom seen far from timber or scrub, like *A. personatus* and *A. superciliosus*, which frequent open grass plains in quest of food.

Red-lored Pardalote, *Pardalotus rubricatus*, Gould.—This is undoubtedly the most northern species of the genus, and the farthest south I found these birds was on the Petermann Creek, where they were hopping amongst the foliage of the gum trees skirting the watercourse. At first I was puzzled by the note, which was low, soft, and always uttered twice in exactly the same key. When once heard, it is easily recognized on a subsequent occasion. The beautiful red lores on the adult birds are very conspicuous. As these birds are said to breed in holes in the ground, similar to the nesting-place of *P. punctatus*, I was surprised to see them exploring the hollow branches of several trees. However, the eggs which Mr. Cowle has forwarded were taken from a hole in a bank.

Striated Pardalote, *Pardalotus ornatus*, Temm.—Although these birds are very generally scattered on the southern portions of the continent, the specimens secured in Central Australia were shot at Alice Well and Stevenson Creek, and others seen much farther north. Their habits are too well known to necessitate an extended notice.—*(To be continued.)*

DISCOVERY OF THE NEST AND EGGS OF THE AUSTRALIAN SNIPE.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 14th Feb., 1898.)

The Australian Snipe, *Gallinago australis*, was first described by Dr. Latham in 1801, and is sometimes known as Latham's Snipe. All sportsmen are familiar with the "long-bills," but little is known of their natural economy, while their nests and eggs were only discovered last year, or nearly a century after the birds themselves became known to ornithological science.

Seebohm, in his splendid work, "The Geographical Distribution of Plovers, Sandpipers, and Snipes," states the Australian Snipe "breeds in both islands of Japan, and passes the Philippine Islands and the coast of China on migration to winter (*i.e.*, to escape the northern winter and really to summer) in Australia and Tasmania." Colonel Legge observes that although the Snipe passes over much latitude, its path is very narrow, as it does not touch the China coast on its flight from Japan to the north of Australia.

The Japanese, who call the bird Yamashinja, take little interest in the natural history of their country. That is one reason why the nest and eggs remained so long undiscovered, and why we know so little of the domestic matters of this feathered migrant, so full of interest to Australians.

When Messrs. S. H. Rowe and J. Kelly, of the Customs Department of Victoria, were deputed by the Government in 1894 to undertake a "Trade Mission" to the East, I very naturally thought of Snipe, and Mr. Rowe kindly made a private memorandum in his pocket-book. When he reached Japan Mr. Rowe was introduced to Mr. Alan Owston, of Yokohama, the only person there likely to procure Snipe's eggs.

I corresponded with Mr. Owston for three years, till at length he writes :—"I am the proud possessor of the eggs of *Scolopax* (*Gallinago*) *australis*. I have had extraordinary trouble and expense to obtain them. The birds breed on the grassy moorlands at the foot of Fujiyama at an elevation of 2,000 to 3,000 feet above the sea. Fujiyama is 12,500 feet high. I watched them on the 28th April (1897), and on other dates during the breeding season. When alarmed they fly round high overhead, circling generally against the sun, and every now and again they cry 'chip, chip, cheo, che-cheo,' and then rush downward at the intruder, beating the air in their descent and making a terrific rushing noise. When the weather is foggy and they come close down the noise is so startling that it is some time before a nervous person can get accustomed to it. Heard in the distance it may be easily mistaken for the hard breathing of a railway engine

climbing a mountain gradient. They make about two or three downward dives during each circuit."

The handsome clutch of eggs I am indebted to Mr. Owston for was accompanied by the following data:—"363. *Scolopax australis.* Nest on ground, among grass. Harasatomura, Cotemba. 17th May, 1897. Contained 4 eggs."

The Snipe has been observed in Japan from April to August. When they take their great southward flight, as soon as Australia is reached some probably land, others go south-west, but the bulk of migration continues down the eastern portion of the continent to Tasmania, the southern limit.

My record (assisted by Mr. P. N. Jenkins, fish salesman, &c., Swanston-street, who generally exhibits the first bird shot) for the last nine years of the annual arrival of the advance-guards of snipes in the vicinity of Melbourne is as follows:—

1889, 5th or 6th September; 1890, 3rd September; 1891, end August; 1892, middle August; 1893, 30th August; 1894, 1st September; 1895, 22nd August; 1896, 4th August; 1897, 27th July.

For an early arrival the last date is a "record." I thought that bird might have been maimed, or had remained during winter in Australia, but I ascertained that several birds about that time or soon after were seen in the same locality, which was Heatherton, between Cheltenham and Dandenong.

By September and October the majority of the snipes have arrived, and may be found in favoured swampy situations, feeding on worms and aquatic insects. When flushed the snipe utters a prolonged "scrape-scrape," and, not being of extraordinary rapid flight, offers a good mark to a sportsman. A brace of birds in good condition should turn the scale at 11 ozs.

Towards the end of the Australian autumn the snipes—those, at least, that have happily missed being shot or otherwise killed—turn their long bills northward again, and the exodus from Australia is probably complete by March or April (Mr. Keartland's latest record was a brace and a half of birds shot at Clayton, Victoria, on 12th March), when the land of the eucalypts is deserted in favour of the upland marshes of the snow-clad peak of Fujiyama, and other similar places in Japan.

The eggs may be thus described:—Pyriform, or pear-shaped; texture of shell comparatively fine; surface glossy; colour, warm stone-grey, boldly blotched and spotted, especially round the upper quarter, with rich umber and dull or cloudy purplish-brown; some of the heavier markings have the appearance of having been wiped on with a brush. Somewhat large compared with the size of the bird, and except for their larger size come nearest in likeness to those of the Turnstone, *Arenaria interpres.* Dimensions of a clutch in inches:—(1) 1·77 x 1·2, (2) 1·73 x 1·22, (3) 1·71 x 1·22, (4) 1·7 x 1·21.

NOTES.

Narrow-billed Bronze Cuckoo.—Mr. J. C. Goudie, Birchip, writes as follows:—"With regard to the question, Does the young of the Narrow-Billed Cuckoo (*Chalcites basalis*) eject its foster-brethren from the nest? touched upon by Mr. A. J. Campbell in his article in the *Naturalist* for March, the following, taken from my note-book, may be of interest to your readers:—'On the 5th of November, 1897, a nest of the White-fronted Ephthianura, *E. albifrons*, was noticed, containing a clutch of three eggs of the rightful owner and an egg of the Narrow-billed Bronze Cuckoo. Between the 5th and 8th one of the Ephthianura's and the Cuckoo's egg were hatched, and the difference in size was at once noticeable, the usurper being half as large again as its nest-mate. By the 8th inst. the two remaining eggs had been thrown out, and the same day I was fortunate enough to witness a determined attempt on the part of the young cuckoo to eject its smaller companion. First of all it assumed an upright sitting posture, then wriggled and shuffled about until it managed to get the young Ephthianura fairly on to its (the Cuckoo's) back; it then rose on tip-toe, with its back to the side of the nest, and, spreading its wings and using them as arms to keep its load in position, it endeavoured, by a series of violent upward jerks, to force the latter out of the nest. On this occasion it was not quite equal to the task, and, after a protracted struggle, gave it up. However, by the evening of the next day it had accomplished its purpose, and rested in undisputed possession. A more remarkable exhibition of instinct I have never seen—more wonderful from the fact that the bird was practically just out of the egg, blind, and seemingly helpless.' While on the subject of this Cuckoo, I may mention an incident which came under my notice last spring. A female of *Malurus melanotus* was observed building her nest in a tangle of high grass and twigs, and while the operation was in full swing—she had just begun the business of lining—a Narrow-billed Bronze Cuckoo's egg was deposited in the nest. I watched this circumstance with interest, expecting, as is usual in such cases, that the egg would be covered over, and thus treated with contempt. But, no! Resenting this unwarrantable intrusion, the little builder removed the entire nest, bit by bit, and rebuilt it about a stone-throw from the old situation, leaving the Cuckoo's egg lying on the ground."

Field Naturalists' Club Library.—The following periodicals are now regularly placed in the library for the use of members:—"Natural Science," "Annals and Magazine of Natural History," "Geological Magazine," "Zoologist," "Science Gossip," "Entomologist's Monthly Magazine," and "Journal of Royal Microscopical Society."

Preliminary Notice.

Australasian Association for the Advancement of Science.

Objects of the Association.

The objects of the Association are to give a stronger impulse and a more systematic direction to scientific enquiry; to promote the intercourse of those who cultivate science in different parts of the Australasian Colonies and in other countries; to obtain more general attention to the objects of science, and a removal of any disadvantages of a public kind which may impede its progress.

The Seventh Session of the Association will commence in Sydney on January 6th next, and last till the following Thursday. The meetings of the Association have hitherto been very successful, and there is every reason to believe that the forthcoming gathering will be equally well attended. It will be held during the Christmas and New Year vacations of the Universities and Colleges, which it is hoped will be a convenient time for a very large proportion of the members to attend.

SEVENTH SESSION,

TO BE HELD IN

SYDNEY,

COMMENCING

THURSDAY, JANUARY 6, 1898.

Under the direction of the following Officers:—

President Elect:

PROFESSOR A. LIVERSIDGE, M.A., L.L.D., F.R.S.

Vice-Presidents:

HIS EXCELLENCY THE RIGHT HON. VISCOUNT HAMPDEN, GOVERNOR OF NEW SOUTH WALES.

SIR JAMES HECTOR, K.C.M.G., M.D., ETC.

PROFESSOR RALPH TATE, F.G.S., F.L.S.

HON. A. C. GREGORY, C.M.G., M.L.C.

H. C. RUSSELL, C.M.G., B.A., F.R.S.

Permanent Hon. Secretary:

PROFESSOR A. LIVERSIDGE, LL.D., F.R.S.

General Treasurer:

H. C. RUSSELL, C.M.G., F.R.S., Government Astronomer of New South Wales.

Members of the Council :

1.) Present and former Presidents, Vice-Presidents, Treasurers and Secretaries of the Association, and present and former Presidents, Vice.Presidents and Secretaries of the Sections.

(2.) Authors of Reports or of Papers published *in extenso* in the Annual Reports of the Association.

Local Committees :

In the intervals between the Sessions of the Association affairs are managed in the various colonies by Local Committees. The Local Committee of each colony shall consist of the members of Council resident in that colony.

Local Secretaries :

E. F. J. LOVE, M.A., [redacted] Melbourne.

PROFESSOR PARKER, D.Sc., F.R.S., C.M.Z.S., Otago University, New Zealand.

ALEXANDER MORTON, F.L.S., Tasmanian Museum, Hobart.

PROFESSOR RENNIE, M.A., D.Sc., University of Adelaide.

PROFESSOR BRAGG, M.A., University of Adelaide.

JOHN SHIRLEY, B.Sc., Cordelia-street, S. Brisbane.

Officers of Sections, 1898.

Section A.—Astronomy, Mathematics, and Physics.

President.—R. L. J. ELLERY, C.M.G., F.R.S.

Vice-Presidents.—To be appointed.

Secretaries.—PROFESSOR A. THRELFALL, M.A.; J. ARTHUR POLLOCK, B.Sc.

Section B.—Chemistry.

President.—T. C. CLOUD, A.R.S.M F.IC., F.C.S.

Vice-Presidents.—To be appointed.

Secretary.—W. M. HAMLET, F.I.C., F.C.S.

Section C.—Geology and Mineralogy.

President.—CAPTAIN F. W. HUTTON, F.R.S., F.G.S.

Vice-Presidents.—To be appointed.

Secretaries.—PROFESSOR T. W. E. DAVID, B.A., F.G.S.; E. F. PITTMAN, A.R.S.M., F.G.S.,

Section D.—Biology.

President.—PROFESSOR T. J. PARKER, D.Sc., F.R.S.

Vice-President.—To be appointed.

Secretaries.—PROFESSOR W. A. HASWELL, M.A., D.Sc., F.L.S.; J. H. MAIDEN, F.C.S., F.L.S.

Section E.—Geography.

President.—To be appointed.

Vice-Presidents.—To be appointed.

Secretary.—H. S. W. CRUMMER. Secretary Royal Geographical Society of Australasia.

Section F.—Ethnology and Anthropology.

President.—A. W. HOWITT, F.G.S.

Vice-Presidents.—To be appointed.

Secretary.—JOHN FRASER, B.A., LL.D

Section G.—Economic Science and Agriculture.

President.—R. M. JOHNSON, F.L.S.

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Secretaries.—R. R. GARRAN, B.A.; F. B. GUTHRIE, F.C.S.

Section H.—Engineering and Architecture.

President.—H. C. STANLEY, M.I.C.E.

Vice-Presidents.—To be appointed.

Secretaries.—J. W. GRIMSHAW, M.I.C.E., M.I.M.E.; H. C. KENT, M.A.

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President.—Hon. ALLAN CAMPBELL, M. L. C., L.R.C.P.

Vice-Presidents.—To be appointed.

Secretary.—Dr. F. TIDSWELL, M.B.

Section J.—Mental Science and Education.

President.—JOHN SHIRLEY, B.Sc.

Vice-Presidents.—To be appointed.

Secretary.—Professor FRANCIS ANDERSON, M.A.

Terms of Membership.

Ladies and Gentlemen can at once become interim Members or Associates on payment of £1 (by crossed cheque, P.O.O., or postal note, with exchange added), to the Permanent Secretary, the University, Sydney, or to the Local Secretary of the colony in which they reside. Their election to full membership has to be confirmed by the Council at the Annual Session. For the subscription of £1, members are entitled to receive a bound volume of the Annual Proceedings and Report, with all other publications and privileges accorded to the Association in general.

It has been decided by the Council in Sydney to suspend, for this session, the rule requiring new members to pay an entrance fee.

A member may at any time become a Life Member by one payment of £10, in lieu of future annual subscriptions.

Special Notices.

A Reception Room will be opened for the convenience of members at the commencement of the session, and which will be at their disposal daily from 9 a.m.

A list of hotels, boarding houses, and apartments, with their tariffs, in convenient localities, will be furnished to members of the Association, and if the amount and nature of the accommodation desired are specified in advance to the Permanent Secretary much inconvenience may be spared to intending visitors.

Travelling Facilities.

Tickets will be issued to members, on production of a certificate of membership, by the Queensland, New South Wales, Victorian, South Australian, New Zealand, and Tasmanian railway authorities, at single fare for the double journey. These will be available for two months, and the following reductions have been conceded by the undermentioned Steamship Companies :—

Adelaide Steamship Co., a rebate of ...	20%
A. U. S. N. Co.	20%
Huddart, Parker and Co.	10%
N. Z. and A. A. S. Co.	10%
Union S. S. Co.	10%
Howard Smith and Sons	20%

Excursions.

In addition to the General and Sectional Meetings for reading and discussing Papers, etc., Excursions will be organised to places of interest, such as the various mining districts, the Jenolan, Wambeyan and other caves, the Blue Mountains, and similar places of interest to geologists, botanists, artists, and others.

New Members.

If not already a member of the Association, and should you wish to become one, please fill in the accompanying Form I. and return it as above mentioned. If you desire to contribute to the proceedings of the Association kindly intimate the title and nature of your paper by means of Form II.; if possible before the end of November next, in order that the list of papers to be read may be completed at an early date.

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