THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

VOL. XVI.

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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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ERRATA.

Page 89—For "*Pomatorrhinus*" read "*Pomatorhinus.*"
Page 118, line 44—For "*Mylitta australis*" read "*Polyporus mylittæ.*"
Page 146, line 30—For "*Minuriella annica,*" read "*M. annua.*"
Page 170, line 21—Omit "*Acacia spinescens.*"

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The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 4th MAY, 1899.

Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 8th May, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. T. S Adcock, F.L.S., Geelong.	C. French, F.L.S.	.. F. G. A. Barnard
Mr. Jas. Kilgour, ... Railway Place, Williamstown.	R. Hall	.. C. French, F.L.S.
Mr. Jas. Lidgett, .. Myrniong.	J. G. Luehmann, F.L.S.	.. Geo. Coghill

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

Nominations (to be in writing) for Office-bearers for year 1899-1900. Election of two Auditors.

5. Reading of Papers and Discussions thereon.

1. By Mr. A. Campbell, jun.. "List of Birds observed at Burnley."
2. By Mr. D. Le Souëf, C.M.Z.S., "List of Birds with their Eggs obtained."
3. By Mr. E. Olive, "On the Katherine River, N. Australia."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

✻ EXCURSIONS. ✻

WEDNESDAY, 24TH MAY. Point Cook (via Laverton). Under the leadership of Mr. R. Hall. Meet at Spencer Street 10.55 a.m. train. Ornithology.

THE

Victorian Naturalist.

Vol. XVI.—No. 1. MAY 4, 1899. No. 185.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th April, 1899. The president, Mr. C. French, F.L.S., occupied the chair, and about 50 members and visitors were present.

REPORTS.

The leader, the President, gave a short report of the visit to the Aquarium on Saturday, 25th March, when there was a good attendance of members and an instructive and pleasant afternoon was spent.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. Jas. Sutherland, 2 Stawell-street, Kew, and H. W. Whitney, Victoria-street, Williamstown North, were duly elected members of the club.

GENERAL BUSINESS.

The President drew attention to the forthcoming conversazione, and impressed on members that all should do their best in order to ensure a thorough success.

PAPERS READ.

1. By Messrs. J. Gabriel and H. T. Tisdall, entitled "Two Naturalists at Phillip Island."

The paper gave a general description of several days spent dredging in Western Port Bay, with rambles on shore, and enumerated the more important shells, polyzoa, and seaweeds noticed.

In the discussion that followed, Mr. T. S. Hall, M.A., said he hardly credited the story of the crab opening oysters by the insertion of small stones, and, as showing the way mollusca are preyed upon, he mentioned the large starfish and the mussels, in which case it has been shown that main force is exerted to cause the bivalves to open. Mr. Hunt spoke on the same subject, and asked the cause of the holes so often found in mussel shells. Mr. J. G. Luehmann and Mr. D. M'Alpine mentioned the fact of pearls being frequently taken from mussels, though the latter could not recommend the industry. Mr. J. H. Gatliff drew attention to the mollusca new to science obtained by Mr. Gabriel.

2. By Mr. R. Hall, entitled "Notes on the Magpies, *Gymnorhina leuconota* and *G. tibicens*."

The author pointed out the differences in the two species, and

gave a number of notes on the birds and their habits, especially as to nest-building while in captivity.

Mr. Le Souëf said that in his travels he had not seen the Black-backed Magpie in North-East Australia, where its place was largely taken by the Roller-bird. Mr. G. A. Keartland stated that he had seen the Magpies in Central Australia, but only rarely, and they were always of the Black-backed species. Mr. H. W. Hunt had had a male Magpie in captivity that each year at nesting time gathered sticks, apparently for nest-building, though it did not attempt to build. Mr. Tisdall said the speakers had, so far, omitted to notice the sweet note of the Magpie, which, according to a recent writer who had experience of many birds in all countries, was the sweetest of all bird sounds. Mr. Coghill asked the author if he had noticed that in some districts the birds did not complete their song, but ended abruptly when about half through. Mr. Currie mentioned that with bush-men the gathering together and singing of the birds was considered to indicate a change of weather. Mr. A. E. Kitson said in his experience the birds away from towns in remote parts were quite as pugnacious as those nearer settlement, in which statement he was strongly supported by another member.

3. By Mr. C. C. Brittlebank entitled "The Birds of Myrniong and Surrounding Districts."

This, after a few brief introductory remarks, gave a list of about 160 species which had been noted in the district, and distinguished those which were known to breed there.

NATURAL HISTORY NOTES.

Mr. T. S. Hall, M.A., read a note asking for information as to the occurrence of the Tupong, Marble Fish, or Freshwater Flat-head in salt water.

Mr. G. A. Keartland read a note on the exhibit of the eggs of the rare *Megapodius pritchardi*.

Mr. A. E. Kitson brought forward a newspaper paragraph recording the capture of a Flathead weighing 14 lbs. off the Williamstown Pier, said to be the largest ever taken in the Bay. A Silver Bream, measuring a foot in length and weighing between three and four pounds, was taken a few days previously in the same locality.

EXHIBITS.

By Mr. F. G. A. Barnard.—Flower of Native Iris, *Diplarrhena morœa*, grown at Kew. By Mr. D. Best.—Fossils from Tasmania. By Mr. A. Campbell, jun.—A Magnificent Rifle-bird, *Ptilorhis magnifica*, from Cape York. By Mr. C. French, jun. —Orchids in bloom—*Pterostylis parviflora*, *P. aphylla*, *Eriochilus fimbriatus*, *E. autumnalis*, *Prasophyllum despectens*, collected at Sandringham, 9th April. By Mr. J. H. Gatliff.—11 species of marine shells, dredged by Mr. Gabriel at Western Port, including

type of *Trichotropis gabrieli*, Pritchard and Gatliff. By Mr. R. Hall.—Several species of the Rallidæ. By Mr. D. Le Souëf, C.M.Z.S.—Egg of Great Bower-bird, *Chlamydodera nuchalis*, from North-West Australia.

After the usual conversazione the meeting terminated.

DESCRIPTIONS OF THREE NEW AUSTRALIAN BIRDS.

By A. J. Campbell.

(*Read before the Field Naturalists' Club of Victoria, 13th March*, 1899.)

Calamanthus rubiginosis (n.s.), Rusty-red Field-Wren.

Most resembles *C. campestris* (Gould), but is more rufous or rusty-red in character of colouring. The white tail tips are absent, but there are a few white feathers on the nape of the neck, which, however, may not be permanent. The whitish line over the eye is also absent.

Dimensions in inches :—Length, 4.5 ; wing, 1.95 ; tail, 1.7 ; bill, .42 ; tarsus, .9.

This variety may possibly be the Desert-Wren, *C. isabellinus* (North), which is described as having the dark streaks of the upper surface almost obsolete. In the skin under consideration these marks are fairly distinct.

Mr. Tom Carter, the collector, informs me that the bird is numerous on his station, near Point Cloates, and may be seen warbling on the tops of bushes at almost any time of the year; but it is difficult to shoot, because as soon as one is approached it dives into the undergrowth and creeps out of sight.

Ptilotis carteri (n.s.), Western White-plumed Honey-eater.

Differs from *P. penicillata* (Gould) by its smaller size and yellow-tinted plumage—almost as yellow as *P. flavescens* (Gould). However, the only skin at my command appears to be that of an immature bird ; therefore, more material is necessary before the new species can be confirmed or otherwise. In the meantime I beg to submit the name *carteri*, after the discoverer, Mr. Thomas Carter, as a small compliment for his enthusiasm as a field ornithologist, and for his British pluck in starting pastoral pursuits in such a dry and uninviting country as the region of the North-west Cape.

Comparative dimensions, in inches, of Eastern and Western varieties of White-plumed Honey-eaters :—

	Length.	Wing.	Tail.	Bill.	Tarsus.
P. penicillata ...	6.75	3.25	3.0	.43	.85
P. carteri ...	6.0	2.8	2.75	.4	.8

Acanthogenys flavacanthus (n.s.), Yellow-spined Honey-eater.

Differs from *A. rufigularis* (Gould) in its smaller size, lighter or more brownish tinge of the upper surface, and by yellow spines on the cheek instead of white.

Comparative dimensions, in inches, of Eastern and Western birds :—

	Length.	Wing.	Tail.	Bill.	Tarsus.
A. RUFIGULARIS ...	10.5	4.75	4.5	.75	1.0
A. FLAVACANTHUS ...	9.25	4.0	4.0	.7	.9

NOTE ON THE MAGPIE.

By D. Best.

(*Read before the Field Naturalists' Club of Victoria, 13th March*, 1899.)

Many discussions have taken place in our Club on the question as to whether the Magpie, *Gymnorhina leuconota*, Gould, is an insectivorous or vegetable feeder, but this particular question has nothing to do with the object of my short paper, or, as I prefer to call it, note.

I may, however, be allowed to express an opinion, heterodox perhaps, that the bird has always been, as it is now, omnivorous, but that, like man himself, has taken advantage of the opportunities offered by increase of settlement to indulge in luxuries it never before dreamt of, and hence its incurring the enmity of many of our farmers.

Although a lover of birds, I confess to knowing very little about them, but I am constrained to say that however much I might be desirous of increasing my very limited knowledge, I certainly could not do so to any great extent from any of the books I have looked into on Australian birds. Of course I am speaking only of Australian, or perhaps I should more correctly say Victorian authors, as I have no desire to court criticism outside my own colony.

So far as my reading goes, all I can learn is generally that a bird breeds in such a month, that it constructs a certain kind of nest, and lays so many eggs of such a size and coloration, and that it has a certain range. As to the number of eggs in a clutch and the colour, these seem two of the most important points to our ornithologists, and whilst I fully recognize that these, as also the other mentioned particulars, are of importance, I regret that so many discussions have taken place on them to the exclusion of more interesting details. Nowhere from our authors do I get any of the interesting and instructive life-history obtainable from the English periodicals on British birds. As illustrating my contention, in no Victorian publication that has come under my notice have I seen anything describing the first attempts of a bird to teach its young to fly, or to search for food, or in how many days from its birth the young bird is considered strong enough to

try its first flight. In fact, I have had the conclusion forced upon me that with all our Victorian ornithologists the main, if not the only, objects they have in view are those above mentioned. This has been especially noticeable in the Club excursions I have accompanied, habits of birds being scarcely mentioned, and rarely if ever alluded to in the reports. To the mere collector this is probably all-sufficient, but if our writers were to take a few lessons from the English periodicals, several of which, as I have before stated, often have most interesting and instructive bird articles, their contributions would be far more appreciated by our members as well as by the readers of our *Victorian Naturalist.*

During my collecting rambles I have often been startled by the swift flight and loud swishing noise close to my head of magpies, and when one's attention is abstracted or devoted to the search for insects, this close swishing is calculated to upset one's equilibrium; at all events, it does mine. Now, last spring I had the same experiences, and I determined I would see what explanation for this habit of the magpie I could get from books, but, alas! I could get none; in fact, so far as I recollect, it was not even mentioned. What I should like to know is, did the bird possess this peculiar habit in the earliest days of settlement, or is it, like that of the New Zealand parrot, the Kea, of only comparatively recent development.

Now, that of the Kea I can understand, for in its well-known fatal attack on sheep it has for its object the gratification of a special weakness—the securing of the kidney fat—and although this has brought upon it condign punishment, which may eventually mean extermination, still, as I have said, it has a distinct gratification in view. I suppose we may dismiss as a mere skit the jocular paragraph that recently appeared in the *Argus* from a correspondent, to the effect that the Kea seems to delight in teasing helpless creatures, such as a dog chained up, and in a recent case went so far as to peck to pieces the boots of the victim of a mountaineering accident while lying on the ground awaiting the arrival of his companions with a stretcher, and it was only by continually moving his head that he kept them away from his eyes.

But where does any gratification, reason, or instinct come in for the action of the magpie, which apparently serves only to betray the whereabouts of its nest and young. If the habit has existed in early times, what was then its object, and is it the same now? It certainly did not serve to frighten away the aboriginal, and of other birds it seems to have no fear, for I have never noticed it act similarly towards them. As to animals it is different, judging from the fact that when accompanied by a dog I have not been interfered with. From my own experience I can state that up to say twenty years ago I was never molested by a

magpie, nor had I seen or heard of the habit, and prior to that time I and a companion did a great deal of collecting and saw many more magpies at all seasons of the year than I have since. This is strongly impressed upon me by the fact that the months when the magpies have their young, August and September, are those in which I have for many years been accustomed to look for a special genus of beetles, and for years no magpie came near me. Now I always have to be on the look-out.

I should also like to learn from some of our bird members the average life of a magpie, and if so long as they live—provided, of course, that they are not disturbed—a pair will continue to return to the same nest, or, if one or the other dies, the newly-mated pair will do so.

I do not profess to have formed any theory for the habit I have described. All I desire is to bring it before the club, by all of whose members it must have been noticed, but where, so far as I can recollect, it has never before been mentioned, and if my paper has the effect I hope for I shall be amply recompensed for all the adverse criticism I may possibly receive at the hands of my ornithological friends.

A HUNT FOR A NAME.

By T. S. Hall, M.A.

(*Read before the Field Naturalists' Club of Victoria, 13th March*, 1899.)

When confronted by a natural history specimen of any kind a question which naturally arises in one's mind is as to its place in the system in which it has been found convenient to arrange both the animal and the vegetable kingdoms. We want to find out its name, for, armed with this knowledge, we are at once given a key which will open to us much of what is known of its structure and relationships. Now the identification of an organism is usually no easy matter, for animals and plants vary, and often it is exceedingly difficult to know where to draw the line between two species, or it may be between two genera. This is, of course, a difficulty due to natural causes. Truly distinct species may be closely allied, and though an expert in the group might separate them with rapidity and unerring accuracy, still the novice may be quite unable to honestly make up his mind as to their distinctness. There is another difficulty, and that is the obscurity of the original description which gives the organism its name. It may be too brief to be of much practical value, and it may be accompanied by figures which are mere smudgy caricatures and more likely to hinder than to aid. Then, again, specialists in every group naturally invent a set of terms which one has to master before any description is intelligible. But how is one to begin?

An animal that we have never seen before comes into our possession, and we want more on the label than date and place of capture. Now one must assume a certain amount of knowledge on the part of the inquirer, and he should, after a preliminary examination, be able to judge whereabouts it belongs, whether a starfish, a tunicate, or a coral. I recently had a hunt for the name of an animal belonging to a group with which my acquaintance was but slight. At first I naturally tried other people. They all, of course, had a general sort of an idea as to its position, but no one whom I asked could satisfy me. It was not a case of no one knowing, but of my not asking the persons who did know, and so the thing was laid aside, to come up every year or two, when someone would ask *me* what its name was. The organism in question is a species of coral which occurs in pieces up to about the size of one's hand, and is found at many places along our shores. Till some three years ago all the specimens I had seen were greatly worn, so that it was not much use attempting to do anything with them. Later, however, on one of the Club's excursions, when under Mr. Gabriel's directions we dredged off Ricketts Point, near Beaumaris, three living specimens were obtained, of which I secured two. Since then other specimens from the same spot have been obtained, and I am indebted to Mr. O. A. Sayce for a fine example preserved in formalin. One of my own specimens I preserved in spirit and the other I boiled in carbonate of soda to remove the organic matter, and I thus had a beautiful example for examination. Then arose once more the question of identification.

Now, I have chosen this coral merely as a convenient peg on which to hang a few remarks as to how one may set about hunting for literature on a subject, so that I will insert a few intermediate steps which, as a matter of fact, were omitted in my search. Rolleston's "Forms of Animal Life," edited by Jackson, forms a convenient starting point, as it contains a classified list of literature. Here, under corals, we are referred for classification to a paper by Martin Duncan in the Journal of the Linnean Society, vol. xviii., 1885. This paper is a revision of the genera and higher groups of the Madreporaria, to which our example belongs. There is a glossary at the end of the paper, and by the aid of some common corals one can get an idea of what is meant by most of the technical terms used in their description. Armed with this knowledge, it was seen that the specimen was referable to the genus Plesiastræa. Then came the question of the species, on which Duncan throws no light. On reference to Mr. T. Whitelegge's "List of the Invertebrate Fauna of Port Jackson and the Neighbourhood" we see one species of *Plesiastræa* recorded from that locality—namely, *P. urvillei*—and the reference to the original description is given. At the same time

reference was made to that great mine of information, "The Reports of the *Challenger* Expedition," and it was found that Quelch, in vol. xvi., on "The Reef-Building Corals," recorded one species and mentioned another from Australian shores, they being *P. urvillei* and *P. peroni*, M. Ed., but no reference was given for the last species. Whitelegge's reference to the "Annales des Sciences Naturelles" was then looked up, and there seemed to be little doubt that my specimen agreed with the figure and description of *P. urvillei*. Moreover, the descriptions of the other species of the genus given in the same paper were read through, but mine differed from all in some point or other. Still there remained *P. peroni*, a description of which I had not seen, for I knew that Tenison Woods, in one of his papers on fossil corals, casually mentioned that the common species on our shores was *P. peroni*, and as corals are not easy things to determine with absolute certainty, it was advisable that the description of the last species should be looked up. But looked up where? Hitherto I had not got a reference, and the species was not mentioned in the only paper of Edwards and Haime I had consulted. In the *Challenger* article mentioned above the reference given to *P. urvillei* was almost meaningless, and evidently the paper I had consulted was not the one meant. The reference runs—"*Plesiastræa urvillei*, Milne-Edwards and Haime, Cor. II., p. 490." Now, the Royal Society of London has published a catalogue of all scientific papers—that is, articles—published between 1800 and 1883, but it contained no paper the title of which could be shortened into Cor. II. A suggestion that it might be a Biblical reference was not acted upon. Evidently, then, it was not a "paper," but must be an independent book. There is a British Museum catalogue of books where, in default of other means of finding its title, I could have gone; but, before doing so, I turned up the literature on corals in Nicholson and Lydekker's "Manual of Palæontology," and there I found "Milne-Edwards and Haime—Histoire Naturelle des Coralliaires," which was evidently what I wanted. On turning up the catalogue of the Melbourne Public Library the title was wanting. This was a severe blow. Nor was it in the University Library. However, no catalogue is perfect, nor is it expected to contain books bought since its publication, so that the precaution taken of asking if the work was in the Public Library was justified, for I found that it was. The description of *P. peroni*, which I had hoped might be in this work, was there, and it, together with the figure, showed the distinctness of my specimen. Having, then, the original descriptions and figures before me, I decided that my specimens were certainly *P. urvillei*.

Now, the present notes have been prepared merely as an

object lesson on the actual method that may be adopted in hunting up the literature of any subject. When one knows the country it is easy for him to find his way about, but to the stranger it is not easy, and he needs the finger-posts which the other never heeds. So it is with work of this kind. "Cor. II." is good enough for the specialist, but is a meaningless "blaze" for the "new chum." It hardly seems necessary to insist on the fact that the mere labelling of a specimen with a name is not the end of natural history; but identification is a step, and a necessary one, if we are to communicate to others any observations we may make.

The principles I have sketched will, of course, apply not merely to a hunt for a name, but also to a hunt in the literature in any branch on which we want to learn something of what has been done elsewhere by other observers.

DESCRIPTIONS OF THE NESTS AND EGGS OF SIX SPECIES OF AUSTRALIAN BIRDS.

By Alfred J. North, C.M.Z.S., Ornithologist, Australian Museum, Sydney.

While examining various ornithological and oological collections recently in Melbourne I observed in Mr. G. A. Keartland's collection four species of Australian birds' eggs that, so far as I am aware, have not been previously described. An egg of *Chlamydodera guttata*, from Central Australia, subsequently received, he handed me for description on the day I left Melbourne; and yet another addition—the egg of *Melithreptus lætior*, from North-west Australia—I received from him shortly after my return to Sydney.

Chlamydodera guttata, Gould (Guttated Bower-bird).

Ever since specimens of the Guttated Bower-bird were obtained by the Horn Exploring Expedition at Glen Edith, in Central Australia, our indefatigable member, Mr. Keartland, has unceasingly urged his many friends in the interior of Australia to try and discover the nest and egg of this interesting species. Towards the latter end of last year Mr. C. E. Cowle, of Illamurta, who has been successful in obtaining many undescribed or little-known eggs in Central Australia, "caught a newly-fledged Guttated Bower-bird in a scrubby Mulga in one of the valleys south of Mareena Bluff. Near the top of this tree, in a 'silvery-white mistletoe,' a nest was constructed of a few dried black Cotton-bush tops, and lined with coarse grass stalks. Externally it measured eight inches in diameter, and internally about four inches and a half." Mr. Cowle further adds—"Viewed from below the nest would be taken for an unfinished one not worthy of inspection, and I was

particularly struck by the amount of ventilation in it when I had it in my hand. The blackboys who were with me were certain it was a Bower-bird's, but I was doubtful if they had seen one before." It was therefore with feelings of extreme pleasure that, just prior to my departure from Melbourne, Mr. Keartland informed me he had received that day the long wished for egg of *Chlamydodera guttata* from Central Australia. It was taken by Mr. James F. Field, during the first week in February, 1899, from a similarly described nest as above, but built in a low bush, in the neighbourhood of Alice Springs Telegraph Station. One egg constituted the sitting. It is elongate-oval in form, of a faint greenish-grey ground colour, with the usual labyrinthine network of zig-zag wavy hair and thread-like loop-lines, scrolls, and figures, crossing and recrossing each other, so characteristic of typical eggs of the Chlamydoderæ. In this specimen there are but very few underlying markings, nearly all of them being well defined and appearing as if they had been placed on the shell with a pen dipped in different shades of umber-brown and violet-grey, the former colour predominating and being more thickly disposed towards the thinner end, where in some places the lines are confluent and form broad irregular-shaped patches, and short wavy streaks. The texture of the shell is very fine and its surface lustreless. Length, 1.56 x 1.02 inch. In shape, size, colour, and disposition of its markings it cannot be distinguished from fairly typical eggs of its near ally, *C. maculata.*

Egg of *Chlamydodera guttata* (natural size), reproduced from a photograph.

The eggs of four out of the five species of the genus Chlamydodera inhabiting Australia are now known. According to the

Hon. Walter Rothschild * *C. orientalis* is not separable from *C. nuchalis*, and does not merit even sub-specific rank. In that writer's opinion, therefore, the eggs described and figured by me in the *Victorian Naturalist* † from Mr. C. French, jun.'s, collection are really attributable to *C. nuchalis*. Although Mr. Rothschild has seen in the British Museum "examples of both forms, together with a specimen almost intermediate, all from one and the same locality," I cannot agree with that writer's conclusions. In the large series of these birds now before me the distinguishing characters of *C. orientalis*, pointed out by Gould, are constant in adult birds, and although undoubtedly both species are closely allied I cannot but regard *C. orientalis* as distinct, and the representative of *C. nuchalis* in Eastern Australia.

RHIPIDURA ALBICAUDA, North (White-tailed Flycatcher).

Although the present species was one of the novelties secured by the members of the Horn Exploring Expedition in Central Australia in 1894, by some inadvertence its nest and egg, which was secured in the same year, has been apparently overlooked and hitherto undescribed. The small cobweb-coated and delicately-formed open nest of the White-tailed Flycatcher doubtless closely resembles that of its well-known near ally, *R. albiscapa*, for Mr. C. E. Cowle, who found it at Illamurta in December, 1894, in describing it to Mr. Keartland, states it is of a "pipe-like shape," evidently referring to the tail-like appendage below the nest and the thin Mulga branch on which it was placed. The single egg, however, which it contained varies somewhat from typical eggs of the White-shafted Flycatcher. It is oval in form, and of a faint buffy-white ground colour, which is thickly covered with minute and indistinct freckles of very pale purplish-buff, the markings being more thickly disposed on the larger end, and forming an obscure cap. Length, 0.65 x 0.5 inch.

PSOPHODES NIGROGULARIS, Gould (Western Whip-bird).

Two eggs of this species, taken by Mr. J. Harris from small saucer-shaped nest built of twigs and placed in low, scrubby undergrowth, near Bunbury, Western Australia, in December, 1898, cannot be distinguished from some eggs of the eastern representative, *P. crepitans*. One specimen is oval in form, and of a pale bluish-white ground colour, with dots, spots, and small irregular-shaped blotches and dashes scattered over the shell, but more thickly disposed on the larger end, where some of the markings are confluent, and are intermingled with a few underlying streaks and spots of faint bluish-grey. Length, 1.06 x 0.78 inch. The other egg is an elongate oval in form, exceeding in length average specimans of *P. crepitans*, and is of

* Nov. Zool., vol. v., p. 86 (1898).
† *Vict. Nat.*, vol. xii., p. 104 (1895).

a pale greenish-white ground colour, with irregular-shaped spots, dashes, and short linear streaks of black distributed over the surface of the shell, some of the spots and dots running in nearly straight lines; in other places they are in small clusters. This specimen has also similar underlying markings. Length, 1.2 x 0.78 inch.

MUNIA PECTORALIS, Gould (White-breasted Finch).

This species was met with and specimens obtained by Mr. Keartland while he remained in charge of the Calvert Exploring Expedition camp near the junction of the Fitzroy and Margaret rivers, in North-west Australia. In his field notes Mr. Keartland makes the following remarks* :—"This Finch was only seen between the Telegraph Station and the Margaret River. It proved very shy, and although disturbed whilst feeding amongst the long grass, or seen flying from tree to tree, only two or three were shot." A nest of this species which he found at the latter end of February, 1897, was a flask-shaped structure, outwardly formed of very coarse grass stalks, and neatly lined inside with the finest "silver-grass." It contained four eggs, and was built in a shrub, about ten feet from the ground. The eggs are elongate-oval in form, white, with a faint blue tinge; the surface of the shell, although smooth, is dull and lustreless. Length—(*a*) 0.65 x 0.43 inch, (*b*) 0.64 x 0.42 inch, (*c*) 0.64 x 0.42 inch, (*d*) 0.62 x 0.43 inch.

TRICHOGLOSSUS RUBRITORQUIS, Vig. and Horsf. (Red-collared Lorikeet).

Mr. Keartland in his field notes made during the journey of the Calvert Exploring Expedition in North-west Australia writes† :—"On approaching Derby several pairs of these birds crossed our line of march, but I was unable to secure specimens. However, the fact that they breed in that neighbourhood was established by Dr. House, Government Resident, who showed me a beautiful pair of young birds in captivity which had been taken from a nest in the vicinity by a native." Recently Mr. Keartland has received two eggs of this species, accompanied with a skin of the female procured at the same time. They were taken by Mr. E. J. Harris from the hollow limb of a eucalypt about twenty miles south-east of Derby, in May, 1898. The eggs are rounded ovals in form, white but very much nest-stained, like most eggs found of its eastern congener, *T. novæ-hollandiae*, the texture of the shell being very fine, but its surface is dull and lustreless. Length—(*a*) 1.1 x 0.9 inch; (*b*) 1.08 x 0.91 inch.

MELITHREPTUS LÆTIOR, Gould (Yellow-backed Honey-eater).

This beautiful honey-eater, of which Mr. Keartland was

* Trans. Roy. Soc. S.A. 1898, p. 143. †Trans. Roy. Soc. S.A. 1898, p. 169.

successful in obtaining several fine examples during his trip with the Calvert Exploring Expedition, has recently been found nesting in the same locality as he procured his specimens. During the first week of February, 1899, Mr. E. J. Harris took an egg of this species from a small cup-shaped nest built in the drooping leafy twigs of a Bauhinia about ten feet from the ground, and close to the junction of the Fitzroy and Margaret Rivers, North-west Australia. It is oval in form, gently tapering towards the smaller end, and is of a pale fleshy-buff ground colour, which gradually passes into a warm reddish buff on the larger end, where there are spots and blotches of a slightly darker hue, intermingled with underlying markings of faint purplish-buff, the surface of the shell being smooth and slightly glossy. Length, 0.86 x 0.61 inch. This egg resembles some of the delicately-coloured varieties of those of *Ptilotis auricomis*.

Figures of all the above eggs are included in the plates of the second edition of the Australian Museum "Descriptive Catalogue of the Nests and Eggs of Australian Birds," now in the press.

NOTES ON AUSTRALIAN COCCIDÆ.

By T. D. A. Cockerell, Entomologist, New Mexico Agricultural Experiment Station.

I.—The Australian Species of Mytilaspis.

TABLE FOR THE SEPARATION OF THE FEMALES.

	No groups of circumgenital glands	1
	Circumgenital glands present	5
1	Lobes broad, truncate (*Coccomytilus*, Leon.)	2
	Lobes narrow and pointed	4
2	Scale greyish-white	3
	Scale dark greyish-brown ... ... *acaciæ*, Mask.	
3	Scale very convex ... ... *convexa*, Mask.	
	Scale slightly convex ... ... *acaciæ* v. *albida*, Mask.	
4	Scale reddish-brown (*Allantomytilus*, Leon.) *maideni*, Mask.	
	Scale with transverse silvery-white bands (*Phaulomytilus*, Leon.) ... ... *striata*, Mask.	
5	No lobes, nor median depression	6
	Lobes present; or if little developed, then a median depression	7
6	Scale snow-white ... *defecta*, Mask.	
	Scale tinged with greyish-yellow ... *defecta* v. *tincta*, Mask.	
7	Only two lobes, those large; margin on each side of lobes denticulate	8
	Not so; usually three pairs of lobes; if only one pair distinct, these small	11
8	Scale snow-white	9

9 Scale more or less surrounded by cottony fluff; lobes very large ... ... *grandilobis*, Mask.
Scale not surrounded by fluff; lobes smaller; dorsal surface of body with six spines 10
10 Smaller, less than 2 millim. long ... *spinifera*, Mask.
Larger, about 3 millim. long *spinifera* v. *major*, Mask.
11 Scale with much cottony fluff; hind end of female with eight pairs of long hyaline linear processes (*Trichomytilus*, Leon.) ... ... *formosa*, Mask.
Scale ordinary 12
12 Scale snow-white 13
Scale greyish or brown, at palest (*melaleucæ*) greyish-white 16
13 A depression between the median lobes, which are the only ones well developed 14
No marked depression between the median lobes .. 15
14 Median lobes represented by thickenings of the margin *casuarinæ*, Mask.
Median lobes rather prominent, rounded *pallens* v. *alba*, Mask.
15 Three pairs of well-formed lobes, all pointed *nivea*, Mask.
Lobes well developed but short, broadly rounded or truncate ... ... *lidgetti*, Ckll., n. sp.
16 Scale brown, linear ... ... *gloverii* (Pack.)
Scale mytiliform 17
17 Squames flattened, with serrated ends; median lobes long and parallel; scale buff colour *banksiæ*, Mask.
Squames spine-like 18
18 Scale light greyish or greyish-white 19
Scale brown 21
19 A marked depression between the median lobes *pallens*, Mask.
No marked depression between the median lobes ... 20
20 Female insect dark red, or nearly black *grisea*, Mask.
Female insect yellow ... ... *melaleucæ*, Mask.
21 Median lobes wider, nearly entire; on various plants *pomorum* (Bouché)
Median lobes narrower, serrulate; usually on *Citrus* *citricola* (Pack.)

(*M. citricola* v. *tasmaniæ*, Mask., on *Pomaderris apetala*, is hardly separable.)

Mytilaspis lidgetti, n. sp.

Female scale of the ordinary mytiliform shape, rather narrow, usually more or less curved, moderately convex, snow-white, the exuviæ bright reddish-orange, but the second skin more or less covered by a thin whitish film. Length of scale about 3 millim.

Male scale much smaller, snow-white, rather broad, more or less loosely woven, so as to appear woolly; no keel; exuvia deep orange.

Adult female after boiling transparent; five groups of circumgenital glands, median of 7 to 8, anterior laterals 15 to 16, posterior laterals 14 to 16, the anterior lateral group often elongated; very many dorsal glands of the type of those of *Parlatoria zizyphus*, but shorter; four pairs of lobes; median lobes fairly large but short, truncate, shaped like the end of an axe-blade, broader than long, separated by a rather wide interval, but the margin not depressed between them. At the outer side of each median lobe is a long spine, nearly twice as long as the lobe, then comes a very short pointed squame; next, and separated by a wide interval from the median lobe, comes the second lobe, which is divided into two separate lobules, the first large and rounded, the second also rounded, but smaller and narrower; at the second lobule of the second lobe is another long spine, then a pointed squame, bifurcate at the end; then after an interval comes the third lobe, completely divided into two separate rather small lobules; then a long spine and a pointed squame, then a more or less rudimentary fourth lobe, the lobules of which are bluntly pointed.

Hab.—Massed on bark of *Eucalyptus rostrata*, Schlecht, and *E. goniocalyx*, F. v. Muell., Myrniong, Victoria, Australia (James Lidgett).

The female scales of *M. lidgetti* are exactly like those of *M. casuarinæ*, which I have from Mr. Maskell. The female of *casuarinæ*, however, is very easily known from *lidgetti* by the depression between the median lobes, which are broad, little produced, and strongly crenulate.

2.—A New Pulvinaria.

Pulvinaria paradelpha, Ckll. and Lidgett, n. sp.

Female (shrivelled) about 4 millim. long, oval, rather pale brown. Ovisac white, broad and flat, of rather a leathery consistency, nearly parallel-sided, about 10 millim. long, and 4 broad. Margin of female almost spineless, the spines few and minute. Spines of lateral incisions in threes, the middle one about twice as long as the others, all of about equal thickness throughout, not bulbous or clubbed at end as in *P. thompsoni*. Skin with fairly numerous round glands, some large, others small. Antennæ 8-segmented, 3 longest, and longer than 4 and 5 together. Formula 3 (281) (45) (67). Legs fairly stout, tarsus about two-thirds length of tibia; claw short and strongly hooked; tarsal digitules slender; claw digitules greatly expanded, with very broad ends. Mouth parts small.

Male scale glassy, translucent, with a flat dorsal area crossed by two or three sutures; and seven or eight sutures on each side, running from the sides of the dorsal area to the margin.

Hab.—Both sexes on leaves of *Acacia melanoxylon*, R. Brown, on Mount Difficult, Grampians, Victoria, at a height of about 3,700 feet. Allied to *P. thompsoni*, Mask., from Tasmania.

For the more exact determination of *P. paradelpha*, the following measurements in micromillimetres may be found useful :—

Antennal segments : (1) 59 ; (2) 56 ; (3) 93 ; (4) 37 to 45 ; (5) 37 to 42 ; (6) 25 ; (7) 25 ; (8) 51 to 54.

Legs : Coxa, 116 ; femur with trochanter, 232 ; tibia, 149 ; tarsus, 99.

Further specimens have been found at Myrniong by Mr. Jas. Lidgett on a somewhat stunted specimen of the same tree growing on the edge of a creek bank which showed undisputed signs of being submerged during flood times. The tree was literally covered with both males and females, the snow-white ovisacs of the latter being fully half an inch in length, giving the appearance as if partly covered by snow. A perpendicular rod-like fungus was noticed growing on some of the females after gestation.

Nests and Eggs of Australian Birds.—We have received the prospectus of Mr. A. J. Campbell's proposed work on the "Nests and Eggs of Australian Birds." As an author Mr. Campbell is well known to members of the Field Naturalists' Club and readers of the *Naturalist*, and to a wider circle of readers by his popular articles on the same subject in the *Australasian*. The manuscript, which is the result of thirty years' personal observations in various parts of the Australian continent, has now been completed, and some 200 coloured illustrations of eggs have been prepared by Mr. C. C. Brittlebank. The book is to be published by subscription, and lovers of natural history should not fail to enter their names for a copy of a work which will, no doubt, reflect great credit both on the author and the artist.

The Power of an Insect.—"But for the Tsetse-fly the whole history of South-Central Africa would be different. It would have been rapidly traversed by mounted men, not nearly so much ill-health would have pursued explorers and pioneers forced to travel on foot, and the whole question of transport would be rendered infinitely more easy, as coaches and waggons could run, and huge numbers of pack animals—horses, mules, and oxen—might convey goods which at present are carried on men's heads. Undoubtedly the Tsetse-fly has checked the southward range of Muhammadan raiders from the north."—From "British Central Africa," by Sir Harry H. Johnston, K.C.B.—a book containing much information of interest to lovers of nature.

Mr. A. J. CAMPBELL

HAS pleasure in announcing that he has completed the MSS. of his life-long work on the

"Nests and Eggs of Australian Birds,"

Including the geographical distribution of the species and popular observations thereon. The work which includes field observations extending over 30 years, 130 photographic illustrations of birds, nests, and nesting scenes, and 200 chromo-lithographic figures of eggs will be the most complete ever published on the domestic history (which is always the most interesting of the natural economy) of Australian birds.

Prospectus and order form may be obtained from the author, H. M. Customs, Melbourne, or from Mr. Thos. G. Campbell, Beatty Avenue, Armadale.

Mr. Campbell ventures to hope he will receive sufficient public support to enable him to publish at once this purely Australian work.

SPECIAL NOTICE.

Members are reminded that the Club's year ended on 30th April last, and that subscriptions (15s.) for 1899-1900 are now due, and must be paid on or before 8th June, in order to entitle members to vote at the Annual Election of office-bearers which takes place on that day. The Hon. Treasurer (Mr. J. T. Gillespie, 395 Little Flinders Street, Melbourne) will be glad to receive such subscriptions. Any person desirous of resigning his membership is requested to notify the Hon. Secretary to that effect and return this *Naturalist*.

CONVERSAZIONE,

18th and 19th MAY.

THIS having been definitely fixed, and the Athenæum Hall engaged for two days, Members are requested to furnish the Hon. Secretary for the Conversazione, Mr. J. A. Kershaw, F.E.S., National Museum, Carlton, with lists of their intended exhibits and space required by this meeting, 8th May, 1899

The following gentlemen have been appointed a sub-committee to work up exhibits in the branches named.

Ornithology	Messrs. G. A. Keartland and A. J. Campbell
Reptilia	Messrs. D. Le Souef and C. Frost
Conchology	Messrs. J. H. Gatliff and J. Gabriel
Entomology	Messrs. D. Best and C. French, F.L.S.
Botany	Messrs. F. G. A. Barnard and H. T. Tisdall
Geology	Messrs. T. S. Hall, M.A., and A. E. Kitson, F.G.S.
Microscopy	Messrs. W. Stickland and O. A. Sayce

And Messrs. J. Gabriel, T. S. Hall, M.A., and J. Shephard have been appointed the Executive Committee.

Tickets (1/- each) have been distributed and members are requested to make returns of sales as soon as possible after the Conversazione.

VOL. XVI.—No. 2. JUNE, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 8th JUNE, 1899.

Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR ANNUAL MEETING.

Monday, 12th June, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. R. T. Morton .. .. 30 Oxley Road, Glenferrie.	O. A. Sayce ..	Geo. Coghill

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

Consideration of Annual Report and Financial Statement for 1898-9.

Election of Office-Bearers for 1899-1900.

The following nominations have been made :—

PRESIDENT—Mr. J. Shephard.

VICE-PRESIDENTS—Messrs. T. S. Hall, M.A., and J. G. Luehmann, F.L.S.

HON. TREASURER—Mr. J. T. Gillespie

HON. LIBRARIAN—Mr. O. A. Sayce

HON. SECRETARY—Mr. G. Coghill

COMMITTEE—Messrs J. Gabriel, R. Hall, G. A. Keartland, J. A. Kershaw, F.E.S., A. Kitson, F.G.S., D. Le Souef, C.M.Z.S., and H. T. Tisdall (five to be elected).

5. Reading of Papers and Discussions thereon.

1. By Mr. J. A. Kershaw, "Note on *Libythea Geoffroyi*."
2. By Mr. H. T. Tisdall, "On Certain Movements of the Spores of a Fungus, Clathrus, sp."
3. By Mr. O. A. Sayce, "Remarks on an Exhibit of Some Living Stages of Mycetozoa."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

✻ EXCURSIONS. ✻

SATURDAY, 17TH JUNE. University. Under the leadership of Prof. Spencer, M.A. Meet at Biological School, 2.30 p.m. Biology.

PROGRAMME 1899—1900.

The Committee will be pleased to receive suggestions of Localities for Excursions for this year as early as possible.

THE

Victorian Naturalist.

Vol. XVI.—No. 2. JUNE 8, 1899. No. 186.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th May, 1899. The president, Mr. C. French, F.L.S., occupied the chair, and over 50 members and friends were present.

REPORTS.

The leader, Mr. T. S. Hall, M.A., gave a short report of the excursion to the West Melbourne Swamp on Saturday, 15th April, 1899, and incidentally mentioned the heaps of stone lying there, brought as ships' ballast from Brazil, which may in future days puzzle geologists.

Mr. J. A. Kershaw reported a satisfactory attendance at the visit to the National Museum on Saturday, 29th April, when he showed those present the entomological and oological collections, as well as taking a general glance at the Museum.

The hon. librarian, Mr. O. A. Sayce, reported the receipt of the following donations to the library: — "Records of the Australian Museum," vol. iii., No. 5, from the Trustees; "Descriptive Notes of Fibres Prepared at Melbourne Botanic Gardens," by W. R. Guilfoyle, F.L.S., from the author; "Proceedings Academy of Natural Science of Philadelphia," 1898, part 2, from the Academy; "Bulletin of Buffalo Society of Natural Science," vol. v., parts 1–5, and vol. vi., part 1, from the society.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. T. S. Adcock, F.L.S., Geelong, and Jas. Kilgour, Railway-place, Williamstown, were duly elected members of the Club.

GENERAL BUSINESS.

Messrs. D. Best and R. Hall were elected auditors, and nominations for office-bearers for 1899–1900 were received.

Mr. G. A. Keartland moved that a deputation from the Club wait on the Commissioner of Customs and ask that the close season for quail be extended to 1st April in each year. This was carried, and on the motion of Mr. A. J. Campbell the President, Messrs. Le Souëf, Keartland, and the Secretary were appointed.

PAPERS.

1. By Mr. A. Campbell, entitled "List of Birds Observed at Burnley."

The author gave many notes on the birds seen by him at the Horticultural Gardens during his three years' course of study there.

The paper was discussed by Messrs. Keartland, Le Souëf, R. Hall, Kershaw, T. S. Hall, M.A., Mattingley, Barnard, and A. J. Campbell.

2. By Mr. D. Le Souëf, C.M.Z.S., entitled "List of Birds, with their Eggs, obtained by Mr. E. Olive on the Katharine River, Northern Territory."

The author extended the notes forwarded by Mr. Olive, and gave many interesting particulars as to the range of habitat of the birds mentioned.

The President, Messrs. G. A. Keartland, R. Hall, and A. J. Campbell joined in the discussion which followed.

NATURAL HISTORY NOTES.

Mr. T. A. Brittlebank communicated a note on the late—or, perhaps, early—building and nesting of birds this year.

Mr. C. French, jun., recorded the finding of the rare Victorian orchid, *Pterostylis acuminata*, at Sandringham, 30th April, 1899.

Mr. George E. Shepherd forwarded a note on the occurrence of the Little Eagle at Somerville, and exhibited the bird mounted.

Mr. D. Le Souëf, C.M.Z.S., read a description of the nest and eggs of the Silvery-crowned Friar-bird, *Philemon argenticeps*, of North Queensland.

EXHIBITS.

By Mr. C. French, F.L.S.—An Australian specimen of the rare butterfly, *Libythea Geoffroyi*, from North Queensland. By Mr. C. French, jun.—Plant new for Victoria and New South Wales, *Epacris mucronulata*, R. Brown ("Prodromus," 552, from Tasmania only in 1810), simultaneously found by J. H. Maiden, F.L.S., on Mt. Kosciusko, New South Wales, and by C. Walter on the Buffalo Mountains, Victoria, January, 1899. By Mr. R. Hall.—Nest of Chestnut-rumped Acanthiza in spout of a tree. By Mr. D. Le Souëf.—Skin and eggs of Crimson-winged Lory, and skin of Red-winged Lory. By Mr. F. M. Reader.—Dried specimens of plants, *Lepturus cylindricus*, F. v. M., *Lepidosperma concavum*, R. Br., *Isoetes Drummondii*, A. Br., new for the north-west of Victoria. By Mr. J. Searle.—Larva of small fly, *Syrphus*, sp., which feeds on aphides, also pupa and parasite.

In last meeting's list of exhibits the shells illustrating Messrs. Gabriel and Tisdall's paper should have been listed as lent by Mr. C. Gabriel.

After the usual conversazione the meeting terminated.

PROFESSOR SIR FREDERICK McCOY.

It is with great regret we record the death on Saturday, 13th May, 1899, at Brighton, of Sir Frederick McCoy, K.C.M.G., M.A., D.Sc., F.R.S., &c., Professor of Natural Science in the University of Melbourne.

The late professor was one of the original members of the Field Naturalists' Club of Victoria, having been elected its first president in May, 1880, and his presidental address, delivered at the first *conversazione* of the Club on 17th May, 1881, printed at length in the *Southern Science Record*, vol. i., page 102, gives an interesting *résumé* of the first year's work of the Club, now entering its twentieth year. He was re-elected president in 1881 and 1882, and followed the then customary plan of giving an annual address at the *conversaziones* in April, 1882, and April, 1883, in each of which hints for future work for members of the Club were given (see *Southern Science Record*, vol. ii., p 103, and vol. iii., p. 139). He was succeeded in the presidential chair by the late Hon. Dr. Dobson, and was subsequently elected an honorary member, and afterwards, along with the late Baron Sir F. von Mueller, a patron of the Club. His last function in connection with the Club was his presence at the *conversazione* of May, 1896, when he proposed a vote of thanks to his fellow patron, Baron von Mueller, for the inaugural speech.

Professor McCoy was educated at Dublin and Cambridge, where he showed considerable ability in the sciences of geology and palæontology, and subsequently served on the geological survey of Great Britain, and on the foundation of the University of Melbourne, in 1854, he was selected to fill the chair of Natural Science, which then embraced the subjects of zoology, comparative anatomy, botany, mineralogy, chemistry, geology, and palæontology, but by the appointment of additional professors and lecturers several of these subjects have since been handed over to others. During later years the directorship of the National Museum of Natural History and Geology occupied a considerable portion of his time, and the regional groups of animals, &c., there are fine examples of his method of presenting the natural history of the world to the general public. As an author his name will ever be connected with the first and second volumes of the well-known "Prodromus of the Zoology of Victoria," of which twenty parts, containing two hundred excellently coloured plates, were issued under his direction, and which stamp him as a man of the front rank among systematic zoologists. He also issued several parts of a "Prodromus of the Palæontology of Victoria," in which numbers of our fossils are accurately described. Professor McCoy was the recipient of many honours during his long life of 76 years, from his Queen, his university, and from numerous scientific societies in many parts of the world.

FIELD NATURALISTS' CLUB CONVERSAZIONE.

THE thirteenth *conversazione* of the Field Naturalists' Club of Victoria was held at the Athenæum Hall, Collins-street, Melbourne, on Thursday and Friday, 18th and 19th May, 1899.

The details of the *conversazione* were much the same as those of previous years. The proceedings were inaugurated on Thursday evening by the president, Mr. C. French, F.L.S., who, in a brief speech, stated that the Club was now entering the twentieth year of its existence, and the fact of its having reached such an age should be some justification for its existence. He considered the members were to be congratulated on the excellent display of natural history objects brought together for the occasion, and trusted visitors would appreciate the efforts of the exhibitors. On behalf of the members of the Club he expressed deep regret at their recent loss by death of their patron and friend, Professor Sir F. McCoy, K.C.M.G., D.Sc., one of the pioneers of natural science in Victoria. In conclusion, he hoped future presidents would return to the former practice of delivering an adddress on their retirement from office.

On Friday afternoon a lecturette entitled "How an Insect Lives" was delivered by Mr. O. A. Sayce, in the Upper Hall, to an appreciative audience. The lecturer directed his remarks to briefly explaining the three factors in sustaining life—(*a*) the taking in of food and its digestion, and how the tissues became supplied with nourishment; (*b*) the aeration of the tissues; and (*c*) the getting rid of the nitrogenous and gaseous waste products. In the matter of feeding he explained the mouth parts of a biting insect (a cricket), and compared these several parts, by the aid of coloured diagrams, with corresponding parts similarly coloured in a sucking insect (a mosquito), and showed how they performed their functions when feeding. The structure of the food-canal was also shown by diagrams, and the passage of the food through it was explained, also how certain glands secreted chemical substances which digested the food, how this digested food was taken up by certain cells and passed on to the blood, and how the blood was circulated by a contractile tube, the heart. The method of respiration by means of tracheæ was also explained. In illustration of his remarks actual examples were shown, under miscroscopes, during the *conversazione.*

In the evening Professor W. Baldwin Spencer, M.A., gave a lecturette descriptive of the Natural History Museum at South Kensington, London. The lecturer, by means of limelight views, gave some idea of the external and internal appearance of the museum, and drew attention to the great improvement in the manner of displaying natural history objects as evidenced at South Kensington, where typical specimens of each class are exhibited in as nearly as possible their natural surroundings,

instead of a bewildering collection of specimens displayed in stiff or conventional attitudes. He said that it was hoped that additional buildings would shortly be commenced for the national collection of Victoria.

The lantern used to illustrate the lecture was kindly placed at the disposal of the Club and worked by Mr. J. Searle.

The display of natural history specimens in the main hall was of course the feature of the *conversazione*, and was perhaps an advance on previous exhibitions of the Club, and evidently aroused considerable interest among the visitors.

The exhibition of specimens made by those members who devote themselves to microscopical work was a very attractive feature, and some twenty-five microscopes were in constant use during the whole period of the *conversazione.*

The platform was tastefully decorated with pot plants by Mr. W. R. Virgoe, of the Old Chatsworth Nursery, North Brighton, who also exhibited some of the new plant-food known as "Jadoo fibre," with plants grown in it.

EXHIBITS.

The following is a list of exhibitors, with particulars of the various specimens :—

ASHWORTH, H. P. C., East Melbourne—Enlarged Photographs of Albatross on Nest; Albatross feeding young; Albatross flying; and group of young Pelicans. Two cases of Victorian Birds.

BARNARD, F. G. A., Kew—Insects collected at Kew. Living Victorian Ferns (15 species). Epiphytal Lycopodium from Queensland (growing).

BEST, D., Hawthorn—Twelve cabinet drawers of Australian Beetles (Coleoptera). One case of Australian Wasps, &c. (Hymenoptera). Case of Australian Cicadæ, Ant-lions, &c.

BRITTLEBANK, C. C.—Water-colour drawings of Orchids.

BRITTLEBANK, T. A., Myrniong—Collection of Birds' Skins from Myrniong and Bacchus Marsh districts.

CAMPBELL, A. J., Armadale—Mounted Rifle-birds and Regent-birds. Photographs of Birds' Nests.

CAMPBELL, A., jun., Armadale—Collection of Destructive Insects.

COCHRANE, Miss S. W. L., Hawthorn—Paintings of Orchids and Wattle.

COLES, A., Melbourne—Orang-Utan from Borneo. Stripe-sided Rock Wallaby. Australian Native Bear. Case of Fox and Cubs. Queensland Cassowary. Case of Satin Bower-birds, with bower. Case of French Partridges. Case of Snipe, Crakes, and Quail. Globe of Black Ducks, young, and egg. Collection of Wild Ducks. Black Swan and Cygnets. Albatross. Case of Gannets. Case of Huias (New Zealand). Armadillo from Borneo. Skull of Crocodile 26 feet long, from Borneo. Collection of Victorian Edible Fish and Birds which feed on them.

DEPARTMENT OF AGRICULTURE, ENTOMOLOGICAL BRANCH—Twelve cabinet drawers of Life-Histories of Economic Insects. Plates for part iii. of "Handbook of Destructive Insects of Victoria," &c.

FERGUSON, W. H., Albert Park—Collection of Aboriginal Weapons.

FRENCH, C., F.L.S., Malvern—Thirty cabinet drawers of Australian and Exotic Lepidoptera (Butterflies and Moths). Sixteen drawers of Australian Coleoptera (Beetles).

FRENCH, C., jun., South Yarra—Case of Australian Sea Birds' Eggs. Crocodile from the Nile. Collection of Lizards.

FRENCH, Mrs. C., jun., South Yarra—Six albums of Victorian Plants, collected principally near the Murray River.

GABRIEL, J., Abbotsford—Collection of Eggs of Australian Birds.

GABRIEL, C., Abbotsford—Collection of Marine Shells.

HALL, R., Box Hill—Five drawers of Australian Birds and Eggs.

HUNT, Mrs. H. W., Brighton—Paintings of Victorian Lepidoptera.

KEARTLAND, G. A., North Carlton—Australian Birds and Eggs. Live Birds. Reptiles in spirits. Native Weapons from Central Australia.

KERSHAW, W., Windsor—Four cabinet drawers of Exotic Lepidoptera (Butterflies). Three drawers of Australian Lepidoptera (Moths). Two drawers of Exotic Coleoptera (Beetles). Case of Birds' Skins from Australia and adjacent islands. Globe of Venus's Flower Basket. Skull of Bengal Tiger.

KERSHAW, J. A., F.E.S., Windsor—Two cabinet drawers of Australian Lepidoptera (Butterflies). Two drawers of Australian Lepidoptera (Moths). Case of Larvæ of Victorian Moths. Case of Minerals.

KITSON, A. E., F.G.S., East Melbourne—Collection of representative ores of Gold, Silver, Mercury, Copper, Zinc, Lead, Tin, Iron, Nickel, Antimony, Manganese, Molybdenum, Tungsten, and Arsenic. Collection of Eocene and Miocene Fossils of Victoria. Collection of representative Igneous Rocks of Victoria. Collection of Zeolites of Victoria.

LE SOUEF, D., C.M.Z.S., Parkville—Live Carpet Snake, live Diamond Snake, live Blue-tongued Lizards. Cast Snake Skins, including Skin of Python 18 feet long. Collection of Natural History Specimens from Queensland. Collection of Eggs of Australian Honey-eaters.

LUEHMANN, J. G., F.L.S., South Yarra—Illustrated Works of Pre-Linnean Botanists.

LYELL, GEO., jun., Gisborne—Case of Tropical Butterflies, including Fifty Specimens of Lycaenidæ. Case of Victorian Moths of the genus Thalaina. Collection of 105 species of Australian Tortricina (Moths).

SHEPHERD, G. E., Somerville—Mounted Birds collected at Somerville.

SWEET, G., F.G.S., Brunswick—Coral and Foraminiferal Rock Specimens, &c., illustrating the origin of Coral Atolls, obtained during the recent expedition to Funafuti, with diagrams, &c.

TISDALL, H. T., Toorak—Water-colour Drawings of Wild Flowers of Gippsland. Algæ of Victoria (mounted).

WALTER, C., Melbourne—Collection of Victorian Alpine Plants (100 species), collected 23rd to 27th January, 1899, on Mts. Hotham, St. Bernard, Smythe, The Twins, and The Buffaloes.

WATSON, W., and SONS, Melbourne—The New "Fram" Microscope. Tripod-foot Microscopes. Substage Illuminators, &c. Choice Mounted Microscopic Objects. Novelties in Microscopical and general Optical Instruments.

WILSON, Master E., Beaconsfield—Collection of Orchids.

MICROSCOPICAL SECTION.—Microscopic exhibits were made by the following:—

Mr. H. Bullen, a microscope formerly used by Sir John Franklin, in use.

Mr. H. H. Baker, Diatom and other slides under microscope, with multiple colour illumination.

Mr. J. Boyes, biological.

Rev. W. Fielder, F.R.M.S., preparations illustrating the structure and life-history of a Sponge, Liver Fluke, and a Bird.

Mr. J. Gabriel, blood circulation.

Mr. D. M'Alpine, micro-fungi.

Mr. J. M'Niven, biological.

Mr. O. A. Sayce, beating of the heart and circulation of blood in insects, living Mycetozoa, and other preparations in illustration of lecturette.

Mr. J. Shepherd, Rotifera and pond life.

Mr. J. Stickland, pond life.

Mr. W. Stickland, pond life.

Mr. H. T. Tisdall, botanical.

ALGÆ OF KERGUELEN'S LAND.

Notes on the Algæ collected by Mr. R. Hall, on Kerguelen's Land, in 1898.

By Henry Thos. Tisdall.

(*Read before the Field Naturalists' Club of Victoria, 13th February*, 1899.)

Before speaking of the seaweeds of Kerguelen's Land it is necessary to take a brief view of its surroundings.

In the year 1772 a French vessel commanded by Ives Julian de Kerguelen Tremaric, after passing to the south-east of the Cape of Good Hope, was caught in a violent storm and driven considerably out of the usual course. After many days the storm ceased, and Kerguelen found himself in an awkward predicament. A heavy steaming fog surrounded the ship, which quite eclipsed the sun, and so prevented him from finding his latitude. The ship's course was impeded by a mass of floating seaweed, and it took him some days to extricate the vessel from its embraces. At last the fog rose, the blue sky appeared once more, and to his astonishment Kerguelen saw before him a new land. As Sir Joseph Hooker describes it—"The island presents a black and rugged mass of sterile mountains, rising by parallel steppes one above another in alternate slopes and precipices, terminating in frightful naked and frowning cliffs, which dip perpendicularly into the sea. The snow lying upon these slopes between the black cliffs gives a most singularly striped and banded appearance to the whole country, each band indicating a flow of volcanic matter, for the island is covered with craters, whose vents have given issue to stream upon stream of molten rock. These are worn all along the coasts into abrubt escarpments, rendering a landing impracticable except at the heads of the sinuous bays." This was the country that Kerguelen and his crew of frightened sailors gazed at. After carefully rounding the rocky prominences, they at length found the entrance to a large, well-sheltered bay—presumably Christmas Harbour, which lies to the south of Kerguelen, or, as Capt. Cook called it some time afterwards, the Island of Desolation. The island is 100 miles long and about 50 miles wide, but is so indented with fiords, harbours, gulfs, and bays that hardly any part of it is more than a few miles from the sea. It lies in the Southern Ocean, about 3,500 miles S.E. from the Cape of Good Hope and 3,000 miles from the extreme west coast of Australia. As this paper only deals with the seaweeds of this remarkable island, we will only take a glance at its position with regard to ocean currents. The great counter current comes from the west and passes both north and south of the island, so that, as we might expect, the seaweeds drifted to the island come from that direction. On comparing the list of seaweeds which were found by Sir J. Hooker during the voyage of the *Erebus* and *Terror* at the Falkland Islands with

those collected by Mr. Hall on Kerguelen's Land, I found them almost identical—in fact, every genus and nearly every species is represented in Hooker's list.

Another remarkable fact requires notice: some distance to the south-west of Kerguelen's Land a large region of the ocean is quite covered—impassably so—by seaweeds. This region is somewhat similar in appearance to the celebrated Sargasso Sea, in the Atlantic Ocean; but it must be remembered that the Sargasso Sea is formed of an immense mass of floating seaweeds brought and kept together by a circular movement of ocean currents, whereas the seaweed region near Kerguelen's Land is in the midst of a strong onward current.

Darwin throws some light on the construction of this almost unknown region. Speaking of the seaweed *Macrocystis pyrifera*:—"This plant grows on every rock, rising from a depth of often 60 fathoms. I know few things more surprising," he says, "than to see this plant growing and flourishing amidst those great breakers of the Southern Ocean, 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," and "nearly all its leaves grow on the surface." Now here we find an explanation of how such a large portion of the sea—1,000 miles long and 500 miles wide—could be covered by seaweeds when the currents of the sea are all in one direction. Presuming that the bottom of the ocean in this part, like the celebrated bank of Newfoundland, rises to within 60 fathoms (360 feet) of the surface, we can quite understand that the enormous length of this seaweed would allow it not only to come to the surface, but to cover the same with its huge leaves. Imagine this submarine rocky island bearing millions of Macrocystis, which, as they arrive at the top of the waves, spread out their massive leaves, often 1,000 in number; and further consider that the leaves become the home of myriads of parasitic seaweeds, and we can easily understand the apparent anomaly of an immense mass of seaweeds retaining its position in spite of winds and currents. Speaking of similar huge beds of seaweeds, Darwin remarks—"Almost all the leaves, excepting those that float on the surface, are so thickly incrusted with corallines as to be of a white colour. We find exquisitely delicate structures, some inhabited by simple hydra-like polypi, others by more organized kinds, and beautiful compound Ascideæ. On the leaves also various patelliform shells, Trochi, uncovered molluscs, and some bivalves are attached. Innumerable crustaceæ frequent every part of the plant. On shaking the great entangled roots, a pile of small fish, shells, cuttle-fish, crabs of all orders, sea eggs, star fish, crawling Nereidous animals of a multitude of forms all fall out together."

What Darwin speaks of as occurring in the kelp of these vast

regions is quite in unison with the personal facts gleaned by members of this club in their outings, either for pond life or on the seashore. A glimpse of life in a Sargasso Sea is caught from an article, "The Nest Builders of the Sea." The author writes :— "In the vast tract, occupying an area of 260,000 miles, popularly denominated the Sargasso Sea, are found numbers of animals that seem peculiarly adapted by various modifications to the pelagic life they lead. In the full enjoyment of our novel surroundings we were attracted by a singular object peering out of the water. The curious creature proved to be the pelagic fish, *Antennarius marmoratus*, so exact in its imitation to the sargassum that, had we not been familiar with it, it would have been passed by. The tall and barbeled dorsal fins were out of the water. It was resting upon its nest, an oval mass of sargassum somewhat smaller than a football. This curious creature, whose pectoral fins resemble limbs, selects from the floating algæ bits of *Sargassum bacceferum*, which consist of feathery branches, each tuft having a thread-like branching stem studded with round air-vessels that form perfect floats or buoys. These are collected into a single mass by the fish, and woven in and out in a seemingly incomprehensible manner. A bit is taken in its mouth, with which the fish dives into the mass, coming out at the opposite side. As the nest assumes a more compact shape a gelatinous substance is attached to the various parts that serves to cement them. It is now an irregular oval, floated by the air-vessels. Around the nest the quaint parents move, or recline upon it as we have seen. When the eggs are hatched the bands are loosened, and in the nest, that, in consequence of the growth of its substance, has become a veritable living arbour, the young find abundant protection, and closely resemble the bits of weed among which they lie concealed."

Referring to the seaweeds collected by Mr. Hall at Kerguelen's Land. The greater portion was taken from the rocks (when uncovered), or picked up on the shore after the heavy tides. Amongst the seaweed may be seen a tiny piece of Lessonia, which gives a very poor idea of this magnificent plant, which is certainly the bulkiest seaweed yet discovered. It only grows in deep water ; it is tree-like in habit. In one of those wonderful books of Jules Verne there is an excellent word-picture of these seaweeds ; and remember that he only speaks in a fictional way of real scientific facts. He presents his hero crawling along the bottom of the sea, casting up his eyes in astonishment at the enormous forms of Lessonia towering above his head for hundreds of feet, the vast stem producing large branches, which bifurcate into smaller and smaller until mere twigs, like those on terrestrial trees ; these bear myriads of leaves that hang gracefully downward.

Another specimen of a very large seaweed is D'Urvillea. This plant is as common as possible on our own rocks ; it especially delights in fastening itself on to the rocks that are lashed by the turbulent breakers in the offing. It is an ever-wonderful sight to see a foaming torrent dashing between close-lying rocks, all below water-mark being covered by the huge fronds of D'Urvillea. As the torrent passes the fronds are swept by it to their utmost stretch, and the beholder never expects to see them again. Now the water rushes back, carrying the seaweed with it. And so on, backwards and forwards, with ceaseless velocity ; but the firm root-like mass at the base laughs at the power of the water, and the young frond grows and flourishes in this rough cradle. One of the red seaweeds is a Polysiphonia ; they are often found growing on some of the larger brown seaweeds. Their construction is rather curious. A number of tubes are completely surrounded by a thicker layer of smaller tubes ; this constitutes the stem for a single internode, then a number of very short tubes placed in the same manner forms the node, then follows a similar internode, and in this way the stem and all its branches are formed. One species, *P. elongata*, is a perennial, and in its several seasonal aspects varies as much as a deciduous tree. It grows on clean rocky sites in deep water. As winter approaches the branchlets fall off, and the stem and branches remain bare until spring returns. While in its winter state it is known in Britain under another name. The branchlets are renewed in the spring, and the plant becomes much more beautiful in consequence of their increasing number. On account of their bulk, Mr. Hall informs me he was unable to dry the large olive green and brown species. So that the great division Phæphyceæ is only represented by half a dozen species, two of which have not been identified by Prof. Reinhold, and may be new to science. On the other hand, the Chlorophyceæ, as a usual thing, are so small and require such close hunting that Mr. Hall has not been able to collect many. I remark that out of the six specimens two seem to be varieties of known species. The red seaweeds, Florideæ, are, however, well represented. The greater number have been identified, but ten out of the thirty specimens of Florideæ are either unknown or varieties of known species. I append to this paper a full list of the species found, and will conclude with a few lines from the pen of Marie J. Ewan :—

> " Nature hath tones of magic deep, and colours iris bright,
> And murmurs full of earnest truth, and visions of delight ;
> 'Tis said, ' The heart that trusts in her was never yet beguiled,'
> But meek and lowly thou must be, and docile as a child.
> Then study her with reverence high, and she will give the key,
> So shalt thou learn to comprehend the ' secrets of the sea.' "

LIST OF ALGÆ FOUND AT KERGUELEN'S LAND BY ROBERT HALL, NAMED BY PROF. T. REINHOLD, OF ITZEHOE.

PHÆPHYCEÆ—
- Adenocystis lessoni
- Macrocystis pyrifera
- Desmarestia viridis
- *D. chordalis
- D. (unknown)
- Lessonia (? unknown)

CHLOROPHYCEÆ—
- Enteromorpha bulbosa (var.)
- E. bulbosa
- Porphyra umbilicaulis
- Ulva lactuca
- Cladophora Hookeriana
- C. (variety)

FLORIDEÆ—
- Rhodomeleæ—
  - Polysiphonia flabelliformis
  - Rhodomelia (unknown)
  - Bostrichia vaga, Hook. and Har.
- Corallinaceæ—
  - Melobesia antarctica, Har.
- Rhodophyceæ—
  - Ceramium rubrum (var.)
  - C. rubrum
  - Ballia callitriche
- Bonnemaisonieæ—
  - Ptilonia magellanica
  - Delisea pulchra
  - D. elegans

FLORIDEÆ *(continued)*—
- Sphœrococcoideæ—
  - Sarcodia (or Merostheca)
  - S. (a variety)
- Rhodomenieæ—
  - *Epymenia variolosa
  - Rhodomenia (unknown)
- Gigartinaceæ—
  - Callophyllis (unknown, inter C. tenera and C. variegata)
  - C. variegata
  - Gigartina (unknown)
  - G. radula
  - Ahnfeldtia plicata
  - A. concinna
- Delesserieæ—
  - Delesseria lyalli
  - D. epiglossum
  - D. Tasmanica
  - D. (unknown)
  - D. crassinaria
  - Nilophyllum (unknown)
- Cryptonemiaceæ—
  - Iridea micans
  - I. micans (variety)
  - Schizymena (unknown)
  - Acanthacoccus antarcticus

* Peculiar to the island.

SOME SOUTH-WESTERN AUSTRALIAN BIRDS.

BY ROBERT HALL.

(*Read before the Field Naturalists' Club of Victoria, 13th March*, 1899.)

FROM the time of the publication of Gould's "Handbook" in 1865 up to 1888, when Dr. Ramsay's "Tabular List of Australian Birds" appeared, not a single new species peculiar to the South-West had been obtained (Ramsay). Since that date I know of no additional species having been revealed, so that it is of interest now to have some preliminary remarks on what may prove to be possibly one new species under further research. The skins referred to are from the Kalgoorlie district, and have been sent

to me at various periods by my enthusiastic correspondent, Mr. Lindsay Cameron.

XEROPHILA.

No sex given. Date of collection, 20/11/98. It resembles *X. pectoralis* more than any other, but has no pectoral band showing. The under surface is dull white. Bill slightly less robust than that of *X. leucopsis*, and not finch-like, as credited to *X. pectoralis*. The white of forehead deeper than in *X. leucopsis*. Under tail-coverts cinnamon; flanks uniform rich cinnamon; tarsus not compressed, stouter than in *X. leucopsis*; tips of tail quills in both webs marked with rufous, as if indicating youth. No Xerophila other than *leucopsis*, as far as I know, has yet been recorded from South-Western Australia. Total length, 4.5 inches; wing, 2.05 inches; tail, 1.7 inches; bill from gape, .4 inch; tarsus, .6 inch.

POMATORHINUS.

Collected 17/1/99. Sex not marked. It bears a close resemblance to *P. superciliosus*, and by the markings of its upper wing coverts, which are partly edged with pale chestnut, it may be the young of this species. It differs in having a bill one-fifth less in length, a forehead and crown not scaly, and having the inner webs of the primary wing quills, excepting the first, partially edged with fulvous. Mr. Gould, writing of *P. superciliosus*, says the sexes of young and old are only distinguishable from one another by dissection. In the specimen under review it is quite easily recognizable from the skins of *P. superciliosus* in my cabinet. Were it not that *P. temporalis* has fulvous on the quill webs I should incline myself to believe the next moult would drop the fulvous quills in the W.A. specimen. Perhaps it will in the winter quarter. Mr. Cameron speaks of the Chatterer as the most conspicuous of their birds. "They run and jump along the ground, and fly from bush to bush, never resting for a minute. They have a great variety of notes, and I have several times heard one I did not know, which, in the finding, I learned to be of the Chatterer. On 10th August last I found a nest of two eggs and several nests with each two young birds only. One nest contained a young bird and an undeveloped egg. The number of young in each nest was always two." Of *P. superciliosus* the clutch is generally four, while it may range from three to five, according to most observers. At Swan Hill, Victoria, on 8/10/96, I observed a nest containing two young, but this seems to be unusual, and it was perhaps a part of a clutch of three eggs. While Mr. Cameron has noted all his nests to contain each two birds or two eggs, the recognized family of *P. superciliosus* ranges from three to five.

GLYCYPHILA.

(a.) Male. Collected 27/11/98. Forehead black, some few

lateral feathers faintly tipped with slaty white, around eye black, with a faint trace of a white ring appearing; crown of head black; narrow line running from angle of lower mandible, white; ear coverts silvery slate, behind which is an irregular line of white; chin feathers brownish black, edged with dirty white; primaries and primary coverts' margins yellowish-green; under surface of wing fulvous; upper tail coverts rufous, central parts black; abdomen, flanks, and under tail coverts whitish with centres of feathers narrowly marked with brownish black; bill, legs, and feet black. Total length, 7 inches; culmen, .65 inch; wing, 3 inches; tail, 3 inches; tarsus, .8 inch.

(b.) Young. No sex given. Collected 27/11/98. The whole of dorsal surface light brown, excepting upper tail coverts, which are a richer brown; under surface chin and throat greyish, upper and lower breast mottled brown, each feather being tipped with light brown; abdomen, flanks, and under tail coverts nearly as in (*a*); wing coverts edged with fulvous; under surface of wings slate; bill brown. Total length, 7 inches; culmen, .6 inch; wing, 3.1 inch; tail, 3 inches; tarsus, .7 inch.

In the two specimens received, *(b)* appears to me to have just left the nest, while *(a)*, possibly the parent of *(b)*, is perhaps only a few months older, or more likely one year old. If it had a white forehead, and was devoid of definite rufous on its upper tail coverts it would be closely related to if not *G. albifrons*. Our fellow member, Mr. G. A. Keartland, secured a specimen of *(a)* while nesting in a stunted tree between the Johanna Springs and Jilgelly Creek in the North-West, but observed only one sex. This skin was lost with hundreds of others. Mr. Cameron writes:—"I think the two honey-eaters are male and female of the same species. I saw numerous pairs of them, and always the same. This pair certainly behaved like mates, and when I fired at another bird, they flew and alighted together on a bush 150 yards away. I then approached and shot them. The dark one was a male; the grey one I consider a female, but cannot definitely say. I have seen none of them since (30/11/98), and most likely will not get more till next spring."

In classifying *G. albifrons*, Mr. Gould says nothing about rufous on the upper tail coverts; but Dr. Gadow, in vol. ix. "British Museum Catalogue of Birds" refers to a rufous brown. In stage *b* (the younger) the upper tail coverts are not nearly so defined in rufous as in stage *a* (the elder) apparently. No stages to the adult of *G. albifrons* seem to have been yet described, and if the above *(a)* and *(b)* do not prove eventually to form an additional species the descriptions will serve as those of connecting links. In this genus the known young are much opposed in plumage to that of the parents.

ACANTHOCHÆRA RUFIGULARIS, Gld.

Not that this species is by any means rare, or because it is new to the western colony, do I now refer to it, but to try and elucidate the point referred to by Dr. Gadow when classifying this family in 1884 ("British Museum Catalogue of Birds," vol. ix.) Dr. Gadow, while examining seven specimens, says half of them have yellowish feathers below the cheeks, while the other half have white spinous feathers in the same places, in both cases independent of age or sex. In several skins I have examined I find what appears to me to be four distinct stages of development, including the type described by Mr. Gould, as follows :—

(a) Young male. 24/11/98. Kalgoorlie, W.A. Yellow cheek feathers, uniform in colour and not spinous ; gape and proximal end of bill bright yellow ; forehead indistinctly scaled ; tail feathers margined on outer webs with olive green ; upper tail coverts and general plumage feathers are edged with fulvous brown.

(b) Male. December, 1898. Kalgoorlie, W.A. Cheek feathers partly yellow, partly white, and some combined yellow and white, the yellow at distal ends. all being spinous ; proximal end of bill sombre yellow ; forehead more scaly than in *(a)* ; tail feathers not nearly so olive green as in *(a)*, almost absent ; upper tail coverts and general plumage feathers whiter than in *(a)*. *(b)* Locality : Swan Hill, Victoria. This is a skin showing the same disposition of the colours and texture of the cheek feathers as in the above specimen from Western Australia.

(c) Male. 8/10/96. Swan Hill, Vict. Cheek feathers white and spinous ; proximal end of bill browner than in *(a)* and *(b)* ; forehead scaly ; tail feathers without olive green ; upper tail coverts and general plumage are edged with a more distinct white than in *(b)*.

(d) The adult skin as figured by Gould, and showing a larger bird than in the three stages above.

In *(a)*, *(b)*, *(c)*, *(d)* the dimensions are progressive, the differences between *(a)* and *(d)* being conspicuous.

I have not been able to secure enough specimens to satisfy the query of Dr. Gadow "that the yellowish feathers below the cheeks, as well as the whites in the same region, are independent of age," but I can trace, as above, the conspicuous feathers below the cheeks to be soft and yellow in the young, to be partly yellow and in part white in the immature bird, the yellow being the softer in texture, while in the adult the feathers in this same position are white and spinous. Skin *(a)* agrees with Mr. Campbell's *A. flavacanthus* exhibited here this evening, while the two skins *(b)*, one from Western Australia, the other from Victoria, connect *(a)* and *A. flavacanthus* with the adult of *A. rufigularis* through *(c)* above.

CORRESPONDENCE.

THE NATIONAL MUSEUM.

To the Editor of the Victorian Naturalist.

SIR,—I was greatly pleased, when present at your conversazione last week, to hear Professor Spencer say that at last there was some reasonable chance of an early extension of the buildings at the National Museum. Having waited so long it may seem rather injudicious to propose any opposition on account of which the matter may be indefinitely postponed, but at the risk of so doing I would venture to suggest that the Field Naturalists' Club should exert its influence in favour of the removal of the National Museum to a more central and accessible site, say at the Public Library, where there is room for an annexe, similar to the picture galleries, along the Latrobe-street frontage. Here a museum would be in close proximity to the existing literature, and thus permit of greater facilities for study. It may be said that the Museum is required at the University for teaching purposes, but I think on inquiry it will be found that the biological and other schools possess nearly enough typical specimens, and that if more are required they can be easily spared from the National collection. The so-called assistants' rooms at the Museum are a disgrace to Victoria, and the whole of the accommodation is far behind that of the Australian Museum, Sydney, as I remember it some years ago.

Along with others I deeply deplore the death of the late director, Sir F. McCoy, but think that now, as there is a vacancy in the management, is the time to bring the Museum more within reach of the average citizen and student.—I am, &c.,

KANGAROO.

Melbourne, 27th May, 1899.

["Kangaroo," and doubtless other readers, will be pleased to know that the desirability of removing the Museum as suggested above was affirmed at a meeting of the trustees on the 1st inst., and at the same time Professor Spencer was appointed honorary director.—ED. *Vict. Nat.*]

THE TUPONG IN SALT WATER.—The Tupong, Marble Fish, or Freshwater Flathead, *Pseudaphritis urvillei*, C. and V. = *P. bassii*, Castlenau, a few years ago suddenly appeared in our streams, but, since Castlenau's description nearly thirty years since, had not been recorded from Victorian seas. Obviously, to rapidly spread from stream to stream it must pass through salt water, though its capture in the sea had not been noted. On the recent visit of the Club to the Aquarium, in the Exhibition Buildings, I noticed what I believe to be *P. urvillei* in a saltwater tank, along with several specimens of "Leatherjackets" (Monacanthus, sp.) I drew the

attention of Mr. Kershaw to the fish, and he was of the same opinion as I was, that the fish was the common Tupong, though, of course, one cannot be absolutely certain of a fish without detailed examination. Still we had a good view of it as it rested on the bottom or swam lazily along close to the glass wall of the tank, elevating and depressing its two dorsal fins. In colour it was somewhat lighter than the variety which we know from our rivers, though mottled or marbled in much the same way. I saw a specimen in the saltwater tanks at the same place a couple of years ago that I believe was also the Tupong, though I could not examine it very closely, since it declined to move, and consequently I waited for some more evidence. Mr. Kershaw has kindly looked up the question at the National Museum, and finds that they have four specimens, received at different times within the last few years, and labelled "Western Port." Presumably these specimens were caught in the sea, as they came through the fishermen. The first specimen I saw at the Aquarium came from the same place, so they do not seem to be very uncommon there. Western Port, it may be mentioned, receives the drainage of no large streams, and, as it is fully open to the sea, is peopled by a truly marine fauna. It is not an estuary, any more than Port Phillip is. The question is rather an interesting one, as Mr J. Douglas Ogilby has suggested (Proc. Linn. Soc., N.S.W., 1897, p. 560) that perhaps our species is identical with *P. bursinus*, C. and V., which, like Castlenau's specimen, was also originally described from saltwater (Port Jackson), and has never since been recognized. If, as Mr. Ogilby points out, the identity of *P. urvillei* with *P. bursinus* is settled, then the latter name will take precedence. Both generically and specifically, as will be seen on reference to Mr. Ogilby's paper, the synonymy of this fish has been somewhat of a puzzle to unravel, and I would ask any of our angling members to carefully preserve any sea-caught fish which they believe to be the Tupong, as possibly some slight variations, sufficient to finally settle its name, may be found.—T. S. Hall. 10th April, 1899. P.S.—Mr. Kershaw has told me that the Museum has also a specimen caught at Port Melbourne in 1883. This, however, is just off the Yarra mouth and might not mean much. Another specimen, however, was obtained from Mordialloc about two years ago, and as it was netted off shore it supplies positive evidence of the occurence of the Tupong in salt water.—T. S. Hall. 13th April, 1899.

Foreign Birds in London.—At the Crystal Palace Bird Show, held in February last, about 400 foreign birds, the majority of which were parrots and parrakeets, were exhibited. Amongst them was a specimen of the rare Princess of Wales Parrakeet, from Central Australia, which was exhibited by Mr. Fulljames, an enthusiastic exhibitor of some seventy birds.

Field Naturalists' Club of Victoria.

OFFICE-BEARERS, 1898-9.

President: MR. C. FRENCH, F.L.S.

Vice-Presidents: MR. J. SHEPHARD. MR. T. S. HALL, M.A.

Hon. Treasurer: MR. J. T. GILLESPIE, Messrs. Alex. Cowan and Sons, 395 Little Flinders Street, Melbourne.

Hon. Librarian: MR. O. A. SAYCE, Harcourt Street, Hawthorn.

Hon. Secretary: MR. GEO. COGHILL, 80 Swanston Street, Melbourne.

Hon. Editor of the "Victorian Naturalist:"
MR. F. G. A. BARNARD, Bulleen Road, Kew.

Committee:
MR. J. GABRIEL, MR. G. A. KEARTLAND, MR. J. A. KERSHAW, F.E.S., MR. J. G. LUEHMANN, F.L.S., and MR. H. T. TISDALL.

OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that the Club's year ended on 30th April last, and that subscriptions (15s.) for 1899-1900 are now due, and must be paid on or before 8th June, in order to entitle members to vote at the Annual Election of office-bearers which takes place on that day. The Hon. Treasurer (Mr. J. T. Gillespie, 395 Little Flinders Street, Melbourne) will be glad to receive such subscriptions.

CONVERSAZIONE TICKETS.

Members are requested to make returns of sales on or before this meeting.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Vol. XVI.—No. 3. July, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 6th JULY, 1899.

Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 10th July, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. H. Hartnell .. .. "Irrewarra," Burke Road, Camberwell.	O. A. Sayce. ..	W. Stickland
Mr. Wildon Jas. Morgan .. 11 Robb Street, N. Essendon.	J. Shephard	O. A. Sayce
Mr. J. A. Harper .. .. Met. Gas Co., Flinders Street.	T. S. Hall, M.A. ..	J. Shephard
Mr. E. Meeking .. .. Auburn.	C. French, F.L.S. ..	G. Coghill
Mr. S. P. Townsend .. Mornington, Victoria.	G. E. Shepherd ..	T. A. Brittlebank

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

1. By Mr. C. Walter (communicated by Mr. C. French, jun.,) "A Trip to the Victorian Alps."
2. By Mr. R. Hall, "Four Phases in the Plumage of Pomatortrinus superciliosus."
3. By Mr. D. M'Alpine, "Plant or Animal—Myxomycete or Mycetozoon?"

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist.*

❋ EXCURSIONS. ❋

SATURDAY, 15TH JULY. Zoological Gardens. Under the leadership of Mr. D. Le Souef, C.M.Z.S. Meet there at 2 p.m. Zoology.

PROGRAMME 1899—1900.

The Sub-Committee will be pleased to receive suggestions of Localities for Excursions for this year as early as possible.

THE

Victorian Naturalist.

VOL. XVI.—No. 3. JULY 6, 1899. No. 187.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE nineteenth annnal meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th June, 1899. The president, Mr. C. French, F.L.S., occupied the chair, and about 30 members and visitors were present.

REPORT.

Mr. R. Hall stated that bad weather on Queen's Birthday prevented the excursion fixed for that day being held.

ELECTION OF MEMBER.

On a ballot being taken, Mr. R. T. Mortan, 30 Oxley-road, Glenferrie, was duly elected a member of the Club.

ANNUAL REPORT.

The hon. secretary, Mr. G. Coghill, then read the nineteenth annual report, for 1898–9, which was as follows:—

"To the Members of the Field Naturalists' Club of Victoria. Ladies and Gentlemen,—In the nineteenth annual report, now presented to you, your Committee records the work of the year ending 30th April, 1899—a year of progress in many ways.

"The membership of the Club has increased since last year, being now 120 ordinary, 2 life, and 11 honorary members, while recent nominations indicate that the number will be larger next year, and would be still larger if all members join in this important branch of their Club duties and induce friends with scientific leanings to join our ranks.

"The attendances at meetings have shown an increase, and the papers read have been numerous, though we have to regret the want of variety in the subjects treated, which we trust will this year be remedied by the botanists, entomologists, and geologists contributing more largely.

"Of the papers read 22 were on zoological subjects, 5 on botanical, 1 on geological, 1 general, and 3 were accounts of trips. The authors were—Messrs. F. G. A. Barnard, D. Best, C. C. Brittlebank, A. J. Campbell, J. Gabriel, R. Hall, T. S. Hall, M.A., E. G. Hogg, M.A., S. W. Jackson, G. A. Keartland, J. A. Kershaw, F.E.S., D. Le Souëf, C.M.Z.S., J. G. Luehmann, F.L.S., Geo. Lyell, jun., D. M'Alpine, J. Shephard, W. Stickland, and H. T. Tisdall—mostly all gentlemen whom we have had to thank in the past, and thank again now, whilst expressing the hope that the new year will see additions to the list of contributors of papers.

"Natural history notes have been read at each meeting and duly printed.

"The fifteenth volume of the *Victorian Naturalist* is now completed, and the journal continues, under the able editorship of Mr. F. G. A. Barnard, to whom our thanks are due, to occupy a prominent position amongst the Australian scientific publications. The plates this year were limited to those illustrating Mr. Hill's paper on the Case Moths, which were kindly supplied by Prof. Spencer.

"The excursions have been for the most part rather better attended, and our thanks are due to the various leaders. The annual social picnic was held at Blackburn on Saturday, 29th October, and proved most enjoyable and a thorough success in every way.

"An exhibition of microscopic acquatic life, on the 14th November, was a great addition to the usual meeting, the organizers and exhibitors sparing neither time nor trouble in placing an attractive and instructive collection before the members.

"The exhibition of wild flowers, held in conjunction with the ordinary meeting on 10th October, again also formed a memorial of the late Baron von Mueller, wreaths and other designs being made of the flowers by lady friends of the president's and afterwards placed on the grave. The principal exhibitors outside of members were Messrs. J. H. Maiden, F.L.S., Sydney, and W. Guilfoyle, F.L.S., Melbourne.

"At the request of the librarian, and owing to the increase of the library, it has been decided to have a large bookcase constructed, which will enable the whole of the books to be properly arranged.

"The attention drawn, at the July meeting of the Club, to the wholesale destruction of the Wattle (Acacia) blossom led to the *Argus* and the Australian Natives' Association taking the matter up, and the united efforts had considerable effect in influencing public opinion and thus saving the trees. We hope in the future something more definite, in the shape of a law, will result.

"The receipts for the year, including £18 12s. from the realization of the Metropolitan Bank deposit, total, by the treasurer's report, £115 2s. 3d., and the expenditure amounted to £120 4s. 5d., leaving a credit balance of £9 0s. 10d., and, for the first time for many years, no outstanding liabilities exist; and further, the hon. treasurer informs us that considerable arrears have come in since the audit.

"The thanks of the Club are again due to Messrs. Morton and Coghill for the use of their office for committee meetings.

"Your Committee would point out in conclusion that, successful though the past year has been in many ways, the coming year may be made more so by a large addition to the scientific workers in

the Club and by these and present workers giving the result of their labours to fellow-members, remembering that all careful observation, be the observer ever such a tyro, is of use in the determining of scientific facts.

"For the Committee of the F.N.C.,

"CHAS. FRENCH, *President.*

"GEO. COGHILL, *Hon. Secretary.*

"*5th June*, 1899."

On the motion of Mr. D. Best the report was received, and, after considerable discussion—principally on the questions of the prevention of the destruction of the Wattles and the protection of native birds—was adopted, on the motion of Mr. C. Maplestone, and seconded by Mr. W. Stickland.

FINANCIAL STATEMENT.

The hon. treasurer, Mr. J. T. Gillespie read the financial statement for 1898-9, which was as follows :—

RECEIPTS.

To Balance, 30th April, 1898							£14	3 0
,, Subscriptions				£72	7	6		
,, *Victorian Naturalist*—								
Subscriptions ...	£6	10	0					
Sales, &c. ...	9	15	3					
Advertisements ...	7	17	6					
				24	2	9		
,, Proceeds of Sale of Fixed Deposit Receipts, Metropolitan Bank ...				18	12	0		
							115	2 3
							£129	5 3

EXPENDITURE.

By *Victorian Naturalist*—								
Printing—Arrears ...	£25	12	0					
Vol. xv. ...	56	5	3					
Reprints	5	3	0					
				£87	0	3		
,, Rooms—Rent and Attendance				8	15	6		
,, Library—Periodicals ...	6	7	6					
Bookbinding, &c.	2	11	0					
Insurance ...	0	6	6					
				9	5	0		
,, Printing and Stationery				3	12	6		
,, Postages, &c.				9	11	2		
,, Conversazione, 1899—Deposit for Hall ...				2	0	0		
							£120	4 5
,, Balance							9	0 10
							£129	5 3

J. T. GILLESPIE, *Hon. Treasurer.*
30th April, 1899.

Audited and found correct.

D. BEST, ROBT. HALL, } *Auditors.*

10th May, 1899.

The hon. treasurer also read the following statement of assets and liabilities :—

ASSETS.

Balance in hand	£9	0	10
Arrears of Subscriptions, say	25	9	6
Books and Bookcases	120	0	0
	£154	10	4

LIABILITIES.

Subscriptions Paid in Advance	£2	5	0

On the motion of Mr. W. Stickland, seconded by Mr. C. Maplestone, the statements were received and adopted.

CONVERSAZIONE.

Mr. J. A. Kershaw, F.E.S., reported that the conversazione held in May last had been in every way a success, and thanked his committee and members generally for the assistance given him. It had resulted in a small credit balance, which would be increased before the accounts are finally closed.

The President and others considered the success of the conversazione was in a very great measure due to Mr. Kershaw's excellent management, and a special vote of thanks was accorded to him, on the motion of Mr. C. Maplestone and the President.

DESTRUCTION OF THE WATTLE.

On the motion of Messrs. D. Best and F. G. A. Barnard, the hon. secretary was instructed to write to the Melbourne newspapers, deprecating the destruction of the Wattles during the ensuing flowering season.

OFFICE-BEARERS FOR 1899–1900.

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

A ballot for five members of committee resulted in the election of Messrs. J. Gabriel, G. A. Keartland, J. A. Kershaw, F.E.S., D. Le Souëf, C.M.Z.S., and H. T. Tisdall.

A vote of thanks to the retiring officers, coupled with the name of the President, was passed, and suitably responded to by Mr. C. French, F.L.S.

Mr. J. Shephard, in taking the chair, thanked members for the honour done him.

CAMP-OUT.

Mr. A. J. Campbell gave notice that he would bring up the question of a camp-out at the next meeting of the Club.

PAPERS.

1. By Mr. J. A. Kershaw, F.E.S., entitled "Note on the Butterfly *Libythea geoffroyi*, Godart."

The author pointed out the various synonyms under which this butterfly has been described by different writers, and gave a detailed description of the male insect from a specimen recently received by Mr. C. French, F.L.S., from Herberton, North Queensland.

2. By Mr. H. T. Tisdall, entitled "On Certain Movements of the Spores of a Fungus, *Clathrus cibarius*."

The author detailed the experiments he had made and the movements noticed, and asked if other members had observed any such action by the spores of fungi.

Mr. O. A. Sayce suggested that the action mentioned was the well-known "Brownian" movement, and was common to all extremely minute inorganic bodies, and was supported in this view by Mr. D. M'Alpine.

3. By Mr. O. A. Sayce, entitled "Remarks on an Exhibit of Some Living Stages of Mycetozoa."

The author briefly demonstrated the life-history of this rarely investigated division of plants by means of drawings on the blackboard, and exhibited specimens in various stages under the microscope.

Mr. D. M'Alpine, in view of the interest of the subject, suggested that the discussion be postponed till next meeting, which was agreed to.

EXHIBITS.

By Mr. A. J. Campbell.—Pair of eggs (the first exhibited) of the Russet-tailed Ground-Thrush, *Geocichla trecini*; also, on behalf of Mr. T. A. Brittlebank, the first reputed eggs of the Yellow-billed Kingfisher, *Syma flavirostris*, from Cape York; the eggs in shape and texture most resemble those of the White-tailed Kingfisher, *Tampiptera sylvia*; two specimens measure each 1 x .88 inch. By Mr. Geo. Coghill.—Large land shell from Matabele Land, South Africa. By Mr. C. French, F.L.S.—Larva and chrysalid of butterfly, *Ornithoptera cassandra*, North Queensland. By Mr. F. M. Reader.—Dried specimens of plants—*Melaleuca ericifolia*, Sm., *Ehrharta stipoides*, Lab., *Thelymitra ixioides*, Sw.—new for the north-west of Victoria. By Mr. Herbert W. Whitney.—Gang-Gang Cockatoo, *Callocephalon galeatum*, shot at Warburton.

After the usual conversazione the meeting terminated.

CHANGE OF ADDRESS.—Mr. S. W. Jackson, of South Grafton, N.S.W., desires to inform readers of the *Naturalist* that his address in future will be—Care of G.P.O., Sydney, N.S.W.

A NEW ROTIFER—*MELICERTA FIMBRIATA.*

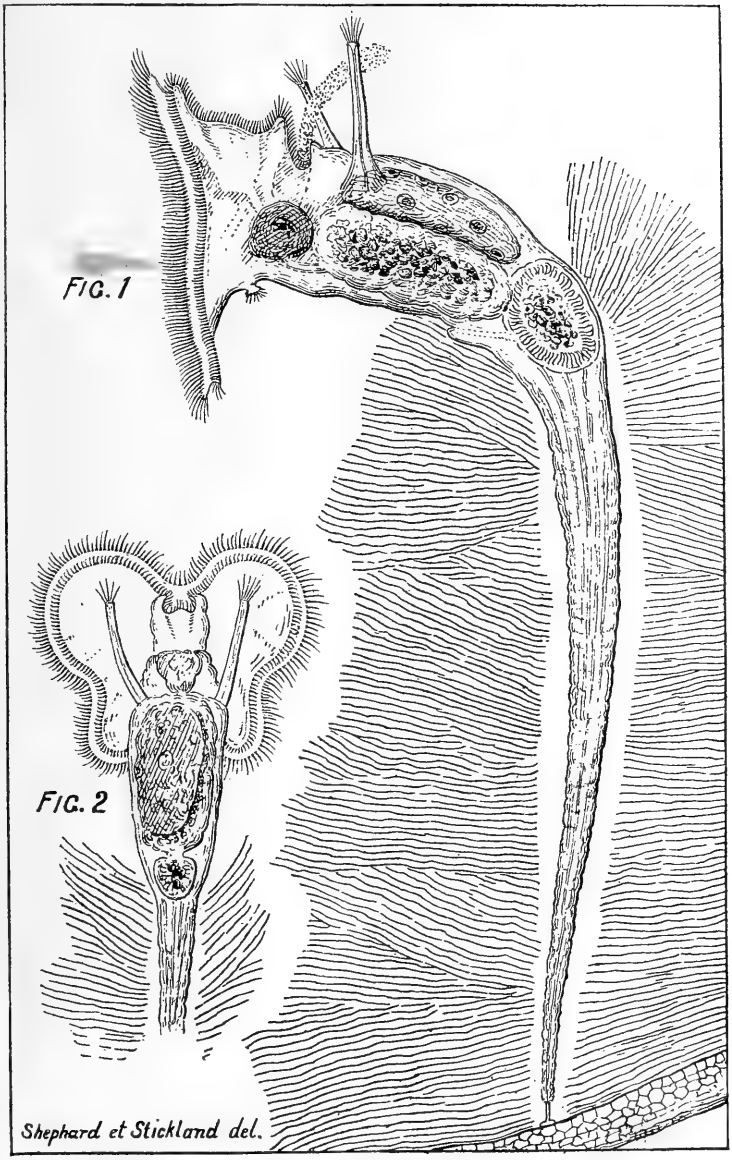
By J. Shephard and W. Stickland.

(*Read before the Field Naturalists' Club of Victoria, 16th Jan.*, 1899.)

In a gathering from the Botanical Gardens, Melbourne, we met with a rotifer, a Melicerta, presenting characteristics sufficiently differing from previously described species to lead us to regard it as new.

The genus Melicerta has hitherto comprised four species. Of these *M. ringens* and *M. conifera* are remarkable for their habit of constructing an outer casing to the tube in which they live, consisting of pellets made by means of a special organ. Both the other species possess the pellet-forming organ, but are said not to use it—*M. janus* fortifying its tube with pellets of fæcal matter, while *M. tubicolaria* possesses only the gelatinous tube, figured by Hudson and Gosse as very similar to those of the genus Floscularia.

The pellet-forming species are well known here; but the other two are, we believe, unrecorded. The animal forming the subject of this paper was found on stems of Nitella, in company with *M. ringens*, several species of Limnias, and *Stephanoceros eichornii;* this latter beautiful object being observed for the first time in Victoria. The general appearance at once suggests *Melicerta tubicolaria*, but the tube is built up of light brown fibres, each possessing a granular structure arranged so as to radiate somewhat irregularly from a thin gelatinous tube which fits closely to the body. The whole appears flexible, and is readily broken up. Older specimens were noticed whose tubes had almost entirely lost the brown colour, but their fibrous nature could still be detected, though with difficulty. In one case the middle portion of the tube was quite pale, while the two ends were coloured. The thickness of the tube wall varies from twice to four times the width of the animal's body, and the filaments composing it are long in proportion to their breadth. The body of the rotifer is usually extended well out of the tube, and when fully stretched is long and tapering. The corona much resembles that of *M. tubicolaria* in outline and width when seen in the dorsal aspect; but the dorsal gap appears wider than in that rotifer, though not nearly so wide as in *M. ringens.* The two ventral antennæ are shorter than those figured for *M. tubicolaria*, not extending to the upper portion of the corona, and possess much flexibility, being sometimes bent into the form of a hook, but usually project more laterally than forward. Considerable search revealed a dorsal antennæ placed high up in the neck, near to the trochal disc, and of somewhat unusual form, having a flat expansion bearing setæ, and supported by a very short peduncle; this is best seen when the animal is in the



A NEW ROTIFER—MELICERTA FIMBRIATA.

act of extending the corona, and is usually covered by the reflection of the dorsal lobes. Viewed from the side, a chin of moderate length overhangs the strongly ciliated cup. The foot is readily seen, through the semi-transparent tube, to terminate in a short cylindrical and very slender peduncle. We were unable to observe much of the internal anatomy (for the animal, though projecting well from the tube, is restless); but a light brownish mass immediately under the ciliated cup was conspicuous, and there appeared indications of a duct joining them. This point, however, requires further investigation. What we saw of the alimentary tract agreed with the other species of the genus. Ova are lodged in the tube. The animals first noticed made no use of the pellet-forming organ; but others, particularly young ones, were repeatedly observed making and fixing fibres. These are produced with great rapidity—a small pellet first appears, as in *M. ringens* and *M. conifera*, in the ciliated cup, and is gradually projected outwards, while material is added from behind, so that the pellet is speedily changed to a sausage-shaped mass, and increases further in length to form a long filament. Then the animal jerks backward into the tube, not with the apparent deliberation displayed by *M. ringens* in affixing its pellets, but making a dash, which sometimes needs repeating before the fibre is left attached to the tube. Occasionally the animal fails to attach it, and the fibre floats away. The whole process of fixing gives the impression of an action automatically repeated until the animal is rid of an encumbrance which its industry has created. The fibres evidently possess properties enabling them to adhere when pressed down with a certain amount of force. It is not clear how the material reaches the ciliated cup, as we were unable to detect it flowing out of the posterior portions of the buccal opening and down ciliated grooves as described in *M. ringens*. The observations made with regard to amount of material entering the buccal opening, and the rapidity of the formation of a fibre, suggest a supply of mucous largely augmenting the solid matter obtained by the trochal system. This feature of the animal generally, we believe, deserves attention in the future.

Comparing the rotifer with *M. tubicolaria* the points of difference are—shorter ventral antennæ; position and form of dorsal antennæ; terminal peduncle, though in regard to this latter feature Hudson and Gosse's figure does not show the termination of the foot, while Ehrenberg's figure of *Tubicolaria naias* (regarded by Hudson as identical with *Melicerta tubicolaria*) does show a termination such as we find in the animal now described. The chief distinctive point is the structure of the tube. Observers such as Dr. Hudson could not possibly have described the tube of the animal in question as "a gelatinous

sheath without pellets." The fibrous structure is seen at once. Dr. Hudson states that the tube of *M. tubicolaria* "bears no pellets at any time." While it is possible that, under some conditions, the latter may make use of the ciliated cup, it has now been so long known that such an occurrence must be extremely rare not to have been seen or evidenced by structure left on the gelatinous tube. Mr. Rousselet states that the tubes of *M. tubicolaria* swell when placed in formalin to three times their original length; we have mounts of the new species put up for several months in 2 per cent. formalin which show no enlargement whatever. The structure of the tube, the use of the ciliated cup and chin as a fibre-producing organ, together with the points of difference in the body itself, appear to us to leave no doubt that the species is distinct from those hitherto recorded.

Finally, the specific characters may be stated as—lobes when expanded three to four times the width of body; ventral antennæ moderately long; tube constructed of fibres formed in the ciliated cup, and arranged radially. Dimensions.—Length of animal (large specimen), 1. mm.

DESCRIPTION OF FIGURES (much enlarged).

Fig. 1. Lateral view, showing animal only moderately extended. The tube is seen in *optical section—i.e.*, as it appears when the microscope is focussed, not on the surface, but on the body of the rotifer in the centre.

Fig. 2. Ventral view. Amongst the other features this shows the strong constriction between stomach and intestine when the animal is not gorged with food.

NOTES ON THE MAGPIES.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 10th April*, 1899.)

UNDER the sub-family Gymnorhinæ of the Laniidæ or "Crow-Shrikes" there are thirteen species recorded for Australia and Tasmania, but of these only four belong to the genus Gymnorhina—one of which, *G. hyperleuca*, occurs in Tasmania; a second, *G. dorsalis*, in Western Australia; while the remaining two, our common magpies, are to be found widely distributed over the Australian continent. It is with these two—the "Black-backed," *G. tibicen*, and the "White-backed," *G. leuconota*—we are now concerned, and even though it may seem strange, the former keeps principally to the north of the Dividing Range and the latter to the south, as far as concerns Victoria. Both species are to be found in the interior (Horn Exp., 1896, Zool., p. 69; Ramsay, Tab. List Aust. Birds, p. 41) and New South Wales, but only the "Black-backed" is to be found in north-east Australia.

During this season I was so surprised at the habits of these birds under domestication that I decided to make an attempt to record some of their habits and to supplement it with field notes, without reference to previous literature bearing upon the subject, which is somewhat lengthy.

WHITE-BACKED MAGPIE, *Gymnorhina leuconota*, Gould.

The pugnacity of the White-backed Magpie is not confined to the rear part of the house, as, for example, in a note I made of four pursuing a hawk in spring time. The hawk took refuge from its pursuers in a clump of ti-tree and remained there for some twenty-five minutes, until the patience of one magpie gave out. Each of the three was posted in a conspicuous spot, and very soon after the first one a second bird thought it had other duties and flew away. The last two still kept their posts until the hawk sallied forth, only to be driven back again. The hawk could face one "pie" but not two. I left them at this stage, so cannot say how the affair terminated. Magpies are not always gregarious. They mate for life, and families of two to five are generally to be seen as if governing each a small area. Sometimes a pair, or the occupiers of a block, will not breed for a year, but they join the multitude in the following summer. Though magpies are fond of wheat they are trebly drawn to the luscious grasshopper, a horde of which they will attack in a most beneficial way for the agriculturist. The season 1897-98 was so poor in insect life that young magpies died in their nests in different parts of the Wimmera. Just as spring seems to come first to the plants near sea levels and later to the alpine forms, so does this species build a nest earlier in the valleys than on the hills. This seems to me to be true as regards the small difference of, say, 300 feet. In my notes on magpies I find the young birds have as much wish to stay with the parents throughout the spring as young albatrosses have, but it is not allowable in the former case. The keen observations of Mr. Geo. Graham, in his letters to me of August last, state clearly (with small additions from the writer) the case of forced individual migration :—"Three out of seven families that occupy my paddocks have with them each a bird of last season's breeding, and to all appearance it intends to stay with them throughout the summer. When the next brood is incubated the family will increase from three to five (two always being the number of the brood here), and, providing there are no accidents, it remains until about next May, when one disappears, and shortly after another goes. At this time there is a deal of chasing among the magpies, and I have concluded that it is the young male that is being driven away. (The young male becomes blacker, and sooner than the female, as well as I can judge.) I think the parent male would not permit the opposite-sexed young to remain

in camp during spring, so the junior male has to go. If the young male should be allowed to remain with the parents into the next season it does not mate during its first year. I have also noticed the adult females of two families trying to drive away the young females by repeated attacks of sometimes thirty minutes' duration. The old bird would pin the young one to the ground, but it seemed to have no other effect than to make the young one afraid of its mother. The male parent stands by, looking on, and takes no active physical part in the contest. In both these cases the youngsters stood the ill-treatment until the duty of nest-building compelled the dame to leave them in possession. After the young of the new brood are hatched out it is amusing to see the dejected attitude of the oldest daughter (unmarried) when the mother happens to approach it in quest of food for the new brood. In May or June following it disappears, and probably begins housekeeping on its own account. Just at this time a new patch of forest has been opened up, and, if only of a few acres, a pair of magpies will find their way into it. But all is not complete yet, for someone has shot the male because it thrashed his domestic fowls. The female cleared out at once, and returned in a few days with four males, the strongest and best fighter of which eventually became her mate."

It is interesting to direct a field-glass on a parent bird with a nest of young, when you can see it fill the mouth with insects almost to bill-overflowing, then fly into the nest and equally distribute the collection to the young.

I think young magpies must be trained to catch snakes, and that it is not an intuition with them. Proof to this effect is not strong, but a bird I know in domestication almost went into hysterics one day when an unassuming lady visitor came in with a boa dangling from her neck. The bird got a terrific fright; it screeched and hid itself for nearly three hours.

My friend, Mr. W. J. Stephen, has a female bird, taken from a nest four years ago, which is a splendid conversationalist. In spring, 1897, an inclination to "sit" was observed. The following year (August, as with wild birds) it showed a similar desire, and some assistance was given as soon as it showed itself in earnest. Both Mr. and Mrs. Stephen were good enough to keep a rough diary for me of the nest-building, which show how the bird in spite of being turned out of its chosen spot several times persisted in building a nest, using for preference pieces of wire, stiff twigs, and also some strips of stiff white calico, but rejecting pink flannelette.

At Box Hill there is a semi-domesticated pair of birds that have lived and reared their young in a garden for five consecutive years. They added to and renovated their first nest up to the third year, and built another for the fourth year. This I know by

the broken leg the male bird has had from the beginning of 1893. Mr. Andrew M'Gregor tells me of a pair of this species living at Pakenham that has reared three families of young without any black pigment in their plumage, but these albinos do not seem to live long in captivity.

My father has a magpie at liberty which has many curious ways. Some mornings I have seen the fowls' food tin filled, but only to benefit the sparrows and the minahs, for this tyrant bird will keep all the fowls away, while allowing the foreigners to breakfast. Our degenerate fowls do not hunt for themselves, consequently they would go all day without food. Although an act of this kind is soon remedied the bird will continue to worry the poultry. At one time it will keep some thirty silly hens and roosters pent up in a corner of the yard for hours. At another it will be standing before the door of the roosting-house, keeping all out until they are relieved at dusk by "maggie" being shut up for the night. All the animals are not treated alike, for we have a stable kitten that has thoroughly won the good graces of the magpie. Upon release from their houses in the morning each runs to greet the other, and the bird fondles the cat by catching hold of its tongue and pulling it in many directions without any offence being given or meant.

The Black-backed Magpie, *Gymnorhina tibicen*, Lath.

I know of a Black-backed Magpie at Hawthorn which has built a nest in a peach tree. For the past three years it has been living under the domesticated *rolê*. The bird was born in New South Wales in 1895, and before it was able to fly was caught and sent to my friend, who is the principal of a ladies' school, who kindly allowed me to photograph the nest and supplied some notes of interest. The bird, not having full freedom, could only work at the nest between 7 and 9 a.m. and after 5 p.m., and on the whole of Saturday and Sunday. The nest was placed 7 feet 6 inches above the ground; it was compact, neatly made of various twigs, and slightly lined with feathers. The whole breadth was 14 inches, that of bowl 4.5 inches, and depth of cavity 2.5 inches. In October three eggs were laid in it, and the dimensions averaged—diameter, 1.08; axis, 1.5 inches. The colours were also normal—ground, bluish grey; under markings, purplish; cover markings, dark brown.

It is rarely that either of these species lays five eggs to the clutch, but cases in both were reported to me last season.

In a letter of Mr. H. S. Burcher to me, dated 15th September, 1898, he says:—"I noticed a very remarkable incident last week in the finding of a Black-backed Magpie's nest with five eggs. This is quite out of the ordinary for a magpie here, as it is the first time I have ever found five eggs in a nest. I left them at the first time to make the note you wrote for, when on passing the second

time I found, to my surprise, the five eggs had gone, although the birds were still there. Noticing the inside of the nest was not so deep as before, I pushed my hand further down and felt the five eggs. It seems that they had built a thin lining over the eggs, which I first thought was to hide them away, but I found out after that they had made a partial new nest on top of the other and laid another clutch. The first set of eggs was poorly developed, and fairly easily blown. Between the laying of the two sets of eggs there was an interval of some fourteen days, including the time occupied in depositing the second clutch."

In a paper recently read before this Club by Mr. D. Best, he remarked that no writers have hitherto referred to the reason why magpies fly at the human species when in the vicinity of their nests. It seems to me a question easily answered, and on this account probably no one has troubled to deal with it. However, I communicated with some of my country friends, and from a summing up of the observations of Messrs. J. C. Goudie, J. H. Hill, and W. J. Stephen, as well as my own, it appears that, in captivity, magpies show an aversion to anyone who has annoyed them, as well as to anyone who looks like the person who has annoyed them. The voice of the offending person is quite sufficient to startle the bird and make it rush post haste to the gate to waylay or torment the arriving juvenile or lady. Although it is principally children and ladies that they have a grievance against, some children and ladies pass by as very good friends, and no stones are picked up by the bird as if to throw and injure. One magpie known to myself upon hearing an enemy's voice will invariably rush to the gate, pick up a stone, and try to get through the pickets with the stone in its beak. Under domestication a magpie can be very pugnacious, according to the provocation given, and in its wild state it is also this same provocation that leads all mankind to be treated alike. Magpies fly at you for a reason similar to that of a hen with its chicks in danger. The male bird, and not the female, appears to be the attacker of man, and the attacked is not only a man, woman, or child, but may be a dog or a species of small bird, or, as is better known, a hawk or crow. Small birds, as robins and acanthizæ, that are breeding at the same time as the magpie, may have their nests pulled to pieces, or the young destroyed, or even the old birds if they can be caught. It is in this respect a brutal bird. Both male and female attack hawks. The magpies fly desperately at you when either eggs or young are in the nest, as well as when the latter have recently left the nest, but later its pugnacity ceases. In individual cases the magpie will keep the pugnacious temperament very strongly for some weeks or even months, and woe betide you if you should meet such an hot-tempered bird.

In breeding season it recognizes its arch-enemy, man, whether on horseback or in the buggy, and far beyond a quarter of a mile from its nest it will follow him and endeavour to make war on him. The Black-breasted Plover will fly at dogs, for protection of its eggs, just as the magpie will fly at a crow for a like reason. To reply directly to Mr. Best's query, I should say the bird has learnt by direct experience (not instinct) to regard mankind in the light of an enemy; experience, because in the remote and sparsely populated districts, where the birds are not subject to the persecutions of schoolboys or other egg-hunters, they are of a much milder disposition, but as we approach the towns their ferocity increases.

In the mallee country Mr. Goudie has noted that a person going near the nest of a magpie is not attacked as he would be in the case of a nest nearer the coast, even when the mallee nest contains young. I have climbed to examine nests in this latter part, and although they contained young the old birds flew straight away to watch from a distance, offering no resistance whatever. When I was a schoolboy I made a visit to Point Cook with a companion, and we took fifteen young magpies from five nests. In not one case did the parents fly at us, although it was a pity they did not do so. Because the country was closed to everyone without a permit to traverse it, consequently the magpies were very trustful.

On Good Friday last I had an incident related to me of a single young bird in a nest half a mile from a house in the country behind Swan Hill. It was ready to fly. Being carried away and placed in the yard, the parent birds immediately perched in the same enclosure, and soon all went off together. This was the first notice of the parents, who doubtless had surveyed the whole proceedings. To me it seems, the thinner the population the less vicious the magpie. It is evidently the inherent love of the parent for its offspring that causes it to attack man, dog, or bird.

TWO NATURALISTS AT PHILLIP ISLAND.

By Joseph Gabriel and Henry Thos. Tisdall.

(*Read before the Field Naturalists' Club of Victoria, 10th April*, 1899.)

Starting from Prince's Bridge station by the 8 a.m. train and passing through the country often visited by the Club, such as Cheltenham, Mentone, Frankston, and Mornington, we arrived at Stony Point at 11.30; thence steamer was taken to Cowes. The approach to Cowes is rather pretty. Towards the north-east the southern part of French Island can be seen; particularly noticeable is a high promontory called Tortoise Head, where the Government proposed some years ago to build a fort.

The situation is excellent, as it commands the whole channel. Cowes itself is a pretty little scattered town at the extreme north of Phillip Island.

Here we were met by Mr. Denne, who drove us over to his place near Rhyll. The road lies over an undulating country fairly covered with White Gums, Box trees, and clumps of Ti-tree. Just out of Cowes we noticed the remains of a magnificent Banksia, *Banksia marginata.* It must have been a fine sight before the late hot weather finished it—or, rather, them, for we could see several more down towards the sea, but they were all dead. Mr. Denne's farm is fully five miles from Cowes, situated on the coast of a deep gulf or bight. Deep does not refer to the water, for its depth entirely depends upon the tide. When the tide is in the bight presents a noble appearance, both from its size and the beautiful wooded banks which enclose it, but when the tide is out it consists of a series of mud flats separated by channels. The margin of Mangrove bushes and the fact that the mud flats are completely covered with sea grass improve it immensely, but its beauty has departed for the time. The Mangrove bushes are from three to six feet high ; the leaves are ovoid, pointed and serrated, moreover they are so succulent as to be of great value to the settlers, for both cattle and horses devour them greedily. They thrive in soft black mud so close to shore that they are never more than two or three hours at a time surrounded by water. The grass weed forms the favourite food of the Black Swans, *Chenopis atrata* ; they eat only the roots, which they pull up at low tide, consequently the whole surface of this part of Western Port is covered with floating grass. After dinner we strolled round the shore of the bight. We noticed that, besides the deep margin of Mangroves (100 to 200 feet wide) there was an inner margin of low Saltbush, then a sward of native grass, and lastly a thick bush of Wattle, Casuarinas, small White Gums, &c. In many places the smaller trees were deeply grooved by spiral twiners of Tecoma and Clematis. Further on we came to grassy park-like land with small clumps of Ti-tree and isolated White Gums. We stopped for some time admiring the antics of some Magpie Larks, *Grallina picata,* at a waterhole. They would make a little rush into the water, flutter for a moment, then out on to a stick or stone and prink themselves down ; they took not the slightest notice of us, although we were only a few yards from them ; occasionally they would make a slight harsh note, but were generally quite silent, just rushing in and out of the water. These birds are truly named the bushman's friend, as their presence is a sure indication of water being near at hand. After tea we went for a short pull on the bay, but found the wind rather boisterous. The tide was full in, and the blue sky sparsely covered with fleecy clouds.

The twinkling stars, the ruffled water, and the misty shores, looking dark in the distance except where the lights from farm-houses shone forth, all made up as lovely a scene as could be imagined.

Next morning we started on the full tide about 7 a.m., and went merrily before the wind until we were just opposite Fisherman's Point. The point consists of gentle undulating grassy country with occasional trees, interspersed with isolated houses, which make up the village of Rhyll, all terminating in a spit of land and a long wooden jetty. The main channel runs past the point, and so south past Cowes. In this channel we commenced operations by throwing out the dredge. The force of the outgoing tide dragged the iron blade of the dredge along the bottom, tearing up not only seaweeds, but sponges and shells, as well as all manner of animal life, into the net. After a few minutes the dredge was hauled in with its mixed cargo, which was emptied into the bottom of the boat. Then commenced the sorting. The best seaweeds, polyzoa, &c., were carefully bottled; the larger seaweeds put to one side for drying; while the refuse shells and seaweeds were kept for manure. Sponges, crabs and other animal life were thrown overboard. We got a useful lesson at the very first haul, for amongst the seaweeds were some small fish, and whilst we were busy handling the seaweeds, the fish let us know they were there by their sharp spines. A sharp spine is no joke, as it penetrates to the bone.

Crustacea are well represented in Western Port, many species having been taken by Mr. Gabriel from time to time and handed over to others for identification, and probably many forms new to science may yet be found there. The Hermit Crab is there in its glory, and it is very interesting to watch. Volute shells seem to be their favourite retiring places, but they do not confine themselves to these alone, for they are frequently found in holes in stones, and in one instance it was related that one had so far degenerated as to choose a tobacco-pipe for its home. That interesting species *Ibacus peronii* (M'Coy's "Zoology," plate 199) has also frequently been obtained. Asteridæ are also in great variety, notably *Asterina calca*, *A. gunni*, and the common but beautiful Twelve-plated Shield Star, *Pentagonaster aurata*. Sea Urchins are very numerous, and the prickly forms assert themselves while we sort out the dredgings. *Goniocidaris tubaria* (figured in M'Coy's "Zoology," plate 100) are found literally in hundreds in 5 to 8 fathoms of water. An occasional young Cuttlefish, *Sepia apama* (?), may also be found.

Western Port has long been known by conchologists as a happy hunting ground, and the variety of molluscs to be found there is great indeed, some evidence of which you can see exhibited on

the tables by Mr. C. Gabriel. It would be impossible to enumerate the species, but it may be mentioned that one found by him, *Trichotropis gabrieli*, is new to science, and that there are several more which will probably prove to be new. As for Polyzoa, Mr. Gabriel has worked these waters for many years and can safely say that the collector of Polyzoa cannot go wrong. They grow here in abundance and in wonderful variety. Species are found here which do not occur in Port Phillip Bay and other places. The rare and lovely form, *Rhabdazoum wilsoni*, has been found at frequent intervals. The specimen upon which Dr. M'Gillivray founded his description (M'Coy's "Zoology," plate 178, fig. 4) was a very poor one, and the lamented doctor was delighted when some good examples were sent to him by Mr. Gabriel, who has found it attached to the piles of Cowes Jetty, but its natural habitat is a weedy bottom and shallow water, and it is with close observation to be found, together with *Pustulipora australis*, *Bicellaria ciliata*, and others, in fair abundance. Another rare form, *Amathia tortuosa*, has frequently been found, and have not only dredged it from deep water (21 fathoms), but have at low tide picked nice clumps of it off the banks of what is locally known as Reed's Channel.

Oysters are to be found in Western Port, and some time ago the Government allowed dredging to be carried on after a long interval of protection. The fishermen, however, soon cleared them off, and the few which are left are, we believe, again protected, and many dredges are now for sale. The fishermen are not the only enemies of the poor oyster, for we hear of his natural enemy the crab, whose method of attack is ingenious, to say the least of it. A little sand is first placed in the opening mouth of the oyster, which no doubt sets up an irritation, which causes the bivalve to open still more, when our wily crustacean seizes his opportunity and dexterously inserts a stone, and then helps himself to his delicious meal. This has been observed by a friend in Sydney Harbour, and new shells have been repeatedly dredged up which were found to be quite empty. After a while we landed on Sandy Beach, to the east of Cowes, for lunch. One of us elected to ride on Mr. Denne's back, but as the ground was firm for one but boggy for two he paid for his temerity, as the bearer, to save himself, gently dropped his burden in the water, much to the amusement of the other fellow. After lunch we continued classifying and dredging until about 5 p.m., then, hoisting sails, we made straight for Denne's Bight.

Next morning 6 a.m. saw us busily engaged arranging our several specimens of seaweeds and Polyzoa, then breakfast and off in the boat. This day we went past San Remo and dredged some fine seaweeds, particularly *Claudea elegans*. We made certain of this being a local seaweed, as it came up attached to fair-sized stones.

It was surmised before by Mr. Luehmann that this plant was indigenous to Western Port, but as it had only been obtained heretofore as drift, this point was not quite settled until now. We now made for Cape Woolamai, where we landed at the granite quarry. It was from this quarry that the stone was obtained for the Equitable Insurance building, corner of Collins and Elizabeth streets. The higher land, towards the Cape, is simply riddled with the nests of the Mutton Bird, *Nectris brevicaudus*. These birds come in thousands in the month of November. They always seem to occupy the same nests year after year, only each year they scrape the hole a little deeper. Each nest only contains one egg. Mr. Denne performed the operation of getting the eggs or birds. First he put in a stick about two feet long and listened carefully for a snake's hiss; all being quiet, he pulled out a fine fluffy bird as big as a small fowl. The bird winked and blinked and tried to get inside his waistcoat out of the light; so after taking a good look we put him near the hole, when he quickly scuttled out of sight. There is a splendid view from this hill of the South Gippsland coast past Cape Paterson and Cape Liptrap towards the high lands of Wilson's Promontory.

Turning back from the entrance we tried the channel between San Remo and Newhaven, with great success, finding many interesting forms of seaweed and Polyzoa. Among the Polyzoa were *Retepora avicularis*, *Microporella diadema*, *Bugula dentata*, *Carbasea reticulum*, *Cellepora glomerulata*, and *Pustulipora australis*. The water here is comparatively shallow, and in fine weather the bottom can readily be seen, revealing, as we gently drift, under the influence of the tide, a pretty and interesting sight. Among the other growths we find that sponges abound in great quantities and variety. Of sponges 120 species were collected by Mr. Gabriel some few years since, and placed in Professor Dendy's hands, at his request, for working out. Some of these were found to be very rare and of great interest, and altogether were a useful addition to the large number collected in Port Phillip Bay by the late Mr. Bracebridge Wilson.

Well satisfied by our success we now made for home, and, by frequent tacking, reached our anchorage about dusk.

LIST OF BIRDS OBSERVED AT BURNLEY.

By A. Campbell, Jun.

(*Read before the Field Naturalists' Club of Victoria, 8th May*, 1899.)

As the bird life of a large metropolis is always interesting, it is my intention to bring under your notice a list of the birds I have seen frequenting or visiting the Richmond Park during the four years (1895 to 1898) I attended the School of Horticulture, Burnley, which is situated in the Park, or Survey Paddock, as it was known in earlier days.

The Richmond Park, with an area of about 200 acres, is barely four miles from the General Post-Office, and is situated on the Yarra, being enclosed on three sides by that river. It seems to be more favoured by bird life than other places about the metropolis, such as Albert, Fawkner, and Studley Parks, as the list of birds will show. Possibly the reason is its being a less disturbed retreat, and during my outdoor studies I had good opportunities of observing the birds which came to seek the shelter of that stretch of timber.

Occasionally persons are to be seen, in spite of the notices and the *Game Act*, shooting at any birds that come within reach, but from my list it will be seen that very few species are permanent dwellers, the majority being visitors or sojourners during the migrating seasons.

The following is the list, and a few notes are given on some of the species. The names are from the "Vernacular List":—

Circus gouldi	...	Harrier (Swamp-hawk)
Astur approximans	...	Goshawk
Accipiter cirrhocephalus	...	Sparrowhawk
Haliastur sphenurus	...	Whistling Eagle
Elanus axillaris	...	Black-shouldered Kite
Falco melanogenys	...	Black-cheeked Falcon
F. subniger	...	Black Falcon
Hieracidea orientalis	...	Brown Hawk
Cerchneis cenchroides	...	Kestrel
Ninox boobook	...	Boobook Owl
Corone australis	...	Raven
Strepera graculina	...	Pied Crow-Shrike
Grallina picata	...	Magpie Lark
Collyriocincla harmonica	...	Grey Shrike-Thrush
Graucalus melanops	...	Black-faced Cuckoo-Shrike
Lalage tricolor	...	White-shouldered Caterpillar-eater
Petrœca leggii	...	Scarlet-breasted Robin
P. phœnicea	...	Flame-breasted Robin
Malurus cyaneus	...	Blue Wren
Rhipidura albiscapa	...	White-shafted Fantail
R. rufifrons	...	Rufous Fantail
R. tricolor	...	Black and White Fantail
Sisura inquieta	...	Restless Flycatcher
Acrocephalus australis	...	Reed Warbler
Acanthiza pusilla	...	Brown Tit
A. lineata	...	Striated Tit
Cinclorhamphus rufescens	...	Rufous Song-Lark
Ephthianura albifrons	...	White-fronted Chat
Gymnorhina leuconota	..	White-backed Magpie
Cracticus destructor	...	Butcher-bird
Falcunculus frontatus	...	Yellow-bellied Shrike-Tit

Pachycephala gutturalis ...	White-throated Thickhead
P. rufiventris	Rufous-breasted Thickhead
Acanthorynchus tenuirostris ...	Spine-bill
Zosterops cœrulescens ...	White-eye
Ptilotis penicillata	White-plumed Honey-eater
Manorhina garrula ...	Noisy Minah
Acanthochæra carunculata ...	Red Wattle-bird
A. rufigularis	Spiny-cheeked Honey-eater
Dicæum hirundinaceum ...	Flower-pecker
Pardalotus ornatus ...	Red-tipped Pardalote
Hirundo neoxena	Swallow
Petrochelidon ariel ...	Fairy Martin
Anthus australis	Ground-lark
Artamus superciliosus ...	White-browed Wood-Swallow
A. personatus	Masked Wood-Swallow
A. sordidus	Wood-Swallow
Staganopleura guttata ...	Spotted-sided Finch
Ægintha temporalis ...	Red-browed Finch
Micropus pacificus ...	White-rumped Swift
Chætura caudacuta ...	Spine-tailed Swift
Alcyone azurea	Blue Kingfisher
Dacelo gigas	Brown Kingfisher
Halcyon sanctus	Sacred Kingfisher
Cuculus pallidus	Pallid Cuckoo
Cacomantis flabelliformis ...	Fan-tailed Cuckoo
Chalcococcyx basalis ...	Narrow-billed Bronze Cuckoo
C. plagosus	Bronze Cuckoo
Glossopsittacus concinnus ...	Musk Lorikeet
G. porphyrocephalus ...	Purple-crowned Lorikeet
G. pusillus	Little Lorikeet
Calyptorhynchus funereus ...	Black Cockatoo
Cacatua galerita	White Cockatoo
C. roseicapilla	Rose-breasted Cockatoo
Aprosmictus cyanopygius ...	King Lory
Platycercus elegans ...	Crimson Parrakeet
P. eximius	Rosella
Psephotus hæmatorrhous ...	Crimson-bellied Parrakeet
Nanodes discolor	Swift Lorikeet
Melopsittacus undulatus ...	Warbling Grass Parrakeet
Hypotænidia philippinensis ...	Pectoral Rail
Lobivanellus lobatus ...	Spur-winged Plover
Larus novæ-hollandiæ ...	Silver Gull
Ardea pacifica	White-necked Heron
A. novæ-hollandiæ ...	White-fronted Heron
Nycticorax caledonicus ...	Night Heron
Pelicanus conspicillatus ...	Pelican
Phalacrocorax novæ-hollandiæ	Black Cormorant

P. melanoleucus ...	...	Little Cormorant
P. strictocephalus ...	...	Little Black Cormorant
Anas superciliosa ...	...	Black Duck
Spatula rhynchotis	...	Shoveller
Biziura lobata ...	...	Musk Duck

The Black Falcon is a scarce bird, and a very rare visitor to the southern part of our colony. I saw only one specimen. My attention was directed to this bird by the unusually large and noisy congregation of Indian Minahs, Magpie Larks, and White-plumed Honey-eaters in some trees near the river. On reaching the bank I saw the Falcon in a small willow bush near the water's edge. It did not seem at all pleased with the attention the other birds paid it, but there was no mistaking its identity. It was a mature specimen, with bright yellowish bill and legs showing well against its black plumage.

The Black-shouldered Kite is also a rare visitant, but the Black-cheeked Falcon, the Goshawk, and the Sparrowhawk are to be seen during the late summer and autumn months of almost every year.

One season (1897) a Brown Hawk stayed in the vicinity of the Horticultural School for nearly three months—February, March, and April—and kept all other birds in terror. The hawk was worth all the guns, nets, and scarecrows in that institution, for the Minahs (Indian), instead of destroying the fruit on the fruit trees, as they are accustomed, seemed to spend nearly all their time flying about in flocks and keeping this hawk in sight. One afternoon I saw this same hawk catch a Cicada or Locust in mid-air, and while soaring round proceed to eat it from its claws.

Several Boobook Owls have for years been living in the flower garden, and woe betide them if the White-plumed Honey-eaters find them out during the daytime in the thick trees or shrubs in which they sleep. One day I caught a specimen, and after keeping it for two days in a cage restored it to freedom.

The Flame-breasted Robin is first seen in the Richmond Park during the last few days of March or in the beginning of April. They generally arrived shortly after the very windy weather that usually comes about that time of year. One note I have for 8th of June, 1897, which was very windy, shows that a flock of probably not less than 200 birds arrived, and passed on after a few hours. There was not a Red-breasted one among them. The Flame Robin leaves again for its breeding grounds during the latter part of August, and by the first week in September all have disappeared. The Scarlet-breasted variety is occasionally to be seen during the winter months.

The Rufous Fantail was seen on two occasions—in the late spring of 1896, and again in 1897. The birds were evidently on their migratory journey to the cool gullies of the ranges.

There was a family of Blue Wrens living among the nursery plots and hedges at the Gardens, and it was interesting to watch them. The family consisted of one male and two females. As winter was drawing on the blue and black coat of the male would disappear, and there would then be *three* little brown wrens hopping about the garden, but *one* had a blue tail. About September the one with the blue tail would again don his blue colours and appear as the male. I never actually saw this male bird while its colours were changing, but I believe it takes a very short space of time for the moult to occur, and the bird probably remains in hiding during the process.

Reed Warblers are plentiful along the River Yarra. They occasionally leave the willows and the water to breed, for two nests were taken in fennel plants, and another with eggs was found in some dock-weed. The birds leave the district in February and March, appearing again in September.

In November, 1896, several pairs of Rufous Song-Larks made their appearance. They had evidently been driven from their accustomed breeding grounds by the dry season. The next month, December, several nests were found. One contained four eggs, another three, and another one, while a fourth nest was seen with young. The following year the larks again appeared. The birds, with but one exception, built their nests in long kangaroo grass. The female alone performed the task of incubation.

The Spiny-cheeked Honey-eater is another of our winter visitants, coming in April and remaining till September.

The Flower-pecker, or Swallow Dicæum, is fairly plentiful during the winter months, but as spring approaches it leaves for more suitable nesting grounds.

The Yellow-bellied Shrike-Tit, however, stays with us all the year round. During the winter time it is sometimes seen busy among the fruit trees in search of food. It seems to be partial to the small case-moths, which are to be found hanging among the branchlets. With its strong bill and claws it soon tears an opening in the tough case sufficiently large to pull the insect out. Numbers of these empty cases with the sides torn are to be seen as evidences of the Shrike-Tit's usefulness.

The Wood-Swallows are interesting birds, inasmuch as in October and November, 1895, the White-browed and Masked varieties came in tremendous numbers. The White-browed built their nests in every convenient tree or shrub, including numerous fruit trees, and one nest was taken in a clump of raspberry canes. The following year, 1896, and also in 1897, the birds came to breed, but not in such great numbers. The Masked variety, though plentiful, did not nest in the Richmond Park. The Sordid Wood-Swallows leave the district regularly every March and appear again about the end of August.

The Australian Swift is another scarce bird, and I only identified a solitary example. This bird, one day in March (1895), came and alighted on a path not ten feet from where I was working. It seemed unable to balance itself on its feet, and after a second or two took its departure. It is a very unusual thing for a Swift to alight while on its southern tour, and this is the only occasion on which I have known anything of the sort. This particular bird may have been over-fatigued, and consequently dropped behind. Other Swifts were passing at the time.

The Cuckoos are interesting migrants, all four species leaving as the winter comes on, but one year (1897), I see from my notes, I saw the Fan-tailed variety three times during winter—viz., second week in April, early in May, and on 21st of June. I also observed a Bronze Cuckoo the day previous to the last-mentioned date; but the winter of 1897 was a mild one, and that may account for the birds remaining. I have observed both the Fan-tailed and the Narrow-billed species feeding upon the caterpillars of the vine. The earliest dates I have for the arrival of the Pallid Cuckoo are 23/8/96 and 11/8/97, and the latest date of hearing its note 15th of February (1897), but I believe that for a month or six weeks previous to taking its departure the Pallid Cuckoo does not whistle at all.

Musk Lorikeets came in great numbers during the Christmas of 1895 and destroyed a large amount of fruit. The Purple-crowned variety put in an appearance in 1896, and also in 1897, and were to be seen feasting among the blossoms of the Blue Gum trees. During the latter year the little Purple-crowned Lorikeet was to be seen from March until September. The Swift and the Little Lorikeets also appeared during the same season.

During the month of January, 1897, a party of Funeral Cockatoos paid a visit to Richmond Park. No doubt they were driven from the Dandenong Ranges, or elsewhere, by the exceptional bush-fires which were raging at that time.

It is a rare thing to see the Warbling Grass Parrakeet so near Melbourne, but a flock of some dozens of these pretty little birds was in the Richmond Park on the 18th May, 1897.

Several Pectoral Rails inhabit the rush-lined margin of a swampy lagoon near the Yarra, and early in the month of December, 1895, a nest containing eight eggs was found in some tall grass in the vicinity.

Other birds driven southward by the drought in the interior were the Herons. In 1895—the first of the dry years—the Pacific Heron, the Night Heron, and the White-fronted Heron came in considerable numbers about Melbourne. Some remained for several weeks on the Yarra at Burnley, but since only an odd specimen of each variety has been seen.

A number of Cormorants and Duck were to be seen about the

end of August and in the early part of September, 1896. At that time flood waters had caused the Yarra to run nearly bank high, and in doing so the small flat at the junction of Gardiner's Creek with the Yarra was under water. Each evening, for four or five days, about five o'clock, a batch of Cormorants (Little Black) would arrive from a south-westerly direction and circle round above this flat. Soon they would be joined by a second and a third batch, until quite three or four hundred had collected, and as night fell they would all roost nithe trees that were standing in water. After the Yarra subsided nothing more was seen of the Cormorants.

A bird not included in my list, but nevertheless might be so, is the Australian Bee-eater, *Merops ornatus*. While passing through Toorak one evening in summer (14/12/96) on my way homewards from the Horticultural School, I observed a solitary specimen. How the bird came to be so far out of its usual habitat I cannot explain.

NOTES.

Early Nesting.—It may be interesting to record that on Easter Monday last, 3rd April, I flushed a crow, *Corvus coronoides*, from her nest, upon which she was sitting very close and seemed reluctant to leave. On 15th April, at Melton, a nest of *Ephthianura albifrons* was observed, with a full clutch of three eggs, while many others were in course of construction.—T. A. Brittlebank. Myrniong, 18th April.

Description of the Eggs of the Russet-tailed Ground-Thrush, *Geocichla heinii*, Cabanis.—In my MSS. (now in London) I have described an egg of a Ground-Thrush, from South Queensland, in the collection of Mr. Dudley Le Souëf, which I believe is referable to the abovenamed species. I have since received similar eggs from the Richmond River district (N.S.W.), which are smaller, less marked, and greener in the ground-colour than those of either of the southern birds, *G. lunulata* and *G. macrorhyncha*. Dimensions in inches of a pair—(1) 1.19 x .82 ; (2) 1.18 x .85. Two eggs are usually a clutch. Breeding months, as far as is yet known, are from September to January.—A. J. Campbell. Armadale, 20th May, 1899.

The Little Eagle, *Nisætus (Aquila) morphnoides*.—During a residence of upwards of 30 years in this district (Somerville), 25 at least of which I have been a very close observer of both the residental and also the migratory species of birds, I have never previously met with the Little Eagle. The specimen exhibited to-night was shot within half a mile of the railway station, where it had been for some two or three weeks making occasional raids upon some poultry the property of a resident, who having described the bird to me previous to shooting it, I had imagined to

be the Whistling Eagle, *Haliastur sphenurus*, which species is common here during the autumn months. The fact is worthy of note as showing the extended range of habitat of this bird in isolated cases, and probably under exceptional circumstances.—Geo. E. Shepherd. Somerville, 3rd May, 1899.

Description of the Eggs and Nest of the Silvery-crowned Friar-bird, *Philemon argenticeps*, Gould.—Mr. R. Hislop found the nest of this bird on 24th December, 1896. It was suspended near the end of a branch of a eucalyptus tree, in open forest country, and the nest was made of long shreds of bark and lined with grass seed-stalks ; it measures—external depth, 7 inches ; internal, 3 inches ; external diameter, 5 inches; internal, 2¾ inches. The eggs are very light creamy pink, with a few light purplish-brown markings, and appearing as if beneath the surface of the shell are markings of a faint purplish hue, they being more numerous at the larger end, and more plentiful than the surface markings. They are in shape a swollen oval, being smaller at one end, but also having a slight tapering appearance at the larger end. They measure—(*a*) 1.12 x .79, (*b*) 1.14 x .81, (*c*) 1.10 x .81 inch.—D. Le Souef. 12th June, 1899.

Pritchard's Megapode.—Dr. Snowball recently received three eggs of *Megapodius pritchardi*, Gray, accompanied by the following note :—"Malan eggs from Ninafou or Good Hope Island, situated about 15° south latitude and 177° west longitude. This bird, known to exist only on this island, is peculiar in its habits, and is capable of flying directly it is hatched. The schooner that brought these eggs to New Zealand met the s.s. *Waikare* on her island trip, when one of the eggs had hatched. The bird was given to Mr. James Mills, of the U.S.S. Co. Many Melbourne people being on board the *Waikare* will remember the incident, and probably know or have heard more about the bird's habits than the writer. It is a very rare bird." Taken 6/9/98. In Lloyd's "Natural History," part v., the range of this Megapode is given as Ninafou, or Hope Island, and Capt. M'Leod, who visited the island, says :—"The bird is restricted to the scrubs in the centre of the island, about a large lagoon of brackish water. The birds lay their eggs on one side only of this lagoon, where the soil is composed of sulphur-looking sand. The eggs are deposited from one to two feet beneath the surface. The locality is under the protection of the king or chief, and by his permission only can the birds or eggs be procured. As many as forty eggs are said to have been obtained in one mound." It will be seen from the specimens exhibited that they are little more than half the size of those of *Megapodius tumulus*, found in Australia, and the description of the bird gives a corresponding variation in size.—G. A. Keartland.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that the Club's year ended on 30th April last, and that subscriptions (15s.) for 1899-1900 are now due. The Hon. Treasurer's address is given above.

PRACTICAL EVENING.

MONDAY, 24th JULY.

"Hints on the Classification of Insects," by Mr. F. G. A. Barnard.

The Committee trust that members will more largely avail themselves of these meetings.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Vol. XVI.—No. 4. August, 1899.

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THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

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Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 14th August, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. F. Baker .. .. Hoddle Street, Richmond.	J. Gabriel ..	G. A. Keartland
Mr. Louis K. M'Nab .. Surrey Road, Hawksburn.	F. Wisewould ..	R. Hall

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

(Authors are requested to hand in a brief resume of their papers to the Secretary.)

1. By Mr. C. Walter (communicated by Mr. C. French, jun.), "Records of Plants New to Victoria, and New Districts for Victorian Plants."
2. By Mr. D. Le Souef, C.M.Z.S., "Description of Birds Eggs New to Science."
3. By Mr. R. Hall, "Notes on the Habits of the Blue Wrens."
4. By Rev. W. Fielder, F.R.M.S., "Recent Researches in the Structure of Protoplasm."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

❋ EXCURSIONS. ❋

SATURDAY 19TH AUGUST. Cheltenham. Under the leadership of Messrs. C. French, jun., and J. Stickland. Meet at Prince's Bridge Station 1.10. p.m. train. Botany and Pond Life.

SATURDAY, 9TH SEPTEMBER. Botanical Gardens. Under the leadership of Mr. F. Pitcher. Meet at office there 2.30. p.m. Botany.

EXCURSION PROGRAMME, 1899—1900,
Is now ready for distribution, and should be received with this Naturalist.

THE

Victorian Naturalist.

Vol. XVI.—No. 4. AUGUST 10, 1899. No. 188.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th July, 1899. The president, Mr. J. Shephard, occupied the chair, and about 45 members and friends were present.

REPORTS.

The president stated that a number of members had paid a visit to the Biological School at the University on Saturday afternoon, 17th June, when—in the unavoidable absence of Professor Spencer—Mr. T. S. Hall, M.A., conducted the party over the building, and pointed out the more interesting of the specimens in the museum.

The hon. secretary reported that a practical meeting had been conducted by Mr. O. A. Sayce on Monday evening, 26th June, when the ordinary methods of freezing and cutting sections for microscopical examination were fully demonstrated; in addition to which Mr. Sayce showed the simplicity and utility of a new method, originated by him, of freezing by means of chloride of ethyl, which does not require any special atomizer or other accessory apparatus.

The hon. librarian reported the receipt of the following donations to the library:—"Annual Report, Department of Mines, Victoria, for 1898," from the Department; "Memoirs of the Geological Survey of New South Wales, Ethnological Series, No. 1—Aboriginal Carvings of Port Jackson and Broken Bay, by W. D. Campbell, F.G.S.," also "Records of the Geological Survey, New South Wales," vol. vi., part 2, from Department of Mines and Agriculture, New South Wales; "Proceedings Australasian Association for Advancement of Science," vol. vii., Sydney, 1898, from the Association; "Proceedings Linnean Society of New South Wales," 1898, part 4, from the Society; "Description of *Ptilotis leilavalensis*, a new Honey-eater from North Queensland," also "Description of Nest and Eggs of *Micræca pallida*, De Vis," by Mr. A. J. North, C.M.Z.S., from the author; also a number of microscopical and other magazines from the Rev. J. J. Halley, to whom a vote of thanks was accorded.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. H. Hartnell, W. J. Morgan, J. A. Harper, E. Meeking, and S. P. Townsend were duly elected members of the Club.

GENERAL BUSINESS.

On the motion of Mr. A. J. Campbell, it was decided that a camp-out for about a week be held in the Lerderderg Ranges, Bacchus Marsh district, early in November, and Mr. A. Mattingley was appointed hon. sec. for the camp-out.

The secretary was instructed to write to the Minister for Lands, asking him to take steps to prevent the destruction of the Wattles, in the parks and Government reserves around Melbourne more especially, during the flowering season.

PAPERS.

1. By Mr. C. Walter, communicated by Mr. C. French, jun., entitled "A Trip to the Victorian Alps."

The author gave a concise account of his trip to Mt. Hotham and the Buffalo Mountains, in January last, mentioning the more important plants collected, so that the paper should prove of great use to future collectors in that district.

Messrs. M'Alpine, Barnard, Tisdall, Kitson, and R. Hall joined in the discussion which followed.

2. By Mr. R. Hall, entitled "Three Phases in the Plumage of *Pomathorinus superciliosus*."

The author pointed out in his paper and showed by the aid of specimens the various phases in the plumage of the White-browed Babbler, which, though now only termed phases, may on further investigation prove to mark new varieties.

3. By Mr. D. M'Alpine, entitled "Plant or Animal—Myxomycete or Mycetozoon?"

The author went critically through the stages of existence of this form of life, and showed wherein it resembled animal and wherein vegetable, summing up in favour of its being classed under the vegetable kingdom.

Mrs. Martin, Messrs. Sayce, Tisdall, Stickland, Barnard, and the president joined in the discussion that followed, to which Mr. M'Alpine briefly replied.

NATURAL HISTORY NOTES.

Mr. D. Le Souëf forwarded a note on the finding of a bird peculiar to the sea—the Mutton-bird, *Puffinus tenuirostris*—at the Korong Vale Reservoir. This bird was forwarded to the Zoological Gardens, and had just died, after living there a month.

Mr. A. E. Kitson read a note on a very large half-bred Dingo shot near Tatong, Benalla.

EXHIBITS.

By Mr. C. C. Brittlebank, Myrniong.—Water-colour drawings of Robins. By Mr. A. Coles.—Pair of Black-billed Spoonbills, *Platalea regia*, shot at Echuca in June last. By Mr. C. French, jun.—2 cones of *Banksia grandis*, from Western Australia. By

Mr. D. M'Alpine.— 51 specimens of Myxomycetes, received from Mr. Lister, author of "A Monograph of the Mycetozoa;" specimens of Fungi—*Stenonitis fusca* (from Doncaster), *Hypholoma fasciculare* on raspberry roots (from Wandin Yallock), and *Isaria graminiperda* (destroying grass in the Lismore district); also, micro. slide with bacteria, stained, the cause of the movement of the spores of Clathrus, mentioned by Mr. Tisdall at last meeting. By Mr. F. M. Reader.—Dried plants of *Xanthorrhœa australis*, Sm., *Goodenia ovata*, R. Br., and *Erechtites mixta*, D. C., new for the north-west of Victoria.

After the usual conversazione the meeting terminated.

Omission.—Mr. F. M. Reader's name should have appeared among the authors of papers in last *Naturalist*, p. 33.

BIRDS OF MYRNIONG AND SURROUNDING DISTRICTS.

By C. C. Brittlebank.

(*Read before the Field Naturalists' Club of Victoria*, 10*th April*, 1899.)

The following list has been compiled from notes taken by my brother and myself during the past six years. The area of our observations extends from Melton on the east to the Moorabool River on the west, north to the Lerderderg River, and south to the Brisbane Ranges. Myrniong is situated on the main Ballarat road, 42 miles north-west from Melbourne and about 14 miles south from the Dividing Range, which at this point is somewhat below the average altitude. Plants and birds have probably been able to pass this barrier, as there are several species of each found in this district which are almost peculiar to north and north-west Victoria, such as Mallee, *Eucalyptus dumosa*, Murray Pines, *Callitris cupressiformis*. The district has an altitude of from 900 to 1,300 feet above sea level, rising in Mt. Blackwood, a spur from the main divide, to 2,430 feet. In October, 1896, the Fuscous Honey-eater, *Ptilotus fusca*, appeared in great numbers, and has since that date become firmly established in an area not exceeding 100 acres in extent. In compiling this list we have used the "List of Vernacular Names for Australian Birds" recently published by the Australasian Association for the Advancement of Science.

Birds breeding in the district are distinguished by an asterisk.

*Circus assimilis
C. gouldi
Astur (Leucospiza) novæ-hollandiæ
A. approximans
Accipiter cirrhocephalus
*Uroaëtus audax
*Haliastur sphenurus
Lophoictinia isura
Elanus axillaris

E. scriptus
*Falco melanogenys
*F. subniger
F. lunulatus
*Hieracidea orientalis
*Cerchneis cenchroides
*Ninox boobook
Strix delicatula
*Corvus coronoides
*Corone australis
*Strepera cuneicaudata
*Corcorax melanorhamphus
*Oriolus viridis
Chibia bracteata
*Grallina picata
*Collyriocincla harmonica
*Graucalus melanops
Edoliisoma tenuirostre
*Lalage tricolor
*Micrœca fascinans
*Petrœca leggii
*P. phœnicea
*P. rhodinogastra
*P. goodenovi
*P. bicolor
Smicrornis brevirostris
*Malurus cyaneus
*Rhipidura albiscapa
R. rufifrons
*R. tricolor
Myiagra plumbea
*Sisura inquieta
Monarcha melanopsis
*Geocichla lunulata
Megalurus gramineus
*Cisticola ruficeps
*Chthonicola sagittata
*Acanthiza nana
*A. pusilla
*A. lineata
*A. chrysorrhoa
*A. reguloides
*Sericornis frontalis
*S. osculans
*Cinclosoma punctatum
*Pomatorhinus temporalis
*P. superciliosus
*Cinclorhamphus cruralis
*Ephthianura albifrons
*Xerophila leucopsis
*Gymnorhina leuconota
*Cracticus destructor
Falcunculus frontatus
*Eopsaltria australis
*Pachycephala gutturalis
*P. rufiventris
*Climacteris leucophæa
*C. scandens
*Sittella chrysoptera
*Acanthorynchus tenuirostris
*Zosterops cœrulescens
*Melipthreptus lunulatus
*M. brevirostris
*Meliphaga phrygia
*Ptilotis fusca
P. sonora
*P. chrysops
*P. leucotis
*P. auricomis
*P. penicillata
*Meliornis australasiana
*M. novæ-hollandiæ
*Manorhina garrula
*Acanthochæra carunculata
*A. mellivora
*A. rufigularis
Philemon corniculatus
*Dicæum hirundinaceum
*Pardalotus ornatus
*P. punctatus
*Hirundo neoxena
*Petrochelidon nigricans
*P. ariel
*Anthus australis
*Artamus superciliosus
*A. personatus
*A. sordidus
*Staganopleura guttata
*Ægintha temporalis
*Mirafra horsfieldi
Micropus pacificus
Chætura caudacuta
*Podargus strigioides
*Ægotheles novæ-hollandiæ

Eurystomus australis
*Alcyone azurea
*Dacelo gigas
Halcyon sanctus
*Cuculus pallidus
*Cacomantis flabelliformis
C. variolosus
*Chalcococcyx basalis
*C. plagosus
Trichoglossus novæ-hollandiæ
*Glossopsittacus concinnus
*G. porphyrocephalus
G. pusillus
Calyptorhynchus funereus
*Cacatua galerita
*C. roseicapilla
Calopsittacus novæ-hollandiæ
*Platycercus elegans
*P. eximius
Neophema venusta
Nanodes discolor
*Phaps chalcoptera
*Coturnix pectoralis
Synœcus australis
*Turnix varia
*T. velox
*Pedionomus torquatus
*Hypotænidia philippinensis
*Porzana palustris
*Porphyrio melanonotus
Eupodotis australis
*Burhinus grallarius
*Lobivanellus lobatus
*Zonifer tricolor
Œgialitis melanops
Hydrochelidon hybrida
Larus novæ-hollandiæ
Geronticus spinicollis
Threskiornis strictipennis
Ardea pacifica
*A. novæ-hollandiæ
Herodias alba
Nycticorax caledonicus
Botaurus poicilopterus
Pelicanus conspicillatus
Phalacrocorax novæ-hollandiæ
P. melanoleucus
*Podiceps nestor
*P. novæ-hollandiæ
Chenopis atrata
Anas superciliosa
Nettion castaneum
N. gibberifrons
Spatula rhynchotis
Biziura lobata

ORNITHOLOGICAL NOTES FROM THE NORTHERN TERRITORY.

A List of the Birds, with the Nests and Eggs, obtained by Mr. E. Olive on the Katherine River.

By D. Le Souëf, C.M.Z.S.

(*Read before the Field Naturalists' Club of Victoria, 8th May*, 1899.)

In the following notes are enumerated the more important birds obtained by Mr. E. Olive when collecting ornithological specimens in the Northern Territory during October, November, and December, 1898, and part of January, 1899, for Dr. W. Snowball, Dr. C. Ryan, and myself. Mr. Olive's field-notes are appended in brackets.

Eurostopus argus, Spotted Nightjar.

These birds seem to be very plentiful all over N.W. Australia, the open, stony character of much of the country suiting them, as they rarely lay anywhere except on a ridge more or less

stony, and then preferably under the shade of a small tree or shrub, although the trees which grow in the places where these birds are found give but a scanty shade. If the exact spot where the bird rises from the bare ground is not noted, it is a very difficult matter to find the egg, its colour harmonizing so well with its surroundings. I have never known these birds to rest on a tree, but always on the ground. They feed on insects, which they catch while on the wing. I do not think they are ever found in the scrub-covered country on the north-east coast, the *Caprimulgus macrurus*, Large-tailed Nightjar, there taking their place. A fresh egg was found by Mr. Olive on 21st October, and the male bird shot as it flew off. The egg was marked in a peculiar way, being pale green all over, except having one large dark spot near one end, which has the appearance of a hole. The egg measures 1.30 x .92 inch.

(Always in pairs, and after once being put up they were very hard to find, and when on the ground can hardly be recognized from the leaves and stems. They prefer camping on stony ridges.)

ORIOLUS AFFINIS, Northern Oriole.

This bird is found all over Northern Australia, but appears more plentiful on the eastern side. Mr. Olive found one nest, and that on 14th November, situated in an ironbark tree about 10 feet from the ground; it contained one egg only, the full clutch being three. The open nest was suspended from a fork near the end of a branch, and was outwardly composed of shreds of bark and coarse grass, with a little cobweb, and lined with the seed-stalks of grass. It measures—external depth, 4 inches; internal, 2¾ inches; external diameter, 5 inches; internal, 4 inches. The ground colour of the egg is light buff, with large, irregular dark brown blotches on it of varying shades, they being more plentiful at the larger end. Some of the markings appear as if beneath the surface of the shell, they being of a dark mauve. It measures 1.27 x .87 inch.

SPHECOTHERES FLAVIVENTRIS, Yellow-bellied Fig-bird.

These birds extend right across the northern portion of the continent, and are in some places very plentiful, especially in the Cooktown district, where in the open forest country they consort with the *Philemon buceroides* (Helmeted Friar-bird) and *Philemon argenticeps* (Silvery-crowned Friar-bird), and frequently nest in the same tree; they are lively, active birds, and very noisy, and they, together with the others mentioned, when nesting in the same tree, keep up a perfect babel if anyone is near. Their eggs are generally difficult to procure, as the nests are built at the end of a thin branch. The only way I could obtain the type specimens was to get a native to climb up the tree with a long, thin stick and push

the eggs out of the nest one by one, and as they fell some thirty feet I caught them uninjured in my hat. The nest Mr. Olive sent was built in a bunch of mistletoe growing on a eucalyptus tree 20 feet from the ground, and is composed of twigs and tendrils; it is very thin and can easily be seen through from below. It is a shallow, open structure, and measures—external depth, 2½ inches; internal, 1¼ inches; external diameter, 5 inches; internal, 3¼ inches. He found it on 5th December, and the eggs were fresh, and he shot the male off the nest, and on opening its stomach found it contained fruit only. The ground colour of the eggs is brownish-green, with irregular markings of a dark reddish-brown, slightly more numerous at the larger end, and a few beneath the surface of the shell, being of a purplish hue; they measure—(*a*) 1.30 x .80, (*b*) 1.24 x .81, (*c*) 1.18 x .81 inch. The eggs of these birds vary very considerably, and the five clutches in my collection run from very light green ground colour with small freckled markings to a brown ground colour with large dark reddish-brown markings, and the intermediate shades; the eggs vary in size and shape, some being more elongate than others.

(These birds are scarce, and travel in flocks while feeding but only in pairs when near their nest, and get greatly excited if that structure is interfered with.)

GRALLINA PICATA, Magpie Lark.

The Magpie Lark is universally distributed over Australia, wherever water is found. In the Royal Park, Melbourne, which is surrounded more or less by suburbs, a flock of about thirty of these birds is to be found nearly all the year round, but only two pairs nest regularly, and nearly always in the same tree, and that they have done for many years past; but the young they rear always seek fresh scenes. The nesting season in Northern Australia depends a good deal on the season, but if favourable November seems to be the principal month. The nest is an open structure, composed outwardly of mud, with a little grass well mixed in, and lined inside with grass seed-stalks. It weighs 1 lb. 7 ozs., and measures — external depth, 4½ inches; internal, 2½ inches; external diameter, 5½ inches; internal, 4 inches. The eggs vary considerably in colour, markings, and size, but the commonest type have the ground colour white, with dark brown, irregular markings, forming a zone at the larger end. A few markings appear beneath the surface of the shell, they being of a purplish colour. A clutch Mr. Olive sent of the above type measure—(*a*) 1.13 x .81, (*b*) 1.11 x .80, (*c*) 1.16 x .82 inch. Another clutch is much smaller, and they have the ground colour light brownish pink, with light chocolate markings, mostly on the larger end, and forming a zone, also purplish markings as if beneath the surface of the shell. They measure—(*a*) .96 x .81, (*b*) .99 x .79, (*c*) .98

x .80, (*d*) .94 x .78 inch. Other eggs, again, have very small markings, giving them a freckled appearance.

(These birds were very plentiful. I found 27 of their nests with eggs in, mostly during November, but, there being plenty of rain, the season was very favourable.)

COLLYRIOCINCLA BRUNNEA, Brown Shrike-Thrush.

These birds are found right across the northern portion of Australia, from Cooktown on the east coast to Derby on the west. They have a beautiful clear note. Mr. Olive found one nest on 18th October, about a foot down in the hollow of a eucalyptus stump, about 5 feet from the ground, and another in a bunch of mistletoe. It is an open nest, and composed of fine twigs and long grass, and lined with dark-coloured rootlets, and measures—external depth, 4 inches; internal, 2¼ inches; external diameter, 6 inches; internal, 3½ inches. The eggs have a white ground, with a few fair-sized reddish-brown markings, slightly more numerous at the larger end, and markings beneath the surface of a dark grey. The eggs measure—(*a*) 1.3 x .78, (*b*) 1.5 x .79 inch.

(Sometimes travel in small flocks, and get greatly excited if their nest or eggs are taken. They are plentiful, and build anywhere—in forks, hollows, mistletoe, &c.)

GRAUCALUS MELANOPS, Black-faced Cuckoo-Shrike.

This bird ranges all over Australia, and Mr. Olive secured some specimens, and also their nest and egg, on 19th October, in the fork of a freshwater mangrove, about 30 feet from the ground. The nest had a chicken in (just hatched) and an egg. The structure was built compactly of fine twigs and tendrils, and plentifully covered on the outside with cobwebs, with shreds of bark fastened on, and it measures—external depth, 2½ inches; internal, 1¾ inches; external diameter, 4 inches; internal, 2¾ inches. The egg was large, measuring 1.30 x .91 inch, its ground colour green, with rather large markings of a greenish-brown fairly distributed over the egg, but forming a zone at the larger end, and the markings appearing beneath the surface of a greenish-grey.

(Generally in pairs. Male and female take turns in sitting on their nest. I climbed up above a nest that was getting built to see if there were eggs. The birds got excited and flew round, and destroyed the nest after I left. They were not plentiful.)

GRAUCALUS MENTALIS, Little Cuckoo-Shrike.

This bird also has a wide range over Australia, but, as far as I know, it has not yet been recorded from south-western Australia. Mr. Olive found its shallow, open nest on 19th November, placed in a fork near the end of a branch of a eucalyptus tree, about 30

feet from the ground. It was outwardly composed of twigs and bark, being well covered with cobwebs, and lined inside with grass. It measures—external depth, 1¼ inches; internal, ¾-inch; external diameter, 3 inches; internal, 2 inches. There was only one egg in the nest, although the full clutch is three. It has a dull green ground colour, and is uniformly spotted with small brownish markings, and some appearing beneath the surface of the shell, they being of a dark grey. The egg measures 1.13 x .81 inch.

(These birds were fairly plentiful, sometimes in pairs, but generally in small flocks. They are shy if their eggs are not well incubated.)

MALURUS CRUENTATUS-BOWERI, Bower Red-backed Wren.

These beautiful little birds are found right across the northern portion of Australia, generally in small flocks, except during the nesting season. They are lively and active, seldom remaining still for more than a few seconds, as they search for their insect food among the low-growing thick bushes or on the ground. A nest was found on 16th December built on a vine 1 foot from the ground. It was dome-shaped, and made of long grass, with a few skeleton leaves intermixed. It measures—external depth, 5¾ inches; internal, 3¼ inches; external diameter, 2¾ inches; internal, 1¾ inches. There was the full clutch—three eggs—and they were white, with greyish-brown markings, more numerous at the larger end, and forming an irregular zone. They measure —(*a*) .56 x .43, (*b*) .57 x .44, (*c*) .54 x .42 inches.

RHIPIDURA TRICOLOR, Black and White Fantail.

These well-known birds are found all over Australia, but generally in the vicinity of water, and I have frequently noticed their nests built close to that of the *Grallina picata*, and both birds sitting on their respective nests at the same time, sometimes within 2 feet of one another. This northern bird was described and named by Gould *Sauloprocta picata*, Pied Fantail, and the specimens Mr. Olive secured agree with Gould's measurements, but there is no difference in their markings.

The open cup-shaped nest was found on 20th September by Mr. Olive, built on a fork near the end of a branch of a eucalyptus tree, about 10 feet from the ground. It is outwardly composed of shreds of bark, compactly put together and well covered with cobwebs and lined with fine rootlets and a few grass seed-stalks. It measures—external depth, 1¼ inches; internal, 1 inch; external diameter, 2½ inches; internal, 2 inches. It contained three fresh eggs, a full clutch, although occasionally four are laid; they are smaller than its more southern representative, and have a ground colour of light stone or yellowish brown, with greyish brown markings, which form a broad, irregular zone

round the centre. They measure—(*a*) .64 x .52, (*b*) .63 x .52, (*c*) .66 x .53 inch.

RHIPIDURA SETOSA, Northern Fantail.

This little Fantail is found all across the northern portion of the continent. It is very similar in its habits to the *Rhipidura albiscapa*, which is found further south, and catches its insect prey when on the wing. Its open nest was found on 25th November, built near the end of a branch of a eucalyptus tree, 10 feet from the ground, and the male bird was secured as it flew off the nest. It is compactly built of fine shreds of bark, grass, and small chips of wood, and well covered with cobwebs, and having a point hanging from below like the stem of a wineglass. It is lined with fine fibres, and measures—external depth, 1½ inches; internal, 1 inch; external diameter, 2 inches; internal, 1½ inches. The clutch is two, and they are of a light stone colour, but vary in the colour of the markings—one has light reddish-brown spots and the other bluish-grey; they are more plentiful at the larger end and are confluent. They measure—(*a*) .64 x .53, (*b*) .66 x .52 inch.

(A pair of these birds built their nest near my camp, and it took them five days to finish it, male and female both working. The male was sitting on the eggs when the nest was taken, and he would not leave until forced to. They are not shy, but are very pugnacious. They are scarce.)

CHLAMYDODERA NUCHALIS, Great Bower-bird.

This fine Bower-bird is only found in North-West Australia. I have received several skins besides those sent by Mr. Olive, and some secured during the moulting season show that the male birds lose the greater portion of their nuchal plumes during that time, but I have never seen one with it entirely absent. Three nests were found, each containing one egg. That found on 18th November was built in a bunch of mistletoe about 10 feet from the ground. The male bird was on the nest, which was open and composed of twigs without any lining, and measures—external depth, 5 inches; internal, 2 inches; external diameter, 8 inches; internal, 4 inches. The egg is a very light shade of green, and well marked all over with short, wavy irregular lines and blotches of a greenish-brown tint, some of a lilac colour, they appearing beneath the surface of the shell; it measures 1.78 x 1.16 inch.

(These birds were fairly plentiful, and I saw several of their bowers. They were all similar to each other, with one exception, and that one was not open on the top, but arched right through. I noticed one getting built. At first the sticks were laid on the ground for a foundation, and then all the other sticks were stood in between them. Every time they came to play they brought fruit, bones, shells, or stones. I found a revolver cartridge in one of the bowers.

The birds were shy, and when they have a nest will not go near it all day if anyone is about. They are very inquisitive ; when near fruit trees on which they feed, if a person sat still they would come within 2 feet of him. When going to fruit trees they fly one after the other.)

POMATORHINUS RUBECULUS, Red-breasted Babbler.

This bird is only found in Northern Australia. They generally keep in small flocks of about a dozen birds, and build their large, bulky nests in colonies, and I have seen eight in one small casuarina tree. When the nesting season is over I have several times during wet weather or at night disturbed as many as five birds in one of the old nests. They may possibly have been the parents and fully-fledged young ones gone there for shelter. Mr. Olive found several of their nests. The one on 25th September was built on a eucalyptus tree, near the end of a branch, about 10 feet from the ground; it was dome-shaped, and built of sticks and lined with grass, and measured—external depth, 1 foot; internal, 4 inches; external diameter, 1 foot 9 inches; internal, 7 inches. The Entomyzas nearly always build their grass nests in the deserted nests of these birds, making the entrance larger.. The eggs are greyish-brown, with irregular shadings, with reddish-brown veins or lines, often crossing one another, but their numbers vary much in different eggs. They measure—(*a*) 1.1 x .73, (*b*) 1.1 x .71 inch.

CRACTICUS PICATUS, Pied Butcher-bird.

Northern Australia is the habitat of this bird, and although it is so similar in plumage to the *Cracticus nigrigularis*, its note and habits are different. The country in which the two birds are found overlaps. A nest was found on 22nd October, built in a eucalyptus tree, about 25 feet from the ground ; it is open, and composed of twigs and neatly lined with grass, and measures—external depth, 10 inches; internal, 2½ inches ; external diameter, 9 inches ; internal, 4 inches. The full clutch of eggs is four, but only three were found in this nest. They are of a light greyish-green colour, with brown markings of various shades, more plentiful at the larger end, and sometimes forming an irregular zone. The markings beneath the surface have a purplish hue. They measure—(*a*) 1.24 x .87, (*b*) 1.25 x .86, (*c*) 1.27 x .89 inch.

(These birds are very shy, and leave the neighbourhood of their nest when it is being robbed. They are generally in pairs, and seem nowhere very plentiful.)

PTILOTIS FASCIOGULARIS, Fasciated Honey-eater.

This little bird extends right across the northern portion of Australia. They are noted for building a dome-shaped nest, whereas all the other honey-eaters in Australia, as far as is known,

excepting the *Glycyphila modesta*, build open cup-shaped nests. Mr. Olive found several of their nests; one on 16th December contained the usual clutch of two eggs. It was dome-shaped and hung on the end of a branch of a melaleuca tree over water, about 5 feet from the water; it is composed entirely of the bark of the tree on which it is built, and has a porch over the entrance. It measures—external depth, 5 inches; internal, 3½ inches; external diameter, 3 inches; internal, 2 inches. The eggs are elongated and white with small reddish-brown markings, which are most numerous at the larger end. They measure—(*a*) .80 x .50 (*b*) .73 x .50 inch.

(These birds were scarce. Male and female both build the nest, which takes four days, and is generally situated over a watercourse. They are very shy, and when there are eggs in the nest they will not put in an appearance all day if anyone is near. They are generally to be seen in pairs.)

ENTOMOPHILA RUFIGULARIS, Red-throated Honey-eater.

This bird is found in the northern and central parts of Australia, and several were seen by Mr. Olive. He found their nest on 28th December, suspended from the twigs near the end of a branch of a eucalyptus tree, 20 feet from the ground; it was cup-shaped, and composed outwardly of shreds of bark and cobweb, and lined with fine fibres, and measured—external depth, 3 inches; internal, 2¾ inches; external diameter, 2 inches; internal, 1¾ inches. The eggs were elongate in form and white, with small reddish markings thickly scattered over the surface of the shell, and being slightly more numerous at the larger end, where in one of the eggs they form an irregular zone, the dots being confluent. They measure—(*a*) .67 x .49, (*b*) .67 x .47, (*c*) .66 x .47 inch.

(These birds were scarce, and only three of their nests were found. They are of the usual open cup shape, but are deep, being 2¾ inches. The birds are shy, and do not interfere when their nest is being taken.)

PHILEMON SORDIDUS, Little Friar-bird.

This bird is found all over Northern and Western Australia, as *Philemon occidentalis* cannot be separated from it. Several of their nests were found, and one on 17th November was built on an ironwood tree, about 10 feet from the ground, and situated near the end of the branch. It is lightly built of tendrils and seed-stalks, and lined with the latter material. It is an open, hanging nest, suspended between a fork, and measures — external depth, 3 inches; internal, 2 inches; external diameter, 5 inches; internal, 3 inches. The two eggs are light pink, with reddish-brown markings; on one egg they form a zone at the larger end, but on the other are evenly scattered over the sur-

face. Some markings which appear under the surface are very faint and light purple in colour. They measure—(*a*) .99 x .71, (*b*) 1.1 x .71 inch.

PACHYCEPHALA FALCATA, Northern Thickhead.

The range of this bird is also across the northern portion of the continent, as I have secured specimens at Cooktown, and it has also been found at Derby, on the north-west coast, besides in the intervening country. It is a lively bird, with a clear, loud note. Its nest was found on 11th October; it was open, and lightly built of tendrils, with an occasional cobweb to fasten it on to a branch; it is lined with fine grass fibres, and measures—external depth, 2 inches; internal, 1½ inches; external diameter, 3 inches; internal, 2 inches. The eggs are olive, with an irregular zone nearly round the centre of the egg of burnt umber markings, with a few other spots scattered over the shell, and some very faint ones of a purplish hue beneath the surface. They measure—(*a*) .81 x .63, (*b*) .82 x .64, (*c*) .81 x .63 inch.

ARTAMUS MELANOPS, Black-faced Wood-Swallow.

These birds have a wide range, being found over the greater portion of Australia, but seldom nest in the south. Its nest was found on 9th November, built on the branch of a eucalyptus tree, about 10 feet from the ground; it is very lightly put together, and is composed of tendrils and lined with fine grass seed-stalks, and measures—external depth, 4 inches; internal, 1¾ inches; external diameter, 4½ inches; internal, 3 inches. The eggs are cream colour, with large markings of burnt umber, which are more plentiful on the larger end and coalesce. The markings beneath the surface are of a light purplish hue. They measure—(*a*) .82 x .65, (*b*) .79 x .67, (*c*) .83 x .68 inch.

(Generally in flocks. Seven or eight settle on a limb close together. They fly at the intruder if their nest is being disturbed, several birds joining in. The sitting bird will not leave her nest until almost forced off. They were plentiful.)

NEOCHMIA PHAETON, Crimson Finch.

These beautiful birds are plentiful in North-West Australia. Mr. Olive found a nest on 30th December, built in a Pandanus Palm, about 15 feet from the ground; it is dome-shaped, and and composed outwardly of shreds of dried rushes and rootlets, and the inner portion of coarse grass and seed-stalks. It measures—external depth, 6¼ inches; internal, 4½ inches; external diameter, 4½ inches; internal, 3 inches. The eggs were four in number, elongate in form, and pure white. They measure —(*a*) .61 x .44, (*b*) .63 x .42, (*c*) .62 x .43, (*d*) .63 x .44 inch.

(These birds are plentiful, but were only found near water-courses. They travel in numbers, and the males fight with each other while building. They are quiet birds, and fly about a

camp picking up waste cotton, feathers, &c., to make their nests of; one little bird used to steal my oakum every day from underneath the shed to build its nest of; it had not finished when I left. They prefer building about the camp, in the sheds, and once on the ridge poles of my tent. On one occasion the female started to lay while the male put the finishing touches to the nest.)

EURYSTOMUS AUSTRALIS, Roller or Dollar-bird.

These curious birds are plentiful over the northern portion of Australia. They are very noisy, and when anyone is near their nest they dodge in and out of other hollows, apparently to mislead the intruder. Their nest was found on 20th October, situated 1 foot down a hollow branch of a eucalyptus tree, about 30 feet from the ground. The eggs were four in number, pure white and slightly glossy, and oval in form. They measure —(*a*) 1.30 x 1.13, (*b*) 1.28 x 1.12, (*c*) 1.37 x 1.9, (*d*) 1.36 x 1.13 inch.

(Generally fly away from the nest, but are very pugnacious while being robbed, and others come and join in. On rainy mornings they were generally to be seen in flocks, but at other times singly or in pairs. They prefer building near watercourses, and are plentiful.)

MEROPS ORNATUS, Bee-eater.

These beautiful birds are found all over Australia, some coming south in the spring of the year to nest, and are very plentiful. They are fond of sitting on some dead bough or post and darting at their insect prey as it flies past. They nest in the ground. Several were noticed by Mr. Olive, and he found that they made their burrow at an angle of 1½ feet in the 4 feet (the general length of the hole), which was 5 inches in diameter and 4 inches in depth. That found on 3rd November had 5 eggs in—the full clutch. They are white, slightly glossy, and rounded in form, and measure—(*a*) .78 x .65, (*b*) .76 x .64, (*c*) .74 x .66, (*d*) .73 x .68, (*e*) .74 x .68 inch.

(Make the burrows for their nests in sandy country. The young do not all hatch at one time, as occasionally one young one is almost ready to fly when the last is being hatched. They never come near when their nest is being disturbed. They travel in flocks or pairs, and are plentiful.)

HALCYON PYRRHOPYGIUS, Red-backed Kingfisher.

These birds are found all through Northern Australia, and are fairly plentiful in places. One of their nests was found on 2nd November. They burrow a hole about 11 inches in depth, which is 6 inches in diameter by 4 inches in depth. The eggs are white and rounded in form, slightly glossy, and measure—(*a*) .98 x .83, (*b*) .98 x 84, (*c*) 1 x .83 inch.

(These birds are scarce on the Katherine River and shy, not coming near their nest when it is being dug out. In making the burrow in the bank for their nest they make a considerable upward angle at the start.)

HALCYON SANCTUS, Sacred Kingfisher.

This bird is found all over the continent, being plentiful in many localities. The one in the north-west is similar in plumage to that found in the south, but its note is slightly different; but the same thing applies to other birds. They make their nest in hollow spouts, and Mr. Olive found one on 17th December in a eucalyptus tree, about 2 feet down the hollow and 15 feet from the ground; it contained two eggs, which were white, rounded in form, and slightly glossy. They measure—(*a*) 1 x .84, (*b*) .99 x .86, (*c*) 1 x .85 inch.

DACELO CERVINA, Fawn-breasted Kingfisher.

These birds are only found in Northern Australia. They are somewhat similar to *Dacelo leachii*. One of their nests was found on 7th December, situated in a hollow branch, the eggs being laid on the decomposed wood at the bottom; they are pure white, glossy, and rounded in form, and measure—(*a*) 1.56 x 1.45, (*b*) 1.49 x 1.28 inch.

TRICHOGLOSSUS RUBRITORQUIS, Red-collared Lorikeet.

North-Western Australia is the habitat of these birds, their range being rather restricted compared with that of the *Trichoglossus novæ-hollandiæ*, but they have similar habits to the latter bird. They nest in hollow spouts of the eucalyptus trees. Mr. Olive found a clutch on 5th December in a hollow branch about 20 feet from the ground; it contained two eggs—the full clutch. They are dull white, but much stained, and measure—(*a*) 1.4 x .82, (*b*) 1.8 x .84 inches.

(These were very plentiful, travelling about in flocks, except those nesting. When the female is sitting on her nest the male generally remains in the same tree, or in the immediate neighbourhood, and they get very excited if anyone attempts to rob them of their eggs.)

PTISTES COCCINEOPTERUS, Crimson-winged Lory.

These beautiful parrots are only found in North-Western Australia, and are considerably smaller than *Ptistes erythropterus*. A nest was found on 2nd January 10 feet down a hollow spout of a eucalyptus tree and 12 feet from the ground. The eggs were deposited on the rotten wood at the bottom, and were a dull white colour and much stained. They measure—(*a*) 1.18 x 1.1, (*b*) 1.21 x 1.1 inch.

(These birds were plentiful, generally in pairs, sometimes threes, or in numbers. They build in large girth trees. The

male stops about while the female is on the nest, and they get greatly excited if their eggs are taken.)

Centropus phasianus, Coucal.

This cuckoo is found all over Northern Australia, and as far south as the Clarence River district on the east coast, it having local variations in colour. As it lives so much on the ground, and has to often force its way through the thick grass, its feathers, especially on the head, neck, breast, and back, are very stiff, the shafts being like stiff bristles. Another curious thing is that the eyelashes are of a similar texture, feeling like pieces of wire, and evidently intended to shield the eye beneath. They are heavy flyers, and much of their time is passed on the ground, where they usually make their grass nest in a tussock of coarse grass and draw the tops together; but sometimes they nest in Pandanus Palms. One was found on the ground on 21st December, which contained four eggs. They are cream colour, with a coating of lime on, which easily gets scratched. They are glossy, and measure—(*a*) 1.28 x 1.8, (*b*) 1.24 x 1.6, (*c*) 1.18 x 1.10, (*d*) 1.28 x 1.12 inch.

In this paper I have given descriptions and measurements of some common eggs, but my reason for doing so is that oologists may be able to compare their size with those of similar birds breeding in Southern Australia, for as a rule eggs laid in Northern Australia are smaller than those laid by similar birds in the south.

ON THE BUTTERFLY *LIBYTHEA GEOFFROYI*, Godart.

By Jas. A. Kershaw, F.E.S.

(*Read before the Field Naturalists' Club of Victoria, 12th June*, 1899.)

Owing to the increased facilities afforded for obtaining specimens of some of our rarer butterflies, and access to works of reference hitherto difficult to obtain, we are gradually perfecting our knowledge of the nomenclature of our Australian Lepidoptera. The great extent of variation existing in many species and scarcity of specimens to refer to has been responsible for the creation of synonyms, and consequent confusion, which cause much trouble and loss of time to workers to unravel. In the species under notice we have another instance of this, illustrating the care one must exercise in creating new species from a limited number of specimens or without proper access to good works of reference. This species was, I believe, first recorded from Australia by the late Sir William Macleay, in 1866, in the Trans. Ent. Soc. N.S.W., i., p. 61, under the name of *L. myrrha*, Godt., a well-known but totally distinct Indian species, and it was known to entomologists under that name until, in 1891, the late Mr. A. Sydney Olliff drew attention to it in a note published in

the Proc. Linn. Soc. N.S.W., vol. vi., p. 27. Mr. Olliff then pointed out the mistake made, and, believing it to be a new species, described it under the name of *L. nicevillei.* On investigation, however, I find it agrees with Godart's species *L. geoffroyi,* originally taken in Java, and since recorded from several of the islands to the north of Australia, and also from New Caledonia. Owing to its variation, however, a specimen was described by Boisduval, from Macassar, under the name of *L. antipoda,* and Wallace also described two specimens under the names of *L. ceramensis* and *L. batchiana,* all of which are now considered to be varieties of *L. geoffroyi.*

A fine specimen from Herberton, Queensland, was recently handed to me by Mr. C. French, F.L.S., for identification, which I consider to be the male of this species. Another specimen from New Guinea, also a male, is in the National Museum collection, which differs from Mr. French's specimen only in the absence of the white spots in the upper wings, and agrees well with a figure of *L. antipoda,* Boisd., in Staud. and Schatz. Exot. Schmett. In a pair, male and female, from the Loyalty Islands in the collection of Mr. W. Kershaw, the male is much smaller, and shows a greater extent of orange in the hind wings, while the female agrees well with Olliff's description, but shows a slight orange suffusion on the edges of some of the spots in the upper wings. As the sexes differ considerably in general appearance, it may not be out of place here to give a short description of the male insect, Mr. Olliff's description of the female being easy of access and all that could be desired. Only one species of the genus is, so far, known to occur in Australia.

LIBYTHEA GEOFFROYI, Godart.

Male.—Head, antennæ, and body blackish-brown ; palpi above blackish-brown, beneath at base grey. Fore wings violet, bordered on costa and hind margin rather broadly with blackish-brown ; a white spot near costa at about two-thirds from the base, and two others between veins 4 and 5 and 5 and 6 ; a very slight whitish suffusion divided by vein 3 corresponds to the larger spot on the under side. The hind wings have the base violet, the rest of the wings being dark brown, with a narrow transverse discal band of dull orange, divided by the veins into three spots. Under side : Fore wings brown ; an elongate orange patch in cell ; an elongate spot on the costa about two-thirds from the base, and another similar spot divided by vein 5, both corresponding to those on the upper side ; a round spot within and at end of cell, and a larger spot just beyond and below the end of the cell and divided on its anterior fourth by vein 3 ; the apex beyond the spots grey, shortly striated with brown. Hind wing greyish-brown, purplish-tinged, with three white transverse bands, the first from base to end of cell, thence to costa at about one-half ;

two others starting together at apex, one going to inner margin at about one-half, the other to the anal angle; the whole of the surface irrorated with dark brown.

Locality.—Herberton, Queensland (in the collection of Mr. C. French, F.L.S.)

BOOK NOTICES.

The British Museum Catalogue of Birds.—Although not numerically the last, the last published of the twenty-six volumes of the British Museum Catalogue of Birds has reached Australia. The whole work may fairly claim to be one of the most important aids to the study of ornithology ever produced. The first volume appeared in 1874, the others following at intervals of rather less than a year. Dr. Bowdler Sharpe undertook the lion's share of the work, and was ably assisted by other authorities who had specially devoted themselves to certain groups, viz.—the late Mr. Henry Seebohm, Dr. H. Gadow, Messrs. P. L. Sclater, O. Salvin, E. Hartert, W. R. Ogilvie-Grant, E. Hargitt, Howard Saunders, Captain Shelly, and Count Salvadori. The work has been a prodigious labour, based on examining no less than 11,548 species contained in the British Museum and giving full descriptions of both sexes and, as far as possible, all stages of plumage. There was besides an exhaustive research into all existing literature, &c. The volumes contain, in addition to numerous woodcuts, 378 coloured plates of species not previously figured, or, if so, in an inadequate manner. According to the present arrangement, the 11,548 species, of which 760 are claimed to be Australian, have been grouped into 2,255 genera. The avial population of the world has now been so far investigated that it is hardly probable that the number of species for the whole globe can exceed 13,000. The collection at the British Museum contains 350,000 birds' skins and 50,000 eggs. It is worthy of note that, with one exception, all the authors of the Catalogue are members of the British Ornithologists' Union.

"A Key to the Birds of Australia and Tasmania."—Advance proof-sheets are to hand of a concise handbook to the birds of Australia and Tasmania, which is being prepared for publication by Mr. Robert Hall, whose close observations of bird life are well known to readers of the *Naturalist*. The author bases his list on the arrangement and nomenclature of the British Museum Catalogue just completed, and expects to complete in rather more than 100 pages a series of brief descriptions, giving the characteristic features of all orders, families, genera, and species of birds found in Australia and Tasmania. In most cases the dimensions of average specimens are given, as well as synonymic and vernacular names. The continent has been divided into regions as indicated on the map accompanying the

volume, and the habitat of every bird is indicated. The work will be well indexed, and includes a glossary of the terms used and an illustration of a bird's external characters.

THE AUSTRALIAN MUSEUM.—The forty-fifth annual report, for 1898, of the Trustees of the Australian Museum, Sydney, has just been issued, and enables one to gain some idea of the great amount of work carried out in that fine institution during a year. The list of donations alone fills thirteen closely printed foolscap pages, and these, together with purchases and exchanges, amount to no less than 16,711 specimens. The number of specimens in the Museum is not given, but the library now numbers about 8,500 volumes. It states that the second edition of the "Descriptive Catalogue of the Nests and Eggs of Birds Breeding in Australia and Tasmania" is in course of preparation, and early publication is anticipated. This will be in quarto form and consist of about 500 pages. The catalogue will contain particulars of the habits, nests, and eggs, and in fact the life-histories of all the different species of Australian birds, illustrated by some 600 figures of eggs and a large number of plates of birds and their nests, many of which will be hand-coloured. The work is being prepared under the direction of Mr. A. J. North, C.M.Z.S., the Ornithologist of the Museum, and will be a valuable addition to the literature of Australian ornithology. A special feature of the volume will be the publication of illustrations and descriptions of the birds recently discovered by the Horn and Calvert exploring expeditions in Central and North-West Australia. In addition to its scientific character, the catalogue will indicate whether the birds are beneficial or injurious to the agriculturist, orchardist, or viticulturist. As in the case of similar institutions in other colonies, the Trustees complain that the work of the Museum is greatly hampered by inadequate funds.

EARLY CHAPTERS IN SCIENCE.—An exceedingly interesting first book of knowledge for young people has just been published by John Murray, London, price six shillings. It is from the pen of Mrs. Awdry, and has been revised by eminent scientists and edited by Professor W. F. Bartlett. It deals with natural history, botany, physiology, physics, and chemistry, which are grouped into two parts. The first, of 198 pages, called "The World of Life," deals with the animal and vegetable kingdoms, while the second, of 139 pages, called "The World of Experiment," deals with the forces of nature. The book is well illustrated, and is worth reading by older persons than those for whom it is primarily intended.

NEW SILURIAN FOSSILS.—The *Geological Magazine* for May, 1899, contains, among the original articles, one by the late Prof. Sir F. McCoy, F.R.S., probably his last paper, entitled "Note on

a New Australian Pterygotus," in which he describes and figures *Pterygotus australis*, McCoy, found by Mr. F. Spry in black, flaggy Silurian rock in the sewer tunnel in Domain-road, South Yarra. The new species belongs to the Merostomatous Crustacea, and is the first example from Victorian rocks. The type specimen has been presented to the National Museum, Melbourne. It is one of four fossils found, the genera of which have hitherto been unknown in Victorian rocks.

A Mutton-bird Strays Inland.—A peculiar-looking bird was recently noticed on the reservoir at Korong Vale, and, after being captured, considerably puzzled local residents as to its identity. To settle all doubts it was forwarded to the Zoological Gardens, Melbourne, when the assistant director, Mr. D. Le Souëf C.M.Z.S., at once pronounced it to be a specimen of the Short-tailed Petrel, or Mutton-bird, *Puffinus tenuirostris*, a bird which, under ordinary circumstances, never leaves the sea or goes up rivers, and never approaches near land except when nesting, in the latter part of November. How the bird reached Korong Vale, which is situated some 150 miles in a direct line from the nearest part of the Southern Ocean, is a mystery, as they cannot feed inland; and it could hardly have been blown in, as the stronger the wind the better they fly. The bird seemed to be in perfect condition, but only lived about a month in confinement at the gardens.

A Large Dingo.—I wish to bring under the notice of this Club particulars regarding a large half-bred Dingo killed recently at Tatong, about 20 miles south-east of Benalla. A paragraph in the *Age* of 24th April last, stating that a Dingo a shade over 6 feet long had been captured at Tatong, struck me as being very interesting, on account of the size of the animal, and I accordingly made inquiries on the matter. Mr. Z. Anthony, of the Vermin Destruction Branch of the Department of Lands and Survey, kindly wrote to Mr. M. J. Delahenty, the Vermin Inspector of the Benalla district, who replied that the animal was a half-bred Dingo, black in colour, and nearly as large as a Newfoundland dog. As this is a most unusual size, even for a half-bred wild dog, the fact appears worthy of record.—A. E. Kitson. 10th July, 1899.

South Australian Ornithological Association.—At the May meeting of this Association a resolution was carried that the recently published "List of Vernacular Names for Australian Birds" is most confusing, and likely to lead to many blunders being made in ornithology and oology, and a second resolution was carried expressing the need for an up-to-date list based on Gould's "Handbook," and retaining his numbers, and as far as possible his classification, with the insertion of any new species after the species to which they are most nearly allied.—*South Australian Register*, 8th May, 1899.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SPECIAL NOTICE.

Members are reminded that the Club's year ended on 30th April last, and that subscriptions (15s.) for 1899-1900 are now due. The Hon. Treasurer's address is given above.

PRACTICAL EVENING.

MONDAY, 28th AUGUST.

Subject, "Preparation and Examination of Blood Films."
Demonstrator, Rev. W. Fielder.

Meet at Mr. Fielder's house, "Norwood," Mitchell Street, St. Kilda.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

Vol. XVI.—No. 5. September, 1899.

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THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 7th SEPTEMBER, 1899.

Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 11th September, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. Chas. L. Barrett .. Dendy Street, Middle Brighton.	J. Hasse ..	F. Spry

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

Discussion on "Protection of Native Birds" postponed from last meeting.

5. Reading of Papers and Discussions thereon.

(Authors are requested to hand in a brief resume of their papers to the Secretary.)

1. By Rev. W. Fielder, F.R.M.S., "Egg Cells and their Development," illustrated by preparations for the microscope.
2. By Mr. H. T. Tisdall, "Plants of Prey."
3. By Mr. D. M'Alpine, F.C.S., "Description of a new Fungus, Parasitic on Orchid (*Pterostylis pedunculata.*)

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist.*

EXCURSIONS.

SATURDAY, 9TH SEPTEMBER. Botanical Gardens. Under the leadership of Mr. F. Pitcher. Meet at office there 2.30. p.m. Botany.

SATURDAY 23RD SEPTEMBER. SANDRINGHAM. Under the leadership of Messrs. J. G. Luehmann, F.L.S. and J. Shephard. Meet at Flinders Street Station 1.20. p.m. train. Botany and Pond Life.

SATURDAY, 7TH OCTOBER. Braybrook. Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer Street Station 1.50. p.m. train. Botany.

THE

Victorian Naturalist.

Vol. XVI.—No. 5. SEPTEMBER 7, 1899. No. 189.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th August, 1899. The president, Mr. J. Shephard, occupied the chair, and about 50 members and visitors were present.

REPORTS.

The hon. secretary reported that a practical evening, devoted to the general classification of insects, was taken by Mr. F. G. A. Barnard on Monday, 24th July, when, by the aid of specimens, the main orders and groups of insects were pointed out, and many general hints given as to collecting, setting, &c.

A report of the excursion to the Zoological Gardens on Saturday, 15th July, was read by Mr. D. Le Souëf, who said that a fair number of members availed themselves of the opportunity to inspect the collection of animals, birds, &c. The polar bears were much admired, also a jaguar, a new arrival from South America. Some time was given to noticing the differences in the Carpet Snakes from various parts of Australia, and the construction of the nesting mounds of the Brush Turkey and Mallee Fowls was explained.

The hon. librarian reported the receipt of the following donations to the library :—"A Catalogue of Australian Coccidæ," by Jas. Lidgett, from the author ; "Proceedings of the Linnean Society of New South Wales," 1899, part 1, from the Society ; "The Missouri (U.S.A.) Botanical Gardens Tenth Annual Report," from the Director.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. F. Baker and L. K. M'Nab were duly elected members of the Club.

GENERAL BUSINESS.

The hon. secretary reported that the deputation *re* extension of close season for Quail, appointed some meetings since, had waited upon the Commissioner of Customs, who had, after hearing Messrs. Keartland and Le Souëf on the subject, promised to again consider the papers dealing with the matter in the light of the fresh evidence now tendered.

A letter was read from Mr. F. C. Christy, "St. Cyr," William-street, South Yarra, suggesting that steps should be taken by the Club to have the close season for waterfowl extended.

After some discussion it was resolved to have the whole matter of protection for native birds brought up for further discussion at next meeting.

Mr. F. Pitcher, as an officer of the Lands Department, mentioned the steps taken by the Department to prevent the destruction of the Wattle.

PAPERS.

1. By Mr. C. Walter (communicated by Mr. C. French, jun.), entitled, "Records of Plants New to Victoria and New Districts for Victorian Plants."

The author drew attention to the fact that many new plants and new localities for others had been recorded, principally by himself and Mr. St. Eloy D'Alton, of Nhill, since the last supplementary list in the *Victorian Naturalist*, and submitted additional records, which were taken as read.

2. By Mr. D. Le Souëf, C.M.Z.S., entitled "Descriptions of Some Australian Birds' Eggs."

The author gave descriptions of the eggs of the Lesser White Goshawk, White-quilled Honey-eater, White-tailed Cockatoo, and Gang Gang Cockatoo.

Messrs. Keartland and Campbell took part in the discussion which followed.

3. By Mr. R. Hall, entitled "Notes on the Habits of the Blue Wrens."

The author's remarks were based on several seasons' observations, and their economic value as insect destroyers was proved by the report of the numbers of beetle larvæ consumed by a bird kept in confinement for over two years.

Some discussion followed, in which Messrs. Barnard, Campbell, Le Souëf, and Keartland took part.

4. By Rev. W. Fielder, F.R.M.S., entitled "Recent Researches in the Structure of Protoplasm."

In introducing the immediate subject of his communication, the author dwelt at some length on the structure of protoplasm as viewed in the light of the *alveolar* theory of Bütschli and the *meshwork* theory of Flemming and others, the elements of a single cell being taken to illustrate each theory. A short digest of a paper by Mr. W. B. Hardy, of Cambridge University, recently published in *The Journal of Physiology*, vol. xxiv., No. 2, was then given. As the result of extensive experiments on white of egg, gelatin, and other substances, Mr. Hardy concludes that the meshwork appearance of protoplasm in a dead condition is owing, either to coagulation of some part of the cell-substance during the process of dying, or, where fixatives are used, to the effect produced by these fixatives upon the colloidal substance of the cell, the network-figure varying, other things being equal, according to the re-agent used. The fixatives employed were principally

absolute alcohol, corrosive sublimate, formalin and osmic acid vapour. Perhaps the most interesting of all the experiments referred to were those showing the effect of fixation under stress, the result in many cases being analogous in appearance to the fibrillar structure shown in the spindle of a cell during one stage of karyokinesis.

The remarks were illustrated throughout by rough blackboard sketches.

Messrs. Stickland, Sayce, the President, and others took part in an interesting discussion on some of the points raised.

NATURAL HISTORY NOTES.

Mr. D. Le Souëf drew attention to a paragraph in a recent *Australasian* headed "Where Do the Eagles Come From?" which question arose from the fact that in Riverina the advent of the lambing season is marked by the regular appearance of Eagles, which are rarely seen at any other time. The pastoralists have to resort to wholesale poisoning in order to keep them in check, and thousands are destroyed annually, yet they appear the next season as numerous as ever. The fastnesses of the remote parts of the Australian Alps are supposed to be their breeding grounds, but no definite information is available.

Mr. G. A. Keartland read a paragraph from the Sydney *Town and Country Journal* stating that a drug named "drumine" had been obtained from the so-called poisonous weed, *Euphorbia drummondii*, which may prove of value in the medical treatment of sciatica, etc.

EXHIBITS.

By Mr. A. J. Campbell.—Egg of the Rufous-tailed Moor-hen, *Amaurornis moluccana;* also nest and eggs of the White-fronted Honey-eater, *Glyciphila albifrons.* By Mr. C. French, jun.—Orchid, *Pterostylis nana,* collected at Sandringham. By Mr. Jas. A. Kershaw.—South Pacific Fern Album. By Mr. G. A. Keartland.—Eggs of 17 species of Waders. By Mr. D. Le Souëf.—Egg of *Calyptorhynchus baudini*, White-tailed Cockatoo, Western Australia, and live Fawn-breasted Kingfisher, *Dacelo cervina.* By Mr. F. M. Reader, Dimboola.—Dried specimens of plants—*Acacia tenuifolia*, F. v. M., *Potamogeton plantagineus*, Ducroz, *Lagenophora* (*Solenogyne*) *emphysopus*, J. Hooker, all unrecorded for the N.W. of Victoria. By Mr. F. Spry.—Dyke Rocks from various sewers around Melbourne; also *Pterygotus australis*, McCoy, from upper silurian, Domain-road sewer, new to science, and Cyrtoceras, species from Yarra improvements. By Mr. H. W. Whitney.—Specimens of Hooded Robin, Fuscous Honey-eater, Scarlet-breasted Robin, and nest of the White-shafted Fantail.

After the usual conversazione the meeting terminated.

NOTES ON AN EXHIBIT OF SOME LIVING STAGES OF MYCETOZOA.

By O. A. Sayce.

(Read before the Field Naturalists' Club of Victoria, 12th June, 1899.)

The life-history of the Mycetozoa is one of peculiar interest. Lately I have cultivated several species, and watched their growth from the spore to the fruiting stage, and although in this note I record nothing new concerning them, the methods I adopted for observation may be of some value to others. For particulars concerning their remarkable life-history and classification I would refer you to Lister's important "Monograph of the Mycetozoa;" but any of the recent text-books of either botany or zoology refer to them—the former under Myxomycetes, or "slime fungi;" and the latter Mycetozoa, or "animal fungi." The word "fungi" appears, however, to be an unfortunate one, for, except in the fruiting stage, one fails to see a resemblance to fungi, and their life-history is very different. Lister says (see page 2) "they are a clearly defined group of organisms, separated from all others by the following combinations of characters:—A spore provided with a firm wall produces, on germination, an amœboid swarm-cell, which soon acquires a flagellum. The swarm-cells multiply by division, and subsequently coalesce to form a plasmodium, which exhibits a rhythmic streaming. The plasmodium gives rise to fruits which consist of supporting structures and spores."

I have done but little in the collecting of them, but during a visit some months ago to Gippsland, in the forest country I found a number of living plasmodia. They appear in this stage as larger or smaller yellow, white, or brownish, very soft structureless jelly-like or mucilaginous masses, more or less spherical or lobed in outline, or forming a network of reticulated lines adhering to damp surfaces, such as the bark of trees or rotting logs and grass, over which they slowly wander, and from the tissues of which the swarm-cell units, which make up a plasmodium, have come. During movement the shape is constantly changing. If such a plasmodium be collected with the substratum on which it is situated, and placed in a damp chamber—a wide-mouthed bottle or test tube containing a little water at the bottom, and the neck plugged with cotton wool, answers well—its movements may be watched, and also the interesting changes into the fruiting stage with sporangia of definite shape and structure containing spores. If now some of the spores be taken and placed in a drop of a weak infusion of hay, placed on a micro. cover-slip, and inverted over an excavated glass slide that has had the edges bordering the excavation or cell painted with vaselin, so that you have a hanging drop suspended in a cell

that does not allow of evaporation, you may watch through the microscope from day to day and trace their development. In one species I have found the naked swarm-cells (amœbulæ) emerge within two hours, and soon afterwards appearing as flagellulæ, and later again as amœboid forms. While in this stage they are capable of ingesting and digesting bacteria and other material; they also reproduce themselves by division. I have kept them alive in these cells for two months, without forming a plasmodium, the abnormal position possibly preventing such. Nearly all the individuals passed into a "resting stage."

For the study of the plasmodial and fruiting stages I have been successful with using one-inch diameter test tubes, placing a little absorbent wool at the bottom, adding a weak watery infusion of hay, with the addition of about half a drachm of pure meat gravy, to a height of about three inches from the bottom, placing a few dead twigs and stalks of hay upright in the tube, with the ends projecting some distance above the water, then boiling for about fifteen minutes, and when cold, adding some spores, and plugging the neck with cotton wool. The boiling is to kill some of the bacteria and spores of mould, the growth of which is apt to be too prolific. The plasmodia will eventually climb up the stalks and sides of the tubes and form sporangia.

To-night I exhibit, under the microscope, amœboid and flagellated forms, and four or five individuals coalesced; also two species in fruit, cultivated by the method given above.

A TRIP TO THE VICTORIAN ALPS.

By Chas. Walter. Communicated by C. French, jun.

(Read before the Field Naturalists' Club of Victoria, 10th July, 1899.)

By the special request of your committee I exhibited at the conversazione in May last a series of about one hundred herbarium specimens of Alpine plants collected by me during a short excursion to the Victorian Alps in January last. The exhibit seems to have attracted some attention, and I have since been asked to give some notes of my excursion, for the benefit of any members who may desire to visit the district and see the great beauty and profusion of our Alpine flora.

One of the first pioneers, if not the first, to visit our Alpine regions was our late lamented friend Baron Ferdinand von Mueller, who in 1853 and 1854, at a time when there were no roads, no tracks, no townships, no hostelries in these remote parts, explored the greater portion of our Alps, even at the risk of his own life, and named Mount Hotham, now locally known as "Baldy," in honour of Sir Charles Hotham, then Governor of the colony, and also described most of our Alpine flora.

A wonderful change has taken place since that time: a railway now extends almost to the foot of the Alps; coaches convey tourists during the summer season from Bright on good roads across the mountains through Omeo to Bairnsdale, in Gippsland, and *vice versâ*.

My first visit to the Alps was on the occasion of the centenary of Australia, on the 26th of January, 1887, availing myself of the cheap excursion fares to Myrtleford, which township was then the terminus of this railway line. I never can forget my delight when I saw the first tree of *Grevillea victoriæ* covered with one mass of bright crimson flowers, and I am sure the Baron must have experienced the same when he named this plant in honour of Her Majesty, and which he fully described in the first volume of the "Transactions of the Philosophical (since Royal) Society of Victoria, 1855," at page 107. All the specimens I obtained then were subsequently purchased, with many others, by my late friend, Baron von Mueller, for distribution.

I made another trip to the Alps in November, 1891, when in charge of the Economic Botanical Section in the Industrial and Technological Museum, under the late Superintendent Mr. J. Cosmo Newbery; but all the specimens I collected at the time were left in the Museum, carefully stowed away, and are probably destroyed by insects before this.

Feeling the want of Alpine plants in my herbarium so much, I considered it necessary to journey to the Alps again. I very much regretted that, on this occasion, my young friend Mr. Charles French, jun., who has been my companion on many previous botanical and entomological excursions, and who is such an enthusiastic and keen observer, was prevented from joining me, by his official duties, so I had to proceed alone.

Having only a week's time at my disposal, I tried to make the most of it. I left Melbourne on Saturday by the early morning train for Bright (mountain district excursion ticket, available for two weeks, 26s. 5d.) Coaches meet the train on arrival at half-past 3 o'clock in the afternoon, proceeding to Harrietville, sixteen miles distant (fare half-a-crown), arriving there a little after 6 in the evening. The drive is very pleasant, providing the coaches are not crammed with passengers and their luggage. The road follows up the Ovens River valley, which is enclosed by bold ranges, crossing the river several times. Harrietville is the last township on the northern side of the Alps, and is situated between two streams at the foot of the main spur leading up to Mount St. Bernard. I stayed for the night at Mr. Tulloch's Harrietville Hotel.

Next morning I left at 9 o'clock to commence my walk up to Mount St. Bernard Hospice, a distance of twelve miles. When

botanizing or collecting other objects of natural history you have to foot it. Besides my simple luggage I had to carry two portfolios, with over half a ream of drying paper. The lot I had strapped over the shoulders, to have my hands free for collecting. I selected the old road, which is two miles shorter than the new cuttings, although the ascent for the first two miles is very steep; but further on the road is more gradual, sometimes almost level, but cyclists should take the new road.

The first plants of note, soon after leaving Harrietville, were two species of Persoonia—*P. confertiflora* and *P. chamæpeuce*, both rare; many of the plants of the lower country I found here still in bloom, especially various Leguminosæ. About half-way up is a spring, where I halted for refreshment—pleasant, cool drinks from Nature's own fountain, free to all. While munching my sandwiches I noticed near and above me patches of the first Alpine fern, the pretty *Lomaria alpina*. Here, as well as further on, between the 3,000 to 4,000 feet elevation, on both sides of the road, are the tall and conspicuous shrubs *Helichrysum stirlingii*, named in honour of Mr. J. Stirling, Government Geologist, by the late Baron von Mueller in January, 1890, on the occasion of an Alpine excursion by the members of the Australasian Association for the Advancement of Science, though I had three years previously supplied to him a number of specimens from the same shrubs.

Unpleasantly for me, after two severe thunderstorms, with hail, a steady rain set in, and continued till evening; this put a stop to my collecting. The road became very muddy, and progress was consequently slow. The flora gradually changed to an Alpine character; *Oxylobium alpestre*, with bright yellow flowers, the showy Eriostemons—*E. myoporoides* and *E. correifolius*—could be seen on the wayside, as well as the pretty trailing *Goodenia hederacea*, var. *cordifolia*, which hung in large festoons over the edges of the road cutting. When approaching the hospice two species of Acacia came in view—*A. alpina* and *A. penninervis*—both in seed only. It was after 4 o'clock when I reached my destination, where I was kindly received by Mr. and Mrs. Ellis, the present proprietors. The hospice had been greatly improved since my former visit; I was made very comfortable, and soon felt quite at home.

On Monday morning, the weather being fine, I set out for Mount Hotham, a distance of six miles, lovely scenery and grand panoramic views in every direction, flowers in great profusion and still greater variety—it would be tiring if I enumerated here all the different species I could have collected besides those I needed. The grassy slopes appeared in many places like a carpet, dotted with flowers of various colours, which are much brighter and more brilliant in the Alps than in the lower country.

It took me some time to reach Mount Hotham, as I was kept busy filling my portfolio with specimens. I had to stop at so many places that a traveller, who was walking in the same direction, and who kept me company for some time, became disgusted and asked what was the good of picking these things—if any money could be made out of it? gave me up, and went on. When approaching Mount Hotham (6,100 feet elevation) the last of the stunted trees, two species of eucalyptus, *E. gunnii* and *E. pauciflora*, ceased altogether, and nothing but a grassy slope to the summit; I was above the "tree line." Here on flat or sloping rocks are large patches, all over the mount, of the Victorian Edelweiss, *Leontopodium catipes*, with silvery-grey leaves, and very much smaller white flowers than its congener of the Alps in Switzerland, but far more easily gathered, while in the Swiss Alps lives have been sacrificed in climbing after their much-coveted Edelweiss. On the same rocks, along with our Leontopodium, occur also two other plants of a moss-like appearance—*Scleranthus biflorus* and *Stackhousia pulvinaris*; but more conspicuous on the mount are the rare Umbellifera *Aciphylla glacialis*, and the Compositæ, principally *Aster exul*, *Aster celmisia*, *Helichrysum lucidum*, and *H. rosmarinifolium*, *Helipterum anthemoides*, and *H. incanum*, the latter in three varieties, white, pink, and yellow (var. *auriceps*); also *Kunzea muelleri* as a low creeping shrub. After resting for a while near the cairn on the summit, and after placing the specimens between drying paper in my portfolio, I started to return. I may here mention that close to Mount Hotham, near the Diamantina Springs, accommodation and refreshments can be obtained at Mrs. Johnston's; this place had been erected since my previous visit. On my way I examined various *Grevillea victoriæ* bushes, but only could obtain a few seed specimens; on the roadsides were a good many shrubs of *Westringia senifolia*, *Prostanthera cuneata*, and *Boronia algida*.

The following day, Tuesday, I went to the Twins Mountains, only two miles away from the hospice, by a plain track, which leads to the top, though the final part is very steep; the principal peak of this double mount is also destitute of trees, like most of the other peaks. I walked across this mountain down to the other side, where I came to the track from Wood's Point, which goes round the side of it. In the afternoon I visited Mount Smythe, a bold rocky peak near the hospice, and followed the source of the Dargo downwards, returning by the Grant or Crooked River road.

There are many other places of note from St. Bernard for excursionists. For instance, a good bridle track leads to Mount Feathertop (6,300 feet), a distance of fourteen miles; Mount Freezeout (5,500 feet), three miles away, and several others; but as I intended on my return to proceed to the Buffalo Mountains

my time was too limited to linger here any longer, though I gladly would have liked to remain, and could have found plenty to do to occupy my time for fully another week.

On Wednesday morning I started on my return journey, the weather continuing fine. I took the walk down from the Alps leisurely, as I intended to stay for the night at Harrietville, and made up in collecting for what I missed during the rain on my way up. After six hours' walk I reached Harrietville, and was disappointed to learn that no coach was leaving for Bright on Thursday, so I was obliged to return the same evening to Bright, where I arrived at 11 o'clock.

Next morning I took the early train (at 5 a.m.) for Porepunkah, which is the nearest station for the Eurobin Falls and the Buffalo Mountains. From Porepunkah there is a good road marked by finger-post to Mr. J. Mansfield's Buffalo Falls Temperance Hotel; crossing over the Ovens bridge in the township, then following the river down to the junction of the Buckland River and up this river to the first bridge crossing, leads to the Eurobin Falls, a distance of six miles from Porepunkah, two miles beyond the Buffalo Falls Hotel, where I arrived in good time for breakfast. I did not feel inclined that day to climb the Buffalo Mountains, and contented myself with botanizing along the banks of the Eurobin, as far as the falls I saw here for the first time *Baeckea crenatifolia*, a pretty myrtaceous shrub, in full bloom, but I was too late for other kinds which I obtained on my former visit, in the month of November. Of *Logania floribunda*, *Micrantheum hexandrum*, and *Mirbelia oxylobioides* I could only get poor seed specimens. A singular variety of *Acacia penninervis*, with straight and narrow leaves, as well as narrow seed-pods, I noticed here, as well as on the Buckland, while the typical *A. penninervis* from Mount St. Bernard has more the shape of the Blackwood leaves, *Acacia melancxylon*. Another interesting plant which occurs here, and also on St. Bernard, is *Gaultiera hispida*, an Ericaceæ, of which order only two representatives are found in Victoria; the other is *Wittsteinia vaccinacea*—both restricted to the north-eastern portion of our alpine regions; the latter is only found in Victoria, while the former extends to New South Wales and Tasmania. *Gaultiera hispida*, on account of its white fleshy seed-berries of the size of a pea, is locally known as "native bread."

The Eurobin Falls are a favourite picnic resort for residents of this large district, and a fairly good road leads up to within half a mile of these falls, but I wonder that the Bright Shire Council, who had the guiding finger-posts erected, could not see its way to spend the few pounds it may cost to clear the remaining part of the fallen timber. The country is almost level up to

the falls, no road-cutting being required. As it is now, picnic parties have to stop with their vehicles in an uninteresting part of the forest. From the rocks of the Eurobin Falls is a splendid view of the Buffalo Waterfall above, which has a drop of about 1,000 feet, but as it was in the middle of summer the volume of water coming over the rocks was not great.

On Friday morning one of Mr. Mansfield's sons kindly volunteered to accompany me up to the mount. The ascent is not an easy matter; soon after leaving the banks of the Eurobin the climbing commences, the spur being of so steep a gradient that for over a mile the track is in a continuous zig-zag, each part from 10 to 30 yards long to the next turn, and we were not sorry when the top of the main ridge was reached, following it along till we reached the steep and rocky slope, where we crossed over to the other side and soon reached some springs. Here I found a variety of shrubs, which were—*Kunzea corifolia*, Leptospermums, *Logania floribunda*, *Pultenæa mollis*, and others, all in seeds, and *Grevillea parviflora*, *Bauera rubioides*, and *Trachymene billardieri*, conspicuous flowering shrubs, in bloom. More climbing, still scrambling through between piles of rocks, many of which may have descended from the top ages ago.

I can imagine how difficult it must have been to carry on a stretcher His Honor Justice Sir Hartley Williams, who met with an accident at the Buffalo Gorge last year, down from the summit over this track. At last we reached the top and had only come six miles, but were now at an elevation of 4,560 feet again. This summit is a large grassy and partly swampy flat, bordered by piles of rocks, through which a small stream flows, forming in its descent from the mount the Buffalo Falls; following this watercourse downwards to the left, towards the famous Gorge, we soon came to a sheltered nook between rocks, where we prepared our luncheon. Conspicuous amongst the flora here was the large *Podolepis longipedata*, with bright orange-coloured flowers, restricted to the north-eastern Alpine district, and which I had never found previously. *Richea gunnii* is also here, as well as on Mount Hotham, while *Kunzea muelleri* attains a height of 6 feet, being sheltered by rocks. Amongst the Ranunculaceæ four interesting species are to be met with here—*Ranunculus muelleri*, *R. gunnianus*, *R. anemoneus*, and a dwarf form of *R. lappaceus*. Near the summit of the Buffalo Mountain I found shrubs of *Epacris mucronulata*, hitherto only known from Tasmania, which is new for Victoria and also for New South Wales, as Mr. J. H. Maiden, F.L.S., at the same time obtained specimens of it on Mount Kosciusko.

From the rocks forming the Buffalo Gorge a magnificent panoramic view is obtained, the sky being so clear we could see Mount Kosciusko, in New South Wales, 90 miles away, and near

us, over 1,000 feet below, nestled amongst trees, was the hotel we left in the morning, and to which we returned safely at 6 o'clock punctually, with a splendid appetite for our dinner. I little expected that two days later, in the last days of January, the plateau would be covered with snow fully an inch deep. Since my former visit a hospice has been erected here, which is superintended by Mrs. Carlile, and to which visitors from Bright resort during the winter season to enjoy a good snowballing.

I obtained a great variety of species at the Buffalos, many of which I missed on the other parts of the Alps, but it would be tiring to enumerate them here.

Saturday and Sunday turned out cold and wet, with snow on the mount; but I was comfortable at the hotel, and found plenty to do with drying and arranging my specimens. Though I had no books with me I was able, with only three or four exceptions, to name from memory all the specimens I had collected during my Alpine excursion. I left a set of the Buffalo plants ready named with Mr. Mansfield's son for the information of future visitors, as I also had done at the St. Bernard hospice in respect to the Mount Hotham flora.

My time being fully up, I returned to Melbourne on Monday by the afternoon train from Porepunkah. Apologizing for the length of this account, I trust that many of my hearers will have the opportunity of enjoying next summer the bracing and invigorating atmosphere of our Alps, where the nights are always cool, and where, with regard to its flora, our Australian summer is changed to a lovely spring.

NEST AND EGGS OF THE CARTER HONEY-EATER, *PTILOTIS LEILAVALENSIS*, North.

By A. J. Campbell.

Although this bird was first publicly exhibited and described by me as *P. carteri*, Mr. A. J. North, the Ornithologist of the Australian Museum, was enabled to get his name, *leilavalensis*, into print a few days earlier than *carteri*; therefore, in obedience to the law of priority, the former name must remain.

I have now pleasure in describing a nest and eggs of this new Honey-eater, discovered on the 14th July last by Mr. Carter at a creek near the North-West Cape, Western Australia.

Nest.—Cup-shaped, oval, well built of chiefly wool and spiders' cocoons, bound together with light-coloured rootlets, lined inside, principally on the bottom, with yellowish-white down off plants, and suspended by the rim to a salt-bush, 3 or 4 feet from the ground, near a waterhole. Dimensions over all, 3 inches by 2½ inches in depth; egg cavity, 1¾ inches across by 1¾ inches deep.

Eggs.—Clutch 2; oval in shape, slightly more compressed at the smaller end; texture of shell fine; surface glossy; colour whitish or pinkish-white, finely but distinctly spotted with reddish-brown and purplish-brown, the markings, which are moderately disposed, being, of course, thickest on the larger end. Most resemble the eggs of its near ally, *P. penicillata.* Dimensions in inches—(1) .85 x .6; (2) .83 x .6.

NOTES ON AUSTRALIAN COCCIDÆ.

By T. D. A. Cockerell, New Mexico Agricultural Experiment Station.

3.—Two New Species and a New Variety.

Ctenochiton cellulosus, Ckll., n. sp.

Waxy scale, 4 mm. long, 2 broad, 1⅔ high; white, with a very faint yellowish tinge; regularly rounded and without keels; not at all divided into plates, but very rough—in fact, tuberculate all over—and everywhere dotted with air-cells, which are easily visible with a lens. These air-cells are quite irregularly placed (not in rows), and are irregular in form, from 30 μ to 60 μ diameter. No true fringe, but the scale viewed from above seems to have a short irregular fringe, owing to the lateral tubercles projecting.

Female insect reddish-brown, shrivelling to one end of the scale. Margin with a row of short-pointed spines, broad at base, about 12 μ long, and very close together. Mouth-parts very small. Anal plates rather irregularly formed, and bearing several stout bristles. Anal ring with six large bristles.

Femur with trochanter, 150 μ long; tibia, 117; tarsus, 75; claw, 24 μ, bulbous at base, with a curved tip. Tarsal digitules, 60 μ.

Antennæ slender, eight-segmented, the segments measuring thus in μ:—(1) 42, (2) 30, (3) 57, (4) 51, (5) 34, (6) 18, (7) 18, (8) 34. Formula 341 (58) 2 (67).

Hab.—Myrniong, Victoria, on *Melaleuca nodosa.* Collected by Mr. J. Lidgett (No. 23). A very distinct species.

Rhizococcus lidgetti, Ckll., n. sp.

Female insects on twigs, very dark purple, naked even when full of young. Boiled in caustic soda, they give a very fine magenta colour; the female boiled and flattened under a cover glass is 4 mm. long and 2½ broad. Mouth-parts very small. Legs and antennæ very pale. Dermal spines numerous, about 30 μ long.

Femur with trochanter, 105 μ long; tibia, 78; tarsus, 90; claw, 24 μ, not much curved.

Antennæ seven-segmented, segments measuring in μ:—(1) 36, (2) 30, (3) 42, (4) 27, (5) 18, (6) 16, (7) 27. Formula 312

(47) 56. Of course there is some variation from these measurements.

Hab.—Myrniong, Victoria, on *Acacia estrophiolata*, F. v. Mueller. Differs from the other Australian species by the seven-segmented antennæ, and in other details. Collected by Mr. J. Lidgett (No. 25).

Chrysomphalus rossi (Mask.), var. *Victoriæ*, Ckll., n. var.

Female scale like *rossi* in size and shape, but rougher and paler (more brown), with the exuviæ covered by whitish secretion. (I have scales of *C. rossi* on *Araucaria* which approach this quite closely.)

Lobes rounded, not at all tricuspid, as they are in typical *rossi*. Circumgenital glands with 8 to 10 orifices in the anterior lateral groups, 5 to 6 in the posterior lateral.

Hab.—Maddingly Park, Bacchus Marsh, Victoria, on *Eucalyptus globulus*. Collected by Mr. J. Lidgett (No. 27). The bark of the eucalyptus boiled in caustic soda gives a very fine deep claret colour, which deepens to a pinkish-brown.

Mesilla Park, New Mexico, U.S.A., 6th April, 1899.

NOTES ON THREE PHASES IN THE PLUMAGE OF *POMATORRHINUS SUPERCILIOSUS*, V. AND H.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 10th July*, 1899.)

I RECENTLY drew the attention of members of this Club (*Victorian Naturalist*, xvi., p. 28) to a specimen of Babbler I had received from Western Australia, which had been collected near Kalgoorlie, some 200 miles inland, bordering on the great Victoria desert. The plumage of this bird attracted my attention as having something strange about it. Subsequently three more skins, an adult male, an adult female, and a young bird, were forwarded to me by Mr. Lindsay Cameron.

The fledgling enables me now to make a comparison between these skins and that of the *Pomatorrhinus superciliosus* of the eastern colonies. In all cases I find the western bird is quite different in the colour of the throat, which is cream coloured, with a flush of flesh colour, while ours (the eastern) is pure white; and, secondly, there is a greater depth of colour in the sombre hue, for while our bird is greyish-brown, in all but one of my specimens, the western bird is brownish-black in all specimens. The young of the western bird has the two central tail feathers blacker than those of the adult eastern bird, which, according to Gould, are dark brown; in the adult western bird the same feathers are dense black, while in the eastern bird they are brown. In this Kalgoorlie form the upper tail coverts are brownish-black to black, compared with the brown to brownish-

black of our *P. superciliosus*. The forehead and crown of all my western specimens are blackish-brown rather than the greyish-brown of the eastern birds, and this is rendered more distinct because of the very feeble scale markings in the Kalgoorlie birds. The young bird has no scale markings, and consequently looks even blacker than the adults. The primaries also are very much darker in the western adults. Briefly, I may say that the young bird of the Kalgoorlie variety is darker, while the adult birds are considerably darker than their eastern representatives.

Taking another species of this genus, *P. temporalis*, it will be found that the brown of the tail matures into black, while the fulvous under wing remains similar throughout the different stages. In the species under notice the tail is black in all stages, while the fulvous under wing changes to grey in the adult.

Having briefly referred to the main differences in the plumage of the Western Australian birds from those of the eastern side of the continent, I will give a more detailed description of the four stages, viz. :—*(a)* fledgling, *(b)* young bird, *(c)* adult male, and *(d)* adult female; these I include under Phase 2, the ordinary *P. superciliosus* forming Phase 1; while a specimen from Stawell, Victoria, represents Phase 3.

Phase 1.—The hitherto described bird with two dark-brown central tail feathers and a head of similar colour.

Phase 2.—*(a)* Fledgling. No sex marked. Kalgoorlie, W.A., 17th January, 1899. Forehead and crown black, flushed only with very light fulvous; nape and back uniform brown, tending to muddy grey; upper tail coverts brownish-grey, the two middle tail feathers deep brownish-black; flanks fulvous brown; throat cream, flushed with flesh colour; primaries and their coverts deep brown, edged with pale chestnut; superciliary stripe anteriorly fawn, posteriorly white; inner webs of primaries from third inward broadly edged with fulvous; bill, 0.20-inch shorter than that of adult.

(b) Young bird, no sex given. Kalgoorlie, 13th March, 1899. Forehead and crown have brown edges to feathers; nape and back brownish-black; upper tail coverts blackish; two centre tail feathers brownish-black; flanks brown; throat cream, flushed with flesh colour; the primaries and their coverts have lost the pale chestnut noted in *(a)*; superciliary stripe whiter than in *(a)*; inner webs of primaries have less fulvous than in *(a)*.

(c) Adult male. Golden Ridge, Kalgoorlie, 19th March, 1899. Forehead and crown brownish-black, and only slightly scaled; nape and back sooty-brown; upper tail coverts brownish-black; two centre tail feathers almost dense black; flanks brown; throat cream, flushed with flesh colour; primaries are brownish-black, except first and second, which are brown (most likely these will disappear next month); abdomen dark brown.

(d) Adult female, apparently fully matured. Golden Ridge, Kalgoorlie, 19th March, 1899. Forehead and crown sooty-black, each feather so faintly bordered with brown that the appearance is uniform sooty-black; cheeks and lores sooty-black; throat cream, flushed with flesh colour; nape, back, and rump sooty; upper tail coverts a deeper soot colour; two centre tail feathers dense black; flanks deep brown; primaries sooty-black, edged with a lighter shade; wing coverts similar to interscapulum; under wing light to dark slate.

Phase 3.—Male. Stawell, Victoria, 23rd June, 1899. While one of the two central tail feathers is dense black, the other forms a strong contrast in being brown, while both are distinctly barred. The head of this specimen is brown, with "scales" upon it. This skin has been mounted, and is in the possession of Mr. A. Coles, taxidermist, Elizabeth-street, Melbourne.

AN OOLOGISTS' REUNION.

At the invitation of Mr. Dudley Le Souëf, C.M.Z.S., about 25 gentlemen, nearly all interested in oology and members of the Field Naturalists' Club, assembled at the Victoria Coffee Palace, Collins-street, Melbourne, on Friday evening, 1st September, 1899. The dining-table was adorned with some of the host's rarer birds' eggs and skins, together with floral decorations of pink and white epacris, wattle, &c.

After dinner Mr. F. R. Godfrey, who acted as chairman, in a short speech referred to Mr. Le Souëf's work among birds, and mentioned that he had now over 500 species of Australian birds' eggs in his collection. He gave a short *résumé* of recent oological and ornithological work in Australia, concluding with a personal reminiscence of an interview with that greatest of all Australian ornithologists, John Gould, before his (the chairman's) departure from England for Australia in 1846. Mr. A. J. Campbell gave a few notes about his work on "The Nests and Eggs of Australian Birds," now in an English publisher's hands, and reminded his friends that, owing to the extent of the MSS., and the consequent great expense of type-setting and illustrating, the receipt of further subscription forms was necessary before the actual work of publication could be commenced. Mr. D. Le Souëf briefly thanked those who had assembled, and hoped that in the future similar gatherings would take place.

Several valuable ornithological works were displayed for inspection by the visitors, after which Mr. Le Souëf entertained his guests with a series of lantern-slides depicting some of the rarer nests of Australian birds and a series of views descriptive of the country in the neighbourhood of Roeburn, Western Australia. The evening passed all too quickly, and at its close general expressions of delight were made as the guests departed to catch the late trams or trains.

NEW BOOK.

A Key to the Birds of Australia and Tasmania. By Robert Hall. Melbourne: Melville, Mullen and Slade.

This work, a preliminary notice of which appeared in the last *Naturalist*, has now been issued from the press, and seems to fulfil the expectation formed by a perusal of the proof-sheets. In addition to the points previously mentioned, the author introduces his work with a short preface of nearly four pages, which is almost entirely devoted to an explanation of the faunal sub-regions adopted, and a comparison of the genera and species occurring in these sub-regions. This portion, however, is somewhat statistical, which perhaps was unavoidable. A useful tabular synopsis of the orders is followed by the main portion of the work, extending to 109 pages. In this Mr. Hall enumerates 767 species, as compared with 761 in the recent Vernacular List of the Australasian Association and 770 in Ramsay's Tabular List. The arrangement differs slightly from that of the former list, but doubtless the author has good reasons for the scheme adopted. An index to the genera is followed by a vernacular index, a most useful addition, and a glossary of technical terms used, which, with the frontispiece, a diagramatic representation of a quail, with the principal external features indicated, should enable any intelligent reader to recognize the distinguishing characters so tersely given, and render the work valuable alike to the ordinary naturalist as to the systematic ornithologist. On the whole Mr. Hall is to be congratulated on his book, which, being issued at the moderate price of five shillings, is within the reach of all. The printing of the work leaves nothing to be desired, and is abundant proof that scientific letter-press can be executed in Victoria.

The Late Professor Sir F. M'Coy, F.R.S., &c.—An appreciative memoir of the late professor appears in the *Geological Magazine* for June, 1899. After giving the general details of his life, an outline of which has already been published in these pages, a list is given of his smaller contributions to natural science. These number sixty-nine, extending from 1838 to 1876, with a final communication in 1881. They cover a vast range of subjects, and the greater number were published in the *Annals of Natural History Magazine*.

A New Saw-Fly.—Mr. W. W. Froggatt, Government Entomologist of New South Wales, has recently described before the Linnean Society of New South Wales, as a new genus, a Saw-fly, *Phylacteophaga eucalypti*, found by Mr. C. French, jun., which is causing considerable damage to young trees of *Eucalyptus globulus* around Melbourne.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

EXHIBITION OF WILD FLOWERS, 9th October.

ANNUAL PICNIC at Blackburn, 28th October.
Tickets 2s. each, to be obtained from the Secretary.

PRACTICAL EVENING.

MONDAY, 25th SEPTEMBER.

Subject, "Structure of the Eye," illustrated by dissections and preparations for the microscope. Demonstrator, Rev. W. Fielder.

Meet at Mr. Fielder's laboratory, "Norwood," Mitchell Street, St. Kilda.

(Members are desired, if possible, to provide themselves with dissecting instruments and microscopes.)

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

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

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Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 9th October, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. W. F. Wyatt .. .. .. Cathedral Buildings.	A. Cummins	Rev. W. Fielder
Mr. Grundt .. .. Collins Street.	J. Shephard	O. A. Sayce
Mr. C. Ludwig	J. G. Luehmann ..	A. J. Campbell
Mr. J. R. Tovey .. .. .. Naturalists' Herbarium, S.Y.	J. G. Luehmann ..	C. French, jun.
Mr. E. H. Swan .. .. .. Hodgkinson Street, Clifton Hill.	G. A. Keartland ..	J. Gabriel

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

(Authors are requested to hand in a brief resume of their papers to the Secretary.)

1. By Professor W. Baldwin Spencer, "Remarks on exhibit of a rare Marsupial."
2. By A. Campbell, jun., "Ornithology of the Lower Wimmera."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

✻ EXCURSIONS. ✻

SATURDAY, 7TH OCTOBER. Braybrook. Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer Street Station 1.50. p.m. train. Botany.

SATURDAY, 21ST OCTOBER. Upper Ferntree Gully. Under the leadership of Mr J. G. Luehmann, F.L.S. Meet at Prince's Bridge Station 1.35. p.m. Botany.

THE

Victorian Naturalist.

Vol. XVI.—No. 6. OCTOBER 5, 1899. No. 190.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 11th September, 1899. The president, Mr. J. Shephard, occupied the chair, and about 60 members and visitors were present.

REPORTS.

The president reported that a practical evening for the preparation and examination of Blood Films had been held at the Rev. W. Fielder's laboratory on Monday, 28th August, when a most interesting and instructive evening was spent.

A report of the botanical results of the excursion to Cheltenham on Saturday, 19th August, was read by the leader, Mr. C. French, jun., who stated that a very interesting afternoon had been spent. Some twelve varieties of orchids had been noted in bloom, besides numerous other plants. On one of the orchids a parasitic fungus new to science had been found. Mr. J. Stickland stated that those members interested in pond life had also experienced a profitable outing, as among other captures were the males of the rotifers *Lacinularia pedunculata* and *L. elliptica*, which are somewhat uncommon.

A report of the visit to the Botanical Gardens on Saturday, 9th September, was read by Mr. F. G. A. Barnard, who stated that, owing to the inclement weather, attention was principally devoted to the collections in the Economic Museum and the System House, which were kindly explained by Mr. J. Baker, in the unavoidable absence of Mr. F. Pitcher.

ELECTION OF MEMBER.

On a ballot being taken, Mr. C. L. Barrett, Dendy-street, Brighton, was duly elected a member of the Club.

GENERAL BUSINESS.

The postponed discussion on the question of protection to native birds was resumed, when a letter was read from Mr. F. C. Christy advocating the extension of the close season for all waterfowl from the 21st December to at least the middle of March. Several members spoke on the subject, but it was considered hopeless to ask for the inclusion of the Christmas holidays in the close season, and that the only course open was to endeavour to have the present Act more strictly enforced.

The president drew attention to a copy of a new work by Mr. R. Hall, entitled "A Key to the Birds of Australia and Tas-

mania," which had been presented to the Club's library by the author, and said that the work would no doubt prove of great service to working ornithologists.

PAPERS READ.

1. By Mr. H. T. Tisdall, entitled "Plants of Prey."

The author called attention to the so-called carnivorous plants, such as the Droseras, Bladder-worts (Utricularia), Pitcher-plants of Western Australia, and the Nepenthes of Queensland, describing some of their more prominent features.

2. By Mr. D. M'Alpine, entitled "Description of a New Parasitic Agaric."

The author described a new species of fungus of the genus Hebeloma (Agaricaceæ), which had been found by Mr. C. French, jun., during the Cheltenham excursion, growing on the stem of an orchid, *Pterostylis pedunculata*, R. Br., it being most unusual for a Hebeloma to be parasitic.

3. By Rev. W. Fielder, F.R.M.S., entitled "Egg-cells and their Development."

The egg-cells of amphioxus, crayfish, frog, and bird were taken as representing types of alecithal, centrolecithal, and telolecithal eggs. After a detailed account of the processes involved, illustrated by blackboard sketches, in the extrusion of the polar bodies and the fertilization of the egg of the frog had been given, the influence of food-yolk upon the segmentation of the egg-cell was graphically described by comparison with other typical eggs. The significant fact that the egg-cells of such diverse types as those mentioned all passed through practically the same stages in their early development was strongly insisted upon as a proof of the importance of embryology to a due appreciation of the position taken up by leading naturalists as to the origin of diverse forms of animal life.

NATURAL HISTORY NOTES.

Mr. D. Le Souëf read a note on the occurrence of double eggs.

Mr. E. R. Hammett, Mansfield, reported that an eagle had recently been shot there measuring 6 feet 8 inches from tip to tip of wing and 3 feet from beak to tail, and weighing 8 lbs.

Mr. R. Hall read a note on a supposed hybrid duck, in measurement resembling *Anas superciliosa* and in colour *Nettion castaneum*.

EXHIBITS.

By Mr. A. Coles.—White Ptarmigan (mounted). By Rev. W. Fielder.—Micro. slides in illustration of his remarks on egg-cells. By Mr. D. Le Souëf.—Head of Murray Cod, from fish weighing 90 lbs., from Edwards River, N.S.W.; also double duck egg. By Mr. D. M'Alpine.—Coloured drawing of fungus *Hebeloma frenchii* (new to science). By Mr. Jas. Lidgett.—40 species of Coccidæ, from Ceylon. By Mr. F. M. Reader.—Dried plants of *Stackhousia*

flava, Hook.; *Goodenia paniculata* and *Scirpus setaceus*, unrecorded for the N.W. of Victoria. By Mr. H. W. Whitney.—Bronze Cuckoo, *Chalcococcyx plagosus*.

After the usual conversazione the meeting terminated.

A BOTANIST ON MT. KOSCIUSKO.

TAKING advantage of his visit to Melbourne, Mr. J. H. Maiden, F.L.S., Government Botanist of New South Wales, and Director of the Botanic Gardens, Sydney, at very short notice offered to give a lecture before the Field Naturalists' Club, entitled "A Botanist on Mt. Kosciusko." The committee accepted the offer with great pleasure, and arranged a special meeting of the Club for Tuesday, 19th September, at the Royal Society's Hall, when there was an excellent attendance of members and friends. Mr. J. Shephard, the president, occupied the chair and briefly introduced Mr. Maiden, who at once entered upon his subject with the remark that he preferred to term it a "chat" rather than a lecture. His remarks were illustrated with limelight views, which were well displayed by Mr. J. Searle.

The lecturer described a trip taken in January last, his starting point being Jindabyne, on the Snowy River, some 300 miles south of Sydney, from whence the top of Kosciusko is distant about 30 miles. The pictures shown were nearly all taken from a botanical point of view, and showed the character of the vegetation met with during the ascent, and mention was made of the extent of ground covered by such species as *Phebalium ovalifolium*, *Orites lancifolia*, *Prostanthera cuneata*, which often occurred in acre patches. The flowers, as a rule, were of the more sombre hues, but what they lacked in colour was made up in quantity. The region at about 500 feet below the summit proved the most prolific gathering ground, and many interesting plants were noted there, while the beautiful *Caltha introloba* was found flowering beneath the snow. At the close of the lecture Mr. F. Wisewould, in an enthusiastic speech, proposed a vote of thanks to the lecturer, which was seconded by Mr. C. A. Topp, M.A., LL.B., and carried by acclamation.

PLANT OR ANIMAL—MYXOMYCETE OR MYCETOZOON?

BY D. M'ALPINE.

(*Read before the Field Naturalists' Club of Victoria, 10th July*, 1899.)

IT is very gratifying to find that a member of this Club, and an expert microscopist (Mr. Sayce), has undertaken the investigation of some of the so-called slime-fungi, and now that attention is being called to them it may not be inappropriate to consider the much-debated question as to their position in the scale of life.

Since they are living organisms, the first point to be discussed is, do they belong to the animal or the vegetable kingdom? and the answer to that question will show that they partake of the nature of both, and yet, strictly speaking, belong to neither. In fact they lie on the borderland of both kingdoms, and consequently have a botanical and a zoological aspect. It is not my intention to quote authorities this evening, but to consider the leading features presented by this group of organisms, and then draw such conclusions as the facts warrant.

There is something in a name in this case, for the name chosen will indicate a leaning either to one side or the other. Myxogastres was the name given to the group by Fries in 1829, as he considered that they had some connection with the group of fungi known as Gastromycetes, but that view is now given up. Wallroth, in 1833, used the name Myxomycetes, or slime-fungi, and in 1859 De Bary introduced the term Mycetozoa, or fungus-animals, to indicate their relationship with the lower forms of animal life; so that it becomes a question as to which name is the most appropriate, Myxomycete or Mycetozoon.

Apart from any views we may hold as to their nature, they have briefly the following life-history in typical cases :—

1. Starting with the *spore*, which is produced in a sporangium, this produces on germination—

2. A *Swarm-spore*, which is typically pear-shaped, and provided with a cilium by means of which it can move about. After a time this cilium is drawn into the body, and now it becomes an amœboid body—

3. *Myxamœba*, as it is termed, and capable of creeping about. When two of these meet their protoplasm can flow together into a single mass, and a number of these uniting constitute the last stage of all—

4. *Plasmodium*, a mass of naked protoplasm, which still retains the power of movement. This last process is sometimes spoken of as multiple conjugation, but the nuclei do not fuse. Finally the sporangia are produced, with their contained spores, and the life cycle is completed.

Let us now see in the first place on what characters their animal nature is based :—

1. *Power of movement.*—At certain stages of their existence they can either creep or swim, and no doubt but the amœboid movement is an animal characteristic. It is well known, however, that there are undoubted plants which at one stage of their existence are capable of free movement, and have the "animal" motion characteristic of infusoria in water, as in the swarm-spores of Ulothrix, or the zoogonidia of White Rust (Cystopus), for instance, so that this character may be dismissed as irrelevant.

2. *Power of absorbing and digesting solid nutriment.*—This is a character not known among recognized plants, and both the plas-

modia and myxamœbæ can take in solid food. The amœboid forms can also divide like ordinary amœbæ, and so their animal character at this stage, as well as from their mode of feeding, is pretty well established. In these two physiological processes, viz., amœboid movement and power of absorbing solid food, such as bacteria, they undoubtedly resemble animals, and if we only knew them in these stages there would be little or no room for differences of opinion.

In the next place let us inquire wherein they resemble plants.

Reproduction.—They are reproduced by means of spores formed inside sporangia, and the walls of both are composed of a substance like the cuticle of the vegetable cell, so that in one of the most important features of their life, the propagation of the species, they behave like plants.

In the matter of nutrition they are animals, while in the matter of reproduction they are plants, and it resolves itself into a question of the relative importance of these two processes in settling their position as plants or animals. The reproductive organs, on account of their relative constancy of character, hold an important place in determining the position of organisms, and the saying, "By their fruits ye shall know them," is generally applicable to plants. If we apply the Scripture criterion to the fructification of the slime-fungi, I think it will be generally acknowledged that from this point of view they are undoubted plants.

Having settled that the most reasonable view to take of the slime-fungi is to place them in the vegetable kingdom, the next point is as to whether they are to be regarded as fungi or not. If we agree with Hartig that "every fungus consists of a mycelium and a sporophore," then, in the absence of mycelia, assuredly these organisms are not fungi. But if we take the other view and divide fungi into two classes, those with hyphæ and those without, then they might readily find a place there. The conclusion of the whole matter is that we cannot definitely assign a fixed place to them. They are exceptional forms, and must be treated accordingly. They might be placed without any dispute in Haeckel's division of the Protista; but, belonging neither to the botanist nor zoologist, they might run some risk of being neglected altogether. In one stage of their existence they behave like animals, and may be accounted as such; at another stage they behave like plants, and since the reproductive process is recognized as settling affinity for systematic purposes, the benefit of the doubt may be given in favour of their retention by the botanist.

I consider that the ends of truth and science would be best served by placing them on the boundary line, but purely as a matter of convenience it is desirable to assign them to one or other of the two great divisions of biology. Let it be clearly

understood that it is a question, like so many others, with two sides; for what I object to, and the main object of writing this note, is the positive way—I had almost said the cocksure way—in which some speak of these organisms, as if their systematic position was beyond dispute. I always remember in cases of this kind a saying of my old teacher, Professor Huxley—"The next best thing to being certain of what is certain, is to be uncertain of what is uncertain."

RECORDS OF PLANTS NEW TO VICTORIA AND NEW DISTRICTS FOR VICTORIAN PLANTS.

By Chas. Walter. Communicated by C. French, jun.

(*Read before the Field Naturalists' Club of Victoria, 14th August*, 1899.)

At the July meeting of the Field Naturalists' Club I noticed that Mr. F. M. Reader, of Dimboola, exhibited specimens of the plants *Goodenia ovata*, Smith, and *Xanthorrhœa australis*, R. Brown, as *new* plants for the N.W. district of Victoria.

Some twelve years ago, when collecting in that district, I saw plants of the Goodenia on the banks of the Wimmera, and noticed the grass-trees, *Xanthorrhœa australis*, not far from Mr. Cowell's station, in Victoria, but near the South Australian border. Mr. Reader has no doubt been guided by the second part of Baron von Mueller's "Key to the System of Victorian Plants," which records the different districts in which plants have been found. This index was published in 1885, and though supplementary lists have been printed in your journal, it is now some years since any additions to it have been published. In the meantime several collectors have visited the Mallee country, among them my friend Mr. St. Eloy D'Alton, of Nhill, who possesses a thorough knowledge of the Mallee flora, and who kept the late Baron von Mueller constantly informed of any new discoveries, as I also did, which the Baron duly noted for a new edition of his list of Victorian plants.

On the occasion of my first visit to the Grampians, some fourteen years ago, I reported to the Baron sixteen species from that locality alone which had not been recorded in the "Key" from the S.W. district. I have no doubt Mr. Reader will still find plants in the Northern Mallee, which, though new to him, are already known to Mr. D'Alton, an abstract of whose "Notes on the Plants Indigenous to the N.W. Portion of the Colony of Victoria" has recently been published in the "Proceedings of the Australasian Association for the Advancement of Science," Sydney session, 1898. My remarks apply also to former exhibits by Mr. Reader—for instance, *Goodenia amplexans*, F. v. M., specimens of which I have in my herbarium, collected in company with Mr. D'Alton in 1887, in the north-west.

I beg to submit the following additions to the plants recorded

in the Supplementary Lists which appeared in your journal of May, 1888 (vol. v., p. 14); December, 1893 (vol. x., p. 132); and January, 1894 (vol. x., p. 159), being twenty-five species unrecorded for Victoria and seventy-four with additional regional records :—

PLANTS NEW FOR VICTORIA.

RUTACEÆ.						
Eriostemon umbellatus, Turcz. ...	—	—	—	N.E.	—	
LEGUMINOSÆ.						
Indigofera efoliata, F. v. M. ...	—	—	—	—	E.	
Acacia glanduligicarpa, Reader ...	N.W.	—	—	—	—	
CRASSULACEÆ.						
Tillæa pedicillosa, F. v. M. ...	N.W.	—	—	—	—	
MYRTACEÆ.						
Leptospermum myrtifolium, Sieber...	—	S.W.	—	—	—	
Eucalyptus corymbosa, Smith ...	—	—	—	—	E.	
COMPOSITÆ.						
Erigeron minurioides, Benth. ...	—	—	—	—	E.	
Helichrysum backhousii, F. v. M. ...	—	—	S.	—	—	
H. diotophyllum, F. v. M. ...	N.W.	—	—	—	—	
Calocephalus lessingii, F. v. M. ...	N.W.	—	—	—	—	
Senecio daltoni, F. v. M. ...	N.W.	—	—	—	—	
Erechtites picridioides, Turcz. ...	N.W.	—	—	—	—	
EPACRIDEÆ.						
Epacris mucronulata, R. Brown ...	—	—	—	N.E.	—	
ORCHIDEÆ.						
Calochilus campester, R. Brown ...	—	—	—	—	E.	
Prasophyllum brevilabre, J. Hooker	—	—	S.	—	E.	
P. reichenbachii, F. v. M. ...	N.W.	—	—	—	—	
Caladenia testacea, R. Brown ...	—	—	S.	—	—	
LILIACEÆ.						
Xanthorrhœa hastilis, F. v. M. ...	—	—	—	—	E.	
GRAMINEÆ.						
Panicum parviflorum, R. Brown ...	N.W.	—	—	—	—	
P. trachyrachis, Benth.	N.W.	—	—	—	—	
Danthonia setacea, F. v. M. ...	N.W.	—	—	—	—	
Stipa scabra, Lindley ...	N.W.	—	—	—	—	
S. micrantha, Cavanilles ...	N.W.	—	—	—	—	
S. acrociliata, F. M. Reader ...	N.W.	—	—	—	—	
LYCOPODINEÆ.						
Lycopodium carolinianum ...	N.W.	—	—	—	—	

NEW DISTRICTS FOR VICTORIAN PLANTS.

Ranunculus hirtus	—	—	S.	—		
Viola betonicifolia	N.W.	—	—	—		
Tetratheca ciliata	N.W.	—	—	—		
Stackhousia viminea	N.W.	—	—	—		
Eriostemon obovalis	N.W.	—	—	—		

Portulaca oleracea	N.W.	—	—	—	
Claytonia volubilis	—	—	S.	—	
Pseudanthus ovalifolius	N.W.	—	—	—	
Beyeria viscosa	N.W.	—	—	—	
Gompholobium huegelii ...	N.W.	—	—	—	
Pultenæa muelleri	—	—	S.	—	
Bossiæa riparia	—	S.W.	—	—	
Hovea heterophylla	N.W.	—	—	—	
Cassia eremophila	—	—	S.	—	
Acacia tenuifolia	N.W.	—	—	—	
A. rupicola	N.W.	—	—	—	
Alchemilla vulgaris	N.W.	—	—	—	
Acæna sanguisorbæ	N.W.	—	—	—	
Haloragis aspera	N.W.	—	—	—	
H. micrantha	N.W.	—	—	—	
Myriophyllum pedunculatum	N.W.	—	—	—	
Lhotzkya genetylloides	N.W.	—	—	—	
Thryptomene ciliata	—	—	—	N.E.	
Eucalyptus hæmastoma	—	—	S.	—	
E. largiflorens	—	S.W.	—	—	
Pomaderris prunifolia...	—	—	S.	—	
Exocarpus stricta	N.W.	—	—	—	
Loranthus celastroides	N.W.	—	—	—	
Grevillea alpina	N.W.	—	—	—	
G. confertifolia	—	—	—	N.E.	
Opercularia varia	N.W.	—	—	—	
Solenogyna (Lagenophora) emphysopus ...	N.W.	—	—	—	
Aster exul	—	—	—	N.E.	
Cassinia arcuata	—	S.W.	—	—	
C. theodori	—	—	S.	—	
Humea elegans	N.W.	—	—	—	
Senecio magnificus	—	S.W.	—	—	
Erechtites mixta	N.W.	—	—	—	
Lobelia simplicicaulis	N.W.	—	—	—	
Goodenia ovata	N.W.	—	—	—	
G. amplexans	N.W.	—	—	—	
G. gracilis	N.W.	—	—	—	
Cuscuta tasmanica	N.W.	—	—	—	
Prostanthera rotundifolia	N.W.	—	—	—	
Styphelia strigosa	N.W.	—	—	—	
S. rufa	N.W.	—	—	—	
S. serrulata	N.W.	—	—	—	
S. appressa	N.W.	—	—	—	
Brachyloma ciliatum	N.W.	—	—	—	
Spiranthes australis	N.W.	—	—	—	
Thelymitra ixioides	N.W.	—	—	—	
T. antennifera	N.W.	—	—	—	
Calochilus robertsoni	N.W.	—	—	—	

Prasophyllum rufum	—	S.W.	—	—
Corysanthes pruinosa	N.W.	—	—	—
Pterostylis nutans	N.W.	—	—	—
P. rufa	—	—	S.	—
Eriochilus fimbriatus	—	S.W.	—	—
Caladenia cœrulea	—	S.W.	—	—
C. cairnsiana	—	—	S.	—
Calectasia cyanea	N.W.	—	—	—
Xerotes thunbergii	N.W.	—	—	—
Xanthorrhœa minor	N.W.	—	—	—
X. australis	N.W.	—	—	—
Alisma plantago	N.W.	—	—	—
Trithuria submersa	N.W.	—	—	—
Lepyrodia interrupta	N.W.	—	—	—
Scirpus nodosus	N.W.	—	—	—
Gahnia (Cladium) radula	N.W.	—	—	—
Panicum sanguinale	—	—	S.	—
Lepturus cylindricus	N.W.	—	—	—
Aira cæspitosa	N.W.	—	—	—
Danthonia carphoides	N.W.	—	—	—
Woodwardia aspera	—	S.W.	—	—
Grammitis rutifolia	N.W.	—	—	—

DESCRIPTIONS OF SOME AUSTRALIAN BIRDS' EGGS.

By D. Le Souëf, C.M.Z.S.

(*Read before the Field Naturalists' Club of Victoria, 14th August*, 1899.)

Astur leucosomus, Lesser White Goshawk.

These beautiful birds are found in Northern Australia, especially in the Gulf country, but their nest and eggs do not seem so far to have been described. They were noticed by Mr. E. Olive building near the Victoria River in October last, but he did not succeed in procuring their eggs. The breeding season is from September to January, according to the season, as the birds often delay nesting until the rainy season has set in. The nest is built of sticks and lined with finer twigs and Eucalyptus leaves, and measures—external diameter, 12 inches; internal, 7 inches; external depth, 7 inches; internal, 4 inches; and was placed at the fork of a horizontal branch of a Eucalyptus tree, about 50 feet from the ground. The eggs are ovate in shape, being slightly smaller at one end, and are a dull white, with a few faint greyish markings distributed over the egg, and, as is often the case with hawks' eggs, they are much stained. They measure—(*a*) 1.52 x 1.18, (*b*) 1.54 x 1.19 inch. This bird is considered by some to be simply a smaller variety of *Astur novæ-hollandiæ*, and I consider it so myself.

Entomyza albipennis, White-quilled Honey-eater.

Northern Australia is the home of these birds. They are very

similar in their habits to the *Entomyza cyanotis*, and are often found in the same country. They live in pairs, and are bright, lively birds, and have a loud, clear note. Like the *E. cyanotis* they build their nests in the deserted dome-shaped tenements of the Pomatorhinus. They are made entirely of grass, with finer shreds of the same material for lining. They measure 4½ inches high and 5 inches wide, and the inside cup 3½ inches wide with a depth of 2¾ inches. The eggs are an elongated oval in shape, and slightly smaller at one end, and of a reddish pink ground colour, with a few dark reddish brown markings, especially on the larger end, where they form an irregular zone. Other smaller markings beneath the surface are of a pale purplish hue. The eggs measure—(*a*) 1.26 x .82 inch, (*b*) 1.28 x .80 inch. I do not think they have been described before.

Calyptorhynchus baudini, White-tailed Cockatoo.

These birds are only found in Western Australia, and chiefly there in the central districts. Mr. Bruce Leake found their nest on 28th August, 1898; it was situated in a hollow spout of a limb, 30 feet from the ground, that had broken off close to the trunk and was partly overgrown, the two eggs being laid on the decomposed wood at the bottom. The birds had used the same nesting site for several seasons. The eggs are a dull white, slightly granulated, and with a few small excrescences; in shape oval, and they measure—(*a*) 1.79 x 1.30 inch, (*b*) 1.77 x 1.26 inch.

The birds generally congregate in flocks of from ten to thirty birds, but during the nesting season, August and September, the flocks consist of young birds only. Gould has previously described the egg of this bird, but he mentions that the breeding season extends from October to December, but, like the *C. banksi* and *C. viridis*, they generally nest in August or September.

Callocephalon galeatum, Gang-Gang Cockatoo.

These birds are found in south-east Australia, and also in Tasmania, and on King Island, in Bass Straits. They are nowhere very plentiful, and go about in pairs, being generally found in heavily timbered country. It feeds entirely on the trees, whereas the majority of cockatoos (excepting the black) feed on the ground; its food consists of seeds and grubs. They have a peculiar cry, something like the creaking of a hinge. The breeding season is from September to December. They generally choose the end of a hollow branch or cavity in the main trunk in which to deposit their two eggs, laying them on the decomposed wood at the bottom, and, as a rule, the holes they choose are very high up and difficult to get at. The eggs are small for the size of the bird, and are dull white, ovate in form, and measure—(*a*) 1.25 x .94 inch, (*b*) 1.28 x .92 inch. Mr. Keartland described and exhibited an egg of this bird some time ago before this Club.

Addendum—Errata.—In my paper entitled "Ornithological

Notes from the Northern Territory," published in the *Victorian Naturalist*, August, 1899, page 65, line 13, *Malurus cruentatus-boweri* should read *Malurus dorsalis (cruentatus)*, and (page 67, line 43) *Ptilotis fasciogularis*, Fasciated Honey-eater, should read *Glycyphila fasciata*, White-breasted Honey-eater.

CORRESPONDENCE.

VERNACULAR NAMES FOR AUSTRALIAN BIRDS.

To the Editor of the Victorian Naturalist.

SIR,—I notice in your number for August a paragraph on page 76 referring to the criticisms of the South Australian Ornithological Association, as published in the *Register*, on the "List of Vernacular Names for Australian Birds" drawn up by Mr. A. J. Campbell and myself, and which, viewed in the light of the present standard of ornithological science, are somewhat remarkable. Exception is taken, it appears—first to the common-sense names, descriptive of plumage and habits, given instead of unmeaning Latin titles; and second, to the antiquated and incorrect Linnean classification adopted by Gould not being retained.

As regards the first point, the object the authors had in view was the doing away with the Latin names, given on the spur of the moment, for want of an English title, by Gould, and instead, bestowing English names, as is done in all other countries. It may well here be asked what is the meaning to a field naturalist or collector, so far as the individual is concerned, of such appellations as Acanthiza, Sericornis, Sittella, Podargus,* Gerygone, &c.? A Latin name used as an English one, to a young collector or student working up ornithology is simply outlandish. Imagine English field naturalists being obliged to call the "Willow Wren" the White-breasted Phylloscopus; the Blackcap, the Black-headed Sylvia; the Wheatear, the Grey-backed Saxicola! The idea is preposterous; yet it has been done for years in Australia, and is what the ornithologists of South Australia apparently wish to perpetuate for the mystification of field naturalists here. It has never occurred, perhaps, to these gentlemen that Gould had no object in giving apt titles to Australian birds. His work was not so much written for Australians as for the scientific world of Europe, and a Latin name was equally acceptable for labels in English or American cabinets! The same cannot be said of Australia; and the perpetuation of Latin names here is most pernicious for purposes of nomenclature. The authors, therefore, substituted names suggestive of the birds' habits, as in the case of those used for Acanthiza, Sericornis, Sittella, &c., or by their

* For this genus Lord Tweedale's very appropriate name, used in "The Birds of Malay Archipelago," was adopted.

affinities to old world genera, such as in the case of Ephthianura, which is a thorough "Chat" in its deportment and mode of life. In other instances, as in Pomatorhinus and Podargus, the Indian names applied to allied species were adopted. This procedure is what, according to our critics in Adelaide, is "most confusing."

As regards the second point, classification: the South Australian "ornithologists" have evidently got beyond their depth. It would not seem necessary to point out that one of the chief objects of classification is to bring together groups and families according to their natural and structural affinities. Gould, who was a personal friend of my own, was eminently a pictorial naturalist, and was not at all a systematist; he adopted for convenience sake the most popular classification of his time, full of errors and incongruities, and discarded years ago. In his "Handbook" the *Picarian* birds are grouped, or I might say "mixed up," with *Passerine* birds under the unwieldy order of Vigors—*Insessores.* The truly passerine Swallow is classed with the totally dissimilar and picarian Swift. In his Grallatores he has combined the Herons with the Plovers—two groups of birds absolutely distinct and in no way related; and in the comprehensive order Natatores the Gulls, Petrels, Cormorants, and Gannets are combined! If the South Australian ornithologists think for one moment that naturalists of the present day, who think and inquire for themselves, are going to be content with errors of this kind they are much mistaken. The classification in the "Vernacular List" is that adopted in all modern works where the Raptores are placed first. It is somewhat more extended as regards the "orders" than that which I adopted in my "Birds of Ceylon;" but these follow one another in a natural sequence perfectly intelligible to all students. The generic and specific names of the birds are up to date, and those adopted in that great work "The Catalogue of Birds" (British Museum), which will now form the basis of all future labour in ornithology, and all Australian workers will be compelled eventually to adopt them.

I have to apologize for the length of this communication. I find that I have perhaps gone into particulars as regards classification which are unnecessary for many of your readers. It would, however, be a pity if such criticisms, based on a want of knowledge, should go forth to the world of Australian naturalists and prejudice those who had not studied the subject. It is to be hoped that there are few workers, either "field" or scientific, in Australia who are not alive to the necessity of keeping up with the times, or content to remain in the state of "Rip van Winkleism" which emanates from Adelaide.—I am, yours,

W. V. LEGGE,
Author of "The Birds of Ceylon."

Hobart, 8th September, 1899.

Field Naturalists' Club of Victoria.

Exhibition of Wild Flowers.

Members intending to exhibit Wild Flowers are requested to intimate at once the space required, and to have flowers at the Hall not later than 4 p.m., on Monday, 9th inst.

Annual Picnic.

BLACKBURN, 28th OCTOBER.

Trains leave Prince's Bridge at 1.35 and 3.45 p.m.

During the afternoon a botanical ramble and visit to the lake will take place. After tea (at 6 o'clock) there will be a musical evening.

Tickets for Tea, 2s. each, may be obtained from Mr. Gabriel or the Secretary.

PRACTICAL EVENING.

MONDAY, 23rd OCTOBER.

Subject, "Elementary Factors of the Nervous System."
Demonstrator, Rev. W. Fielder.

Meet at Mr. Fielder's laboratory, "Norwood," Mitchell Street, St. Kilda.

(Members are desired, if possible, to provide themselves with dissecting instruments and microscopes.)

CAMP OUT IN THE LERDERDERG RANGES,

Going via Bacchus Marsh.

Members desiring of joining please send in their names to Hon. Secretary for Camp Out, Mr. A. Mattingly, Customs House, within the next week or 10 days.

First. — Those who intend Camping for the week commencing Saturday Morn, 4th November.

Second.—Those who intend Camping for three days only, 7th to 9th (including the Public Holidays—Cup Day and the Prince of Wales' Birthday).

Members Joining will be advised of details by post card in ample time.

Vol. XVI.—No. 7. November, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

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Editor: F. G. A. BARNARD, Esq.

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Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 13th November, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mr. Sydney J. Parsons, .. M'Arthur Street, Malvern.	C. French, jun. ..	G. A. Keartland.
Mr. Wm. Howat, ... 358 William Street.	A. Tadgell	G. Coghill.

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

(Authors are requested to hand in a brief resume of their papers to the Secretary.)

1. By Mr. F. Billinghurst (communicated by Mr. T. S. Hall, M.A.), "The Genera of Australian Dragon Flies."
2. By Mr. D. M'Alpine, "Two Mallee Fungi."
3. By Mr. R. Hall, "Notes on some Abnormal Plumaged Birds."

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

✻ EXCURSIONS. ✻

SATURDAY, NOVEMBER 18.—Ringwood. Under the leadership of Mr. F. G. A Barnard. Meet at Prince's Bridge Station, 1.35 p.m. train. Entomology and General.

SATURDAY, DECEMBER 2.—Port Phillip. Under the leadership of Mr. Gabriel. Meet at Middle Brighton Pier, 2.30 p.m.

THE

Victorian Naturalist.

VOL. XVI.—No. 7. NOVEMBER 9, 1899. No. 191.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th October, 1899. The president, Mr. J. Shephard, occupied the chair, and about 100 members and visitors were present.

CORRESPONDENCE.

From the Department of Trade and Customs, stating that after due consideration it had been decided to adhere to the close season for Quail as at present gazetted.

REPORTS.

Messrs. J. Shephard and J. G. Luehmann reported that owing to unfavourable weather little was done at the excursion to Sandringham on Saturday, 23rd September, though before the rain set in a number of specimens of the curious little plant, *Polypompholyx tenella*, were obtained.

A short report of the excursion to Braybrook was read by the leader, Mr. F. G. A. Barnard, who said that, while knowing the district was not an encouraging one for field work, an interesting afternoon had been spent. Among the plants noticed was a very robust form of *Correa speciosa*, and a well-marked variety of *Goodenia pinnatifida*. The only orchid noticed was *Diuris pedunculata*. The ferns *Asplenium flabellifolium* and *Cheilanthes tenuifolia* were found growing in the crevices of the basalt. Some specimens of freshwater algæ were obtained in the Kororoit Creek, which had not yet been identified.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. W. F. Wyatt, O. Grundt, C. Ludwig, J. R. Tovey, and E. H. Swan were duly elected members of the Club.

PAPERS READ.

1. By Prof. W. Baldwin Spencer, M.A., entitled "Remarks on a Rare Marsupial."

The author verbally drew attention to a specimen of the rare phalanger, *Gymnobelideus leadbeateri*, McCoy, which had recently been obtained in the Bass River district, where the original specimens, on which the species was founded by Prof. McCoy, were obtained some 30 years ago. The animal, which is figured in the "Zoology of Victoria," vol. i., plate 91, is remarkable for

the length of its tail, which measures 6½ inches, while the body from the tip of the nose to the base of the tail is only 5½ inches, and for the skin of the flanks not being expanded into a parachute as in the flying squirrels. The fact of this being only the third specimen obtained might be accounted for by its small size and nocturnal habits. The specimen had been presented to the National Museum by Mr. A. Coles.

In a short discussion which followed, reference was made to the National Museum, now in course of removal to its new location in the Public Library buildings, and Prof. Spencer stated that he is extremely anxious to make the collection of the Australian fauna as complete as possible, and donations of specimens, however common, would be gratefully acknowledged.

2. By Mr. A. Campbell, jun., entitled "Field Notes from the Lower Wimmera."

The author gave a number of interesting notes, principally descriptive of the bird life noticed while making a collecting trip through the central Mallee, northward from Hopetoun, in October, 1898.

NATURAL HISTORY NOTES.

Mr. C. French, jun., recorded the finding of the orchid, *Pterostylis grandiflora* at Kewell, in the Wimmera, by Mr. J. A. Hill, being new for the N.W. district.

Mr. A. J. Campbell read a note describing for the first time the nest and eggs of the Wattle-checked Honey-eater, *Ptilotis cratitia*, Gould, obtained near Nhill, in the Wimmera.

EXHIBITION OF WILD FLOWERS.

The evening was principally devoted to an exhibition of wild flowers, and a special vote of thanks was passed to Messrs. Walter, Luehmann, and Gabriel for their efforts in connection with it.

The following were the principal wild flower exhibits :—

By Miss Cochrane, about 50 species from Tunstall and Sandringham, including *Thelymitra ixioides*, *T. flexuosa*, *Melaleuca squarrosa*, and *Aotus villosa*.

By Misses Wise, about 20 species from Sale, including *Caleya major*, *Caladenia cairnsiana*, *Dampiera stricta*, *Correa speciosa* (red variety), and *Boronia polygalifolia*, var. *anemonifolia*.

By Mr. G. Coghill, about 80 species from Croydon and Point Lonsdale, including *Utricularia dichotoma*, *Zygophyllum billardiera*, *Swainsona lessertifolia*, *Spærolobium vimineum*.

By Mr. J. G. Luehmann, about 40 species from Cheltenham, including *Thelymitra aristata*, *T. epipactoides*, *Epacris obtusifolia*, &c.

By Mr. J. R. Tovey, about 30 species from Mentone, including *Thelymitra aristata*, *Isopogon ceratophyllus*, &c.

By Mr. F. G. A. Barnard, about 12 species from Braybrook, including *Veronica gracilis*, *Lobelia anceps*, *Craspedia chrysantha*, *Correa speciosa*, and *Ptilotus spathulatus*.

By Mr. J. Wilcox, *Boronia pinnata*, from Warragul.

OTHER EXHIBITS.

By Mr. F. G. A. Barnard.—Specimens of scale insect, *Cryptes (Lecanium) baccatus*, Maskell, on *Acacia dealbata*, forwarded by Mr. J. Lidgett, Myrniong. By Miss Cochrane.—Paintings of wild flowers. By Mr. A. J. Campbell.—Carter's Honey-eater, nest and eggs, and Wattle-cheeked Honey-eater, nest and eggs. By Mr. A. Coles.—Pair Spotted Pardalotes, nest and eggs, in natural surroundings, collected at Mornington by Mr. S. P. Townsend. By Mr. G. A. Keartland.—Eggs of Green-Leek Parrakeet. By Mr. F. M. Reader.—3 species of mosses new to science—*Barbula androgyna*, C. Mueller; *B. chrysogœte*, C. Mueller; *B. perbrevifolia*, C. Mueller. By Mr. H. C. Smart.—7 species of Victorian Acanthizas.

After an extended conversazione and examination of the flowers exhibited the meeting terminated.

PLANTS OF PREY.

By Henry Thos. Tisdall.

(*Read before the Field Naturalists' Club of Victoria*, 11*th Sept.*, 1899.)

Amongst the animal kingdom we find many notable examples of the manner in which members of that kingdom manage to ensnare or catch their prey. Who has not watched a cat crouched patiently for an indefinite period until the long-wished-for mouse made its appearance? We read of snakes terrifying little birds, so that in their fright they fall an easy prey. In fact, on land, in the air, and more especially in the sea, myriads of animals prey on each other, either by swiftness or by lying in wait. These facts are well known to everyone, but few notice the wonderful adaptations of the organs of certain plants by which they ensnare animals. When we consider the want of swift motion it is hard to see how a plant can possibly catch animals, the said animals for the most part being quick-flying insects.

Let us for a moment consider what use a plant could have for the flesh of an insect. Every plant must obtain a certain amount of such elements as carbon, oxygen, hydrogen, and nitrogen, in order to turn them into plant food. They obtain them partly from the soil and partly from the air. Of course, different plants require different quantities of these elements, and this brings us to the fact that many species require more nitrogen than they can

absorb from the earth. As they have not the means of obtaining enough nitrogen from the air they catch animals by various means and retain their bodies, in some instances secreting juices which act directly on the bodies. In time the insects die and decay, and the plant obtains the required nitrogen.

One of the commonest of these plants of prey is the well-known Drosera or Sundew. In any outing of the Club during the season thousands of these plants may be obtained, and if carefully examined under a good lens their curious peltate leaves may be seen to be covered with long hairs, each hair surmounted by a gland. The *modus operandi* is as follows :—The insect sportively flying among the grass, either for pleasure or prey, comes in contact with a hair-like tentacle ; from each hair oozes a viscid substance, which detains the insect, and then several neighbouring tentacles close slowly over the victim, dragging it down to the centre of the leaf, from whence it seldom escapes, but gradually expires, and its nitrogen is finally absorbed by the Drosera.

In some of the half-dried swamps about Oakleigh and elsewhere may be found pretty little plants, each tall thin stem surmounted by a yellow, pink, or blue flower. They belong to the Bladderworts (Lentibularineæ). This particular species is *Utricularia dichotoma*. F. von Müller describes them thus :—"Stem often rather tall, always branchless ; leaves from ovate to almost linear, seldom conspicuously elongated ; pitchers few ; flowers rather large ;" and so on. The organs I wish to draw your attention to are the pitchers or bladders. In the Oakleigh species the bladders are few in number, and the plant does not branch, but in *Utricularia flexuosa*, which Mr. Luehmann assures me is to be found in the swamps about the Yarra and Murray, these plants are described as "floating, branched ; leaves distantly beset with numerous minute roundish vesicular pitchers." These bladders form wonderful traps for catching small water insects. Each bladder is borne on a stalk, and has a small aperture on one side, completely surrounded by stiff hairs or bristles. The opening itself is closed by a small trap-door, which opens inwards. Now, we can easily fancy a tiny animal fleeing in from its enemy amongst the stiff bristles for protection. It pushes against the delicate valve, which opens easily, and is admitted into the chamber, and the valve immediately falls into its place. The same thing happens over and over again, until the bladder becomes nearly full of these little creatures. In a short time they die, decay, and the products from their remains are absorbed by special cells found in the lining wall of the bladder. According to Kerner the principal animals found in these bladders are the larvæ and adult individuals of small species of Cypris, Daphnia, and Cyclops.

Another plant, *Cephalotus follicularis*, which, though not

found in Victoria, is very plentiful in Western Australia, and Mr. Guilfoyle told me that he had met with it on the highlands of New South Wales. The climate of Victoria does not seem to suit it, as they have endeavoured to cultivate it in the Melbourne Botanic Gardens, but it always dies off. In Bentham and Müller's "Flora" it is marked as endemic in the wet marshes at St. George's Sound. Amongst its characters are mentioned—"Some of the leaves are converted into ovoid or nearly globular pitchers of about 1 inch in diameter, or rather more, each with three external longitudinal raised nerves, dilated into narrow leaf-like double wings, ciliate on the edge; the mouth of the pitchers bordered by a transversely plaited ring; the ovate lid attached to the side next the petiole."

The pitchers mentioned rest on the damp earth, and the half-open lid is brightly coloured, with white patches and purple veins. The inner surface of the mouth is provided with a quantity of honey glands. The bright colours arrest the eye of the flying insect, whilst the strong scent from the honey induces myriads of ants to climb up from the ground. As they fly down or creep up to the mouth of the pitcher they crawl slowly and carefully towards the honey, but the fluted leaf is smooth and slippery and numbers slide into the pitcher. To get out is almost impossible. In the first place many are likely to be drowned by the fluid secreted by the pitcher; those that escape drowning may attempt to crawl up the side, but they will soon be stopped by hundreds of sharp prickly bristles, pointed like bayonets exactly towards their helpless bodies, and arranged so closely that nothing can pass between. So in time they fall backwards into the putrid fluid, which thus becomes a rich liquid manure.

A much larger plant of prey may be seen in the Nepenthes or Pitcher Plants of Queensland. A number of their leaves are so modified as to form pitchers of a large size with closely fitting lids. The general mode adopted by the Nepenthes for catching their prey is very similar to that just described in the Cephalotus; but it is perfectly marvellous to see the various contrivances found in these plants for ensuring the capture and detention of their victims—gorgeous colours for the eye, strong scents for the smell, and sweet nectar for the taste. Again, the paths to the tempting dainties are made easy and pleasant; but now comes the fall, the hideous prison, and the sharp weapons—prickles, thorns, some straight and some curved, but all so placed as to form an impassable barrier to freedom. A very interesting account of a then newly discovered Nepenthes may be seen in the "Transactions of the Linnean Society of New South Wales," dated April, 1880. It may be noticed that the plants under consideration may be separated into distinct divisions. Thus the Nepenthes and Cephalotus form perfectly quiescent pitfalls; the Utricularia

forms more of a trap with a movable valve; the Drosera has hair-like glands, with distinct active movements.

Too wide a field for the consideration of this subject would be open were we to attempt to describe the plants of prey found in other countries. Kerner says that at least 600 different species of plants are now known that obtain a great deal of their nourishment by capturing animals either by pitfalls, traps, or the active movement of glands; the quick closing of leaves, as in the well-known Venus's Flytrap, *Dionœa muscipula*; and, commonest of all, by sticky mucilaginous glands.

Before concluding this paper the writer would wish to acknowledge with gratitude the courtesy and help received by him from both Mr. W. R. Guilfoyle, Director of the Botanic Gardens, and Mr. J. G. Luehmann, Director of the National Herbarium, more particularly in placing at his disposal specimens of the plants herein described.

A NEW PARASITIC AGARIC.

By D. M'Alpine.

(*Read before the Field Naturalists' Club of Victoria, 11th September*, 1899.)

A new species of Hebeloma was discovered by Mr. C. French, jun., while conducting an excursion of the Field Naturalists' Club around Cheltenham on 19th August last. It occurred on the stem of an orchid, *Pterostylis pedunculata*, R. Br., just at the collar and beneath the basal leaves, where it formed a dense felt of mycelium, without apparently interfering with the proper flowering of the plant. I have much pleasure in naming this interesting species after the discoverer, who not only follows that branch of natural history with which his father, the Government Entomologist, is identified, but who has made a specialty of our Victorian Orchideæ. This is only one of several fungi which he has already sent me from the Mallee and elsewhere, descriptions of which I hope soon to publish.

Hebeloma frenchii, n. sp.

Pileus ¼ in. across, fleshy, deep reddish-brown, smooth, slightly viscid when moist, convex to somewhat conical, slightly incurved at margin, sometimes bent back on stem, with silky fibres passing from margin to stem; flesh yellowish. Gills reddish-yellow, not crowded, ventricose, adnexed. Stem ¾ in. long, ⅛ in. thick, central, creamy-yellow, hollow, equal, cylindrical, slightly curved, apex mealy, passing at base into dense woolly felt and attached to collar of plant. Spores yellow, elliptical, slightly apiculate, 10–12 x 5½–6½ μ. Strong mushroom odour. Attached to orchid, *Pterostylis pedunculata*, R. Br., just beneath basal leaves. August, 1899. Near Cheltenham, Victoria; C. French, jun.

This is the first instance known to me of a *Hebeloma* being parasitic. The orchid grew amongst decayed leaves and moss, in sandy soil, under tall Tea-trees, *Leptospermum lævigatum*, F. v. M. It was in flower, as shown in the drawing, and the flower-stalk attained a height of 8½ inches. The plant did not seem to suffer much from the parasite, although it formed a dense felt at its base, and was firmly attached. Only two were found, occurring on the same plant and springing from a common dense mycelium.

This species differs from *H. petiginosum*, Fr., already found on the ground in Victoria, in the smaller pileus and shorter stem and in the gills not being free but adnexed.

NEST AND EGGS OF THE WATTLE-CHEEKED HONEY-EATER, *PTILOTIS CRATITIA*, Gould.

By A. J. Campbell.

The beautiful Wattle-cheeked Honey-eater has been chiefly found in the southern parts of Australia, where it seems to love the timber of the drier country, such as Mallee tracts. This species may be distinguished from all its kind by the strips of lovely lilac-coloured naked skin which stretch from the corner of the mouth across the sides of the cheeks; hence the vernacular name, "Wattle-cheeked." The wattle, however, in the young or immature bird is yellowish.

Gould first found this honey-eater as a new bird on the 26th June, 1839, in the ranges near the Upper Torrens, in South Australia; so 60 years have passed before an authenticated nest with eggs was discovered and brought to scientific light through this Club.

During a search for Mallee Hen egg-mounds near Lawloit, October, 1884, I flushed a Wattle-cheeked Honey-eater in the act of constructing its nest, but I never passed that way again, and had no further opportunity of exploring the haunts of the honey-eater till September, 1899, when, with two companions, I was investigating some Mallee scrub, locally known as Kemp's Block, at Woorak West, about 10 miles to the north of the flourishing township of Nhill. Finding the interesting birds fairly numerous there, we secured three pairs of skins for museum purposes, and on the 25th I discovered a nest containing a pair of almost fresh eggs, procuring one of the parents for identification.

The nest was situated about 6 feet from the ground in a parasitical creeper, *Cassytha glabella*, entwining a Mallee bush, *Eucalyptus oleosa*. I saw another nest similarly situated, but about 3 feet from the ground, which had been tenanted by young, but whether the current season or the last I could not say. Other

two nests, apparently in course of construction, were found, and two old ones—one being in a stiff-leafed Grevillea and one in another kind of bush.

One of the bird's calls—probably its alarm note—is loud and sounds something like "chuc-chuc-chuc-chuc-chuc" repeated very rapidly many times. Another noise is composed of jerky, rattle-like notes. The birds are shy as well as noisy.

NEST.—Cup-shaped; fairly well built of very fine threads of bark, felted or matted together with an abundance of spiders' webs and torn cocoons, imparting to the structures a whitish appearance externally; lined inside with fine grass and a few feathers; usually suspended by the rim, at a height varying from 3 feet to 6 feet from the ground, in creeper in Mallee (Eucalyptus) scrub. Dimensions over all, 2¾ inches by 2¾ inches in depth; egg cavity, 2 inches across by 2 inches deep.

EGGS.—Clutch 2; in the type set one is almost elliptical in form, the other a roundish oval; texture of shell fine; surface glassy; colour white, sparingly and finely spotted with rufous or reddish-brown and faint purplish-brown, the markings being more numerous about the apex. Dimensions in inches—elliptical, .84 x .6; roundish, .79 x .64. These eggs are among the lightest-coloured of Ptilotis eggs.

THE *SOUTHERN SCIENCE RECORD.*

SOME uncertainty seems to exist as to the number of issues of the *Southern Science Record*, and being one of the few possessors of what is, I believe, a complete set, some particulars about it may enable others to note deficiencies existing in theirs.

The journal was commenced as a 16-page octavo magazine, price sixpence, in December, 1880, and its first volume consists of thirteen numbers. Its second volume commenced as a 24-page monthly in January, 1882, at the same price. In January, 1883, it came out as a 32-page journal, at the price of one shilling, but the later numbers of that volume became gradually smaller, owing to want of financial and other support, and did not appear till some months after the months named on their covers, consequently several were not issued until well on in 1884. With the number for January, 1885, commenced vol. i. of a new series, 24 pages at one shilling per month, of which, however, only four numbers were issued, when it again ceased. However, nothing daunted, the indefatigable proprietor started again, in January, 1886, with the first number of vol. ii., 24 pages at one shilling, intending to gradually supply the missing numbers for the past year, but did not get any further.

Of the four numbers for 1885, and the one for 1886, I believe few copies reached the general public, and a list of the titles of the papers published may be of interest:—

Jan. 1885 Contributions to the Palæontology of Older Rocks of Australia, by Prof. R. Tate.
Microscope and its Useful Application, by C. R. Blackett.
Remarks on Flora of Australian Alps, with Introductory Notes on the Geology and Meteorology, by J. Stirling, F.G.S. Continued in February, March, and April.
Feb. Definitions of Some New Australian Plants, by Baron F. von Mueller. Continued March and April.
The Fertilization of Plants, by T. Harrison.
Oology of Australian Birds, supplement i., by A. J. Campbell.
Mar. The Protection of our Native Birds, by A J. Campbell.
Notes on *Leipoa ocellata*, by F. W. Andrews.
April Some Indigenous Shrubs of South Australia Suitable for Fodder, by S. Dixon.
Jan. 1886 List of Australian Terebridæ, by Prof. R. Tate.
Fossil Terebridæ of Australia, by Prof. R. Tate.
Description of *Medinilla maidenii*, by Baron F. von Mueller.
Oology of Australian Birds, supplement ii., with illustration of nest of *Sittella leucocephalus*, by A. J. Campbell.
The Volcanic Eruption in Straits of Sunda, by D. Ploos van Amstel.

The journal at the time it was commenced filled a vacant place, and even now a monthly magazine giving such excellent abstracts as appeared in it of the latest proceedings of all the scientific societies of Australasia should be a desideratum to scientific workers throughout the colonies, who now have to wait until the appearance of the quarterly, half-yearly, or annual proceedings, as the case may be, of the different societies to learn what their neighbours are doing. Could not the Australasian Association for the Advancement of Science step in and provide this undoubted want? The expense would not be a great deal, and it would do much to keep workers in touch with one another.

The magazine, no doubt, did not receive the financial support requisite to enable the proprietor, Mr. Joseph Wing, to carry it on except at a great sacrifice of both time, energy, and money. For the first two years it was subsidized to a small extent by the Field Naturalists' Club of Victoria, but during 1883 the Club decided to publish its own proceedings, and in January, 1884, the first number of the *Victorian Naturalist* appeared, the present number being the 191st of the series.

F. G. A. Barnard.

NOTES.

THE LATE MR. W. KERSHAW.—Since our last issue one of the few remaining original members of the Field Naturalists' Club of Victoria has passed away in the person of Mr. W. Kershaw, formerly Entomologist at the National Museum, which position he occupied for some forty odd years. He had reached the ripe age of eighty years, and, though retired from active work, still retained a deep interest in natural history, and exhibited and was present at the Club conversazione in May last. Beyond assisting at the annual conversaziones he did not take a very active part in the work of the Club, though always ready to render assistance to those who required specimens named. Probably from his official position he felt himself precluded from putting in writing and placing before the Club much information which he must have gained during a long series of years, and he could recall with pleasure the days when it was possible to walk from Richmond to Caulfield and collect through unoccupied country nearly all the way. Mr. Kershaw was one of the most thorough of insect collectors, and it is to be regretted that he did not live to see the national collection properly housed in its new quarters.

THE NATIONAL MUSEUM.—We are pleased to announce that Mr. James A. Kershaw, son of the late Mr. W. Kershaw, has been promoted to the position of Curator of the Zoological Department of the National Museum, and that great efforts are being made, under the directorship of Professor Baldwin Spencer, to have the Museum ready for public inspection by the Christmas holidays.

THE SCRUB-TIT IN NORTH-WEST TASMANIA.—It is interesting to learn that the Scrub-Tit, *Sericornis* (*Acanthornis*) *magna* occurs here. My son, R. N. Atkinson (a rising ornithologist of 13 years), found a nest at which an unknown bird was busily at work. On further examination it proved to be the Scrub-Tit. The nest was situate, and carefully hidden, in a bunch of rushes and tall grass, partly surrounded by water. We visited the place several times after the building of the nest was completed, but could see no trace of the birds; but after an interval of a few days, on the 30th September last we flushed the bird from the nest and obtained three fresh eggs. The nest and eggs of this rare bird agree with the descriptions given by Mr. North in his valuable book on "The Nests and Eggs of Australian and Tasmanian Birds," *vide* Appendix ii., fol. 387. I may mention that Waratah is 40 miles inland, 2,000 feet above sea level, and is essentially a dense forest country.—E. D. ATKINSON. Waratah, Mt. Bischoff, Tasmania, 7th October, 1899.

EXTENDED DISTRIBUTION OF GERYGONE ALBIGULARIS, Gld.—In August last a sportsman presented me with a bird shot near

Western Port. It agrees with the descriptions given to *Gerygone albigularis*, Gld., the White-throated Fly-eater, and, as far as I know, it has not been previously recorded from Victoria. The throat being of an impure white and the base of the bill being light in colour, I conclude it is a bird of last season's rearing. The genus Gerygone is composed of two species, one of which confines its range to the Derby district, N.W. Australia, while the other has a wide range across the continent.—ROBERT HALL.

NOTE ON A HYBRID DUCK.—There was handed to me recently for comparison, by E. D'Ombrain, Esq., what appears to me a male skin of a duck, obtained in Victoria. It is most closely related to *Anas superciliosa*, Gmelin, as regards the proportions, and to *Nettion castaneum*, Eyton, in the colour. The measurements (specimen in the skin) are :—

	A. superciliosa.	*Hybrid.*	*N. castaneum.*
Total length.	22 inches ...	22 inches ...	18.5 inches
Culmen	2.1 ,, ...	1.85 ,, ...	1.35 ,,
Wing	10 ,, ...	9.5 ,, ...	7.75 ,,
Tail	5 ,, ...	5 ,, ...	4.5 ,,
Tarsus	1.65 ,, ...	1.60 ,, ...	1 ,,

The indication of the Black Duck in this specimen is in (*a*) the boundary lines of the lores being whitish and the superciliary lines being present, though faint; (*b*) the bill being broad, not compressed, and about the length of the head. The indication of the Teal is in (*a*) the chest and breast being markedly chestnut, (*b*) upper wing coverts being slate-grey, (*c*) head faintly washed with green, (*d*) feet and legs black. Opposed to both species are (*a*) the head and lower throat being black or greeny-black instead of metallic green in the one and brownish-black in the other, (*b*) the throat being rufous instead of fawn in the one and white in the other, (*c*) the greater part of the lores being light chestnut and black, (*d*) the whole under surface being more or less marked by rufous, (*e*) the entire dorsal surface being blacker, the upper and lower back being black, each feather edged with the usual fawn. This skin was exhibited on the occasion of the reunion of oologists recently held at the invitation of Mr. Dudley Le Souëf. —ROBERT HALL.

BOOK NOTICE.—We have received *Naturæ Novitates* for 1898 from the publishers, Messrs. Friedlander and Sohn, Berlin. This well-known work contains a list of all the more important books and periodicals published during the year on physical and natural sciences, and is of the greatest use to all who have to search for the literature of science.

WICKERSHEIM'S PRESERVING FLUID.—This fluid is not commonly used, owing to the poor preparations that have been put upon the market. Animal and vegetable bodies impregnated

with it retain their form, colour, and flexibility in the most perfect manner. The objects to be preserved are placed in the fluid, and left in it for from six to twelve days, after which they are dried in the air. The ligaments remain soft and movable, and the animals or plants remain fit for anatomical study for long periods. The formula for the fluid is as follows :—Dissolve 100 grains of alum, 25 grains common salt, 12 grains saltpetre, 60 grains potash, 10 grains arsenious acid, in 7 ozs. of boiling water. Filter the solution, and when cold to 5 ozs. of the solution add 2 ozs. of glycerine and ½ oz. of methyl alcohol.—*Knowledge*, August, 1899.

To Preserve Spiders and Myriapods.—Mix thoroughly half an ounce of Wickersheim's solution, half an ounce of glycerine, and an ounce and a half of distilled water, then add ten ounces of ninety-five per cent. alcohol. It is said that alcohol which has been previously used for preserving mites and spiders is preferable to fresh alcohol, as the former already contains some of the fats dissolved out of the specimens. This fluid preserves the colouring of the specimens, and keeps them flexible.—*Knowledge*, August, 1899.

The A.A.A.S.—The eighth session of the Australasian Association for the Advancement of Science, which will be held, under the presidency of Mr. R. L. J. Ellery, at the University of Melbourne on 9th January next, should prove an extremely successful gathering. Councillor M'Eacharn, the Mayor of Melbourne, will officially welcome the Association, and has kindly promised his assistance in other ways. The Mayors of Ballarat city and town have also offered official patronage, and at Bendigo a welcome will be extended to members of the A.A.A.S., who will be invited to visit the chief places of interest in the locality. Evening lectures, excursions for geologists and engineers, and numerous entertainments of a social nature are being arranged. The list of papers to be read before the ten sections and titles of the presidential addresses is a varied and interesting one. Tickets of membership, costing £1 each, will entitle the holders to attend all the meetings and entertainments, and to purchase tickets for the excursions. Ladies' tickets, at 10s., which will admit the holders to all the privileges of full members, except the right to receive the printed report, will also be available to full members. Subscriptions should be sent without delay to the hon. secretary, Professor Baldwin Spencer, the University of Melbourne.

"Nests and Eggs of Australian Birds."—In an earnest letter in a recent *Argus* the Mayor of Melbourne advocates the claims of Mr. A. J. Campbell's projected work to the support of all lovers of nature and of Australian literature, and trusts that the 150 subscribers yet required will soon be obtained.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

PRACTICAL EVENING.

MONDAY, 27th NOVEMBER.

Subject: "Some Elements of Histology."

Meet at Mr. Fielder's laboratory, "Norwood," Mitchell Street, St. Kilda.

(Members are desired, if possible, to provide themselves with dissecting instruments and microscopes.)

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

VOL. XVI.—No. 8. DECEMBER, 1899.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 7th DECEMBER, 1899.

Editor: F. G. A. BARNARD, Esq.

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

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1899.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 11th December, 1899, at Eight p.m.

1. Correspondence and Reports.

2. Nominations for Membership.

   Members making nominations will oblige by handing the full name and address to Hon. Secretary.

3. General Business.

4. Reading of Papers and Discussions thereon.

   (Authors are requested to hand in a brief resume of their papers to the Secretary.)

   1. By Mr. A. Campbell, jun., "Ornithology of the Lower Wimmera, Part II."
   2. By Rev. W. Fielder, "Amoeba and its relatives."

5. Reading of Natural History Notes.

   Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

6. Exhibition of Specimens and Conversazione.

   Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist.*

EXCURSIONS.

SATURDAY, DECEMBER 16.—Gisborne. Under the leadership of Mr. F. G. A. Barnard and Mr. G. Lyell, jun. Meet at Spencer St. Station 6.40 a.m. train, return fare 5s. 1d. Entomology.

SATURDAY, JANUARY 13.—Willsmere. Under the leadership of Mr. W. Stickland. Meet at Kew Tram Terminus, 2.30 p.m. Pond Life.

FRIDAY AND SATURDAY, JANUARY 26 AND 27. Plenty Ranges. Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer Street Station 10.35 a.m. Entomology and General.

THE

Victorian Naturalist.

Vol. XVI.—No. 8. DECEMBER 7, 1899. No. 192.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, the 13th November, 1899. The president, Mr. J. Shephard, occupied the chair, and about 35 members and friends were present.

REPORTS.

A report in diary form of the "camp-out" in the Lerderderg Ranges, 4th to 9th November, was read by Mr. A. Mattingley, and Mr. A. J. Campbell gave some notes on the birds, &c., seen. A special vote of thanks was accorded Mr. Mattingley for his energy as manager of the "camp-out," and for the use of the camping material, &c., placed at the disposal of the party.

The hon. secretary reported that the annual picnic had been held at Blackburn on Saturday, the 28th October, and had been attended by nearly 60 members and friends, who all seemed to enjoy thoroughly the ramble in the afternoon and music, &c., in the evening.

The hon. librarian reported the receipt of the following donations to the library:—"Monthly Progress Report, Geological Survey of Victoria," new series, No. 1, from Department of Mines, Victoria; "Proceedings Royal Society of Victoria," vol. xii., part 1, from the Society; "Annual Report, 1898, Department of Mines, New South Wales," "Mineral Resources of New South Wales," No. 5, and "Records of Geological Survey of New South Wales," vol. vi., part 3, from the Department of Mines, New South Wales; "Annual Report Botanic Gardens, New South Wales, 1898," from the Government Botanist; "Proceedings Royal Society of New South Wales," vol. xxxii., 1898, from the Society; "Proceedings Linnean Society of New South Wales," vol. xxiv., part 2, from the Society; "Transactions Royal Society of South Australia," vol. xxiii., part 1, and "Memoirs Royal Society of South Australia," vol., i., part 1, from the Society; "Queensland Agricultural Journal," vol. v., July, August, October, 1899, from the Department of Agriculture; "The Student's Flora of New Zealand," by T. Kirk, from the New Zealand Government; "Proceedings Nova Scotian Institute of Science, 1898," part 3, from the Institute; "Field Columbian Museum, Anthropological Series, vol. ii., No. 3, from the Museum; "Transactions Wisconsin Academy," vol. xi., 1896–7, from the Academy; "Wisconsin Geological and Natural History Survey—Solitary Wasps," from the Survey Department; "Bulletin Geological Institute of

Upsala, Sweden," vol. iv., part 1, from the Institute; "Naturæ Novitates, 1898," from Friedlander and Sohn, Berlin.

ELECTION OF MEMBERS.

On a ballot being taken, Messrs. Sydney J. Parsons and Wm. Howat were duly elected members.

PAPERS.

1. By Mr. F. Billinghurst (communicated by Mr. T. S. Hall, M.A.), entitled "The Genera of Australian Dragon-Flies."

The paper was a translation of some notes on the classification and arrangement of Australian Dragon-Flies by M. Réné Martin, a French entomologist, based principally on specimens collected in Victoria by Mr. Billinghurst.

2. By Mr. D. M'Alpine, entitled "Two Mallee Fungi."

The author described a new micro-fungus, *Septoria tabacina*, found by Mr. C. French, jun., in the Mallee in October last, occurring on the Native Tobacco, *Nicotiana suaveolens*, Lehm.; and recorded as new for Victoria, *Puccinia nieracii*, Mart., also found by Mr. C. French, jun., on *Hypochœris glabra*, L., in the same locality.

3. By Mr. R. Hall, entitled "Notes on Some Abnormal Plumaged Birds."

The author briefly noted some thirty-five instances of birds with abnormal plumage, belonging to twenty-seven species, which had come under his notice, and suggested that further records of such deviations from the normal plumage would prove interesting.

Messrs. A. J. Campbell and G. A. Keartland thought that the subject was one worthy of further investigation.

NATURAL HISTORY NOTES.

Mr. A. J. Campbell, jun., contributed an ornithological note on the occurrence of the White-throated Fly-eater at Rutherglen, and on the nesting of the Southern Fly-eater in the same locality.

Mr. A. J. Campbell mentioned that the skin of the rare Rail recently procured in New Zealand had been purchased for the Otago Museum for £250.

Mr. J. Shephard drew attention to his exhibit of exceptionally large Rotifer colonies.

Mr. C. French, jun., recorded the finding of the orchid *Prasophyllum elatum* in the Mallee, near Lake Albacutya, being new for the N.W. of Victoria.

EXHIBITS.

By Messrs. A. J. Campbell and H. Anjou.—Photographs of the Lederderg camp-out. By Mr. A. Campbell, jun.—White-throated Fly-eater and Southern Fly-eater's nest and eggs, all taken at Rutherglen. By Mr. C. French, jun.—Fungus, *Mylitta australis*, commonly called Native Bread, from Gippsland. By Mr. J.

Lidgett.—Three new Victorian Coccidæ, collected by Mr. J. C. Goudie at Birchip. By Mr. F. M. Reader.—Dried plants, *Diplotaxis muralis*, D. C., naturalized and new for Victoria; *Barbara vulgaris*, new for N.W. of Victoria. By Mr. J. Shephard.—Abnormally large colonies of Rotifer, *Lacinularia reticulata*, from Brighton.

After the usual conversazione the meeting terminated.

THE LERDERDERG "CAMP-OUT."

It having been decided to organize a "camp-out" during the spring, the locality of the Lerderderg Ranges, about 40 miles north-west of Melbourne, was selected. From the easy accessibility of the camp from Melbourne it was confidently hoped that the attendance would have been a record one, and Mr. A. Mattingley had taken considerable trouble in perfecting the arrangements, and had kindly placed a very complete camping outfit at the disposal of the members for the week. However, from various causes, not the least of which was the prevalence of influenza in the community, the number of members who were able to join in the outing was smaller than anticipated. Some left town by the early train on Saturday, 4th November, reaching the camping ground, some eight miles north of Bacchus Marsh, by 10 a.m. After pitching the camp, and luncheon having been disposed of, the members dispersed in various ways to seek their several specialties, meeting again for the evening meal. The daily routine was much the same—up at daybreak, a swim in the river, breakfast, collecting, lunch, more collecting, tea, general conversation, singing, &c., bed-time. The party was reduced by departures and augmented by arrivals once or twice during the stay, and finally broke up and returned to town on Thursday, the 19th inst., having had a most enjoyable outing, carried out without a hitch, and, with the exception of one thunder-shower, favoured with fine weather every day.

Mr. A. J. Campbell has supplied the following details of the objects collected or noted :—

Legend says that Lerderderg signifies in aboriginal language "broken reeds." Whether legend be correct or not, "The River of Broken Reeds" is indeed a very euphonious title.

This stream by erosive action has carved a somewhat direct course for several miles through parallel ridges of bold schistose mountains, which rise by steep gradients from the river's bed to peaks varying from 800 feet to 1,000 feet. At the entrance of this valley we pitched our camp. Below, the river describes a more sinuous course through rich alluvial flats, and enters the Werribee at the eastern end of Bacchus Marsh township—named after an early settler, Captain Bacchus.

The waters of the Lerderderg are slightly clay-coloured, caused by sluicing operations in its upper reaches. Ever since the discovery of gold in the colony, gold in more or less payable quantities has been won from the Lerderderg valley. Topazes are also to be found amongst the rubble.

The chief eucalypts on the ridges are Ironbarks, *Eucalyptus leucoxylon*, and Stringybarks, *E. capitellata*, which send their roots far into the rents among the crumbling slabs of slate. Here, too, are several sweet-scented shrubs. Many flowering plants were also noticed, but the absence of a botanist precludes their names being given. The intervening dells, strewed with moss-covered boulders, hedged about with tussock grass and golden everlastings, were delightful nooks except for mosquitos. The most perfect sylvan spots, however, were noticed at the entrance of the ranges after passing what is locally known as Bald Hill.

I am not certain if it has been officially reported that on a previous excursion the Aster-like shrub, *Cassinia lævis*, was found here for the first time in Victoria, and *Westringia glabra*, a somewhat rare plant, was also obtained, having been previously recorded for only two other localities in the colony.

The ornithological notes made are of ordinary character. Although not of many species, birds were plentiful. The whole valley was fairly filled with cheerful bird songs, the most prominent singers being probably the Thickheads—the White-throated and the Rufous-breasted. The pluck of a little Black and White Fantail amused us. A Jackass approached rather near its nest; the Fantail immediately jumped on the Great Kingfisher's back, pecking it violently.

A Grey Box tree in bloom appeared a surfeiting ground for numerous nectar-loving birds. Three species of Lorikeets—the Musk, the Purple-crowned, and the Little—were shot from its flowering branches; while three kinds of Honey-eaters—the New Holland, the Lunulated, and the Fuscous—were also present.

A pair of Mistletoe-birds (Dicæum) had constructed a tiny moss-made nest in a small gum sapling at the rear of our tents.

The ubiquitous Tits, of course, were in evidence. There were the Yellow-rumped, the Striped, the Brown, and the Buff-rumped. Nests and eggs of the two latter were found in tussock grass. The Brown contained an egg of the Narrow-billed Bronze-Cuckoo, the Buff-rumped the egg of the other Bronze-Cuckoo. While mentioning Cuckoos, a little White-shafted Fantail was observed feeding a noisy young Bronze-Cuckoo, but whether the Fantail reared the Cuckoo or not is doubtful.

A Scrub-Wren (Sericornis) shot proved to be the Allied. It was a genuine pleasure to listen to an Oriole mocking the songs of various of its feathered friends; the ringing notes of the Grey

Crow-Shrike (Strepera) particularly being an excellent bit of mimicry.

White Cockatoos flew in flocks of scores. They appeared to roost far back in the ranges, and came to feed about the base of Bald Hill.

Flocks of black birds were cawing about the summit of a steep spur. Were they crows or ravens? The question was settled by an enthusiastic member of the camp, who scaled the rocky height and brought back a raven.

Some excellent photographs of the camp and its surroundings were taken by Messrs. H. Anjou and A. J. Campbell. The other members of the party were Messrs. J. Shephard, S. P. Townsend, C. Ludwig, T. A. Brittlebank, W. Morton, E. C. Russell, R. Euler, and F. Zeigler, with A. Mattingley as honorary secretary.

FIELD NOTES FROM THE LOWER WIMMERA.

By A. Campbell, jun.

(*Read before the Field Naturalists' Club of Victoria, 9th October*, 1899.)

Referring to a map of Victoria it will be seen that the course of the Wimmera River, after leaving Lake Albacutya, is due north, and the river finally loses itself in the heart of the Mallee. This tract of country, the Central Mallee, is without doubt the driest part of Victoria, and during the month of October, 1898, when a party, consisting of Dr. Chas. Ryan, Mr. C. French, jun., and myself, paid a visit to the locality, it afforded a highly interesting field to us, as collectors from the southern part of the colony.

In the Mallee itself we did not observe many birds. Among the few species we saw four at least may be termed unique in the Australian avi-fauna. The birds I refer to are the Mallee Fowl and the three smaller birds, the Bell-bird, Scrub-Robin, and Red-throat. But what a change when the bed of the Wimmera is explored. It is like coming to an oasis in a desert, and birds of several dozen species are to be seen in scores. At one place in particular that we visited, where there was a large sheet of water, waterfowl were in hundreds.

However, the Wimmera in this locality contains no water, save in two or three places along its track, but its course is marked by the belts of redgum and box trees, here and there widening out into broad flats, which during seven or eight months of the year are clothed with a wonderful crop of grass and other herbage. Altogether they are really a pleasure to see after the dreary stretches of waterless Mallee. Early in October, when we visited these flats, the grass was quite luxuriant, and in some places waving like a young crop in the wind, but, alas! our guide told us in another month's time, after the first hot winds had scorched the herbage, the flats would be stretches of hard, black, cracked

ground. It is noticed then that most of the feathered tribe keep near the river bed, doubtless so that they may obtain the necessary supply of food for themselves and their young. In this paper I will, however, endeavour to deal with the species of birds met with during our trip, and to do so just in the order that we were introduced to them.

Outside the township of Hopetoun is the sheet of water called Lake Norong, and in the timber skirting it we heard and saw the beautiful Black-tailed Parrakeet, *Polytelis melanura*, and also the Red-backed Parrakeet, *Psephotus hæmatonotus*, but we were destined to see and learn more of these two birds and their habits later on. During the journey from Hopetoun to Yallum several classes of country were passed through. Leaving the redgum we passed into belts of box tree and finally into the Mallee. In the box timber the Striped Honey-eater, *Plectorhynchus lanceolatus*, and the Oreoica were heard, and other birds, such as the Bee-eater, *Merops ornatus*, the Tree Martin, *Petrochelidon nigricans*, the Pardalote, *P. striatus*, and the Xerophila, or White-face, were fairly numerous, while the White-shouldered Caterpillar-eater, *Campophaga tricolor*, was quite plentiful, and its merry song was heard in all directions. One nest with two fresh eggs was found, and a nest of the White-face containing four eggs was taken from a cavity in a dead tree trunk. While crossing a fine stretch of grass two male Song-Larks, *Cinclorhamphus rufescens*, and one of the larger brown species, *C. cruralis*, were startled, and soared away, uttering their curious songs, but we had no time to spend hunting for their nests hidden away among the long grass. A little further on our track was a swamp, the water in which was evaporated to such an extent that only a thick sludge remained. On the muddy margin we observed a pair of Shieldrake or Mountain Duck, *Casarca tadornoides*, while Spurwing Plover were circling around overhead, anxious lest we should disturb their eggs or young, which no doubt were in the vicinity. After entering the Mallee we noted no birds at all, but as it was late the few inhabitants may have gone to roost for the night.

Next morning we took a short trip under the leadership of our guide, Mr. Chas. M'Lennan, who promised to take us to the home of the Mallee Fowl. We passed through country known as "sandy Mallee." The soil is very poor, being mostly sand, and supports a vegetation consisting for the most part of the *Eucalyptus gracilis*, which in this class of soil grows about 12 feet high, but the round clumps of porcupine grass (Spinifex), are in profusion. Ridge after ridge is crossed, and there seems to be no end. Standing on one rise we see series of rises in all directions, and we could readily imagine the sorry plight of a lost traveller in such a place, for as far as the eye can reach there is nothing but the undulations of the Mallee appearing one behind

the other, like the billows of the sea. This country is the home of the Mallee Fowl, of the Oreoica, and of the Yellow-rumped Pardalote, *P. xanthopygius*. The two last-mentioned birds are without doubt the two of Victorian birds that can put up with a dry habitat, for no matter what the Mallee is like, good or bad, these two species are to be found throughout its entire area. They were seen and heard in tracts where not another bird was found. But the Mallee Fowl, I believe, does not always frequent all classes of Mallee.

Passing down a slope we disturbed a little Pardalote, which hurried out from a bank of sand, and upon investigation its nest was discovered. The tunnel was about 2 inches in diameter, and after following it along for 18 or 19 inches we came to the grass and bark made nest, containing four white eggs. The nest itself was situated at a lower level than the entrance to the tunnel, thus showing that the birds had no fear of being flooded out by rain. The little Pardalote, while we were unearthing its domicile, remained in an adjacent bush, uttering now and again its sharp whistle. Like its southern relative, the Spotted Pardalote, *P. punctatus*, the Yellow-rumped species is an exceedingly hard bird to locate, for its two high-pitched whistling notes, borne on the breeze, seem to come first from one direction and then from another.

After traversing about 6 miles we came to a pretty stretch of open plain, surrounded on all sides by clumps of the Murray Pine. This place is known as the Wild Horse Plain, where there is a small permanent waterhole. Here we had our lunch, and during the afternoon took several nests of the White-winged Chough, *Corcorax melanorhamphus*, and also a nest each of the White-browed Babbler, *Pomatorhinus superciliosus*, and the Red-capped Robin, *Petrœca goodenovi*. But a search in the surrounding Mallee revealed no traces whatever of the Mallee Fowl. The Mallee scrub here again varied, for it is of a very small nature, the growth being entirely of the eucalyptus, and about 8 or 10 feet high. Passing through on horseback one can see well ahead. Returning in the evening, on the Yallum Plain we saw a beautiful male specimen of the Black-backed Wren, *Malurus melanotus*, and I procured a skin of the Crimson-bellied Parrakeet, *Psephotus hæmatorrhous*, which is locally known as the "Bull-oak Parrot," for it is always found among the patches of Casuarina. It is at the same time the only Parrakeet found breeding in that particular class of country. The Peaceful or Ground Dove, *Geopelia tranquilla*, is very plentiful here; in the early morning and at evening its loud song is heard among the timber bordering the plain.

The following day (Thursday) we set out for Pine Plains, but decided to take a roundabout route by way of the Wimmera bed. Accordingly we set off due west from Yallum, and expected that by 3 or 4 o'clock in the afternoon we should have reached the

river's ancient track, where we intended to camp for the night. The distance was 18 or 20 miles, but 3 and 4 o'clock passed, and nothing came in sight but hill after hill and ridge after ridge, clothed with Mallee and porcupine grass. Soon, however, we could see an occasional clump of pine trees, and then a larger patch ahead. Just about this time, too, a small flock of four or five Black-tailed Parrakeets flew over, and, as our guide said, we could depend upon them as a sign that water was not far away. Our hopes then went up like a rise in a thermometer, for one at least of our party had already seen visions of four weary men and four weary horses roaming about in the Mallee with their tongues hanging out for want of water. On entering the larger clump of pine trees a little Black and White Fantail, *Rhipidura tricolor*, was seen, another sure sign of the presence of water, for a few hundred yards further on we caught sight of the waving foliage of redgum trees. Descending the slope we were on a beautiful grass flat, and Lake Brambrook could be seen shining through the trees. It is remarkable with what suddenness the country changes, for we saw absolutely no sign of the redgums until we were almost on them. The chief reason may be that the flat on which they grow is on a lower level than the surrounding country, and consequently the gums, although they are giants in comparison to the Mallee, are hidden from view by the ridges of intervening scrub. It was now getting late, and the night threatened to be stormy. After watering our horses, we decided to camp for the night on a point of land running out into the lake, and pitched our tent alongside a tree which had recently fallen, and which would afford us partial shelter from the wind. During the night the storm passed over, and a few drops of rain fell. We were out early in the morning, and what a beautiful sight it was to see the long, narrow sheet of water, surrounded on all sides by the redgum trees, which here and there ran out in little headlands or retreated in small bays; and on the surface of the lake stately Pelicans and Black Swans feeding in hundreds, while flocks of Ducks and Cormorants moved about from one quarter to another. Several Tippet Grebes were close in shore, no doubt wondering who the new arrivals were; and round in a small bay on our right an old Black Swan was endeavouring to entice its young ones, which had evidently just left an old nest lying among the weeds, out into the open water, where they would be safe from our interference. Along the shore the little Black-fronted Dottrel, *Ægialitis melanops*, was seen running anxiously to and fro, uttering its single piping note. After hunting in vain for Dottrels' nests, we turned our attention to the birds on the flats. We first visited an old tree from which a White Cockatoo, *Cacatua galerita*, was flushed the previous evening, and, with the aid of climbing spurs and 20 feet of rope, the nest was reached;

but great was our disappointment on finding the two eggs just hatched—in fact, one of the young was not yet entirely free from the shell. This, the first nest of the parrot tribe, proved to be a bad omen of all our trip, for all the other parrots' and cockatoos' nests investigated were found to be very nearly about the same stage: either the young hatched, or the eggs very close upon it. This shows how regularly the birds commence breeding. Had we been a fortnight earlier we should have taken eggs in nearly every instance.

After breakfast a Black-tailed Parrakeet's nest near our camp was visited and found to contain four addled eggs and one young bird newly hatched. It was also remarkable, during our trip, that we should find such a number of addled eggs in parrots' nests. A White-fronted Heron, *Ardea novæ-hollandiæ*, was intently watching our proceedings from its nest, situated in a tree almost above our tent, but the nest had fledglings; while in a tall gum tree a short distance off a large stick nest was observed, and a Sea-Eagle, *Haliaetus leucogaster*, soaring round above raised our suspicions. The nest, however, had not been used that season, but it had a new lining of fresh green leaves.

It was highly interesting to notice at Lake Brambrook, besides all along the old river's track, the water-marks left on the barrels of all the gum trees, which now are high and dry. The marks are no doubt from flood waters, and at Lake Brambrook they were very distinct. Looking through the timber one could see that the tree trunks below were of a darker colour and with hard, corrugated bark, while above the high water mark the stems were the usual smooth shining grey. This water-mark was fully 20 feet above the present level of the lake. At some remote period this place must have been subject to periodical inundations. Has this era of floods passed here?

Not having much time to spare we now essayed to push on northward, and soon were in the saddle again. Rounding one headland on the lake we surprised a flock of Coots, *Fulica australis*. They were close in shore, feeding, and, being startled by our sudden appearance, made off as fast as they could swim for the open. There were many dozens in the flock, and, swimming closely together, they appeared as a black mass moving across the water. We soon left the lake behind, and were making along the river's old bed. A nest of the Black-backed Magpie, *Gymnorhina tibicen*, was seen, containing one young bird. Magpies were very uncommon in this region, only an odd example of the Black-backed variety being seen. Another White Cockatoo was disturbed, and flew off screeching through the timber. Two eggs, nearly hatched, were taken from the nest. A little further on a third nest was discovered, but, being in rather a difficult position, it was left alone.

Soon we came to another broad flat, studded thickly with red-gum trees, and here we found a good nesting ground. This place is called "Black Flat," because of the very dark colour of its rich alluvial soil; but to us no black soil was visible, for the surface was thickly clothed with waving green grass, in some patches so luxuriant that it reached almost to our horses' knees. The first bird to be disturbed from its nest was a Red-backed Parrakeet. The hollow was in a living red-gum tree, and was easily reached by standing on the horse's back. It contained, however, several young birds and one addled egg. In the next tree a Mallee Parrot, *Barnardius barnardi*, betrayed its home by rushing out of a dead spout. This nest, unluckily for us, also contained fledglings. This was the first place where we found these two varieties of parrakeets breeding. Neither of the species was observed at Lake Brambrook, but from Black Flat northward they were everywhere in evidence. The beautiful "Rock Pebbler" (Black-tailed Parrakeet) was also plentiful at Black Flat, and we succeeded in taking another clutch of five eggs. Here, too, we could hear the notes of the Purple-crowned Lorikeet, *Glossopsittacus porphryocephalus*, among the trees. We observed one pair of birds investigating a small hole in the elbow of a redgum branch, but were evidently too early for their eggs. A short distance away another lorikeet was seen to leave a hole, and one small fresh egg was found therein. Moving to the other end of the flat we observed a pair of the beautiful Little Cuckoo Shrike, *Graucalus mentalis*, but were unable to locate their nest. Another Red-backed Parrakeet's home contained two addled eggs, besides young (newly hatched). Other birds inhabiting the timber were the Brown Tree-creeper, *Climacteris scandens*, the Striated Pardalote, and the Tree Martin. Two nests of the last-mentioned were found to contain young. This damped our ardour, so we did not trouble chopping out any others.

After thus making a quick search of this flat we proceeded on our journey, for it was our intention to reach the next water and spend the coming night there. All we had now to do was to follow along a well-defined track which is used occasionally by shearers travelling from Western Riverina into Victoria. The track runs almost due south from Mildura to Lake Albacutya and Lake Hindmarsh. What a weary journey it must be through the uninhabited Mallee, for well nigh 100 miles, without a drop of water till the Wimmera bed is reached!

Late in the afternoon we arrived at our next camping place. This patch of water takes the name of Lake Wonga. It is only about 6 or 8 acres in extent, but is of a greater depth than Lake Brambrook. A few waterfowl, such as Black Swans and Coots, were feeding leisurely on its surface, while a flock of Ducks made

off on our approach. Next morning a careful search was made in the surrounding timber, but the only eggs obtained were a clutch of 4 of the Nankeen Kestrel, *Cerchneis cenchroides*, taken from a hollow spout near which the bird was seen perched. Parrakeets as usual were plentiful. The male birds were noticeably handsome in their brightly coloured plumage, flying from tree to tree or feeding among the grass. Several mature males of the Mallee Parrot were quite conspicuous for their beauty, while a pair of Rock Pebblers we had an opportunity of observing were truly the handsomest birds I had seen. The two birds possessed a nest containing 4 fledglings in a dead tree near our camp, and as they anxiously watched us from a neighbouring branch they were indeed a pretty picture, the spotless olive-green colour of the female contrasting with the beautiful jonquil-yellow of the male's plumage, and the morning sun shining on them only enhanced their beauty. Much as I should have liked to procure the male bird for my collection, yet I felt restrained from breaking the happy family, so I sought elsewhere for my specimen. In a second dead tree close by was another happy family. A pair of White-rumped Wood Swallows, *Artamus leucogaster*, were incubating their eggs high up on a fork, from which a small broken branch now hung suspended, forming a secure base on which to place the nest. While we were watching the mate came to change places with the brooding bird, and the latter soared away out in the morning air. In all the larger redgums Tree Martins were flitting in and out of the small holes, evidently busy conveying food to their nestlings ; while up among the foliage the merry notes of the Striated Pardalotes are heard, as they hunt about among the leaves for their titbits. Down on the bank of the lake two small down-covered chicks of the Spur-winged Plover, *Lobivanellus lobatus*, were disturbed, and the old birds, in their anxiety, only betrayed the whereabouts of their hiding young. Several pairs of the Black-fronted Dottrel were here too, and by their antics led us to think they were nesting, but although we searched diligently along the sandy margin and among the *débris* no eggs were found.

Later in the morning we started on the third and final stage of our journey, for now Pine Plains was only 10 or 12 miles distant, and could be reached by following the shearers' track. The general aspect of the country was noticeably changing as we moved northward, and giving place to smaller and more stunted timber and vegetation, while the soil, instead of being the rich black alluvial deposit, was becoming more of a sandy nature. After a while the great belts of Murray Pines from which the station takes its name came in sight. The heavily-clad ridges of these trees are indeed pretty, and in the distance they could easily be mistaken for forests of the *Pinus insignis*, so close a resem-

blance do they bear in general contour. On the outskirts of the pines we passed Bracke Well. The well is about 30 feet deep, and the lines of troughs connected with it show that it is a watering place for stock, but only during the dry weather, when the waterholes are giving out. The water is brackish, the name Bracke evidently being a corruption of the word brackish. At present the water tasted quite fresh, but later in the season, when the supply is drawn upon, it becomes very salt. From a neighbouring ridge we could see the homestead of Pine Plains, situated on a rise at the far side of a stretch of open grass land. While passing through some small box trees on the outskirts a little Red-capped Robin was flushed from her nest, which contained two eggs, and on the plain itself a number of the Black-breasted Plover, *Zonifer tricolor*, rose at our appearance. A Raven's nest in a solitary tree further on was investigated, but found to contain young.

The Pine Plains homestead has an extensive outlook across the plain, which is several miles in circumference. This plain is highly typical of the stretches of grass land that are met with throughout the Mallee, although it is of larger proportions than the average. It is surrounded on all sides by hillocks and ridges clothed with the Murray Pine, patches of bull-oak, and kindred vegetation. The outskirts of this plain are timbered with box trees, and an occasional clump of redgum. Small belts or patches of a species of Ti-tree, Melaleuca, are also met with. To our left is pointed out a rise a few feet higher than its fellows, which rejoices in the name of Mt. Jenkins, and behind us is another hillock. The several large patches of whitish sand showing have suggested the name of Mt. Snowdrift.

On the morrow, our party, having been joined by our host, Mr. Le Couteur, set out in a south-westerly direction, our guide taking us to where he knew of a Mallee Hen mound. Our track lay through the box timber and into the pine scrub and Mallee. Among the pines we heard the whistling of the Red-throated Thickhead, *Pachycephala gilberti*, and I was successful in obtaining an immature male bird for my collection of skins. The nest of the Mallee Fowl was found without much trouble, but it was not in a very tidy condition, for we must have disturbed the birds while they were working at it. The mound was situated on a slope, among thick scrub composed of Mallee and other bushes. It measured 25 feet in diameter and nearly 3 feet 6 inches in height. On the upper side the surface of the ground for many yards had been scratched quite clean by the birds, and the sand brought down hill to form the nest. After a photograph was taken, all hands eagerly set to work and unearthed three eggs. The bulk of the mound consisted of almost pure sand, with perhaps a few sticks or twigs amongst it, and a quantity of this material had to be removed before we could reach the egg cavity. The place in which the eggs are deposited is a firm bed of decay-

ing leaves, from which the heat, generated internally, is derived. The actual egg cavity in this case measured no more than 18 inches across, and about 7 or 8 inches in depth, and was surrounded on the bottom and sides by the bed of leaves before mentioned. The three eggs taken showed that the birds had only begun to lay, and had not yet completed their first tier of four. We returned home well pleased with the result of our morning's ride. For dinner we had scrambled Mallee Hen eggs, and they proved first-class diet.

Next day our experience of Mallee Fowl nesting was still further enlarged. This time we went more afield and in a northerly direction. Soon after leaving the homestead we emerged on to a fine open plain, geographically known as Warringen Plain. According to observations this must have been at one time a splendid lake, not very deep but of considerable area, and into it the Wimmera River emptied itself. The track of the river can now be traced to it but not beyond. The plain must be quite six miles in diameter, and the most of it is good for grazing purposes. In or very near the centre, however, is a large tract of barren sand, which has so far defied the efforts of plant life to grow thereon. The plain is bordered with belts of redgum and box trees, which are alive with birds. Three varieties of Parrakeets, the Brown Tree-creeper, the Tree Martin, and the Striated Pardalote are again in numbers, among the dead and living timber alike. The Red-capped Dottrel, *Ægialitis ruficapilla*, has been collected here too, and one day Mr. M'Lennan saw a male specimen of the Tricolored Chat, *Ephthianura tricolor*. But we did not cross the plain. Our track lay along the edge for a short distance, and then turned off into the pine scrub. Here the birds most numerous were the White-browed Babbler; one nest taken contained three eggs. A few Pink Cockatoos, *Cacatua leadbeateri*, were seen, and one nest was found, situated in a hollow of a dead pine trunk, not more than ten feet from the ground. Three eggs were in the clutch, but so nearly hatched that the bill of one of the young birds had already chipped the shell. Among some pine bushes, too, I tried hard to shoot a beautiful male Black-backed Wren which was attended by three little brown females, but was unsuccessful because of the birds' quick movements among the undergrowth. The male bird moved about with great rapidity in the small shrubs and creepers, and wherever he went he was closely followed by his three little brown mates in single file.

In concluding this part of my paper, I will mention an incident that occurred during this outing, causing some amusement among us. When crossing a grassy open among the pines, a rough-skinned lizard was espied feeding leisurely on the blue-bell flowers. One of our party captured the reptile, and, holding it in one hand, attempted to remount. The horse, however, started off before our

friend was back in his saddle, and while attempting to scramble into position the saddle, slowly at first, but surely, slipped round, with the result that the collecter, who was also encumbered with a large botanical portfolio slung around his neck, was soon sprawling upon the ground. But he did not let go the lizard. The reptile, too, must have been anxious for its own safety, for it had managed to get a grip of the reins and it held them like a vice, so that the horse stopped and looked on, wondering, perhaps, what was the matter.

THE BLACKFISH.—Some interesting notes on the habits of the Blackfish, *Gadopsis gracilis*, McCoy, appear in the *Australasian* of 25th November, which, though written from an angling point of view, are worthy of attention, and possibly criticism, especially by country naturalists. Blackfish can almost be claimed as purely Victorian fish, and even here are nearly confined to the southern streams. The only other habitat of the genus is Northern Tasmania. Professor McCoy recognizes three species, and remarks, in "The Prodromus of Victorian Zoology," vol. i., p. 39, that the colour is very variable, in some specimens being of a light olive-green, becoming yellowish-white towards the belly, while the sides, back, and fins are marbled with distinct irregular patches of dark brown; whereas in other specimens the dark brown spots are more numerous, and extend over the belly as well as the head, tail, and fins. The writer of the article is of opinion that the colour of the fish is generally due to the condition of the water in which it is found, and states that he once caught Blackfish, after a heavy rain, in a creek with clayey banks, when the water was thick with clay, and that the fish were as yellow as the water—in fact, had it not been for their general appearance they would not have been recognised as Blackfish; however, after being dead some hours and washed and cleaned, they became almost the colour of ordinary Blackfish. Specimens obtained in clear water, amongst rocks, are of a beautiful deep purply black, which he regards as the normal colour. On another occasion some fish were obtained out of holes in a creek which was not running—the water was quite black, owing to the leaves of the overhanging trees which had fallen into it and decayed; the fish taken were as black as ink, but, like the yellow ones, after being washed and cleaned they assumed the natural colour. Large Blackfish are undoubtedly scarce, owing to the many enemies they now have to encounter, and are only to be found in the upper reaches of the streams in the most unfrequented portions of the colony. In the early days of Melbourne fish of 6 lbs. to 8 lbs. in weight were of common occurrence, but one hears of such fish but seldom now. One was taken in the Cockatoo Creek, near Seville, in January last, which weighed 7¼ lbs., and it is on record that some twenty years ago a fish was

caught in the Ringarooma River, Tasmania, which turned the scale at 13 lbs. 4 oz. In seeking for Blackfish the size of the stream does not seem to matter; in fact, fine fish are often obtained in the smallest streams. They are very shy fish in daylight, seeking the shelter of sunken logs, stones, &c., and though with great care they may be caught in the daytime, especially if the water be discoloured by rain, the best time to secure them is in the brief period between sunset and darkness. They can sometimes be taken all night, but another good time is just before or at daybreak. The writer, though in favour of protection for the Blackfish, states that the present close season, from 31st August to 15th December, is of no practical use, as in the first place it is rarely observed, and secondly his experience leads him to believe that Blackfish spawn nearly all the year round, as he has taken the fish containing spawn in January, February, March, and April. He suggests that instead of a close season a minimum weight of half a pound should be adopted, and so give the small fish a chance to grow and provide sport worthy of the fisherman.

THE S.A. ORNITHOLOGICAL ASSOCIATION.—At the usual bi-monthly meeting of this society held in Adelaide on the 3rd of November last, considerable discussion took place with reference to the recently published "Vernacular Names for Australian Birds," and the president was desired to write to the *Victorian Naturalist* expressing the views of the Association on the subject. Mr. J. W. Mellor gave an account of a week spent among the birds at Eyre's Peninsula, where he identified 60 species, and had undoubted information of at least 15 more, exhibiting specimens of the Yellow-eared Cockatoo, Grey-breasted Robin, and Spotted Scrub-Wren, &c. In addition to other exhibits, Mr. S. A. White exhibited the Black-eared Cockatoo from the same locality, and Mr. A. H. C. Zietz, F.L.S., exhibited the Marsh Snipe from Port Noarlunga.

CORRESPONDENCE.

VERNACULAR NAMES FOR AUSTRALIAN BIRDS.

To the Editor of the Victorian Naturalist.

SIR,—My attention has been drawn to a letter from Colonel Legge in your journal, severely criticising a resolution carried by our Association some months ago. Whilst thanking Colonel Legge for having offered some explanation of the alterations adopted, we feel that his letter requires some comment.

In the first place, I do not consider that the Latin names given by Gould are vernacular names—all the instances, by the way, quoted by Colonel Legge are Greek names. If these names are to be done away with, let us at least have something reasonable in their place, and not such absurdities as "Cuckoo-Shrike" for Graucalus; and if Ephthianura is to

be altered, why call it "Chat," which conveys nothing at all to the average Australian field naturalist? Why in this case, as in others, was not one of the many local vernacular names given, such as "Tin Tac," which means as much as Chat, and is already familiar to many Australians? I should like to give a few instances of what we consider "most confusing." Firstly, the omission of any reference numbers either to those of Gould's "Handbook" or Dr. Ramsay's list. As it is, anyone not already familiar with Australian birds would find it impossible to determine what bird is meant. For instance, two birds are removed from Eopsaltria and placed in Pœcilodryas without any comment; and another confusing alteration is that of Ground-Thrush to Ground-bird and of Mountain-Thrush to Ground-Thrush. I am well aware that the Cinclosomæ are not true Thrushes; but then neither are the Shrike-Thrushes, yet the name is retained, and, I think, wisely. I think, also, it is a mistake to alter scientific names where there is any doubt as to the justification of such alteration, as in the case of Micropus for Cypselus and Cerchneis for Tinnunculus. A few, among many, other confusing points are the misplacement of the reference No. 1 on page 12, the misplacement of the specific synonym of No. 517, and the transposition of the vernacular names of Nos. 285 and 286, to say nothing of numerous typographical errors and mistakes in spelling. As regards classification, I am well aware that Gould made many mistakes in that respect. In fact he himself says, in the introduction to the "Handbook"—"This is not to be regarded as a natural arrangement, but one which offers great facilities for the study of the avifauna of a single country," which is exactly the position I take up. When the grosser mistakes have been rectified, such as the position of Struthiones, the classification is a fairly natural one. However, to my mind there is nothing more ridiculous in Gould's classification than the association of Grallina with Collyriocincla, or Dicæum with Pardalotus, in the new list. The whole of the classification and the greater part of the scientific nomenclature is acknowledged to have been copied from the "Catalogue of Birds of the British Museum," a work which informs us, amongst other interesting information, that the Sittellæ breed in holes, and that the Sun-birds lay white eggs. This is the work which is to "form the basis of all future labour in ornithology," including, I presume, Australian ornithology. If Colonel Legge is so anxious that the Latin and Greek names, of which a translation is easily obtainable, shall be removed, why retain such barbaric names as Manucode, Drongo, and Pitta, which are said to hail respectively from Malay, Madagascar, and Telugu dialects?—I am, yours, &c.,

A. M. MORGAN,
President S.A. Ornithological Association.

Angas-street, Adelaide, 8th November, 1899.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

INTRODUCTION OF NEW MEMBERS.

The Committee invite the co-operation of Members in this necessary branch of the Club's work. No entrance fee is charged, and persons joining now need only pay 7s. 6d. for the balance of the year.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

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— OF —

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1900.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 15th January, 1900, at Eight p.m.

1. Correspondence and Reports.
2. Nominations for Membership.

   Members making nominations will oblige by handing the full name and address to Hon. Secretary.
3. General Business.
4. Reading of Papers and Discussions thereon.

   (Authors are requested to hand in a brief resume of their papers to the Secretary.)

   1. By Mr. F. M. Reader, per Geo. Coghill, "Contributions to the Flora of Victoria," No. IX.
   2. By Mr. D. Le Souef, "A visit to West Australia," illustrated by Limelight views.
5. Reading of Natural History Notes.

   Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.
6. Exhibition of Specimens and Conversazione.

   Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

EXCURSIONS.

SATURDAY, JANUARY 20.—Willsmere. Under the leadership of Mr. W. Stickland. Meet at Kew Tram Terminus, 2.30 p.m. Pond Life. Postponed from 13th.

FRIDAY AND SATURDAY, JANUARY 26 AND 27. Plenty Ranges. Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer Street Station 10.35 a.m. Entomology and General. Details of Excursion will be announced at meeting. Accommodation is limited, and names of those intending to take part must be handed to the Hon. Sec. or leader not later than Wednesday, the 17th inst.

SATURDAY, FEBRUARY 10.—Heidelberg. Under the leadership of Mr. J. Shephard. Meet at Collingwood Station 2.15 p.m. train. Pond Life.

THE

Victorian Naturalist.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, the 11th December, 1899, when the president, Mr. J. Shephard, occupied the chair, and about 45 members and visitors were present.

REPORT.

A report of the excursion to Ringwood, on Saturday, 18th November, was forwarded by the leader, Mr. C. French, jun., who reported that, proceeding in the direction of Bayswater, many bushes of *Leptospermum myrsinoides* were found in flower, but owing to the dull weather insects were very scarce, though the buprestid beetle, *Stigmodera macularia*, and several Curculios were collected, while on the eucalyptus saplings several species of Chrysomelidæ were taken. Flowering plants were fairly numerous, the beautiful blue flowers of *Dianella tasmanica* and the pink ones of *Comesperma ericinum* being especially noticeable. Several orchids, such as *Pterostylis cucullata*, *Thelymitra carnea*, *T. longifolia*, *Prasophyllum fuscum*, *Microtis atrata*, and *M. porrifolia* were obtained, and several other interesting plants—*Candollea despecta*, *Utricularia dichotoma*, and *Selaginella preissiana*—noticed. On a plant of *Limnanthemum exaltatum* a fungus was noticed which, on being referred to Mr. M'Alpine, had been determined as *Septoria limnanthemi*, being new for Australia. A young Copper-head Snake was met with and killed, and altogether an interesting afternoon was spent.

GENERAL BUSINESS.

The president announced that Mr. C. A. Topp, M.A., and himself had been appointed to represent the Club on the Council of the Australasian Association for the Advancement of Science for the ensuing Melbourne session.

Mr. C. A. Topp pointed out the advantages members would derive by becoming members of the Association, and was supported in his remarks by Mr. T. S. Hall, M.A., H. T. Tisdall, and the president.

PAPERS.

1. By Mr. A. Campbell, jun., entitled "Ornithology of the Lower Wimmera," part ii.

The author continued his remarks on the birds met with during a visit to the Central Wimmera, in October, 1898, and gave some interesting details of the egg-mounds of the Mallee Fowl, *Lipoa ocellata*.

Messrs. G. A. Keartland, A. J. Campbell, and A. E. Kitson took part in the discussion which followed.

2. Owing to the unavoidable absence of Rev. W. Fielder, his paper on "The Amœba and its Relatives" was postponed, and Mr. O. A. Sayce, at very short notice, gave "An Outline Sketch of the Sub-class Entomostraca," demonstrating the types of the different orders by drawings on the blackboard and preserved specimens.

NATURAL HISTORY NOTES.

Mr. D. M'Alpine contributed a note on an abnormal flower of the Foxglove, and recorded the finding by Mr. C. French, jun., at Ringwood and Oakleigh, in November and December, 1899, of the fungus *Septoria limnanthemi*, new for Australia, parasitic on *Limnanthemum exaltatum*.

Mr. G. E. Shepherd read a note giving particulars of the finding of the eggs of two species of Cuckoo.

Mr. H. B. Williamson, of Hawkesdale, forwarded a note recording new localities for Victorian plants.

EXHIBITS.

By Mr. R. Hall.—Western Australian representatives of 9 species of Eastern birds—*Petrœca campbelli*, *Ptilotis leilavalensis*, &c. By Mr. F. M. Reader.—Mounted specimens of new grass, *Stipa luehmanii*, F. M. R. By Mr. O. A. Sayce.—Types of four orders of Entomostraca. By Mr. G. E. Shepherd.—Nest and eggs of Spine-bill Honey-eater; eggs of Kestrel (5 set); nest and eggs of Buff-rumped Tit, with egg of Narrow-billed Bronze-Cuckoo; egg of Goshawk; also mounted specimen of Roller-bird, all procured at Somerville. By Mr. C. Walter.—Dried plants, *Cryptandra bifida*, F. v. M., from northern parts of Mallee (north-west), found by Mr. D'Alton, previously only known from South Australia; and *Eriostemon scaber*, from Myrniong Ranges (south), found by Messrs. C. C. and T. Brittlebank, previously recorded from New South Wales and Queensland. By. Mr. H. W. Whitney. —Wild flowers gathered at Ringwood. By Mr. H. B. Williamson. —Dried plants—*Montia fontana*, new for south-west of Victoria; *Haloragis alata*, found on Curdie's River, December, 1894, new for south-west and possibly for Victoria; *Pseudanthus ovalifolius* and *Zieria veronicea*, new for Gippsland.

After the usual conversazione the meeting terminated.

Cuckoos' Eggs.—Last month, when photographing an Emu-Wren's nest with Mr. A. J. Campbell, it was observed that a Narrow-billed Bronze Cuckoo, *Chalcococcyx basalis*, had deposited her egg in the nest. Also, the same day, a Blue Wren's nest was found containing a clutch (three eggs), besides the egg of a Square-tailed Cuckoo, *Cacomantis variolosus*.—Geo. E. Shepherd. Somerville, 11th December, 1899.

NOTES ON THE BLUE WRENS.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 14th August,* 1899.)

In the following notes I propose to give some account of the life-history, &c., of the Blue Wren (Superb Warbler), *Malurus cyaneus*, Ellis, and of Gould's Blue Wren, *M. gouldii*, Sharpe (*longicaudus*, Gould).

The genus Malurus is peculiar to the Australian continent, and no less than sixteen species are distributed through its various regions. These can be roughly subdivided into two groups, the red-backed and the black-backed. Some of the latter differ in appearance, like the Humming Birds, according to the light in which they are viewed. This is specially noticeable in the two species under consideration and another which occurs in Queensland. *Malurus gouldii* occurs in Victoria, South Australia, and Tasmania, the latter locality being probably its stronghold, as it is the only Blue Wren found there, while *M. cyaneus* is the common "Blue Wren" of Victoria, South Australia, and New South Wales. It seems to stay its northward course just south of Brisbane, and is then represented in Queensland by *M. cyanochlamys*, a closely allied species.

The habits of the two species are so similar to one another that I am unable to name any characteristic by which they may be distinguished in the field, and as the difference in the colours is so slight, and only distinguishable when handled and examined in the same light, it is difficult to say whether the birds are found together in certain localities. However, I know that *M. gouldii* is strong in the Heytesbury Forest district, while *M. cyaneus* is most numerous about the Werribee.

For at least some months of the year *M. cyaneus* is gregarious—that is, in small companies—preferring to keep within their individual family circles, or perhaps associating with another similar group. From the time the young birds leave the nest till the following spring they stay with the parents, and can be depended upon to be found in or about the same place. As a help towards keeping a family in view it is often possible to note a white patch on one of the parent birds, which thus enables that particular family to be watched, but if you would view the wren at home with its children you must be very quiet, for then only will you see the group of from six to twelve birds travelling along the ground beneath the undergrowth, feeding and chatting as they go. Should the leading bird take to flight, the others will follow in single file, and faithfully keep together, though perhaps the last of the colony may be a little late.

The late Mr. John Gould found a difficulty in attempting to mimic by words their melodious notes. There is first the grand

oratorio of the male in spring, when he is leading a charming competitive life ; then the notes of rollicking fun of the summer bird ; and thirdly, the series of thrilling squeaks when the young have ventured into a gambol among the boughs, which would be quite out of place in birds of maturer years, while, during nesting the female will sometimes utter a call as if a tragedy were taking place. Blue Wrens are occasionally known to sing at midnight, and may frequently be heard between 9 and 10 p.m., as well as the Black Fantail and the Great Brown Kingfisher (Laughing Jackass). By July the young birds have acquired their highest attainments in their musical efforts, though young wrens in captivity do not burst into song so soon as those of the adjacent bush. My correspondent, Mr. Graham, says that a young male of *M. gouldii* in captivity attempted its first notes on 16th September, 1898, when its note seemed to equal about half the fulness of the old bird.

These birds have wonderful appetites, and should be particularly useful to market gardeners. I have seen them busily eating the small Plutella Moths in the early morning when the dew was still upon the grass. At such times one in a family will leisurely expand its body feathers and become almost spherical in appearance, while another will seem to rest lazily as much upon its tail as upon its feet, while the wings lie limp and disarranged. Under such circumstances the young show no fear, and leave all timidity to their parents. The staple articles of their diet seem to be grasshoppers, hard-winged insects, and larvæ. The persistent work of Mr. Graham, as a skilled keeper of wrens in captivity, in providing food has proved that they are capable of disposing of eighty larvæ of the Cockchafer Beetle daily for several months in succession.

At the commencement of the breeding season the males show their greatest activity, and as many as five have been seen engaged in a pugilistic encounter to determine who should claim the favoured female. Nest-building usually takes place in September, and it is generally placed within three or four feet of the ground, sometimes in a thistle, but more often in some small bush. In a previous paper, "Notes on the Birds of Box Hill" (see *Victorian Naturalist*, vol. xiv., p. 71), I gave some extended notes on the nesting of the Blue Wren, which need not be repeated now. The period of incubation is fourteen days, and the young fly from the nest on the eighth to tenth days, though sometimes remaining till the fourteenth. The brood of *M. gouldii* is usually three, and Mr. Graham has frequently noticed at Heytesbury that before the break-up of the family in the following spring it consists of one male and two females. This he has been able to do owing to their habit of persistently following the plough. He has also observed the fact that more than one adult

male will attend the brood of nestlings. Three nests of young were brought from the forest and placed in three cages somewhat apart. Each nest had its female, which in one case was attended by three males, in the second two, and in the third one, all helping in the task of feeding the young. In the first-mentioned case this was observed before the nest was removed, and was continued for fourteen days after the removal to the new quarters, where the feeding was done through the wires. Considering the large number of female wrens, it seems probable that young females pass the first year without breeding. Unfortunately broods of both species suffer much from the depredations of foxes.

My friend Mr. G. Graham, of Heytesbury, has supplied me with an interesting series of observations, the result of four years' careful watching of *Malurus gouldii*. "This bird," he says, "is hatched out on the fifteenth day from the time of laying the last egg. The eyes open on the sixth day, the wings are feathered and fairly fledged on the seventh to eighth days, and they leave the nests in from ten to fourteen days. The young birds are short-tailed when leaving the nest, the feathers rarely exceeding one inch in length. At the end of the first month the tail seems to have attained its full length, and young wrens are able to catch flies and otherwise provide themselves with food, though they are still fed by the parents for another month or six weeks. They seem to require teaching as to the manipulation of the bulkier items of their food. Last summer I watched a female wren give a young bird a lesson. The latter was trying to reduce a large caterpillar to a condition fit for swallowing by beating with its bill, but after a few strokes the caterpillar would slip from the young bird's bill and fall amongst the grass, when the old bird would pick it up and place it on the log near its offspring, then, giving the caterpillar a few strokes to show how it should be done, would leave the young bird to finish it. Sometimes the object would be picked up and handed over without further treatment, and sometimes would have to be repeated several times before the food was finally ready for swallowing. I have observed these actions many times, and on one occasion spent at least fifteen minutes carefully watching the method of procedure. After leaving the nest the young wrens, male and female, are alike in outward appearance until their fifth month, when the first moult takes place, after which the males are distinguished from the females, young or old, by their light blue tails, which remain the outward symbol of their sex until the second moult, in the tenth or eleventh month, when they assume the full plumage of blues and blacks, with a still darker blue tail. The bill also becomes a darker colour, and finally a jet black. It wears this spring and summer suit until the third moult, generally in

February or early March, when it is changed to grey for a season more or less prolonged. With the older males there seems to be no regular time for recovering their blues and blacks, as individuals can be found moulting the grey from the middle of April to the end of September. This season seems favourable to an early recovery of their blue dress, as at this time (June, 1899) there are more coloured wrens than I have seen for many years. In August the family is disbanded, the males attacking and driving away the younger members of their sex, and the old females doing the same, though at a slightly later period. Another token of the approach of the breeding season is the intense pugnacity of the mated males. From the time the young are driven off until long after the next brood is out all trespassing wrens of either sex are persecuted. In my garden a male wren proved a great nuisance. It was impossible to give my caged wren the benefit of air and shade outside, so I was obliged to keep it indoors, and cover the windows with fine wire netting, so as to protect the caged bird from the incessant attacks of the free bird. Should I have happened to have left the door open, and to be looking into the cage to see how the changes of plumage were progressing, the tormentor was sure to fly past my head and hang on to the wire of the cage till driven away, though constant chasing seemed to make no difference. It never missed an opportunity for an attack, and its own nest being situated in a gooseberry bush just opposite the door, it was always ready to enforce the universal law that no wrens may come within a certain distance of the breeding place. In this district October is the breeding month. In selecting a site for the nest the female is chiefly concerned in securing a place somewhat removed from other wrens. Ideal nesting-places are small detached portions of cover situated a short distance from the main cover, and all the better if it contains plenty of tussocky grass. When the young are old enough to make an outcry if disturbed is the time to see a display of pugnacity and courage on the part of the male. It does not flutter or utter alarm notes like the female, but goes silently and swiftly to the attack, with its little body crouched, its wings and tail depressed, and its blue mantle standing out like a ruff. It moves quickly along the twigs or over the ground after the manner of a mouse, making angry darts at the intruder until it retires. Nest-building occupies the female a part of each of six days, and I have not been able to detect a male assisting in this work. A large overhanging tussock comes first in favour as a site for the nest; next, low prickly bushes. During incubation the female leaves the nest frequently to feed. The evening of the first day the young leave the nest is an anxious time for the parents. Much calling and persuasion is needed to get the young

family to follow to a suitable perching place for the night. When this is at last accomplished, one may, with great caution, get a peep at them, all in a row, with an old bird at each end. Low, dense, broad-leaved shrubs, Eucalyptus trees, if low, or dense masses of broad-leaved sword-grass are the usual camps chosen. Young wrens seem to lose their early notes about the time they have fully acquired the song. July and August are the earliest months in which I have detected the young wrens practising the song, though to some it may come earlier than others. Besides the song there are the notes of alarm, harsh and quick; the low note of satisfaction uttered at every peck at an insect, especially when the family has alighted on a good patch; and sometimes, not often, a low melancholy note uttered at each series of hops. In spring the males sometimes make a continued utterance of what is like half the usual song. One use for the song is to keep the family together, and acquaint each other of their whereabouts. One may often see a wren which has been left behind mount the topmost twig of a bush and sing until answered from a distance, when it will fly off in that direction and rejoin the others. Gould's Wrens are not gregarious; though two or three families may hunt over each other's ground, they never join in a community like the Acanthizas and Chats, but each family keeps, if it can, to its own particular ground and has its own particular camp. In one of my letters to you last year I told you about three males attending a nest I had transferred to a cage, and about which I was making notes. The spring before (1897) I had noticed a similar case, so when in August, 1898, I found a pair of males attending one female in a very isolated patch of cover, which could be easily watched, I determined to watch them right through. From the first it was evident that one male had possession of the female, and that the other male was tolerated either because it could not or would not be driven away. When the female was on the nest, the two males were apparently friendly enough—fed, hunted, and camped together. One day when I was watching a Pied Grallina building its nest, a female wren—a stranger—came into the tree, when both males at once attacked it. For five minutes their bills were clipping like shears, when the poor little female took flight for the nearest cover, pursued by both of its tormentors. When the young were hatched out, on 28th October, both males fed and attended to them, and right on to the present time (20th June) the partnership continues. This being the third instance of such conduct in three successive seasons leads one to assume that it is no uncommon occurrence. That wrens can think seems to me proved by the following incident:—In June, 1897, I had completed the building of a large heap of logs preparatory to burning, and was intently watching the actions of a White-

throated Tree-creeper, which, having secured an unusual prize—a meal worm—was making a long task of killing it. Tree-creepers do not seem as expert at such work as other birds, for a robin would have finished it off in a few seconds. There were some wrens about at the time, and one female seemed as much interested as I was, and twice sidled close up to the tree-creeper, and was rewarded with a couple of sharp pecks in order to make it mindful of its own business. After watching the tree-creeper for a few moments the wren made a sudden rush, and fairly frightened the tree-creeper some inches away from its food, which the wren quickly picked up and flew off with. This was clearly a feat of strategy, and happened on the heap of logs. My garden male wren is becoming quite shrewd, for it does not now mistake glass for space, as if surprised inside when I come home, it makes a rush past me through the doorway, the result, I suppose, of its having been caught in the window so often and examined. I have a habit of feeding it and its family on a block by the door, and a few crumbs of cheese are sufficient to bring them to my feet. Last March I was using a kerosene tin to pick up windfall apples. Standing it by the door, I very soon saw the garden female wren come and perch on the edge of the tin, and catch sight of a grub on the bottom, but how to get that grub was the trouble. It leaned over and hopped round the edge of the tin many times. It would like to go down to get that grub, but it looked too risky; happy thought—it would get down outside and get it. Down it went and hunted all round the tin and seemed surprised it could not see the grub. Up again to the edge, to see if it really was there. Yes, there it was, so down it went again and tried to insert its bill beneath the tin. Again it hopped up and feasted on the sight for some little time, and and then gave up the grub in despair. As enemies, the Nankeen Kestrel during summer takes numbers of young, while the fox, that terrible bird exterminator, plays havoc in the breeding season, and the wren is lucky which does not have to rear a second brood. As to at what age wrens start breeding I have no certain knowledge, and the large number of wrens that during spring and summer have no other occupation than that of feeding themselves leads me to infer that the females do not breed the first year. Male and female, when once mated, remain so until accident or the advent of a stronger or more pugnacious male causes a division. With regard to the proportion of males to females in the brood, I have not as yet observed more than one male in a brood of three. My garden wrens had the unusual brood of four, but still only one male, but to be certain of this point the families will require further watching."

The results of our observations on the moulting of these two species appear in full in the " Proceedings of the Royal Society

of Victoria," vol. xii. (new series), p. 59, from which you will understand that the males moult in spring as a general act, and again in autumn on a smaller scale. Point casting does not take place in the black-backed section, and a complete fall of quills and contour feathers is effected twice a year. That the quills fall is specially interesting to us, because Mr. A. H. Evans, in the "Cambridge Natural History—Birds," page 5, writes of the spring moult affecting the smaller feathers only.

TWO MALLEE FUNGI.

By D. M'Alpine.

(*Read before the Field Naturalists' Club of Victoria, 13th Nov.*, 1899.)

During the recent visit of Mr. C. French, jun., to the Mallee he found several fungi, notwithstanding the drought and the dried-up appearance of the herbage when he was there, in October. Two are here recorded, one of which is new to science and the other on a new host-plant for Victoria.

1. The one found on Native Tobacco, *Nicotiana suaveolens*, Lehm., is of some economic interest, since it has been found that diseases of Native Tobacco may pass to the cultivated plant and cause considerable damage. Tobacco Mould is a case in point, caused by *Peronospora hyoscyami*, De Bary, and which has even threatened the existence of the industry in Australia, although it is now being successfully treated at the Government Tobacco Farm, Edi, Victoria. It was considered passing strange that a fungus disease should virulently attack the cultivated Tobacco in a comparatively new country like Australia, while in America the "weed" had been long and extensively grown without any such fungus. The discovery of this fungus on the Native Tobacco at Myrniong by Mr. C. C. Brittlebank probably accounts for its appearance, and the genial climate, with its heat and moisture producing the too well-known "muggy" weather, would encourage its rapid and extensive spread.

There are several other instances tending to show that some of our new plant diseases at least are derived originally from native plants, and the fungus, passing from them to the more delicately nurtured and well-nourished cultivated plants belonging to the same family, finds a more congenial home and a more liberal host.

Fortunately the present fungus, *Septoria tabacina*, n. sp., has not yet spread to the cultivated tobacco, but it shows, what is so difficult to impress upon growers and their advisers, that even the fungi on so-called weeds are well worthy of study from an economic point of view, since they may some day become a menace to an important industry, if not carefully watched and guarded against.

2. *Puccinia hieracii*, Mart., or a form of it, has only hitherto

been found in Queensland on *Hypochœris glabra*, L., and now it is recorded for the first time in Victoria on the same host plant.

1. SEPTORIA TABACINA, n. sp., Tobacco Septoria.

Spots scattered or confluent, frequently extending over entire leaf, orbicular or irregular, somewhat translucent when held up to the light, very pale brown, averaging 8–10 mm. broad, with minute, black, punctiform pustules on both surfaces of leaf, but most numerous on under surface.

Perithecia depressed-globose, fragile, pale blue by transmitted light, with wide mouth, 130–180 μ diameter.

Sporules hyaline, numerous, straight, curved, or flexuous, blunt at both ends or only at one end, 1-, 2-, and occasionally 3-septate, 30–43 × 2–3 μ.

On leaves of *Nicotiana suaveolens*. October, 1899. Mallee, Victoria ; C. French, jun.

This species destroys the leaves of the Native Tobacco, sometimes causing actual perforations or entire portions to fall away. The sporules are all slender, but sometimes very crooked and with one half separated by a septum much stouter than the other half.

It differs from *S. nicotianæ*, Pat., found in Ecuador, in the absence of concentric zones and red margins to the spots, in the larger perithecia and the shorter sporules, which are found to be 3–4-septate and 50–55 μ long.

2. PUCCINIA HIERACII, Mart.

Uredospore and teleutospore sori on both surfaces of leaves, but particularly on upper, of *Hypochœris glabra*, L. October, 1899. Mallee, Victoria ; C. French, jun.

AN ABNORMAL FORM OF THE FOXGLOVE FLOWER.

By D. M'ALPINE.

ON the 1st of December I received from Mrs. Parsons, Olinda, near Bayswater, a specimen of Foxglove with a regular bell-shaped flower at the top of the stalk, requesting an explanation of the unusual appearance, and for various reasons I consider it worthy of mention among the Natural History Notes. It is no uncommon thing (at least I have several times met with it) to find the cultivated Foxglove producing a flower at the end of the stalk, but then it is no longer irregular, like the ordinary lateral flowers, but regular. I have never met with this appearance in a plant growing wild, so that it appears to be a product of cultivation. Not only was this specimen bell-shaped and regular, but the symmetry in number of the different parts was remarkable. There were 13 green sepals of the usual shape crowded together. Then the bell-shaped corolla had 13 lobes, each one corresponding to a petal. The stamens were also

13, placed opposite to the slight ridges or seams between each lobe of the corolla, and they were all pretty much about the same length. Finally, the top of the carpels or stigmas numbered 26, and the ovary when cut accross showed 13 chambers with their ovules. If we compare this with the lateral flowers on the same axis, we find not only a different number of parts, but in different proportions. The calyx is composed of five sepals, the corolla is usually five-lobed, but the stamens are only four, and the pistil consists of two united carpels, as indicated by the two-lobed stigma and the two-chambered ovary. The size, too, was very striking, as the terminal flower measured about 1½ inches in diameter, while the greatest breadth of the lateral flowers was about ¾ inch.

Thus the principal differences in this abnormal flower are :—

1. Upright, instead of pendulous.
2. Terminal, instead of lateral.
3. Regularly developed, instead of irregularly bell-shaped.
4. Number of parts symmetrical throughout.
5. About double the size.

If we are justified in drawing conclusions from such abnormally produced specimens and regarding them as indicative of the primitive type of the flower, then each of these points would be very suggestive, but to dwell upon them all would make the note too long. The terminal flower is regular because its various parts are equally exposed to the various forces of nature, and there is no reason why one part should be more developed than another, but whenever the flower becomes lateral instead of terminal then the different forces of nature, such as heat, light, gravity, &c., would act unequally on different parts and thus tend to produce the so-called irregularity of flowers. Then, with the visits of insects this tendency would be taken advantage of, and the stimulated protoplasm would respond. It may also be noted here that with increased differentiation there is usually condensation of parts and economy of material, so that the number of parts is gradually reduced, and some of them more so than others on account of some counterbalancing advantage.

Records of Victorian Plants.—At the December meeting of the Field Naturalists' Club I exhibited *Cryptandra bifida*, F. v. M., from the northern parts of the Mallee as new for Victoria, collected by Mr. D'Alton, but I find that a specimen had previously been exhibited by Mr. F. M. Reader, which had been given him by Mr. D'Alton. However, *Eriostemon scaber*, Paxton, found by Messrs. C. C. and T. Brittlebank in the Myrniong Ranges (south division) is new for Victoria, though previously recorded from New South Wales and Queensland. The following plants are new for the respective divisions :—North-West.

—*Cassytha pubescens*, R. Br.; *Lycopus australis*, R. Br.; *Pimelea elachanta*, F. v. M.; and *Pomaderris subrepanda*, Reisseck and F. v. M., all collected by Mr. D'Alton, Dimboola. The last-named plant occurs on limestone ridges in different parts of the northern Mallee as a low shrub, while in other districts it is only found on the banks of watercourses, attaining a height of 15 feet. South-West.—*Pomaderris subrepanda*, Reisseck and F. v. M., Grampians, C. Walter. South.—*Acacia montana*, Bentham, and *Sambucus xanthocarpa*, F. v. M., Myrniong, Brittlebank and Walter.—Chas. Walter. Melbourne, 14th December, 1899.

Records of Victorian Plants.—Mr. F. M. Reader, of Dimboola, forwards a long criticism of Mr. C. Walter's "Records of Victorian Plants," in the October *Naturalist*, in which he states that since September, 1896, he has exhibited at the meetings of the Field Naturalists' Club of Victoria specimens of some 60 plants, either new to science or new for the north-western district of Victoria, but of these only 13 are mentioned in Mr. Walter's list, while 39 of those mentioned as new for the north-west had already been enumerated in Mr. D'Alton's notes read before the A.A.A.S., Sydney, in January, 1898. With reference to the latter list, Mr. Reader says that of grasses alone he has collected and identified some 70 species in the district, besides which he has put aside a considerable number for future determination, while Mr. D'Alton enumerates only 25, and the names of several plants, not uncommon in the north-west, are given which are not mentioned in Mr. D'Alton's paper.

[The discrepancy between Mr. Walter's and Mr. Reader's records seems to have arisen through the former not seeing the *Naturalist* regularly, and recording only those plants of which he had examined specimens, and which had not been included in the supplementary lists published. It is to be hoped that an official supplement to the "Key" will be published by the Government Botanist at an early date.—Ed. *Vict. Nat.*]

British Museum Catalogue of Birds.—Mr. Robert Hall writes:—"I cannot but feel that Dr. Morgan, in his letter in last month's *Naturalist*, has unfairly referred to the above work. Like many human efforts, it may not be perfect, but, personally, I have found the work so distinctly above all others on the subject that I immediately go to it when seeking information. Gould's publications are, no doubt, excellent for external characters and field information, but for nomenclature, distribution, and internal characters, unless one wants to stand still for ever, the 'British Museum Catalogue' must be the authority, and the whole trend of modern biological knowledge shows that it is to be preferred rather than Gould. My object in writing is not to discuss the points at issue in the letter referred to, but to briefly uphold the 'Catalogue' against an ungenerous attack."

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

INTRODUCTION OF NEW MEMBERS.

The Committee invite the co-operation of Members in this necessary branch of the Club's work. No entrance fee is charged, and persons joining now need only pay 7s. 6d. for the balance of the year.

THE VICTORIAN NATURALIST

Contains the proceedings of the Field Naturalists' Club of Victoria.

Authors of Papers published in the *Victorian Naturalist* are informed that reprints of such articles can be obtained at a nominal cost by giving notice previous to publication to the Hon. Sec., from whom all information can be obtained.

MOST of the Numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. Geo. Coghill, 80 Swanston Street, Melbourne, at Sixpence each, or in sets (except Vols. I. and IV.), with title page and index, 6/- per volume.

The Hon. Sec. will pay full price for clean copies of Vol. II., No. 3; Vol. IV., Nos. 2, 3, and 4; Vol. V., No. 9; Vol. VIII., No. 10, and Vol. IX., Nos. 2 and 3.

VOL. XVI.—NO. 10. FEBRUARY, 1900.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

PUBLISHED 8th FEBRUARY, 1900.

Editor: F. G. A. BARNARD, Esq.

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1900.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 12th February, 1900, at Eight p.m.

1. Correspondence and Reports.
2. Nominations for Membership.

   Members making nominations will oblige by handing the full name and address to Hon. Secretary.
3. General Business.
4. Reading of Papers and Discussions thereon.

   (Authors are requested to hand in a brief resume of their papers to the Secretary.)

   1. By Messrs. E. Ernest Green and Jas. Lidgett, introduced by Mr. F. G. A. Barnard, "Description of New Victorian Coccidæ."
   2. By Mr. R. Hall, "Notes on Bronze Cuckoo and 3 other Birds."
   3. By Mr. J. G. Luehmann, F.L.S. "Observations on some Specimens in the National Herbarium, collected over 200 years ago."
5. Reading of Natural History Notes.

   Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.
6. Exhibition of Specimens and Conversazione.

   Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

EXCURSIONS.

SATURDAY, FEBRUARY 10.—Heidelberg. Under the leadership of Mr. J. Shephard. Meet at Collingwood Station 2.15 p.m. train. Pond Life.

SATURDAY, FEBRUARY 24.—Black Rock. Under the leadership of Messrs. H. T. Tisdall and O. A. Sayce. Meet at 1.20 p.m. train, Flinders Street Station. Marine Biology.

SATURDAY, MARCH 10.—Sydenham. Under the leadership of Mr. T. S. Hall, M.A. Meet at 12.15 p.m. train, Spencer Street Station. Geology.

THE

Victorian Naturalist.

Vol. XVI.—No. 10. FEBRUARY 8, 1900. No. 194.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, the 15th January, 1900, when the president, Mr. J. Shephard, occupied the chair, and about 90 members and visitors were present.

REPORTS.

A report of the excursion to Gisborne on Saturday, 16th December, was read by Mr. F. G. A. Barnard, who stated that an enjoyable afternoon had been spent, though entomological captures were few. Many interesting plants had been noted.

GENERAL BUSINESS.

The president mentioned that the committee had invited members of the Australasian Association for the Advancement of Science to attend the meeting, and expressed himself glad to welcome so many distinguished scientists from other colonies, specially naming Father Curran, Messrs. Maiden, Rainbow, and Froggatt, of New South Wales, and Messrs. Clark and Selway, of South Australia.

PAPERS.

1. By Mr. F. M. Reader, communicated by Mr. G. Coghill, entitled "Contributions to the Flora of Victoria," part ix.

This was the description of a new grass from the Wimmera district, and named by the author *Stipa luehmannii.*

2. By Mr. D. Le Souëf, entitled "A Visit to Western Australia."

The author gave a brief account of a recent visit to the southern part of Western Australia, in which he described and illustrated by about 60 lantern views the various things of interest seen, such as the wonderful flowers; also the timber and other vegetation, the hills of granite and so-called soaks at their base, the ancient drawings of the natives, and also the graves of some of that fast-disappearing race. Habits of some of the birds and reptiles seen were also touched on, as well as a description of the country about Perth.

Messrs. Keartland, R. Hall, and J. H. Maiden, F.L.S., joined in the discussion which followed.

A special vote of thanks was accorded to Mr. J. Searle for his kindness in providing the lantern for the illustrations.

NATURAL HISTORY NOTE.

Mr. W. J. Rainbow, F.L.S., Entomologist to the Australian Museum, Sydney, exhibited, on behalf of Mr. C. French, jun., a photograph, by Mr. C. Frost, of a curious spider's nest and

cocoons or egg-bags (genus Dicrostichus, sp.), and gave some interesting details of the animal's architecture. The nest is made of leaves, closely woven together and held in position by silk. This takes various forms, sometimes being constructed in the shape of a miniature cornucopia. From the nest there is suspended two or more long, yellowish, closely-woven, tough egg-bags, and these are always jealously guarded by the mother. Only three species of the genus have been recorded so far, and all of these from New South Wales. Mr. Rainbow also drew attention to the curious structure of the cephalothorax of spiders of the genus under consideration, which he illustrated by diagrams drawn upon the blackboard.

EXHIBITS.

By Mr. F. G. A. Barnard.—Beetles of the genera Schizorrhina and Stigmodera, from the neighbourhood of Kew. By Mr. A. J. Campbell.—Four varieties of Blue Wrens; also, the eggs of Eastern Swallow, *Hirunda javanica;* Grey-rumped Swiftlet, *Callocalia francica;* Chestnut-bellied Rail, *Eulabiornis castaneiventris;* and Blue-faced Lorilet, *Cyclopsittacus maccoyi.* By Mr. A. Coles.—Leopard cub, two days old. By Mr. C. French, jun.—*Erythræa spicata,* with white flowers, collected at Western Port; photograph of remarkable cocoons of the spider Dicrostichus, sp., collected in Victoria; also, nest of Rose-breasted Robin, from Dandenong Ranges. By Mr. R. Hall.—Male cone of Macrozamia, from Western Australia, and nest of White-browed Spine-bill. By D. Le Souëf.—Dried Western Australian flowers, in illustration of paper. By Mr. J. Stickland.—Pholas, a rock-boring mollusc, from Picnic Point, Sandringham. By Mr. C. Walter.—Plants new to science—*Corchorus longipes,* Tate, *Minuriella annica,* Tate, *Zygophyllum hybridum,* Tate, collected by Max Koch, Mt. Lyndhurst, South Australia, August, 1899; *Melodinus australis,* Maiden and Betche, collected by R. G. Brown, October, 1899. By Mr. H. W. Whitney.—Egg of Minorca hen, with smaller one inside; weight, 6¾ ozs.

After the usual conversazione the meeting terminated.

Victorian Plants.—I desire to record new districts for the following plants, specimens of which were exhibited at the December meeting of the Field Naturalists' Club:—*Montia fontana,* L., found at Winslow, near Warrnambool, new for S.W.; *Haloragis alata,* Jacquin, found at Curdie's River, December, 1894, identified by the late Baron von Mueller, who said that it had been once before doubtfully recorded from Victoria; *Pseudanthus ovalifolius,* F. v. M., from 18 miles south of Sale; and *Zieria veronicea,* F. v. M., from 20 miles south-east of Sale, Gippsland, both unrecorded for the eastern district.—H. B. Williamson, Hawkesdale.

EXCURSION TO GISBORNE.

NOTWITHSTANDING the beautiful day on Saturday, 16th December, 1899, only two members left town by the midday train for Gisborne. Perhaps the distance (40 miles) was answerable for the small attendance. On arrival there, at 2 p.m., we found that our leader, Mr. G. Lyell, had kindly provided a conveyance to take us some four or five miles south of the station to some scrubby country forming the slopes of the valley of the Pyreete Creek. Passing through the old township the fine trees in the main streets were justly admired. Turning into the Melton road we travelled along this for about three miles, and then, selecting a shady spot, left our youthful driver to beguile the time as best he could for some three hours.

A visitor to the locality for the first time is at once struck by the resemblance of the flora to the heath grounds around Sandringham, though here we were at least 1,500 feet above the sea level. Another peculiarity is that one seems to descend instead of ascend into the ranges. The fact is that the valley of the Pyreete Creek forms a huge basin covering some twenty square miles, which drains into the Djerriwarrh Creek, and thence into the Werribee, and is really the most easterly tributary of that river. This basin is bounded on the eastern side by Mt. Gisborne, the source of Kororoit Creek, and on the west by Mt. Bullengarook, while the roads from Gisborne to Melton on the eastern side, and to Bacchus Marsh on the western side, keep along the outside edge of the basin on an elevated table-land.

We were soon at work, but, being now rather hot, insects were scarce. Quantities of Native Heath, *Epacris impressa*, were everywhere, and in the season the hillsides must present a lovely appearance indeed. *Hibbertia fasciculata* and *Correa speciosa* were plentiful. But the few remaining flowers of such leguminaceous plants as *Dillwynia floribunda*, *Bossiæa cordigera*, *Daviesia corymbosa*, and *Pultenæa daphnoides* made us wish we had been there a month or so earlier. The locality seems also to be a stronghold of the Acacias, for eight species were identified during the afternoon, among them being *Acacia leprosa*, with its sticky foliage; *A. armata*, the Kangaroo Acacia, well known as a hedge plant about Melbourne; and the pretty little *A. acinacea*. Grass-trees, *Xanthorrhœa australis*, were numerous. Following down a somewhat easy valley, a few ferns, such as *Davallia dubia*, *Lomaria capense*, and *Adiantum æthiopicum* were noticed, also *Veronica derwentia* and *Senecio dryadeus* in flower, while fine bushes of *Goodia lotifolia* and *Indigofera australis* were bearing their burdens of seed-pods. A single specimen of *Gompholobium huegelii* added another papilionaceous plant to our list. On the hillside *Trachymene billardieri* was growing. Arriving at the creek we worked down for a short distance, coming to a rocky bank

brilliant with the flowers of the golden everlasting, *Helichrysum lucidum*, while among the stones at the water's edge grew a stunted form of *Lomaria discolor*. We now commenced to reascend to our starting point, up a succession of stony ridges timbered with Eucalyptus, Exocarpus (Native Cherry), Banksias, Hakeas, Acacias, *Grevillea alpina*, Grasstrees, &c., in some places very dense. On the tops of some of the ridges we got extensive views to the south-west, embracing Bacchus Marsh and the plains on the other side of the Werribee. The country near at hand put one very much in mind of the undulating scrubby hills near Sydney, between Willoughby and Middle Harbour, with the exception that here Silurian rocks with numerous quartz outcrops took the place of the Hawkesbury sandstones of that locality. With regard to the zoological results of the trip, perhaps the most noticeable animal seen was a Kangaroo, but which species I am unable to say. Birds were scarce, though an ornithologist might have noted more than we did. A few small lizards disappeared among the rocks as we approached them. Regarding insects, Mr. Lyell reports as follows about the Lepidoptera:—"Butterflies were few in number of species. Besides the common *Heteronympha merope* and *Pyrameis kershawii*, only *Lycœna agricola* and *Holochila mœrens* were taken. The dull-coloured moth, *Taxeotis intextata*, occurred in great numbers, and in the gullies plenty of *Hydriomena correlata* and *H. mecynata* were to be noticed. The pretty little *Peltophora atricollis* was met with frequently, and several specimens of the vividly bright *Procris viridipulverulenta* were seen. *Acropolitis dolosana* and *Philobota sigmophora* were taken—the latter, with the very distinct capital S on forewing, is by no means common. On a saddle of the range on our way back we captured a specimen of *Coesyra iozona* (first record for the district), and also one each of *Philobota monosema*, Turner, and *Eupselia ecliptis*, Meyrick, two species recently described, and only recorded so far from this locality." Other orders of insects were either poorly represented or by common species, as nothing of note was captured.

Returning to our conveyance we were soon back in the township and ready to accept our leader's hospitality for the evening, and Mrs. Lyell was sorry that there were not more members of the Club present to do justice to the good things she had provided. The time soon slipped away, chatting of early memories of the Club, the Yarra Falls camp-out affording several tales of adventure, so that we had but little time to admire Mr. Lyell's splendid collection of Australian Lepidoptera, which in butterflies is almost complete and in the smaller moths is perhaps unrivalled, and when it can be said that the whole of this is due to Mr. Lyell's energy and hard work since he joined the Club some

eleven years ago, it goes to prove that the efforts of the founders of this Club have not been unrewarded. The appearance of the collection is well known to members of the Club and needs no words of description beyond the statement that it is worth a trip to Gisborne any day to see it. But trains wait for no one, and we had to leave many interesting things unseen, and, bidding adieu to our kind host and hostess, wend our way stationwards, and so back to Melbourne.—F. G. A. BARNARD.

FIELD NOTES FROM THE LOWER WIMMERA.

(Concluded.)

BY A. CAMPBELL, JUN.

(*Read before the Field Naturalists' Club of Victoria, 12th December*, 1899.)

LEAVING the belt of pines, we passed through some good Mallee scrub, growing upon reddish-coloured soil. The eucalyptus was of a considerable height, 15 feet or even 20 feet, and among it were various other small-growing trees. The undergrowth consisted of numerous dwarf shrubs and plants, which gave it quite the general aspect, but for the Mallee bushes, of a patch of heath-like country. This is the home of the Scrub Robin, *Drymaœdus brunneopygius*, a unique species, of which very little is known. I was very fortunate in procuring a male bird, which was observed hopping over the ground in a leisurely fashion, and as it moved about, its long legs and large tail gave it quite a singular appearance. In this scrub also a pair of Chestnut-backed Ground Thrushes, *Cinclosoma castanonotum*, was startled, and flew off in a great hurry. No traces of their nest, however, could be found.

A little further on we came to another patch of poor-class Mallee, and considerable excitement was caused by our guide announcing us to be in the vicinity of a Mallee Fowl's mound—one which he himself had discovered a few weeks previously. We accordingly spread out and made a search through the scrub. A false alarm occurred through one of the party coming across an old mound, or at least one not in use that season. It was of the usual height and shape, but on attempting to remove the top the sand was found to be firm and hard. The remains of another old mound were also discovered. In this case the sand was scooped out and the centre open. However, a few more minutes of patient search revealed the genuine article, constructed in a small open patch of a few square yards in area, and surrounded on all sides by the close-growing scrub. The soil in the vicinity is of a poor, sandy nature, and the Mallee consisted of nothing but the eucalyptus, growing thickly and close to a height of 8

or 10 feet. There was no mistake about this mound being in use, for around and upon it were the marks of the birds' feet, while the surface of the nest itself was ornamented with numerous sticks and twigs. This is a curious habit the birds have of placing sticks upon the crown of their nest. It may be to deceive some natural enemies, or it may be for the purpose of ornament, but in every case where a mound is in use and contains eggs these sticks will be seen strewn over the top. This mound, which was of about the same measurements as the one found the previous day, was also photographed. It, however, was a more neatly finished structure, having a well rounded surface and being ornamented with the abovementioned sticks and twigs placed all over, but more particularly about the crown. Removing these, we proceeded to pull away the sand from the centre, taking care to throw it well back, else the loose dry material would run in again. It was interesting to notice the varying temperature of the mound. On the surface the sand was influenced by the sun's heat. Down a few inches the mound was much cooler, but on going deeper still we could feel the humid warmth of the hotbed of leaves down below. Scraping carefully now, the top of one pink egg was uncovered, then another and another. These three constituted the uppermost layer. Then just below, and partially embedded as it were in the side or bank of leaves, we found four more, thus making a total of seven eggs in the mound.

While it lasted, the excitement was intense, as, feeling carefully in the sand, we unearthed these eggs one by one. When they were laid out in the sunlight it was comparatively an easy matter to arrange them in order of their age, or priority in the mound. The fresh egg bore a beautiful bloom, while the next in age was not quite so handsome. The fourth egg showed signs of the pinkish colouring changing to a buff or browner tint; and on the seventh egg even this brown colour was commencing to disappear, for a few whitish smudges or scratches were showing through it about the larger end. From this latter specimen, we concluded that by the time it is about to hatch it could hardly be recognized as the beautiful flesh-pink coloured egg of a few weeks previously. The three oldest eggs, too, bore signs of incubation, for the blood-vessels were forming in the yolks.

The Mallee Fowl's mound, when examined, is truly a remarkable piece of work, and that a bird should be capable of making such a structure is really wonderful. The source of all the heat generated in this unique incubator is the compact bed of decaying leaves in the centre, for the outside layer of sand is undoubtedly to protect the hotbed and concentrate its heat. The birds, if they decide to re-use an old mound, will open it out some time before laying in it. They scratch back the sand so that the hotbed can be replenished. When all is in proper condition, they

fill in the centre with dry eucalyptus leaves and trample them until quite a firm bed is made. It should be mentioned that the centre of the mound is scooped out to several inches below the ground level, and the hollow thus formed may serve as a catchment for water, a small supply of which would be necessary for the satisfactory decay of the leaves. The bed, in the last mound we investigated, was 45 inches in diameter and perhaps 15 inches in thickness. In the top of this was the egg cavity, 20 inches in diameter and about 8 inches deep. This cavity is hollowed out of the bed of leaves, and in it the first layer of eggs is always deposited. So one can be quite sure they have obtained all the eggs from a mound when they come upon this hard, firm bottom and the compact sides. The first (bottom) tier always contains four eggs, which are placed against, or sometimes partially in, a little pocket in the bank of leaves. It must be highly interesting to watch, if it were possible, a Mallee Fowl's movements while placing an egg in position. It would have been interesting, too, if we had been able to prove the fact, averred by some collectors, that the second egg deposited in a tier is placed opposite and not next to the first, the third and fourth eggs being afterwards put in position on either hand. But in our excitement I am afraid we forgot this point. It would have been but little extra trouble, for, as I have mentioned, the priority of the eggs could be determined by their appearance. Every egg in a mound is in a vertical position, standing on its smaller end. The second tier also contains four eggs, but each egg is placed, not directly over its fellow below, but midway in the interstices. This allows of a closer arrangement while yet giving each egg sufficient room. In our last mound it was noticed that the bottom of each egg in this layer was somewhat lower than the level of the tops of the first tier. This second tier, however, was unfinished, for it only contained three eggs.

In mounds that have their complement there are four tiers, three of which contain four eggs each. The topmost or fourth layer is invariably one egg, placed in the centre. Thus, if on scraping down a mound, we had come first upon one egg we should have known that the nest was full, and expected to find the eggs of the bottom tier well advanced in incubation. But the time of our visit was too early for that, for, being October, the birds in most cases had only recently commenced laying. A full mound, containing as it would these 13 eggs, is also of a greater height than either of those we examined.

There is no doubt the Lipoas pay great attention to their nest. It has been said that they assist the young to emerge, but I hardly think that possible, although they do so indirectly by keeping the sandy covering so loose, and paying constant attention to the regulation of heat. This latter function the

birds could do by the removing, or the heaping up of the top sand as required; but the parents could not scrape to the eggs as each one is hatching without upsetting the arrangement of the topmost tiers. Whether they remain in the vicinity to receive the young when they emerge has yet to be proved. But during the few weeks that the eggs are being laid the birds exercise all possible care. They have an arduous task removing the sand away from and back to the centre when wishing to deposit each egg. After each operation the mound is rearranged and the sticks placed upon its surface with the utmost care. When the young hatch they cannot have much difficulty in getting through the loose sand, and there is no doubt they have the instinct to make their own way out. The young Mallee Fowl too, like its cousin the Brush Turkey, Talegallus, is remarkable in that it is fully feathered when hatched, and is quite able to look after itself. It possesses almost as much speed as an old bird has, and could soon outrun a possible enemy. But I am afraid the numbers of the Mallee Fowl are decreasing, on account of the ravages of the foxes, wild dogs and cats, which abound in the same tracts of country that this unique bird inhabits. Mr. M'Lennan tells us he often finds the birds caught in his dog-traps.

Dr. Ryan had to return to Melbourne next day; but Mr. C. French, jun., and myself remained at Pine Plains a while longer. We employed ourselves in searching the belts of timber at hand, only venturing out in the early part of each morning and later in the afternoon, for, even though early in the summer, the heat was very oppressive during midday. In the timber the first bird noticed to be a stranger to us was the Many-coloured Parrakeet, *Psephotus multicolor*, but afterwards we saw numbers of them. It is plentiful at Pine Plains, although it was not seen at all during our journey along the Wimmera bed. This parrakeet is usually seen in pairs, and does not congregate like the Red-backed variety. The male is a very handsome bird, the patches of brilliant yellow on its shoulders and forehead showing conspicuously. The female, as is the case with all the Psephotus, has a protective brownish colour, and has a dull red mark across the shoulder of the wing. The Mallee Parrakeet is also common at Pine Plains, but the Rock Pebbler has never been recorded. Unfortunately here, as also at other places we had visited, we were too late to obtain eggs. However, in one nest of the Mallee Parrot we discovered one addled egg with two newly hatched young; and in another instance, when investigating a hollow tree, were fortunate in finding a deserted nest, apparently of the Red-backed variety, containing four eggs.

Flocks of the Cockatoo Parrakeet, *Calopsittacus novæ-hollandiæ*, were seen during our trip here as well as further south,

From a photo. by DR. CHAS. RYAN. *Half-tone by* TRIUMPH ENGRAVING CO.

EGG-MOUND OF THE MALLEE HEN.

but they do not breed in the district. The little Warbling Grass Parrakeet, *Melopsittacus undulatus*, also puts in an appearance at certain times of the year, departing again on the approach of the breeding season.

We decided, if possible, to procure some young parrots for the purpose of conveying them to Melbourne with us. So far all we had seen, being unfeathered, were not in a fit condition to leave the nest. However, one Red-backed Parrakeet's nest contained seven young which could fly. One escaped, but six were captured and carried in triumph to our quarters. They comprised two males, with their red backs showing, and four sombre-coloured females. They were placed in a cage outside, and a curious thing was that next morning the two parent birds had found them out. The poor birds flew to and fro over the house for some time, and all their calls were answered by the captive young. Four fledgelings of the Many-coloured Parrakeet were also obtained from a hollow spout. They were not so old as the former nestlings, although they were feathered. In this lot three were females. It was interesting to notice how conspicuous was the yellow mark across the shoulders of the solitary male, the same patch on the females' wings being red-coloured. Thus we had got a nice lot of 10 young birds to take back with us. But I am sorry to say none of them reached Melbourne alive. They all died *en route*, the probable cause being, no doubt, improper feeding and exposure.

Part of the timber on Pine Plains, having been ring-barked some years ago, was now dead, and in this the various parrots found abundant suitable nesting hollows. Tree Martins also made use of the hollow spouts in which to rear their young. But only one nest containing eggs was discovered, and in this five pretty red-speckled specimens were found resting on a bed of green leaves. The Striated Pardalote and Brown Tree-creeper were tenants too. One nest of the former species was observed ready for eggs. Bee-eaters were numerous, flying overhead, but they had not yet commenced nesting, for they had only arrived from their winter haunts a few days previously.

In a belt of box saplings we examined a bower or playing-ground of the Spotted Bower-bird, *Chlamydodera maculata*. The measurements were as follows:—36 inches in length and 21 inches in width externally, while the passage itself was only 9 inches wide. Around the bower was a miscellaneous collection of pieces of rag, bits of lead (from a tea-chest), and wire, while at either end were heaps of bones and numerous pieces of glass and broken bottles. The floor of the bower was strewn with quite a number of short pieces of wire. The number of bones was found to be 334, and were nearly all the vertebræ of lambs. The most of them were placed at one end, while the broken glass

preponderated at the other. The birds had been very industrious in the collecting of material—for the pieces of cloth, wire, and tea-chest lining must have been carried from the homestead, a distance of over half a mile. The overseer living at the house says the birds are often seen about, and last season they were very persistent in eating the fruit of a grape-vine growing over the verandah. We searched diligently for a nest of the Bower-birds, but were unsuccessful, although in a bull-oak near by there was what appeared to be the remains of an old one.

In another bull-oak tree in the same clump a Brown Hawk, *Hieracidea orientalis*, was incubating a clutch of two eggs. Another hawk's nest had been examined the previous day. It was situated in a large gum tree out on the edge of plain. It contained one egg and one newly-hatched bird; the latter was clothed in bright rufous-coloured down. It is peculiar that in this dry district the Brown Hawk should only lay two eggs in a clutch. The diurnal birds of prey observed during our trip were three kinds, viz.:—Wedge-tailed Eagle, *Uroaëtus audax*, the Brown Hawk, and the Kestrel. Night birds were represented by a large owl and the Owlet Nightjar, *Ægotheles novæ-hollandiæ*. Returning home one evening the large owl was observed on a dead tree, showing up conspicuously against the fading light. But it would not allow of approach within gunshot, although I followed it until I could no longer see it in the dusk. From its size we conjectured it must have been the Winking Owl, *Ninox connivens*. The bird had evidently been disturbed while feeding, for as it flew from tree to tree, a reptile (either a lizard or a small snake) of about 15 inches in length was dangling from its claws.

Another bird whose identity was not definitely settled was a small grey hawk similar in appearance to the Grey Falcon, *Falco hypoleucus*. Only one specimen was seen. It was a very quick flyer, and as it flew some small birds in the vicinity set up their alarm notes, as they will do when there are suspicious birds about.

The Wedge-tailed Eagle is a destructive bird during spring-time, when it is responsible for a percentage of lambs killed. On Pine Plains station, until quite recently, 2s. 6d. was given for every eagle's head. The birds are easily poisoned; we saw the result of one *coup*, where a fox caught in a trap was baited with strychnine. Within ten yards of the carcass were the bodies of a pair of eagles. The Raven, *Corone australis*, which is found in hundreds about the plains, is also very destructive during the lambing season. Two old eagles' aeries were noticed. One was situated in the broken top of a pine tree, while the other was in a large-sized Mallee bush, and was not more than 12 feet from the ground. But from this latter nest the sitting bird would have a

grand outlook. The site was on the slope of Mount Snowdrift, and overlooked the broad stretch of Warringen Plain.

One afternoon we took a little trip on horseback, and explored the timber on the other side of Pine Plains. Passing through belts of pine trees and bull-oaks, we here and there came across small areas of grass, on one of which we disturbed a flock of 12 or 14 Leadbeater's Cockatoos, which were feeding in the open. Mr. M'Lennan tells us that Emu are occasionally seen on these small plains. Here, too, we surprised a pair of Eagles that were sitting in a tree leisurely preening their feathers. They did not notice our approach until we were close to them. A beautiful male of the Black-backed Wren was shot, and in the pines near were distinguished the notes of the Gilbert's Thick-head, and also the Rufous-breasted, *P. rufiventris*. In a patch of Mallee further on our dog startled a Mallee Fowl, but the bird in a very short time managed to get away. This was the only occasion on which we met the bird itself, although we frequently saw its tracks and where it had been scratching among the leaves and twigs upon the ground. And in this instance only a rapid glimpse was obtained, as it rushed off and disappeared through the scrub. It requires a good dog to follow a Mallee Fowl—even with the best the bird will often get away. But if hard pressed the bird will leap into a bush, and so intently does it watch the dog's antics that a person can approach and with a stick place a noose around its neck.

In a branchlet of a Mallee bush overhanging our track we discovered a nest of a species of Acanthiza containing young. We did not see the owners, but it may have been the property of the Little Tit, *A. nana*, a specimen of which had been shot among the pines.

Another day we employed in a further search of the redgum and box trees nearer home. On the way through the timber a little quail (probably the species *Turnix velox*) was flushed from the grass. A flock of perhaps twenty Black Cockatoos, *Calyptorynchus funereus*, was seen flying across, and several pairs of the Lead-beater's were among the trees. A nest of the latter variety was found in a large dead tree, but the eggs were hatched; the two young could not have been more than a day old. Everywhere the three varieties of Parrots—the Red-backed, the Many-coloured, and the Mallee—were seen, and occasionally a small flock of the Cockatoo Parrakeets would fly over.

Other birds noticed were the Chough, the White-shouldered Campophaga and the Oreoica, and mobs of the White-browed Babblers were ever on the move among the brush. The Chough is very noisy; it is often amusing to see them, keeping as they do in companies, and playing as it were "follow the leader" through the trees. Several of their capacious mud nests were investi-

gated. One contained three fresh eggs, as well as some newly-hatched young. The Campophaga is plentiful throughout all the timber. It keeps in pairs, and the pleasant, continuous song of the male bird is heard among redgum and bull-oak trees alike. Apparently nesting operations had not been commenced. Another gifted musician in these dry regions is the Oreoica, aptly termed the Bell-bird from the nature of its beautiful ringing notes, which are given forth with several variations. It is found in the gum and box saplings, as well as in the desolate Mallee, and its nest is very hard to locate, for the bird is shy. A solitary specimen of the Red-backed Kingfisher, *Halcyon pyrrhopygius*, was shot, we being attracted to it by hearing its peculiar note; and, while hammering the hollow trees for parrots' nests, a lonely Owlet Nightjar was disturbed from his noonday sleep.

Coming to a brush fence, we heard the merry song of the Red-throat, *Sericornis brunnea*, a little dull-coloured bird, the male of which has a conspicuous rusty-red patch on the throat. A pair of birds was shot for our collection, but no traces of a nest could be seen. Afterwards, on dissecting the birds, the female was found to contain two fertilized yolks. The Red-throat possesses many habits of a Sericornis, and delights to frequent thick masses of bush and undergrowth. The male and the female also have a very pleasant song, which is remarkably loud and sweet for so small a bird. In the same brush fence were two families of Black-backed Wrens. After careful hunting, one nest was discovered hidden away in the dead leafy top of a sapling thrown among the *débris*. The nest was made of bark and sheepswool, with several pieces of grass in the inside. It measured five inches high by three inches in diameter, and contained four pretty reddish-spotted eggs.

At Pine Plains the Cuckoo family is represented by the Fantailed, *Cacomantis flabelliformis*, which lives exclusively among the bull-oaks and pines. A somewhat scarce species, the Black-eared, *Mesocalius palliolatus*, is occasionally seen in the district. It is a very shy and silent bird.

The Bronzewing Pigeon, *Phaps chalcoptera*, is tolerably plentiful in patches of timber near the waterholes. At the close of a warm day the birds may be seen coming singly or in pairs for their evening drink. Another member of the Columbæ is the Ground Dove, *Geopelia tranquilla*. It is not as plentiful at Pine Plains as at Yallum, but nevertheless at sunrise and at sunset its loud and melancholy song is heard in the pine ridges.

Directly opposite the homestead is a small patch of trees of a few acres in extent, consisting principally of redgums. A few clumps of this nature were scattered here and there along the edge of the plain. They appeared to grow in hollows which were at one time swampy ground. On the morning of our departure I

made a hurried search through this in the hope of finding the nest of a Leadbeater's Cockatoo which had been heard and noticed in the locality. On the brink of a hollow in a large gum tree I espied the cockatoo sitting. The hole proved to be its nest, for on ascending I found it to contain a fledgeling and an addled egg. In another hollow close by I was surprised to see the two eyes of some animal glaring at me. No persuasion on my part would cause it to move in any way or stir from its domicile. Earlier in our trip, while at Lake Wonga, I had seen a similar animal in a hollow spout. On this former occasion its body was hidden in a recess, and only the head was visible. I tried for some moments to noose it, but in vain, and I had not the inclination to chop it out. The animal, whatever it was, possessed a head shaped like an opossum's, and appeared about the size of the ring-tailed variety.

On Saturday we made our way back to Yallum, along a track which takes a detour, making the journey about 30 miles. The whole route lay through the Mallee scrub; but at two places patches of good country, and a correspondingly fair amount of bird life, were met with. At each place is a large waterhole. The first stage was through truly wretched sandy Mallee, so bad in comparison that it is termed "the Desert" by the local people. Only one bird was noticed here, and that was a little Pardalote as it flew across the track; but a little further on a specimen of the rare White-fronted Honey-eater, *Glycyphila albifrons*, was seen. We reached the "ten-mile tank," or the first waterhole, about midday and proceeded to boil our billy. There is some good nesting ground around this place. Patches of small pine scrub and sparse mallee, with thick-growing bushes as undergrowth, and areas clothed with a species of acacia growing about 5 feet high, would afford good breeding grounds for birds. While having lunch, a single whistling note was heard near by which aroused our curiosity. It came from a male Black Honey-eater, *Myzomela nigra*, and several couples were presently seen. Needless to say we hunted diligently for the scarce nest of this bird, but were unsuccessful. Passing through some undergrowth on the way two young birds of the Red-throat were disturbed. They were fully feathered, but could barely fly; their squeaking soon attracted the parents. Some Black-backed Wrens were seen too. This scrubby undergrowth is also the home of the Chestnut-rumped Ground Wren, *Hylacola pyrrhopygia*. The Hylacola is another peculiar bird. The birds, like the Red-throat, are allied to the Sericornis family, and spend their time among the thick scrubby undergrowth. The nests are rather bulky covered-in structures, built near the ground. The eggs are of a buff colour, streaked or spotted with markings of a darker hue. The Hylacola also has a very pleasant warbling song.

Among the blossoms of the Mallee bushes the Yellow-plumed Honey-eater, *Ptilotis ornata*, was to be seen feeding, and its lively notes were often heard as the birds chased each other through the scrub. The White-plumed variety, *P. penicillata*, was not common, but occasionally its whistle would be noticed. Two nests of the Yellow-plumed Honey-eater were found. Both were situated in the tops of small pines, and one contained three beautiful eggs. Of the White-plumed one fresh egg was taken. This latter nest was in a bush growing alongside the track, and was made almost entirely of sheepswool, which the birds had gathered from the bushes where sheep had been passing. There is an abundance of material, for this is the route along which the sheep are taken from Pine Plains to the shearing sheds at Yallum, consequently tufts of wool are torn off by the undergrowth through which the animals have passed.

Nothing more of importance was noted until we reached the second waterhole on our road. This hole is a great deal larger than the "ten-mile tank," and possesses the extraordinary name of "Touchewalop." It is situated in an area of gum and box timber, but birds are not plentiful. Leadbeater's Cockatoo was the most in evidence, and several were around the water when we arrived. Among some bull-oak trees several fully-fledged young of the Crimson-bellied Parrakeet were observed. They were flying about with their parents, but could be, distinguished at once because of their short tails, which were not yet grown to their full length. After shooting a young bird for reference we pushed on, as it was now late in the afternoon. When darkness came on we were again in the Mallee, but our track was well defined, and our horses knew the road. About nine o'clock we reached Yallum, and so ended our trip to Pine Plains.

The ornithological result of the whole trip was 42 bird skins, besides 75 eggs.

CONTRIBUTIONS TO THE FLORA OF VICTORIA. No. IX.

By F. M. Reader, F.R.H.S. (Communicated by G. Coghill.)

(*Read before the Field Naturalists' Club of Victoria, 15th January*, 1900.)

Stipa Luehmannii, sp. nov., F. M. Reader.

A rather stout perennial grass, from about 1 foot to more than 2 feet high. Culms somewhat compressed or angular and striate, of a pale or purplish colour, more or less invested with very short hairs, or smooth and shining. Basal leaves rather short or some long, acute or short-pointed, flat or involute when dry; lower side densely beset with short and soft shining hairs; upper side scabrous, and invested with short or long hairs; sheath

broad, loose, pubescent with the short shining hairs. Upper leaves rather short; upper sheaths and leaves scabrous and puberulent. Ligule ciliate. Panicle of a greyish or pale colour, first erect, then spreading, from about 6 to 12 inches long. Branches capillary, beset with very short hairs. Spikelets short, usually of a purplish or somewhat green colour, otherwise pale or light brown, on short or long capillary pedicels. Empty glumes unequal, thin, veins vanishing in the hyaline portion. Outer glume about 4 lines long, more or less truncate and toothed, frequently with three short teeth, the middle tooth the shortest, the tooth in the lower margin of the glume the broadest and longest. Inner glume about 3 lines long, truncate, with two or three usually unequal teeth. Flowering glume about 2½ lines long, on a hairy stipes, beset with short, whitish, shining hairs; the stipes nearly a line long; lobes, none. Awn from less than 2 to 2½ inches long, in young plants nearly straight, in older tortuous below, twisted above, shortly and softly hairy to the twist, the hairs appressed, rather spreading or almost plumose, rarely with an additional line of hairs above the twist. Palea about 1¾ lines long, shining, oblong-linear, with narrow hyaline margins, and two thin but well-defined whitish veins, vanishing in the hyaline summit, hairy at the back. Grain narrow, nearly 2 lines long.

Flowers October to December. Sandy desert, Lowan, 1898; F. M. Reader.

The species is named in honour of Mr. J. G. Luehmann, curator of that magnificent collection of plants—the National Herbarium.

This species belongs to the section of the genus Stipa with the flowering glume silky-hairy, the margins not dilated under the awn, the ligule ciliate. It is distinguished from *S. semibarbata* by the glumes being much smaller and toothed, &c.; from *S. hemipogon* by the toothed unequal and shorter glumes, &c.; from *S. pubescens* it differs chiefly in the teeth of the glumes, in the smaller size of them, &c.; from *S. aristiglumis*, also, this species is distinguished by teeth and smaller glumes, &c. It is separated from *S. eriopus*, *triohophylla*, and *scabra* by its truncated and toothed glumes.

This new grass may easily be discerned from other species by the soft vestiture of the leaves and sheaths, which give the plant a greyish appearance. *S. semibarbata*, var. *mollis*, in this respect, however, resembles *S. luehmannii*, but the former is a stouter plant with much denser panicle and larger glumes, and in the latter the panicle of plants in a more advanced state with its twisted awns is much more like *S. scabra*. In habit this species is not unlike the variety *elatior* of *S. scabra*, but the greyish hairs gives *S. luehmannii* quite a different aspect, and is also a stouter plant.

NOTES.

WHITE-THROATED FLY-EATER.—On the 18th October a male specimen of the White-throated Fly-eater, *Gerygone albigularis*, was shot at Rutherglen. An allied species, *Pseudogerygone culicivora*, the Southern Fly-eater, is also in the district. This latter appears to be restricted to a patch of timber about 100 acres in extent, consisting for the most part of box saplings, small Murray pines, and bull-oak trees. The birds build their nests in the saplings, at heights varying from 2 to 10 feet from the ground. Some are very neat and pretty structures, built after the fashion of the Gerygones, with a hood over the entrance, and a long, tail-like appendage. The tail measures from 3 to 5 inches, while the total length of the nest is 9 or 10 inches. Several nests have been taken containing clutches of three eggs each, two being also the depository for the speckled egg of the Narrow-billed Cuckoo, *Chalcococcyx basalis*. Both the male and the female Southern Fly-eaters are songsters.—A. CAMPBELL, JUN. Rutherglen, 5th November, 1899.

FLORA OF MT. KOSCIUSKO.—"Our steep track through the belt of Snow Gums, *Eucalyptus coriacea*, was a struggle, but the sight of one plant therein will never be effaced from my memory. I allude to *Dianella tasmanica*. This plant occurred in large patches all through the scrub, and it was, without exception, the handsomest plant we saw. Its blue flowers were borne in the greatest profusion, while its leaves were up to six feet long and two or three inches wide. We feasted our eyes upon it, and its abundance was the more remarkable considering the paucity of blue flowers of any kind on the mountain. Other gems met with there were *Claytonia australasica*, bearing beautiful white flowers; *Stackhousia pulvinaris*, emitting a perfume both powerful and sweet; *Epilobium confertifolium*, a beautiful glaucous-leaved plant, bearing a profusion of creamy-white flowers; *Nertera depressa*, a dainty little plant, bearing a profusion of reddish berries (often seen in cultivation); *Raoulia eatipes*, the Australian Edelweiss, one of the daintiest of the alpine flora. Then the Kosciusko plateau is the place for buttercups. The largest, *Ranunculus anemoneus*, is a white-flowering species, with flowers two or three inches in diameter, while the smallest, *R. millani*, a dainty little plant, is often less than an inch in height, and present in innumerable quantities. The sight of the dwarf and spotlessly white *Caltha introloba* growing on the fringe of the snowdrift, or actually under the snow, is very beautiful."—From "A Second Contribution towards a Flora of Mt. Kosciusko," by J. H. Maiden, F.L.S., Government Botanist of New South Wales.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

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VOL. XVI.—NO. 11. MARCH, 1900.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

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

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1900.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 12th March, 1900, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Mrs. Henry Press .. .. *(Esplanade, Williamstown.)*	R. Hall ..	G. A. Keartland.

3. Nominations for Membership.

Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

(Authors are requested to hand in a brief resume of their papers to the Secretary.)

1. By Mr. J. F. House, "A three days Entomological trip to Gisborne."
2. By Rev. W. Fielder, "Notes on some Marine Specimens from Flinders" (illustrated by specimens).

6. Reading of Natural History Notes.

Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

Members exhibiting specimens are requested to furnish the Hon. Secretary with written particulars of their Exhibits for record in Minutes and *Naturalist*.

EXCURSIONS.

SATURDAY, MARCH 10.—Sydenham. Under the leadership of Mr. T. S. Hall, M.A. Meet at 12.15 p.m. train, Spencer Street Station. Geology.

SATURDAY, MARCH 24.—Port Phillip. Under the leadership of Mr. J. Shephard. Meet at Middle Brighton Pier at 2 o'clock. Dredging.

SATURDAY, APRIL 7.—Point Cook, *viâ* Laverton. Under the leadership of Mr. R. Hall. Meet at Spencer Street Station, 10.55 a.m. train. Ornithology.

THE

Victorian Naturalist.

Vol. XVI.—No. 11. MARCH 8, 1900. No. 195.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, the 12th February, 1900, when the president, Mr. J. Shephard, occupied the chair, and about 40 members and visitors were present.

REPORTS.

A report of the excursion to Willsmere, Kew, on Saturday, 20th January, was read by the leader, Mr. W. Stickland, who stated the results were very similar to those of the previous excursion to the same locality. The rare rotifer, *Pterodina trilobata*, was taken; also a number of green Hydras, which are usually somewhat rare, but on this occasion were very numerous, especially on the stems of Nitella.

A general report of the excursion to Wallaby Creek, Plenty Ranges, on 26th and 27th January, was read by the leader, Mr. F. G. A. Barnard, who stated that several interesting specimens had been obtained, notably two small freshwater crustaceans, which might prove new to science. Other members of the party gave reports on their several branches of natural history, showing that fairly complete records of the fauna and flora had been made in the short time at their disposal, and a hope was expressed that a future excursion might be made to the southern slopes of the Plenty Ranges.

PAPERS.

1. By Messrs. E. Ernest Green, F.E.S., and Jas. Lidgett, communicated by Mr. F. G. A. Barnard, entitled "Descriptions of New Victorian Coccidæ."

The authors described the following new species:—*Mytilaspis bicornis*, *Fiorinia lidgetti*, *Eriochiton melaleucæ*, and *Dactylopius australiensis*.

2. By Mr. R. Hall, entitled "Notes on Four Species of Birds."

The author pointed out that *Pardalotus affinis*, Gould, and *P. assimilis*, Ramsay, were doubtless identical, and gave some field notes on a variety or phase of *P. assimilis*, Ramsay. He also gave particulars of a case of a tree-building Pardalote acting as foster-parent of a Cuckoo, and gave additional information on the plumage of the Blue Wren.

Messrs. Le Souëf, Coles, Brittlebank, Keartland, and Campbell joined in the discussion that followed.

NATURAL HISTORY NOTES.

Mr. J. G. Luehmann, F.L.S., Curator of the National Herbarium, called attention to some dried plants which had been

found among the specimens in the collection of the late Dr. Sonder, purchased for the Herbarium some years ago. These bore pre-Linnean names, and were marked as collected in India in 1695, also with the word "Pet.," which on investigation proved to be an abbreviation of Petiver, the name of a botanist who described some plants in the "Transactions of the Royal Society of London" in 1703, and the specimens had evidently been mounted by or belonged to him. They were still in excellent preservation, and were exhibited at the close of the meeting.

EXHIBITS.

By Mr. A. J. Campbell.—Eggs of the Egret, *Herodias timoriensis*, from New South Wales. By Mr. A. Coles.—White Goshawk, male and female. By Mr. R. Hall.—Five phases of *Pardalotus assimilis*. By Mr. G. A. Keartland.—Glossy Ibis, *Falcinellus igneus*, and Greenshank, *Glottis glottoides*, both shot in Victoria, also eggs of above received from Europe. By Mr. J. G. Luehmann, F.L.S.—Four specimens of plants in illustration of his remarks. By Mr. H. C. Smart.—Three specimens of *Climacteris leucophoœ* and two of *C. pyrronhota*—the latter is now probably recorded for the first time from Victoria; the specimens were obtained at Loch in November last. By Mr. H. T. Tisdall.—Specimens of plants collected during recent excursion to Wallaby Creek. By Mr. Chas. Walter.—Dried plants: new species—*Eucalyptus torquata*, J. G. Luehmann, from Coolgardie district, W.A., collected by L. C. Webster; new localities—*Acacia glaucescens*, Willd., Eurobin Valley, Buffalo Mountains, N.E. Victoria, collected by Jas. Wm. Mansfield; *Cotula filicula*, J. Hooker, Mount Macedon, collected by C. French, jun., and C. Walter; *Aster pimeleoides*, Cun., Myrniong Ranges, Bacchus Marsh, Nov., 1899, collected by C. and T. Brittlebank.

After the usual conversazione the meeting terminated.

South Australian Ornithological Association. — A meeting of this association was held on 5th January, when the president, Dr. A. M. Morgan, occupied the chair. The president illustrated in a practical way, by means of the sternum bones, the differences between certain genera of Australian birds, pointing out the importance of the study of the anatomical characters in the arrangement of species. The eggs of the Black-fronted, Red-capped, and other Australian Dottrels were exhibited by Dr. Morgan. Two mounted specimens of a Neophema, probably *N. elegans*, though marked with very large patches of orange on the under surface, were exhibited by Mr. J. W. Mellor, as well as eggs of the Ruddy Nightjar, Yellow-breasted Fig-bird, Brown-backed Honey-eater, and nest and eggs of the Mistletoe-bird from Queensland.

EXCURSION TO PLENTY RANGES.

This year the usual Foundation Day excursion was arranged for the Plenty Ranges, *viâ* Whittlesea, with the hope that the Club would be permitted to explore the water reserves situated there, and make use of the Metropolitan Board of Works' house accommodation in the district. On making representations to the Board these facilities were kindly granted, and arrangements were then entered into for the party to spend nearly a couple of days at Wallaby Creek House, which is situated on the northern side of the Dividing Range, almost behind Mt. Disappointment. On meeting at Spencer-street station on Friday morning, the 26th January, the leader was gratified at being able to welcome such a representative party of members, and all prominent men in their several branches. Ornithology had two representatives, entomology two, botany two, and pond-life one ; and notwithstanding the promise of a hot day we formed a merry party as the train traversed its weary way to Whittlesea (27 miles), where we lunched before starting on our six-mile drive. From Whittlesea the ranges appear closer than that, owing to the intervening country being very flat. At length we were off, and in half an hour reached the entrance to the water reserves. Here we got a glimpse of the Toorourrong Reservoir, formed at the junction of the eastern branch of the Plenty River and Jack's Creek—a truly pretty spot. We now took the track towards "the Cascades," and were soon passing through the usual vegetation of the altitude of 600 to 800 feet, but presently a number of the larger Grass-trees, *Xanthorrhœa australis*, also *Lomatia ilicifolia*, with its delicate creamy flowers, indicated that we were gradually ascending, and soon our vehicles came to a stop at a pretty bend in Jack's Creek, where it is joined by a miniature tributary known as Smith's Gully. Here we left the conveyances, arranging to meet them at the same place on Sunday afternoon. The track from here makes a steep ascent up a spur from the main range, and in springtime is bordered with many lovely flowers, such as *Epacris impressa*, *Grevillea alpina*, *Eriostemon correifolius*, Acacias, &c. However, we took a bridle path alongside the creek, as affording a pleasanter walk on a hot afternoon. We had now to shoulder our impedimenta for a six-mile walk, in the first mile of which we should ascend nearly 1,000 feet. Just at the commencement of the track a magnificent group of King Ferns, *Osmunda* (*Todea*) *barbara*, attracted our attention, and presently other smaller species were noted. The other side of the creek was a dense mass of vegetation of the usual kinds found in our fern gullies. *Senecio vagus* brightened the scrub with its large yellow flowers, while the white-topped *Cassinia aculeata* was everywhere, but yielded no results to our entomologists' vigorous shaking. Our ornithologists noted

some Buff-rumped Tits, *Acanthiza reguloides*, among the saplings. A welcome rest at the foot of the Minnie Falls gave us the opportunity to quench our thirst at the rushing stream, and admire the tree-fern trunks clothed with their filmy covering of Hymenophyllum. But onwards and upwards were our orders, and shortly we reached the foot of "the Cascades," where a seat has been thoughtfully provided under the shade of the fern trees, so that visitors may watch the billows chasing one another down "the Cascades" into the pool at their feet, only to rush away immediately down the valley of Jack's Creek to augment the Melbourne water supply. The original stream as it trickled into the basin was icy cold, and was much appreciated after our climb. Close by the fern *Lomaria patersoni* was found. It was now necessary to climb the steep bank alongside "the Cascades," but we were soon at the top, and practically on the top of the Dividing Range, about 1,700 feet above sea-level. This spot is easily discernible from Melbourne, being situated at the foot of a somewhat sudden descent in the main ridge of the Plenty Ranges, eastward of Mount Disappointment. We now had to follow the road alongside the aqueduct bringing the water from Wallaby Creek for some five miles, but the road is good and almost level, so that the task was not a difficult one had we not been encumbered with so much collecting material, &c. The aqueduct is a succession of graceful curves as it is carried on a contour line along a spur of the range running in a north-easterly direction, and at every turn one wonders what is beyond the next curve. The first mile or so passes through good forest country. Our attention was directed to the curious *Acacia spinescens* growing alongside the track; presently, at a bend of the road, some fine specimens of the Mint-tree, *Prostanthera lasiantha*, were noticed in full bloom. Ferns of various kinds were seen as we headed several good gullies. Some fine Eucalyptus saplings, which must have been fully 120 feet high, attracted attention, and we were afterwards assured that these trees were not more than sixteen years old, which will give some idea of the rapidity of growth in these mountain regions. The soil was of a rich ferruginous colour and of great depth where exposed by the cuttings for the aqueduct. Presently, owing to the ravages of bush fires, the country became more open, and extensive views to the eastward were obtained, revealing two prominent mountain peaks, probably in the vicinity of Marysville. Fine specimens of the hill tree-fern, *Alsophila australis*, stood out prominently from the tangle of bracken covering the hillsides, looking like so many circular tables standing on a green carpet. But the afternoon was close and warm, and it was necessary to try the qualities of the aqueduct water several times; however, about five o'clock the welcome sound of a southerly

breeze was heard behind us, and presently we all felt re-invigorated by its refreshing coolness. We passed some fine specimens of the Mountain Ash, *Panax sambucifolius*, at a bend in the road, also such shrubs as the Native Laburnum, *Goodia lotifolia*, but flowers were rather scarce. Coming to the last mile-post we decided to take a good rest and then make a bold spurt for our goal. Two scouts were sent on ahead to say the main army was following, when behold round the next turn the welcome sight of habitations arose, and we found the last mile the shortest of the day, the fact being that the miles are measured from the weir, and the house is nearly half a mile before reaching the weir.

After tea three of the party went out to learn a little of the surroundings of their temporary abode, and while walking near the aqueduct one of them almost stepped on a young tiger snake, which, however, got safely away before a stick could be obtained. A glimpse at the weir in the twilight and a further ramble along the aqueduct from Silver Creek terminated the day's experiences so far as outdoor work was concerned. A pleasant hour or two was spent on the verandah, chatting about matters more or less naturalistic, when all turned in, determined to have a good day on the morrow.

Saturday morning broke dull and cool, and though some were early astir, and off in different directions spying out the land, our senior botanist can safely claim to be the most ardent, as before breakfast he had been as far as the third mile-post on the Silver aqueduct and back, and made a fair collection of flowering plants. Along the track fine spikes of *Veronica derwentia* were growing; also *Calocephalus lacteus*, *Candollea serrulata*, &c.

After breakfast the ornithologists went off in the direction of King Parrot Creek, as that seemed to be the most likely part for bird life, while the rest of the party climbed up the range by the old tramway to the Nimmo Falls and the upper part of Wallaby Creek. We had not gone far before a swift-flying insect whizzed past us and set us wondering what it was. After a short time one was captured, and proved to be the beetle *Schizorrhina christyi*, a rather handsome insect. Presently more appeared and several were captured. Our path was bordered on the upper side by a stream of water used for supplying the house. Along this grew quantities of the beautiful Fringe Lily, *Thysanotus tuberosus*, conspicuous with its pretty mauve flowers. Fine young plants of *Grevillea alpina* and *Platylobium formosum* were everywhere, and quite a young forest of the Golden Wattle, *Acacia pycnantha*, was already showing its flower buds. Higher up we came to a bank of Coral Ferns, *Gleichenia circinata*, and King Ferns, growing on a wet bank, and closer examination revealed quantities of the singular plant *Drosera binata*, bearing its delicate white flowers. *Bauera rubioides* was in flower here also, and beautiful sprays of

the deep blue fruits of *Dianella tasmanica*, with the bright blue flowers of *Lobelia simplicicaulis*, added colour to the scene. The butterflies *Heteronympha merope*, *Xenica achanta*, and *T. klugii* were plentiful on the hillside. The Nimmo Falls were now in front of us, and marked the change from the Silurian to the Granitic formation. Crossing the creek above these some fine bushes of *Leptospermum lanigerum* afforded a collecting patch for the entomologists, but yielded only a few skipper butterflies, *Hesperilla donnysa* and *H. compacta.* Ascending the opposite hill for some distance through a mass of *Senecio dryadeus*, &c., we had a fine view of the plateau at the back of Mt. Disappointment, which forms the watershed of Wallaby Creek, and towards the east could make out range after range of hills till they were lost in the distance, perhaps as far away as Mansfield. The botanists now retraced their steps to investigate the surroundings of a spring for minute plants and specimens of pond-life, and here made a couple of captures, which will be referred to later on, and were probably the most interesting of the trip. The entomologists went further up the creek, but with the only result of having some hard work to do to get round or over the fallen trees. The hillsides here must at one time have been magnificent forests, but now contain nothing but gaunt skeletons hundreds of feet high, standing up against the skyline waiting for another fire or a winter storm to lay them low. Rejoining our pond-life member, a number of samples were bottled for future investigation, and we returned homewards for luncheon.

In the afternoon our botanist was occupied pressing his specimens, and the contents of the bottles were submitted to the searching eye of the microscopist. Three of the party started off to try the hills on the other side of Wallaby Creek, but beyond seeing a few parrots, *Platycercus elegans*, life was absent, and flowering plants, beyond those already mentioned, were also scarce. After traversing some distance without many results they determined to strike out for the Silver Creek weir, which was reached rather late in the afternoon. Here a fine blackwood tree afforded ample shade for a welcome rest before starting on the return journey. There are two or three other minor weirs here, but we did not visit them, owing to the lateness of the hour. How the Silver Creek obtained its name I do not know, but near the weir, where there had been a slight washaway, the roadway was so covered with minute particles of mica that it had quite the appearance of having been dusted with bronze powder. We decided to return by the aqueduct, a distance of about 8½ miles, and were amply repaid for the extra mileage by the views of the deep and precipitous valleys round the heads of which the aqueduct is carried.

Looking down into these valleys one could not help thinking

of Hume and Hovell, the first explorers of these ranges, in December, 1824, and the difficulties they encountered in trying to get from King Parrot Creek across the Dividing Range, and with what truth Hume, when he was baffled in the attempt, named the highest peak Mt. Disappointment, and had to find a way across further west, somewhere near the pass now traversed by the North-Eastern Railway.

Soon after starting a tiger snake was heard to slip into the aqueduct, and after some trouble was fished out and killed.

The country had now more of the character of ordinary stringy-bark hills, and the trees were not so large as on the main range. A few spikes of the pretty pink orchid *Dipodium punctatum* were noticed, also bushes of *Indigofera australis*, while *Clematis aristata* entwined itself among the bracken, &c., and a few small, unimportant plants were noticed alongside the track. At several places during the afternoon wombats' holes were noticed, but, singularly, no wallabies or other animal life was seen. During the afternoon the ornithologists secured a young Wonga Pigeon, *Leucosaria picata*, on the Nimmo Falls track, which was, perhaps, their best capture during the trip.

The evening was spent in putting away specimens, &c., and lounging about our sleeping-house.

Next morning (Sunday) early morning strolls were indulged in, during which some Mountain Trout were seen in the Wallaby Creek, but they resisted the temptations of a butterfly net as a means of removal from their mountain home, and after breakfast all visited the Wallaby Weir where a couple of snap-shots were taken of the party. As the day promised to be warm some of the members decided to make an early start for Jack's Creek, leaving the rest to follow after lunch. Little of interest was seen on the way back, and after a good rest at Smith's Gully our vehicles arrived, and we started for Toorourrong Reservoir. Though the day was warm, little did we think, as we rested at the gully, that Melbourne folk were experiencing nearly 107° in the shade—the highest reading for the year. We spent a short time at the reservoir, where our pond-life friend filled up his remaining bottles with likely-looking material, and our artist took a couple more snap-shots of the lake, and then drove on to Whittlesea, where we found tea ready, which was very welcome after our hot drive. Another tedious journey in a hot railway carriage, and Melbourne was reached about 9 p.m.

I am indebted to Messrs. Keartland, Kershaw, Shephard, and Tisdall, members of the party, for the following brief notes of the objects seen or collected :—

Ornithology.—Mr. G. A. Keartland reports that, as the country passed through was so very different in its nature from that usually frequented by members of our Club on their

excursions, we naturally expected to gain some interesting information, if not specimens, and were not disappointed. Although birds were not so numerous as might be expected, over 30 species were noted. On passing the Toorourrong Reservoir a beautiful Azure Kingfisher, *Alcyone azurea*, was disturbed, and soon afterwards the Blue Wren, *Malurus cyaneus*, and Sericornis (sp.) were seen hopping through the scrub beside our path, and the White-shafted Flycatcher, *Rhipidura albiscapa*, fluttered about the trees on the margin of the aqueduct. Near "the Cascades" a Collared Sparrowhawk, *Accipiter cirrhocephalus*, rose from the ground with what appeared to be a bird in its talons nearly as large as itself. The Rose-breasted Robin, *Erythrodryas rosea*, next arrested attention, whilst Pennant's Parrakeets, *Platycercus pennantii*, were seen all along the route to our destination. The loud screech of a Sulphur-crested Cockatoo, *Cacatua galerita*, was also heard, and the Rufous-breasted Thickhead, *Pachycephala rufiventris*, vied with the White-throated species in proclaiming its presence. In the valleys the Coachwhip-bird, *Psophodes crepitans*, made its note heard, but kept out of sight. But the appearance of several Flame-breasted Robins, *Petrœca phœnicea*, quite upset the theory that these birds always leave the mainland in the spring to breed on the islands of Bass Strait or Tasmania, returning again on the approach of winter, and Mr. Hall not only secured an adult male but also a young male just changing to the bright colours of the adult. Many others were seen each day, so the specimens secured were not isolated birds. A young Wonga Pigeon, *Leucosaria picata*, scarcely able to fly, indicated that it was bred in the vicinity, for had the country been open instead of dense scrub it might have been caught without the aid of a gun. The garden attached to our sleeping quarters was visited each day by a Sooty Crow-Shrike, *Strepera fuliginosa*, in quest of raspberries and other soft fruits, for which he was execrated equally with the Wattle-bird by the caretaker. Whilst wandering near the aqueduct in the evening we disturbed several Bronzewing Pigeons, *Phaps chalcoptera*, which created a surprising noise by the striking of their wings as they dashed off. Whilst waiting for our conveyances on the return trip a pair of Gang-Gang Cockatoos, *Callocephalon galeatum*, were seen. The sun was very hot as we returned to Whittlesea, and at several small pools passed we disturbed Crows, Magpies, Wattle-birds, Minahs, and Grallinas, which permitted the near approach of the vehicles before taking flight. Amongst other birds noted were the Great Brown Kingfisher, Lunulated and Yellow-faced Honey-eaters, Buff-rumped and Lineated Acanthizas, Yellow Robin, Spotted Ground and Harmonious Thrushes, Tree-creepers, White-fronted Heron, Nankeen Kestrel, Black-faced Graucalus, and Fairy Martin.

Entomology.—Mr. J. A. Kershaw, F.G.S., reports that insects were conspicuous by their absence, and those seen were mostly of the common kinds. However, the following are perhaps worth mentioning :—Coleoptera—*Rhyssonotus jugularis* (one specimen taken) and *Schizorrhina christyi* (several specimens taken, many others seen flying swiftly in the sunshine). Lepidoptera—Rhopalocera : *Heteronympha merope*, *Epinephile abeona* (several good specimens taken), *Pyrameis kershawi*, *Xenica achanta*, *Xenica klugii* (very plentiful), *Lycæna labradus*, *Lucia lucanus* (one specimen), *Hesperilla donnysa*, *H. compacta*, and *H. eclipsis*. Heterocera : *Agarista lewini* (common), *Hydriomena subochraria*, *H. anthracinta*, *H. strumosata*, *Xanthorhoe subidaria*, *Dichromodes stilbiata*, *Talis pleniferellus*, *Scoparia exhibitalis*, *Dipterina rupicolana*, *Cacœcia pyrosemana*, *C. polygraphana*, and *Capua obfuscatana*.

Pond Life.—Mr. J. Shephard reports that, as was anticipated, the mountain streams proved sparsely inhabited with rotifers and Entomostraca. The various formed channels are kept free from accumulations of vegetable matter, and the natural watercourses leading into them also appear to receive attention in this respect. Attention was, however, directed to damp places, and with the assistance of Mr. H. T. Tisdall an attempt was made to find plants of the order Jungermanniaceæ, which in Europe are the host of a parasitic rotifer of the genus Callidina. This, however, proved a disappointment, as the plants of that order found did not reveal the expected guest, but the search was not unprofitable, for several specimens of small Crustacea were secured from among the spongy mass of lower plant life growing on the hillside, at the source of a spring, which is evidently permanent, as it is utilized for supplying the houses with water. Mr. O. A. Sayce has kindly examined these for me, and says :—"With reference to the two crustaceans collected at Wallaby Creek, one is an Amphipod, and is evidently an undescribed species ; the other is an Isopod, of particular interest as being the first specimen from Victoria of the archaic genus Phreatoicus of Chilton. Three species are so far known, two of which are blind inhabitants of subterranean waters in New Zealand ; the third, *P. australis*, has been found on the summits of Mt. Kosciusko (Chilton) and Mt. Wellington, Tasmania (Thomson). The present specimen is very like *P. australis* in form, but differs slightly in the terminal segment and its appendages, also in the mouth parts. It is undoubtedly a new species, and I shall take an early opportunity of describing it." Two species of rotifera of the genera Melopidia and Diglena were also obtained in the same locality. On the return journey some collecting was done where Jack's Creek empties itself into the Toorourrong Reservoir, where the conditions were more favourable to minute aquatic plant life. One

beautiful form, a minute alga, was very plentiful. It consisted of a somewhat oval disc of open network, composed of four-pointed stellate cells, with setæ at the extremities of the peripheral points of the outer border of cells. Internally the cells were so placed as to bring the points of the rays of one cell in contact with the corresponding ones of another cell, thus forming the open network. Mr. W. Stickland found a number of desmids belonging to the genera Euastrum, Cosmarium, Micrasterias, Staurastrum, Hyalotheca, and Desmidium in the material from this locality.

Botany.—Mr. H. T. Tisdall reports that, considering the time of year, a fair number of plants were noticed in bloom. During the three days over forty were collected, and at least ten others were seen which had just passed into the fruiting stage, amongst which was *Tetratheca ericifolia*, a rather rare and local plant. A few plants, such as *Tetratheca ciliata* and *Comesperma ericinum*, were still in flower, which in lower country would have passed that stage. Some remarkably fine specimens of the Trigger-plant, *Candollea serrulata* were seen, the flower-stalk of one measuring 51 inches in height. The most noticeable shrubs and plants seen in bloom were *Prostanthera lasiantha*, *Lomatia ilicifolia*, *Seigesbeckia orientalis*, *Acacia spinescens*, *Bauera rubioides*, *Bæckia diffusa*, *Leptospermum lanigerum*, *Senecio vagus*, *Cassinia aculeata*, *Veronica derwentia*, *Drosera binata*, *Erythræa australis*, *Thysanotus tuberosus*, *Viola hederacea*, var. *Sieberi* (white flowers), *Lobelia simplicicaulis*, *Epilobium glabellum*, var. *grandiflora*, *Gratiola peruviana*, *Mentha laxiflora*, and *Dipodium punctatum*, the only orchid seen. Twelve species of ferns were collected, the most noticeable being *Lomaria patersoni*, *Hymenophyllum nitens*, *Gleichenia flabellata*, and *G. circinata*. Many other plants were seen, indicating that in the spring or early summer good collections of flowering plants could be made in the district.

On the whole the party, though spending a most enjoyable outing, were to some extent disappointed at the results of the trip, for, considering we were within the boundaries of some thirty square miles of almost uninhabited country, we certainly expected to see more objects of interest than we did, but it must be remembered that it was the hottest part of the year, and though away from Melbourne nearly three days only one could be thoroughly devoted to collecting. The general opinion, however, is that the northern side of the Dividing Range is not equal to the southern, and that if at some future time we can get permission to make a similar trip to the Plenty watershed—*i.e.*, between Toorourrong and Mt. Disappointment—much better results may be anticipated. In conclusion, we have to thank Mr. J. Wilson, the resident inspector, for granting every facility for prosecuting our researches, and to the caretaker and his wife at Wallaby Creek for their attention to our domestic wants.

F. G. A. Barnard.

NOTES ON SOME ABNORMAL-PLUMAGED BIRDS.

By Robert Hall.

(*Read before the Field Naturalists' Club of Victoria, 13th Nov.*, 1899.)

Deviations from the normal plumage of our native birds have seldom been brought before our society, and, as far as I know, few papers have been published in Australia on the subject. Some years ago, however, Sir Walter Buller contributed a paper to the "Proceedings of the New Zealand Institute" on "Albino and Semi-Albino Birds." I therefore think it would be of service to collectors to place on record brief descriptions of some variations which have come under my notice, and if other members would from time to time do the same an interesting series of observations would be recorded.

"Albinos are notoriously shy," says Professor Alfred Newton, meaning that they are very uncommon, and so they surely are when we compare the number of those known with Mr. A. R. Wallace's estimate of the number of individuals of any one species. In his work "Darwinism," Mr. Wallace speaks of any very rare species numbering, in all probability, 30,000 or more, while a common species will number 30,000,000 or even 300,000,000 of individuals. Just imagine 30,000 birds of the Atrichia, and the egg of the western form still a desideratum in our colonial museums.

Sir Walter Buller is particularly struck with the inherent tendency to albinism in his colony, and refers to it as one of the distinguishing features of the New Zealand avi-fauna, while in India the inherent tendency is in the opposite direction, melanism being frequent. Melanism has been noted in many American and European birds, both passerine and grallaceous.

As regards Australia, I should be inclined to say that in the south the tendency is to albinism, while in the north it is to melanism, and as an example I would call to mind a variety of the parrot *Platycercus elegans* (*pennantii*), known to us as *P. nigrescens*, found in Queensland, which is, doubtless, the black form of the southern bird, which in its turn is known to assume abnormal dress.

In the introduction to the second edition of "Buller's Birds of New Zealand," page xlii., and in the "Transactions of the New Zealand Institute," vol. xxvii. (1894), page 135, forty species of birds are described with abnormal plumage, and a glance at the lists will show that birds of prey, both diurnal and nocturnal, insect-eaters, semi-vegetarians, freshwater and sea birds have all erred. In passing, I may mention that the British Museum authorities have noted some 56 specimens of the parrot family which are not identical with recognized species, and have regarded them as accidental varieties.

As I believe modern ornithology may be advanced by a further record of accidental varieties, I beg to submit brief descriptions of 37 specimens belonging to 27 species which have come under my observation. In those cases not in my collection I have to thank the respective owners for the privilege afforded me of making a close examination of the specimens, and for permission to record the descriptions, to which in some instances I have added notes taken from standard works, and as I think it would add to the convenience of reference, I will mention the several birds in the order of their arrangement in "A Key to the Birds of Australia and Tasmania," recently published.

44. CORVUS CORONOIDES, Vig. and Hors., Crow.

At Kerang there is a mounted specimen of either this species or *Corone australis*, the Raven, which is an extreme instance of albinism, as it is quite white, with creamy bill and brownish-cream legs. The first primary is almost equal in length to the innermost secondaries.

It may be mentioned that the young of this species are almost as black soon after birth as they are at maturity, and they do not go through the stages of plumage usual with most birds.

In the "Proceedings of the Zoological Society of London" for 1895, page 401, the case of a Rook is mentioned in which every feather of the entire plumage is spangled or tipped with white.

In birds, albinos are more common in species that are naturally black than amongst those of any other colour. This, says Mr. Tegetmeier, is one of the few laws respecting variation which have been definitely proved, and is equally true of wild and domesticated species. The occurrence of white Blackbirds, Rooks, &c., is recorded much more frequently than that of other albinos.

67. GRALLINA PICATA, Lath., Magpie Lark.

Dr. Chas. Ryan has observed and identified an almost white specimen of this bird.

91. PETRŒCA CAMPBELLI, Sharpe.

This species is a recent addition to the known avi-fauna of this continent, and is found in Western Australia.

Mr. Campbell has described to me an albino of this bird in the possession of a friend at Albany. It has bill, legs, and feet black; breast scarlet; rest of the plumage white.

92. PETRŒCA PHŒNICEA, Gould, Flame-breasted Robin.

At a recent meeting of this Club Mr. A. Coles exhibited a specimen of this bird which appeared abnormal only by a conspicuous blotch of yellow encircled by the red of the breast.

Such a result may have been produced by alcohol, though it is more likely to be an ancestral mark reproduced.

164. PTILONORHYNCHUS VIOLACEUS, Vieill., Satin Bower-bird.

In collection of Mr. J. S. Andrews. Male. Trafalgar, Victoria.

In this specimen three interscapular feathers are pure white, and against the metallic blue the glossy whites are very conspicuous. In all other respects the bird is a fully-matured male.

Glossy feathers, apart from colour, are the result of smooth and polished surfaces, while the metallic blue is due, it is believed, to a transparent sheath acting like a prism.

P. rawnsleyi seems to be a freak of this species, for up to 1881 only one bird had been obtained, and I believe none since. Sharpe says—"It is like a Satin Bower-bird with wings of a Regent-bird." It is mentioned in a recent French work, "Les Oiseaux Hybrides, recontrés à l'état Sauvage: Suchetét," perhaps the greatest authority on hybrids. References are also made there to hybrids on the borderland of distinct species. This applies to certain Flycatchers in New Zealand (*Ibis*, 1894, p. 100), and nearer home to a naked-nostriled Magpie, mentioned later on.

196. ACANTHIZA CHRYSORRHOA, Quoy and Gaim., Yellow-rumped Tit.

(*a.*) In collection of Government Entomologist, Melbourne.

Instead of presenting a dark appearance, in this specimen a yellowish white prevails; under plumage yellowish-white; throat darker; wing coverts white and yellowish-white; flanks yellowish white; forehead normal; crown white and brown; back brown intermixed with yellow.

(*b.*) In collection of Mr. G. A. Keartland. Locality, Whittlesea.

Lemon-white, excepting tail coverts, which are yellow; feet and bill black. Two or three brown feathers are scattered over the breast and one on the wing, all of which should be brownish.

243. GYMNORHINA TIBICEN, Lath., Black-backed Magpie.

I recently saw at Swan Hill a specimen with plumage clear white, with a dark shade across the back.

Specimens of what appear at first sight to be hybrids between this species and *G. leuconota* have been collected at Bacchus Marsh, Somerville, the Wimmera, and in Central Australia, having the band across the back broad or narrow and in intermediate stages.

244. GYMNORHINA LEUCONOTA, Gould, White-backed Magpie.

(*a.*) In collection of Mr. G. A. Keartland. Male. Keilor, Victoria.

Cheeks and ear-coverts light brown; throat fawn; breast and abdomen splashed with brown; primary quils brown on inner web, white on outer; secondaries brown, edged with white; back and hinder neck white; crown fawn; the distal half of tail fawn to

brown, while the proximal is fawn to white. The bird is thus a partial albino.

(*b.*) In National Museum collection, Melbourne.

Plumage nearly clear white, bill creamy white.

(*c.*) A living male bird with white wing quills has been watched by Mr. G. E. Shephard for twelve years during nesting season, always resorting to the same place.

(*d.*) Mr. Keartland has seen at Beveridge, Victoria, two white fledglings in the nest, and I have recorded on a previous occasion (*Victorian Naturalist*) two clutches of albino young.

360. MANORHINA (MYZANTHA) GARRULA, Lath., Noisy Minah.

Dr. Chas. Ryan has observed and identified an almost white specimen of this bird.

363. ACANTHOCHÆRA CARUNCULATA, Lath., Red-wattle Bird.

In collection of Mr. H. E. Hill. Male. August, 1898.

Eyes pink. The only normal colour appears to be the saffron of the abdomen. Nearly all the other exposed parts are impure white; head is brownish, with shaft-streaks of feathers white; the back is softly blotched with brown. The shafts of each feather throughout the plumage, except on the yellow abdomen, are normally white; the inner webs of all the wing quills are nutty-brown, except the web of the innermost quill, which, being more exposed, is whitish; the broad webs of the tail feathers are nutty-brown.

385. HIRUNDO NEOXENA, Gould, House Swallow.

In March last a flock of 20 to 30 of these swallows was observed at Swan Hill, Victoria, in which was a bird, evidently of the same species, having a creamy appearance, with mottling upon it. In noticeable contrast were the blue-black head, the extremities of the rectrices, which were slate, and apparently the two outer primaries were edged with slate. My informant is Mr. A. C. Stone, who is a good observer and familiar with the flight and habits of *H. neoxena* as well as of *Petrochelidon nigricans*, *P. ariel*, and *Cheramœca leucosternum*, thought the bird may have been a wayward form of *H. javanica*, but the distribution of the latter in Australia, Yorke Peninsula, is rather against that assumption. White House Swallows have been recorded in Britain and Germany.

447. DACELO GIGAS, Bodd., Great Brown Kingfisher (Laughing Jackass).

At Howlong, New South Wales, there was in February last a live albino of this species, which is described by Mr. A. Lehmert as being entirely creamy-white, with a slight darkening of those parts usually the deepest colour in a normal bird. This bird has been under observation for some five years. Judging by the specimens in the Australian Museum, Sydney, this bird seems to

be more subject to partial or complete albinism than any other Australian bird. Mr. North also records a semi-hybrid.

468. TRICHOGLOSSUS NOVÆ-HOLLANDIÆ, Gmel., Blue-bellied Lorikeet.

In collection of Mr. A. Coles, Melbourne.

In this specimen rich yellow is the predominant feature. The entire head, throat, and upper breast are delicate red, the exposed part of each feather, except in upper breast, having the rachis and extremity white, but on the forehead traces of violet show along the rachis of many feathers. Broadly speaking this delicate brick-red head, streaked with white, should be blue on first glance, or if examined more closely a violet-brown, broadly streaked along the middle of each feather with rich blue-grey, rather duller than we see it in *Malurus cyaneus*. The whole of the neck, back, and tail should be green, with a bar of greenish-yellow in the nape, and one of clear red and yellow in the inter-scapulum, but this bird is rich yellow, except in the majority of the upper tail coverts, rump, and extremity of the rectrices; the edgings of the outer webs of each tail quill show the green faintly on the centre ones, deepening in order as the quills expand. The wings above and below are yellow, the primaries having their quills (rachis) white, while the tips of the inner primaries and secondaries are green. The humeral plumage is principally green. The abdomen, instead of being violet, as with the normal head, is red, in conformity with head of this one, while the chest is yellow instead of being red with another grade of yellow.

Comparing this specimen with a normal one it is noticed that violet has given place to red and green to yellow.

It is probable that the bird known as *T. verreauxius* is simply an abnormal form.

472. GLOSSOPSITTACUS CONCINNUS, Shaw, Musk Lorikeet.

In National Museum collection, Melbourne.

In this specimen the forehead and auricular patch are venous red instead of arterial red, the hinder crown and nape muddy yellow, with a trace of indistinct red. The azure blue has given way to what appears a double layer. In the tail there are transparent reds, while on the chest and abdomen there is a greenish-yellow, with a trace of green on the flanks.

The general appearance of the bird is thus yellow, with a tendency to green, instead of the deep green of a normal specimen.

498. PLATYCERCUS ELEGANS (PENNANTII), Gmel., Crimson Parrakeet.

(*a*.) In National Museum collection, Melbourne.

Crown, breast, and under tail coverts marked by red as in young birds; cheeks normally blue; abdomen yellowish, instead

of green in the young and red in adult stage; humeral feathers faint dark brown with a few blues, instead of true blue in young and old birds; back, upper surface of tail, and wing coverts medium deep yellow, instead of green in young and red with black in adult bird.

The pronounced peculiarity of this variety is the prevalence of yellow and red instead of green and red in the young bird or red in the adult.

The green colour is probably due to an admixture of a yellowish pigment called psittacofuloine. Hitherto a really green colour has been found only in the Touracoes (Dr. J. S. Kingsley). Although this species shows blue in the true form and violet in a metamorphosed bird, there are, it is believed, no such pigments known. The dark brown to yellow on the shoulders of this specimen would give the blue appearance of the normal plumage if the surface structure of the feathers was placed in a certain way, but because the cells are incorrectly placed the blue does not show. The blue is an objective structural colour—that is to say, it is brown with certain superimposed transparent cells which give the brown the appearance of blue. Brown without these cells is an absorption colour. To test this thoroughly, wet a green bird with water when it will appear brown, because the colourless cells which overlap the pigment in each feather have been disarranged. Buller ("Trans. N.Z. Institute") mentions that if you beat a green feather of a parrot with a hammer it will appear yellow, such as this one is without the hammering, or if you treat a blue feather in the same manner brown will be the result. An experiment was made with a blue macaw, which was turned into a brown one.

I should like to mention here an adult bird with a malformed bill occupying the same perch in our museum. The lower mandible curves upwards and inwards, with the end and tip on a plane with the crown. The upper mandible has a more crescentic curve, and for half an inch at the extremity lies along the cheek blue. Its length is nearly 5 inches.

(*b.*) In collection of Mr. A. Coles. jun., Melbourne.

Indistinct blue instead of strong blue in the specified parts of normal bird, while the green is yellowish-green instead of true green; breast, forehead, and under tail coverts crimson.

(*c.*) In National Museum. *P. nigrescens*, Ramsay.

In the "Tabular List of Australian Birds," 1888, page 34, Dr. Ramsay refers to this bird as a variety of *Platycercus pennantii*, now *elegans*, and found in the Bellenden-Ker Range, North Queensland, but up to 1891 the British Museum authorities were evidently unacquainted with it. Dr. Ramsay mentions the appearance of a few violet feathers on the chest, which is a

parallel case to a *P. adelaidæ* I am about to mention. In *P. nigrescens* the plumage is in many parts very black, which leads me to think it is a rare case of Australian melanism, especially as in one specimen the black overpowers the greater part of the blue cheeks. Very few specimens are known.

500. PLATYCERCUS ADELAIDÆ, Gould, Adelaide Rosella.

The key given to this species by the British Museum in 1891 is—"Cheeks blue; under parts pale red, each feather slightly fringed with yellowish."

The key given by Dr. Ramsay, "Catalogue Aust. Museum, Psittaci," 1891, is for the female—"Cheeks blue; the feathers of the under surface of the body dull yellow, washed with red at their tips."

The key to my specimen is—"Cheeks blue; under parts have some of the feathers quite red, others quite yellow, and a few subterminally edged with light violet, all irregularly disposed, while across the forehead is a band of red."

The key to *P. elegans* is—"Cheeks blue; under parts crimson."

I am quite satisfied that this particular bird to which I wish to draw your attention is an abnormal form of *P. adelaidæ*, as its plumage appears to be half male and half female, but I am not sure that *P. adelaidæ* is a distinct species from *P. elegans* (*pennantii*). I am rather inclined to think that the first three types are all tending to Xanthochroism, and that my specimen is the most successful. Possibly it is the reversional step observed in parrots by Meyer in 1882.

Comparing my specimen with an adult of *P. elegans*, instead of the whole ventral surface being uniform red there is a tendency to nondescript yellow, with red blotchings on the chest, and the same, but rather more pronounced, on the abdomen. The dorsal appearance of red with dense black and deep scale markings in the normal bird is replaced by a general appearance of black with faint red and dirty yellow "scales" or edgings to the black feathers. But the marked peculiarity of this specimen is that some of the crimson edgings to each feather are replaced by muddy yellow on the interramal region and faint red on the lumbar, thus resembling *P. adelaidæ*. Across the forehead is a band of crimson. On the crown, nape, neck, and sides of the head the clear crimson of the normal adult gives place to dirty yellow, fused in parts with an orange red, while the deep and light blues on the cheeks, wings, and tail are as strong as in a mature bird. In development from youth to age *P. elegans* has several stages, and necessarily it takes some years to attain "full feather." This extraordinary specimen was doubtless undermarked by green and yellow in its first two years, and then as

the greens matured to reds the yellows were arrested in development, owing to the want of green-making superstructure.

506. PLATYCERCUS EXIMIUS, Shaw, Rosella.

(*a.*) In National Museum collection, Melbourne. Female.

Head and chest red; nape yellow and red; cheeks normal white; back, upper tail coverts, and abdomen lemon-yellow; wing quills white, with a tinge of violet showing, as if attempting to become the normal blue; upper wing coverts white flushed with yellow; mid-tail quills yellowish white, lateral ones similar with additional violet in parts. Instead of exhibiting strong greenish-yellow the skin shows a clear lemon-yellow in its place, and instead of blue on wings and tail the tendency is to be white flushed with very light violet.

(*b.*) In the aviary of Mr. Sylvester Brown.

This is a young bird of November, 1898. Soon after leaving the nest it showed a rich yellow on the interscapulum, which six months later had each feather edged with red, while most of the under surface was yellow. By May, 1899, it had changed to red throughout the whole ventral surface. The head is red; the edges of the interscapulum feathers and primary covert edges are red in cuneate and semicircular markings, beyond these the nape to the upper tail coverts are saffron-yellow; the secondaries are white; the upper tail coverts are red, with a few yellows dispersed among them; the tail is white, washed with yellow; bill almost ivory white; legs, feet, and nails are flesh white, and the iris hazel. Altogether to the eye this bird is a very beautiful specimen.

On a previous occasion (*Vict. Nat.*, xv., p. 79), I drew attention to a spiral malformation of bill and nails in a specimen of this bird.

509. PLATYCERCUS IGNITUS, Leadbeater, Fiery Parrakeet.

In collection of Dr. Chas. Ryan, Melbourne.

Count Salvadori, in the "British Museum Catalogue of Birds," vol. xx., 1891, refers to only two skins of this bird, one of which is that of a young one, while Dr. Ramsay, in the "Australian Museum Catalogue of Birds, Part 3, Psittaci," p. 62, places it along with the Rosella, *P. eximius*. If the latter position be correct we have now a third form, differing from those just described by having the scarlet rump blotched with yellow. The specimen was shot from a flock of *P. eximius*, by Dr. Ryan, at Lancefield, Victoria, in the autumn of 1898, and was the only one observed.

523. PSEPHOTUS MULTICOLOR, Temm., Many-coloured Parrakeet.

Mr. John Gould, in his "Handbook," has called attention to variations in this species. I find the humeral feathers vacillate greatly between red and yellow in both eastern and western skins.

524. PSEPHOTUS HÆMATONOTUS, Gould, Red-backed Parrakeet.

I have seen an albino of this species which was shot from a flock of these birds, but it presented no strong contrasts.

533. MELOPSITTACUS UNDULATUS, Shaw, Warbling Grass-Parrakeet.

In author's collection, from Kalgoorlie, W.A.

This bird, a male, received from Mr. L. D. Cameron, has a misplaced primary quill, leaving a vacancy between the fifth and seventh primaries of the right wing. It has grown out of the back, immediately to the right of the centre of the lumbar region, that is, on the side nearest to the wing having a feather short. The feather extends three-fourths of an inch beyond the rump feathers, and appears to be quite perfect, compared with those between which, under ordinary conditions, it should have been placed. How this misplaced feather affected the flight of the bird would be interesting to know.

In the report of the Calvert Exploring Expedition, "Trans. Royal Soc. S. Australia," vol. xxii., part 2, p. 171, reference is made to yellow birds of this species having been seen on three occasions.

562. COTURNIX PECTORALIS, Gould, Stubble Quail.

(*a.*) In National Museum collection.

This specimen is pure white, with the exception of a few small blotches of brown at distances from each other. One is at the rear of the junction of the tarso-metatarsus and tibio-tarsus, a second is behind the shoulder, a third at the bases of the right lateral rectrices, another on the occiput, with two on the nape and two on the neck. The brown and black pigments of the regular plumage have failed to develop. This specimen is whiter than (*b*).

(*b.*) In collection of Mr. Andrew M'Gregor.

General appearance greyish-white. The crenate markings on the upper surface are white against the surrounding grey; the slate along the broad axis of each contour feather is whitish and prominent; head light brown, with lines along shafts of feathers white. Primaries whiter than rest of plumage. Bill and feet dark.

Female bird, taken at Beveridge, Victoria, March, 1898.

I have heard of a hybrid quail, but have not had an opportunity of examining it.

Dr. Schufeldt has examined a hybrid grouse, and found certain differences in the osteology of it and the nearest species (*Auk*, x., p. 281).

591. PORPHYRIO MELANONOTUS, Temm., Bald Coot.

In National Museum collection, Melbourne.

The sides of chest, head, hinder neck, back, tail, together with

some primary quills and coverts, are white. In the tail one or two webs and coverts also are black in parts. The white is encroaching on the throat, and slightly on the chin. Other parts are blue, excepting the tail under-coverts, which are normally white. With the exception of this one patch of white all should be blue and black. Bill and feet red.

Buller mentions an albino bird in New Zealand.

728. Phalacrocorax (Graculus) melanoleucus, Vieill., Little Cormorant.

In National Museum collection, Melbourne.

Uniformly white, displacing the black and white.

Such a specimen shows the complete absence of the pigment known as "zoomelanin," and, on account of the absence of such black particles in the interstices of the molecules of the feathers, the appearance is white.

753. Anas superciliosa, Gmel., Black Duck.

(*a.*) In collection of Mr. A. Coles, Melbourne.

General plumage dirty cream, but with usual blue on wing. Superciliary, loral, and cheek stripes brown instead of black; throat normal; edges of contour feathers less distinct than in usual plumage; primary quill coverts normal.

(*b.*) In National Museum collection, Melbourne.

Two specimens closely marked as last, though one is rather fainter than the other.

Buller has recorded an abnormal specimen from New Zealand.

755. Nettion (Anas) gibberifrons, S. Müll., Grey Teal.

(*a.*) In collection of Mr. G. A. Keartland, Melbourne.

Semi-albino. General plumage creamy, with an indistinct scaly surface from breast to tail, which is the faint representative of the distinct crescentic appearance of the correct plumage. The dense pigment dorsally is displaced by light brown, varying in intensity as with the normally-plumaged bird. The feathers are margined with cream. Metallic green does not show on the secondaries, and the black is less dense, or, rather, more brown.

As the sex of this specimen is not given, it might be a female of the Teal, *N. castaneum*, Eyton, as when Count Salvadori was classifying the Chenomorphæ for the "British Museum Catalogue," in 1895, he could see no difference between these two species in their normal plumage.

(*b.*) At Swan Hill there was, in 1897, a skin similar to the foregoing.

Buller mentions a similar case of divergence in New Zealand.

765. Dromæus irroratus, Bartl., Spotted Emu.

Mr. J. P. Rogers, of Fitzroy River, North-Western Australia, informs me that the aboriginals of the district report that a white emu exists inland, which would probably be of this species.

Field Naturalists' Club of Victoria.

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OBJECTS.

THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

SUBSCRIPTIONS.

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The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

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

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1900.

Field Naturalists' Club of Victoria.

ROOMS—ROYAL SOCIETY'S HALL, VICTORIA ST., MELBOURNE.

BUSINESS PAPER FOR MONTHLY MEETING.

Monday, 9th April, 1900, at Eight p.m.

1. Correspondence and Reports.

2. Election of Members.

	Proposer.	Seconder.
Prof. J. W. Gregory, D.Sc., F.G.S. University.	Prof. Baldwin Spencer	T. S. Hall, M.A.
Mr. W. Heber Green, M.Sc. Surrey Hills.	Rev. W. Fielder	H. T. Tisdall

3. Nominations for Membership.

   Members making nominations will oblige by handing the full name and address to Hon. Secretary.

4. General Business.

5. Reading of Papers and Discussions thereon.

   (Authors are requested to hand in a brief resume of their papers to the Secretary.)

   1. By Mr. T. S. Hall, M.A., "A Decapitated Valley."
   2. By Mr. H. T. Tisdall, "A Trip to Anglesea River."
   3. By Mr. R. Hall, "Extension of Range of some Australian Birds."
   4. By Mr. R. Guilfoyle, F.L.S., communicated by Mr. H. T. Tisdall. "A New Species of *Bursaria sinosa*."

6. Reading of Natural History Notes.

   Members who may note any unusual occurrence, or see anything of interest in Foreign or Colonial papers, are requested to inform the Secretary of the same that he may arrange for their bringing them before the meeting; such notes should, however, be brief.

7. Exhibition of Specimens and Conversazione.

   Members exhibiting specimens are requested to furnish the Hon. Secretary wit written particulars of their Exhibits for record in Minutes and *Naturalist*.

EXCURSIONS.

SATURDAY, APRIL 7.—Point Cook, *vid* Laverton. Under the leadership of Mr. R. Hall. Meet at Spencer Street Station, 10.55 a.m. train. Ornithology.

SATURDAY, APRIL 21.—National Museum, Swanston Street entrance, 2.30 p.m. Under the leadership of Professor Spencer, M.A. Zoology.

THURSDAY, MAY 24.—Somerton. Under the leadership of Mr. T. S. Hall, M.A. Meet at Flinders Street Station, 10.25 a.m. train. Geology.

THE

Victorian Naturalist.

Vol. XVI.—No. 12. APRIL 5, 1900. No. 196.

FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, 12th March, 1900. Mr. T. S. Hall, M.A., one of the vice-presidents, occupied the chair, and about 40 members and visitors were present.

REPORTS.

The report of the excursion to Heidelberg on Saturday, 17th February, was held over, in the absence of the leader, Mr. J. Shepherd, as he desired to refer at length to some of the captures made.

Reports of the excursion to Blackrock on Saturday, the 24th February, which was devoted to marine biology, were made by Messrs. O. A. Sayce and H. T. Tisdall, who acted as leaders of the zoological and botanical sections of the party. Several interesting specimens were secured, and an enjoyable afternoon was spent.

A report of the excursion to Sydenham on Saturday, 10th March, was made by the chairman, who acted as leader on the occasion. The object of the excursion was to visit a very fine example of columnar basalt situated on the bank of the Saltwater River or Deep Creek, about two miles north of Sydenham station. The members taking part in the outing were much struck with the size of the columns, many of which are fully fifty feet in height.

ELECTION OF MEMBER.

On a ballot being taken, Mrs. Henry Press, The Esplanade, Williamstown, was duly elected a member of the Club.

PAPERS READ.

1. By Mr. J. F. Haase, entitled "A Lepidopterist at Gisborne and Macedon."

The author gave brief notes of three days' butterfly-collecting in the Macedon district, where he was successful in taking several of the rarer "blues" and "skippers."

The chairman and Mr. F. Spry congratulated the author on the results of the trip, the latter referring to the uncertainty still existing as to the number of species of the genus Ialmenus.

2. By the Rev. W. Fielder, F.R.M.S., entitled "Some Marine Specimens from Flinders."

The author briefly referred to the more important specimens

which he had secured during a recent dredging excursion at Flinders, Western Port Bay, dealing with them according to their places in systematic zoology, and illustrating his remarks with specimens and blackboard drawings.

The paper created considerable interest, and gave rise to some discussion.

EXHIBITS.

By Mr. F. G. A. Barnard.—Beetle, *Schizorrhina christyi*, from Wallaby Creek; also sample of waterworn mica from Silver Creek. By Rev. W. Fielder.—Marine specimens from neighbourhood of Flinders, including the gephyrean worm, *Bonellia viridis*. By Mr. J. F. Haase.—Butterflies, *Ialmenus evagorus* and *I. inous*, in illustration of paper. By Mr. R. Hall.—A freshwater shell, *Melania ballonensis*, from Lake Boga; also, a young Wonga Pigeon from Plenty Ranges, Victoria. By Mr. D. Le Souëf.—Young Brush Turkeys, *Catheturus lathami*, two days and fifteen days old. By Mr. J. Stickland.—Œdogonium, a filamentous freshwater alga, showing interesting stages in its reproduction. By Mr. H. T. Tisdall.—Water plants, in formalin, collected at Club excursion to Heidelberg; also seaweeds, mounted, collected at Club excursion to Blackrock.

After the usual conversazione the meeting terminated.

EXCURSION TO BLACKROCK.

Blackrock, on the shores of Port Phillip Bay, between Sandringham and Beaumaris, was visited by a fair party of members on Saturday, 24th February, who devoted the afternoon to studying the marine zoology and botany of the locality.

Mr. O. A. Sayce, who acted as leader of the zoological section, reports that for best results in collecting shore fauna it is important to have low tide, and in this respect the party on Saturday, 24th February, was somewhat unfortunate, as very few rock-pools, which are always abundant of life, were isolated from the sea. However, by wading and turning over stones and searching amongst floating weed, some interesting forms were found. Of Porifera, or Sponges, a few young living forms attached to weed, suitable for microscopical examination without any preparation; also from the same source one or two Hydrozoa, and a living Polyzoa, which proved of interest and profit when examined by the microscope during the evening and seen with each polyp extended from its cell or zooecium. It is when seeing objects such as this in a living condition that the truth comes home that zoology is comparatively a barren study if the objects are only seen when dead, and the need of "field" observation is realized as it should be.

Of Unsegmented "Worms" the class Turbellaria was repre-

sented by a large leaf-like polyclad Planarian seen under almost every stone ; also a small pink Nemertine, the members of which class are easily identified as such when the long characteristic proboscis is everted through a pore at the extreme top of the head.

Of Echinodermata, besides the common little eight-rayed Cushion Star-fish, *Asterina calcars*, there was seen a large five-rayed form, measuring 5 inches from tip to tip, and possessing a thick smooth epidermis of a uniform brilliant scarlet colour on both upper and under surfaces.

Of Segmented Worms (Annulata), the class Chætopoda, or those possessing bristles, was represented in the free-living or errant order (Erantia) by a small member of the family Nereidæ, while the sedentary tube-builders (order Sedentaria) had two examples, one of the family Terebellidæ, and a Serpulid with pink tentacles, its calcareous tubes being seen attached to almost every stone and shell. Of the class Hirudinea, or Leeches, a member of the family Ichthyobdellidæ was noted.

Of Crustaceans, several of the sub-order Isopoda were taken—viz., a species of Idotea, which I think is new, and some forms of the family Sphæromidæ, the members of which may be regarded as marine representatives of the terrestrial Wood-lice, also a beautiful little example of the family Janiridæ, Jæropsis (sp.) ; several of the sub-order Amphipoda, amongst which was a small Caprellidæ—these are remarkable in having a very long, thin thorax (pereion), and in having the abdomen (pleon) reduced to a minimum, amounting practically to none, which gives them a very extraordinary appearance.

Another extraordinary looking creature may also be mentioned —viz., a very small example of the Sea-Spiders (Pycnogonida), the affinities of which are uncertain, but perhaps may be ranked between Crustaceans and Arachnoids. These also possess but a rudimentary abdomen, and without previous knowledge one would be at a loss to tell which was head and which was tail ; they look, indeed, to be very little more than legs, for these are proportionately very pronounced. Some of the members of the group are found at great depths.

Most of the forms mentioned are classified and exhibited here to-night, with a view of helping those interested in marine biology.

Mr. H. T. Tisdall, who acted as leader of the botanical section, reports as follows :—

Amongst the half-dried drift-weed we saw portions of the huge *Macrocystis pyrifera*, and specimens of *Phyllospora comosa* and *Ecklonia radiata*. Dr. Goebel, of Munich, when he was out here last year, was much interested in the Ecklonia. He gathered many specimens, not only of the

leaves and stems, but also the organ of attachment, which in this instance forms a much-branched base, often so firmly fixed to its matrix that pieces of the solid rock may often be seen still fixed to the branching fibres. It is more than likely that Dr. Goebel will give an interesting account of this plant in his forthcoming work.

The rocks, uncovered by the receding tide, were covered with *Hormosira banksii*, their necklace-like thallus crackling under our feet at every step. On the Hormosira were noticed small parasitic plants, which proved to be tiny specimens of *Notheia anomala*. *Ulva latissima* was very plentiful, its lovely green fronds waving in every pool. Some of the smaller green seaweeds, Cladophora and Chætophora, were also noticed amongst the Ulva.

The shore was strewn in some places with the bright-green leaves of *Cymodacea zosterifolia*. Although this plant grows only in sea-water it is not a true alga, but belongs to the family of Fluviales, nearly related to the common Duck-weed, *Lemna minor*.

Only one specimen of *Codium muelleri* was found, although it is very plentiful at Beaumaris. This curious plant is worth notice. It has a rope-like stem, but very branching; cut across and examined under the microscope, it shows a thin solid thallus surrounded by hair-like outgrowths. But the peculiarity of its structure is that it has no septa; therefore, although so large and branching, it must be placed amongst the unicellular seaweeds. This characteristic may also be noticed in the Caulerpa, a specimen of which was found.

A species of Rhabdonia was very common; it had fruit, and looked like *R. robusta*, but I submitted it to Mr. Bastow, who pronounced it *R. coultiri*—a species I have not obtained before. Another uncommon species which was found was *Corynospora australe*, also unknown to me; it greatly resembles *Griffithsia sonderiana*. The curious *Dictymenia tridens* was very common; it is easily distinguished by the tips of the frond breaking into three tiny branchlets. As usual on this coast, *Lobospira bicuspidata* was present in large masses. Only one specimen of *Caulerpa hypnoides* was picked up, and that most likely came as drift from the Heads. Another stray seaweed was obtained, namely, *Bryopsis plumosa*, which hitherto has only been obtained on the outside beach. Portions of different species of Sargassum were very plentiful, their air-bladders enabling them to float anywhere. The beautiful red Laurencias were also to be seen in great quantities; only one of the species could be identified. Only one small specimen of the wonderful *Dasya villosa* was obtained; it is fairly common further round the coast; it is of such a glutinous nature that it is extremely hard to dry.

Altogether I consider that we had both a pleasant and a profitable outing.

A VISIT TO WESTERN AUSTRALIA.

By D. Le Souëf, C.M.Z.S.

(*Read before the Field Naturalists' Club of Victoria, 15th January*, 1900.)

In reading these notes it must be borne in mind that they apply only to the south-western portion of the colony, between Perth and Albany, that being the only portion visited.

I left Melbourne on 2nd October for Perth, arriving there on the 9th, having travelled overland from Albany. One often has the idea, before visiting this city, that it is only a hot, dusty, and sandy place, but personally I was much surprised and pleased at the natural beauty of its situation, built as it is on the banks of the Swan River, which is here a wide, shallow estuary, about 14 miles from the mouth.

There is also a large park adjoining the city and situated on high ground overlooking the river. It is kept in very good order, and the views to be obtained over the water are very beautiful. The museum is as yet small, but the collection is gradually mounting up, and is a great help to visitors wishing to identify the fauna of the district, but the Curator, Mr. Bernard Woodward, has no skilled assistants, except the taxidermist, which naturally handicaps him and prevents much useful work being done. The birds have their nests and eggs placed alongside them as they are obtained, which is an improvement. I hope the same will be done with our local birds in the Melbourne Museum. A Zoological Gardens has also been formed at South Perth ; it was only opened a little over a year ago, and the Director, Mr. E. A. Le Souëf, has evidently lost no time in pushing on with the work. They are well laid out, with neat buildings and fences, and the various enclosures and houses fairly well stocked either with foreign or native animals and birds, and it is to be hoped that special efforts will be made to exhibit the local fauna of the country. The gardens are gay with flowers, which seem to grow to perfection, but all the soil being nearly pure sand, every blade of grass has to be planted and then kept well watered. The footpaths have to be made like a macadamized road, which involves much labour and expense. The situation of the gardens is very good, overlooking as it does the river. They are well supplied with water from a deep artesian bore, a little over 1,800 feet in depth, the water being hot when it comes to the surface.

Most of the country round about Perth consists of sand ridges, with patches of good soil here and there. The vegetation is brushwood of various kinds and smaller plants, but very little grass, and during the summer months none at all. The principal eucalyptus tree is the Jarrah, *Eucalyptus marginata*, which is very plentiful in places, and its beautiful wood forms a large export trade. Although I had heard much of the Western Aus-

tralian wild flowers, I found that the colours were so varied and vivid, the flowers of such strange shapes, and in such abundance, and of such delicate tints, that practically no words can describe their beauty nor the interest they create; and, as usual, the poorest-looking sandy and ironstone country was the most prolific in flowers. One reason why they are of such a bright colour is, undoubtedly, the presence of so much decomposed iron in the soil, as you get it almost everywhere, and much of the high land is composed of ironstone ridges, and on sinking down in these the ironstone ore has a very large percentage of that metal in it; even the artesian well water at South Perth is strongly impregnated with the same mineral. The so-called everlasting flowers, Helipterum, are at their best in September, and you can see acres of them, of many different hues, carpeting the ground. Of all the various tints seen yellow predominates, although not among the everlasting flowers, but principally among the small plants. Many of the flowers have two or three colours, according to the soil in which they grow—for instance, the Pattersonia in the sandy soil near Perth is mauve, but in the Darling Ranges, where ironstone abounds, they are all yellow; other flowers, again, are purple, white, or yellow, as the case may be. One very curious plant, named Kangaroo Paw, has a very striking flower, the dark variety, *Agonizanthos juliginosus*, particularly being very handsome. The Drosera flourishes here, attaining the height of two feet in moist situations; another plant that is plentiful is the curious Conospermum, or Smoke Plant, so called from the appearance its flower-stalks have, being covered with greyish-white down, therefore the top of the bush is always well fringed, generally to the depth of 4 inches, with a colour that has the appearance of light-coloured smoke. *Hypocalymma angustifolium*, with its pretty white flower, abounds, as well as other varieties of the same plant, with their crimson and pink flowers. The little Stylidiums of several kinds were observed. The beautiful *Verticordia chrysantha* was seen occasionally, and its brilliant yellow flowers could easily be detected in the scrub, as well as the other beautiful variety with its pink flowers; these shrubs grew to the height of about 4 feet. The blue Scævola grew in profusion in certain localities, and often close to it flourished the Dampiera, with its brilliant deep-blue flowers; also a Pultenæa, with orange-coloured flowers.

As we passed along, we noticed *Eriostemon spicatus;* an Hibbertia, with its curious yellow flowers, *Stackhousia huegelii*, with its delicate white blossoms; the prickly *Eryngium rostratum*, varieties of the Goodenia, the prettily marked and delicate flower of *Hemigenia pungens*, and the long dark-coloured stalk of the Stylidium. The delicate little purple Utricularia; the ground orchid, *Caladenia patersoni*, or so-called Spider Orchid, and the Diuris, which raised its dark purple-coloured flower among some

thick undergrowth, which often consisted of the bunchy Andersonia, with the soft white cushion-like flowers of the Ptilotus. These latter plants were of several kinds, one with an elongated greenish fluffy flower, which grew very thick in places, and as the seeds came off, with their downy covering, they carpeted the ground. Several varieties of Pimelea were noticed, with their rounded, white, soft-looking flowers. Grevilleas were plentiful in the ironstone ranges, particularly one with a prickly leaf and purplish flower; and occasionally one with a handsome dense, elongated yellow flower, and on the hills of granite grew *Kunzea serica*, with its bright deep crimson flowers, generally well supplied with honey, and often near the same locality the Prickly Hakea. *Melaleuca scabra*, with its pink flowers, generally grew away from the timbered country; in the Darling Ranges *Leucopogon verticillatus* was very plentiful, with its curious bunches of leaves and tiny flowers, and in the same locality, climbing over fallen timber, grew the beautiful *Clematis aristata*, var. *occidentalis*. I found the well-known Cape Weed plentiful in many places, and was informed that it was first recorded in Western Australia in 1832. It is often erroneously stated that it was introduced by the late Baron von Mueller, but the above fact completely disproves it. The pretty little flower *Petrophila linearis* was very noticeable in the sand ridges, with its long down-covered stamens of a delicate pink colour; its elongated, thin leaves are very hard and wiry, and each plant has only one flower-head.

Grass Trees are exceedingly plentiful in all the southern coastal districts, and are apparently of three kinds. One, *Xanthorrhœa gracilis*, has several flower-stalks projecting from the crown, and with a single trunk; another, *X. preissii*, also has a single trunk, but with only one long flower-stalk, often 6 feet long, and covered with small white flowers; and another very similar one has several branches, each of which bears a single flower-stalk. These latter variety only seem to grow in swampy land, and farmers say that where they are found the soil is good. They are full of resinous gum, and are consequently much used for lighting fires.

The Zamia Palms, *Macrozamia fraserii*, are also very plentiful on the sandy ridges, and form a picturesque feature in the landscape, and you notice both the male and female plant. The male generally bears three flower-cones, but as the stalks that bear them are not very strong the cones fall over and lie on the ground; they are of a dark-purplish colour. The female plant also bears cones, generally one, but occasionally two or three; they stand upright, and are large and full of seeds about the size of a walnut; the cone is of a bright green colour. I was informed that cattle in dry seasons often eat these palms, but they are poisonous, especially the nuts and the crown, and the effect on the stock seems to be that they lose power over their hind-

quarters, and if they attempt to run they fall down; and that the effect was permanent, as cattle I saw in that condition had been so for over a year. It does not seem to affect them adversely otherwise, provided they are taken away in time, as those seen were in fair condition, but they can be picked out from the others directly by noticing the way in which they walk, consequently where the palms are plentiful fences have to be erected round them to keep the cattle away. The natives often use the nut and centre of the palm when crushed up as food, and it has the appearance of arrowroot, but they expose it to the air and wash it in several changes of water.

There are two other poisonous plants in this part of Western Australia, and large tracts of country are consequently of no use for stock until the plant has been eradicated, which is often a somewhat expensive undertaking, especially as the country is so poor that it takes a good many acres to keep one sheep. One is locally called the Box Poison, *Oxylobium parviflorum*, because it is generally found in country where Box or White Eucalyptus trees grow, and the other is called York Road Poison, *Gastrolobium calycinum;* both are small shrubs, bearing a pea-like flower. The effect on stock is very similar to that of the well-known Darling Pea.

In the scrub-covered country there is sometimes a little thin grass in the spring of the year, but it soon dries up, and then the stock have to feed entirely on shrubs, which accounts for their eating the poisonous ones. The Brush Bronze-wing Pigeons often feed on the seeds, with apparently no bad effect; but a well-known local sportsman told me that on one occasion when cleaning a pigeon he had shot he threw the intestines away, they being full of the seeds of the York Road Poison Plant; his retriever, before he could stop him, ate them, and died under twenty minutes, which shows that the seeds must be a strong poison. It apparently also affects human beings if they eat the seeds, and I heard of several accidents that were attributed to that cause.

One of the commonest shrubs is the Banksia, of which there are several varieties; of these *Banksia grandis* attracts the most attention, with its large flower-cones. I noticed near the Serpentine River four kinds growing within an area of a quarter of an acre. Some of the flower-cones are large and striking, others again much smaller, and one variety with a small prickly leaf has hardly any cone. These trees have thin foliage and give very little shade, but the same remark applies to most Western Australian shrubs. Among the various kinds of eucalyptus trees none is more striking in its way than the locally-called Gimblet-wood, *Eucalyptus salubris*. They only grow in certain localities, and then the country is mostly occupied by them; they are small, averaging about 80 feet high, with comparatively thin trunks;

their bark is of a bronze green, very smooth in appearance, and shiny, as if it had been rubbed over with oil. The leaves grow in bunches at the extreme top of the tree, and they are of a dark rich green colour and shiny, and reflect the sun very brightly, which gives them a pretty appearance as they blow about in the breeze. The trunk is curiously grooved, the grooves running up the tree longitudinally, hence its name. The wood is very hard, and largely used in fencing and buildings. There is a particular kind of beetle, a specimen of which I was unable to procure, which seems to lay its eggs on or just under the bark of this tree —they vary in number from one to about a dozen—and the young larvæ, when hatched, commence burrowing their way under the bark, the burrows going parallel to one another for some distance, and as they increase in size in consequence of the insects' growth they gradually get further apart, and eventually end in a hole where the larvæ has burrowed more into the centre of the tree. Those I saw were in the dead wood, and the residents assured me that they had never seen similar burrows in the green timber.

The local names of the various eucalyptus trees in this district are mostly similar to those in Victoria, but the names, such as White Gums, Red Gums, *E. calophylla*, Peppermint, Woollybutts, &c., are applied to different trees to those they are applied to here. The finest timber is in the southern coastal district, especially towards Albany, where there are large forests of splendid trees, mostly Jarrah and Karri, *Eucalyptus diversicolor*. Elsewhere there is plenty of forest land, but the timber is, comparatively speaking, small, and it deteriorates as one proceeds inland.

One of the White Gums sheds its bark in very small patches, which gives it a ragged appearance, and looks as if the trees had been pitted by a heavy passing hail-storm. There is a curious tree, locally called Christmas Tree, *Nuytsia floribunda*; it has a thick stem, and grows to about the height of 30 feet; the wood is very resinous, soft and brittle; it bears large masses of small reddish-yellow coloured flowers, which sometimes nearly cover the tree, and have a very beautiful appearance; the roots have a sweetish taste, so much so that pigs are fond of them and soon tear up and eat any they can get at in the sandy soil in which the trees grow, and I was informed by residents that sheep are fond of the grass which grows close to these trees; the leaves are small and grow in dense bunches. In the swampy land very large specimens of the Swamp Ti-tree, Melaleuca, grow, far larger than I have ever seen in Victoria. Their branches grow very irregularly, while the wood is tough and often much knotted. I was shown the remains of one large dead tree on Mr. Richardson's property at Serpentine which had been struck by lightning and

only about 8 feet of the stump left, the wood being all scattered round, some to 60 yards away, and broken up into matchwood, which shows the terrible force of the stroke. The tree being dead, the centre probably contained a good deal of moisture, which, being suddenly converted into steam, is supposed by some to cause the destruction, and that is given as the reason why some trees are affected far more than others. Not far from the remains of the Ti-tree was a White Gum, which had a curious and rare freak of having a small green branch growing out of the trunk about 15 feet from the ground and then growing into the trunk again; it was about 8 feet long, and shaped like a well-drawn bow, and had no branches growing from it. I had only once seen a previous instance in a eucalyptus tree, and that in Queensland. Acacia trees are plentiful, especially one locally called Jam-wood, *Acacia acuminata*; it has a dark red coloured wood, which when cut has a strong scent of raspberry jam; it is very hard and lasts for many years in the ground, and is not attacked by white ants, and consequently is largely used for fencing, &c. When the trees are killed, either by bush fires or ring-barking, the top all closes in towards the centre, forming a bunch, and in this dense thicket of dead wood many birds are fond of building their nests, especially the Yellow-tailed Tit, as their dwellings are well protected from other birds, &c. Frog-mouths are also very partial to resting during the day in the dead wood of these trees, the colour of the bird harmonizing almost completely with that of the bark. Prickly Acacia, *Acacia armata*, bushes are often met with, and they are again frequently resorted to by the Yellow-tailed Tit wherein to build their homes, as the sharp thorns are an effectual protection against marauding cats or larger birds.

Quandong Trees, Santalum (sp.), are plentiful in places; they grow to about 25 feet high, and look very picturesque when laden with their ripe red-coloured berries. The leaf of the tree itself is very small. Sandalwood, Santalum (sp.), is also fairly plentiful, and it extends for a good distance inland; most of the trees seen are small, many of the larger ones having been cut out, and it is a common sight to see large stacks of the wood with the bark taken off at the various railway stations waiting to be sent to Fremantle, from whence it mostly shipped to China. The seed has a somewhat similar appearance to that of the Quandong, being a spherical nut contained in an outer layer of fruit, and of a yellowish colour when ripe, and the trees often bear a plentiful crop of berries. Mallee Scrub, *Eucalyptus incrassata*, is plentiful in places, but generally further inland, where it covers large tracts of country.

Very few natives are to be seen in the settled districts, and

those not very bright specimens of humanity; but when staying at Mooranappin, near Kellerberrin, I was enabled to see the way they constructed their graves. Those who have come from further inland, towards Coolgardie, cover their graves over with the tops of leafy branches of Acacias, and then with the same material form two lines of the shape of a horseshoe, one larger than the other, the grave being in the centre of the smaller; some of them have a good many sticks stuck upright along these lines, the sticks having tufts on them made by pairing the wood down to a certain point, generally about 9 inches apart, and leaving the curled up pared strips on. The graves of the local blacks of that district were well covered over with a heap of grass. Then a small grass hut was erected over the spot. The bodies were buried facing the east, so that, as the natives say, they can face the rising sun. I was informed that before they buried any men they broke their forefinger, to prevent them, in case they should revive and come out, from throwing spears at their relatives who had buried them, and that they often tied the thumb and three fingers together, and likewise burnt off the finger-nails on the right hand, to prevent them from trying to scrape their way out, but in case they did come out they left a billy for them, or a pannikin, or pipe, with a woomera or spear-thrower; but I noticed that in both the woomeras I saw the notch to hold the spear had apparently been taken off, probably on purpose. On one of the graves an old hat had been left, carefully fastened up, in case the deceased owner might want it again. About 8 feet in front of the graves of those who had come from the inland districts a tufted stick and green branches had been stuck into the ground in a bunch, which they said was to indicate in what direction the country of the deceased lay. After the burial a fire is kept burning for some weeks, and then a few pieces of wood are left together ready for lighting. Tribal customs have mostly died out, as well as the natives, from contact with Europeans. I inquired of several old settlers if they had any stone tomahawks in their possession, but they all said no, and that they had never seen any; probably the material for making them was hard to get, as personally I saw no stone suitable for such a purpose, nor did I hear of any. In Victoria stone tomahawks were plentiful enough and are often found. Near Mooranappin I was enabled to see in some small granite caves a few ancient drawings by the natives, one especially, the so-called red hand, made by a native placing his outspread hand on the smooth rock and then rubbing the surface round it with red clay, or Wilgite, as the natives call it, which leaves the form of the man's hand. These red hands are generally done on the roofs of the caves, often at a considerable distance from the ground, and in many cases the natives must have climbed up on the shoulders of a companion to

do it. I photographed it as well as I could and also another rude drawing of what gives one the idea of a "broad arrow," but which is probably meant to represent the foot of an emu. Similar drawings, as well as many others, are found all over Australia, especially in the Northern districts, and those preserved are mostly in caves, where they are sheltered from the weather.

When the timber is rung in the forest country it is surprising what a sward of grass often springs up from ground that had previously been quite bare except for the trees. During the winter and spring the streams are as a rule well supplied with water, but by far the greater number dry up during the summer months, or at most form a string of waterholes. Nearly everywhere you go in Western Australia, especially in the inland districts, the want of water seems to be the principal drawback; for instance, at Coolgardie the dark-brown soil seems very good, and will, practically speaking, grow anything, but fresh water cannot be spared, and the artesian water is mostly salt, and the rainfall very deficient, there being no high land to attract it.

Various means are used for conserving water, the principal one being at the so-called soaks, where at the foot of a large granite rock, often some acres in extent, the drainage water is collected in some hollow in the granite under the surface, and shallow holes are sunk in which water can be obtained at the bottom; but now the Government in many places, such as near railway stations, &c., build a small wall, generally of flakes of granite fastened on end, about 2 feet high, all round the rock, so that the water comes off at one place only, and it runs into a large tank or reservoir, from which it can be taken as needed. And when a selector is looking out for land in the inland districts his first thought is for a granite rock from which he can obtain water, and if it was not for this way of obtaining it much of the land at present occupied would be deserted. Another way of obtaining the much-needed water is from pipes or holes which are found in the otherwise solid granite. They are called gnamma holes, and they vary in width and depth, some being only about a foot or less in diameter and possibly 5 to 15 feet deep. Others, again, are several feet wide and go down to a considerable depth, and hold as much as 20,000 gallons when full. The holes are mostly more or less spherical, and the water in the few I saw was well charged with iron, which discoloured the surface of the rock at the openings, and which looks as if the cause of these holes was the decomposing of a belt of ironstone in the granite, or a dyke composed of softer material, which the natives may have helped to clear out; anyhow they puzzle local residents as to how they came to be there, as the granite in which they are formed is often high above the surrounding plains, and shows no signs of ever having been caused by erosion from water, and they

only get filled by surface drainage when a heavy thunderstorm passes over.

Kangaroos, *Macropus giganteus*, do not seem to be plentiful anywhere, and personally I saw none wild. I was told of one that had been shot which only possessed half a tail, and that very small and shrivelled in appearance, having probably been so from birth ; in trying to travel fast it frequently tumbled, especially in trying to turn, as it could not balance itself properly. Wallabies were much more plentiful, and in the thick undergrowth near the coast were the Short-tailed Wallabies, *Macropus brachyurus*, and in the more open country further inland the Black-gloved Wallaby, *Macropus irma*, then the Dama Wallaby, *Macropus eugenii*, and Crescent Wallaby, *Onychogale lunata*, locally called Tamma. They are naturally more numerous near permanent water, and in the thick scrub their runs are very noticeable. Bandicoots, especially *Peragale lagotis*, or Rabbit Bandicoot, are very plentiful in places, but in parts of the country where formerly they were numerous none are now to be seen ; ringing the timber and cultivation have driven them away. The burrows of these animals are very similar to those of rabbits, and when these rodents come along they will find homes ready prepared for them. At one place where I was staying the head of the household generally had eight cats by his chair at meal time, on the lookout for tit-bits, which they knew they would receive from their indulgent master, and if food was not forthcoming quickly enough they would stand up on their hind legs against his chair and tap his arm with their fore paw as a gentle reminder that they were there. When I expressed my surprise at their number, my friend said, "It is better to be forearmed in case the rabbits come." Dingoes are met with everywhere, but they fortunately do not seem very plentiful. It is a curious fact that about four out of every five you obtain are females. The specimens here are as a rule darker in colour than those found on the eastern side of Australia. They have to eat what they can get, and become expert in catching ground birds, jumping on them suddenly from behind a bush or tussock, and often catching them before they can get away. The beautiful little *Myrmecobius fasciatus*, or Banded Anteater, is much sought after on account of its skin, but it is not often seen, as, like almost all other Australian animals, it remains under cover during the day, and comes out to feed in the evening.

Opossums, *Trichosurus vulpecula*, are plentiful, except in settled districts ; there they have been nearly all shot and snared. They are the same as the Victorian species, although forms of melanism seem more often to occur, and these specimens have been erroneously called *T. fuliginosus* ; but I do not think that a true specimen of the latter has ever been found out of Tasmania.

Nests of the Western Ring-tail Opossums, *Pseudochirus occidentalis*, are occasionally seen in the thick scrub, and mostly near watercourses. Snakes are scarce, the most common being the harmless Carpet Snake, *Morelia variegata*, and, curious to say, its markings and colour are very similar to those found to the north of Victoria—namely, black and greenish—whereas those found on the Houtman's Abrolhos Islands are very similar in colour and markings to those found in Queensland—namely, light brown and black—apparently showing that the lighter is the older colour, as it is probably a long time since the islands were separated from the mainland. They form interesting links between the so-called varieties. The principal venomous reptile is the Black Snake, *Pseudechys porphyriacus*, and further inland, near the goldfields, the best place to find Blind-worms, *Typhlops nigrescens*, small Ringed and other snakes and apparently legless lizards is in the disused sawpits. Lizards abound everywhere, but that most often seen is the sluggish Blue-tongued Lizard, *Trachysaurus rugosus*, popularly called "Bob-tailed Guano." They will not, as a rule, move out of your way, but only open their mouth and hiss, thereby making their presence known, as their colour, black and grey, harmonizes so well with the ground on which you find them that they are mostly passed by without being seen. They often travel in a cart wheel track, and if a conveyance passes they generally get crushed, as they will not move out of the way. They are very plentiful. Just before the young are born the mother hibernates, either in hollows under stones or in old bandicoots' holes, hollow logs, &c., and the young, generally to the number of four, do not appear until they are two or three months old, consequently very young ones are rarely seen. The little ones cast their skins when they are about two days old, and they grow rapidly. They do not hatch from eggs, as in most other kinds. Among the granite rocks Spine-tailed Lizards, *Egernia stokesii*, are often found, but they never seem to leave their rocky home, and are very difficult to dislodge when taking refuge in a narrow crevice, as they get a very firm hold with their keeled scales. They are far more active than the Trachysaurus. York Devils, *Moloch horridus*, are often met with, especially inland. They vary much in colour according to the colour of the soil on which you find them, and they seem to be able to change their hue to harmonize with their surroundings. Their principal food is small ants, and they also occasionally eat vegetable matter. They lay hard-shelled round eggs, from which their young are hatched. The Lace Monitor, or so-called Iguana, *Varanus varius*, is found everywhere, especially in the sandy country, and they are great enemies of both harmless and venomous snakes, as although these reptiles can travel very fast on hard ground or where grass and other vegeta-

tion is very thick, on loose sandy soil with little undergrowth they cannot do so, and their movements are slow, in consequence of the overlapping portion of their abdominal scales not being able to get a firm hold on the ground. The Iguana can then secure them if they are out in the open, and he rushes up, and, catching them quickly in his mouth, gives them a good shake like a terrier does a rat. He then drops them and backs away, only to rush up and do the same thing again, until the snake is eventually killed, when it is swallowed whole, the lizard jerking it down by degrees. They also kill and eat opossums, frogs, birds, eggs, &c. They are much infested with tapeworms and ticks, but all the larger lizards and snakes have ticks on them more or less. Echidnas, *E. aculeata*, are found throughout the district. They have longer spines and less hair than those found in Victoria, but are otherwise the same. They are also infected with ticks. Their favourite food is Termites, or White Ants, and their burrows into the mounds made by these insects are often seen. Turtles, *Chelodina longicollis*, are plentiful in the permanent waterholes or streams, and in October or November make a small circular hole in which to deposit their eggs. The excavation is about 2 inches in diameter at the surface and 6 inches deep, generally being a little wider at the bottom. From 7 to 21 pure white eggs are laid. They are an elongated oval in shape, and are not laid in any regular order, being in all positions. The hole is filled up with earth and some mud pressed down over the top by the mother, which, when it dries and hardens, looks just like the surrounding soil. The nests are occasionally a considerable distance from the water, in dry, hard soil.

Birds in Western Australia—anyhow, in the districts I visited—are by no means numerous, except in certain favourite localities. Probably the great want of water in summer has something to do with it, but many residents state that they were much more plentiful a few years ago than they are now. Probably the many domesticated cats that have gone wild have helped a little in this respect, as these animals are now found in the bush from one end of Australia to the other, and birds probably form their principal food. I will only briefly mention those birds that I personally observed some of the habits of, and will not make a detailed list of those seen, as my friend Mr. R. Hall, who has been practically over the same ground, is doing so instead. All the settlers are enemies to the Wedge-tailed Eagles, *Uroaëtus audax*, as they occasionally destroy lambs. The only time these birds seem to appear in any numbers in the settled districts is in August, when it is the lambing season. A few nest in the forest country near Cape Leeuwin, and occasionally in the more open country further inland, but, as they appear mostly to come from the north, it is possible that they principally nest there. Last

year, in the Zoological Gardens at Melbourne, a pinioned Wedge-tailed Eagle and a pinioned Native Companion, *Australasiana antigone*, accidentally got together and engaged in battle, in which the Eagle was victorious, killing its opponent and being not much the worse itself; yet the cranes are powerful and also spiteful birds. I was told of an Eagle that swooped down to take a young Bustard, when the wary mother flew up to meet its enemy and they came in collision with great force, the Eagle breaking its neck with the contact and the Bustard being killed by the claws of the Eagle being fixed in its neck. I observed a Western Goshawk, *Astur cruentus*, resting on a small stump of a eucalyptus tree, about a foot high, and which was mostly overgrown with young shoots, and as the leaves were of a light greyish green colour, at a short distance it was almost impossible to distinguish the bird from the background of leaves, and I wondered whether the bird went there by chance or because of the similarity of the foliage with its plumage, as otherwise it was an unusual place for this particular bird to rest. In the same locality I noticed a Kestrel Hawk, *Cerchneis cenchroides*, chasing a Brown Hawk, *Hieracidea berigora*, from the vicinity of its nest, and when it left off a pair of Magpies took up the running. Very few Ravens, *Corone australis*, were noticed. I was informed that Crows generally appear about the same time the Eagles do, namely, in August, and leave again by the 1st of October. They are very fond of devouring young snakes and lizards—in fact, very little seems to come amiss to them—and they have a great weakness for hens' eggs, and when at the 75-Mile Railway Siding I heard the small son of the guard of the train, whose home was evidently near by, call out to his father, "The Crow ran away with another egg, Dad. I saw it just now." The Leaden Crow-Shrike, *Strepera plumbea*, was often seen. It has a loud, clear, whistling note. They are locally called "Squeakers," and are found in the open forest country, and I observed several of their open stick nests, built high up in large eucalyptus trees.

Magpie Larks, *Grallina picata*, are, as usual, plentiful, and they seem to prefer the settled districts, often building their mud nests close to the settlers' houses, but they are seldom interfered with. One pair were observed by Mr. R. Adam, at Katanning, repairing their old nest with fresh mud for a second brood. Several pairs of White-shouldered Caterpillar-eaters, *Lalage tricolor*, were noticed; they have a curious habit of lightly and slowly flying from one tree to another, uttering at the same time a peculiar double whistling note, and the bird seems to delight in it, as he did it over and over again. Magpies, *Gymnorhina dorsalis*, are very plentiful, and the markings on the young birds are easily distinguished from those on the young of the *G. leuconota*. I saw no *G. tibicen*, either birds or skin, nor do I think they are

found in this district. The Western Scarlet-breasted Robins, *Petrœca campbelli*, were often seen and their musical note heard ; also the Red-capped Robins, *Petrœca goodenovii*, and Hooded Robins, *P. bicolor*, and nests of all kinds were found. The Western Fly-eater, *Pseudogerygone culicivora*, was common, and its curious descending slowly-uttered notes often heard, but their nests were difficult to find, being well hidden. As in Victoria, Wrens were frequently to be observed restlessly hopping about among the herbage near the ground. The blue and black plumage of the male was very striking. We noticed three varieties—in the sandy country near Perth, the Banded Wren, *Malurus splendens* ; in the gullies of the Darling Ranges, the Red-winged Wren, *M. elegans* ; and further north, near the coast, the Blue-breasted Wren, *M. pulcherrimus*. I found the nest and eggs of the two former. The lively Western Fantail, *Rhipidura preissi*, was plentiful in places; they seem to build their nests very high up, and generally on such thin boughs that they are most difficult to obtain, consequently you rarely see their eggs in local collections. Their note is very similar to the Victorian species.

On one hot day at Katanning I was passing a small bush and noticed a Chestnut-backed Babbling Thrush, *Cinclosoma castanonotum*, under it enjoying the shade, and although as a rule these birds are shy this one kept on the far side of the bush as I moved round it. I put my hand within a foot of it through the bush before it flew away. The Babblers, *Pomatorhinus superciliosus*, seem to have the habit of building several nests in the same neighbourhood, but only laying in one, and I found a nest containing three young ones, and close by three other new nests; possibly they use them for roosting in at night. The beautiful cheery note of the Collared Butcher-bird, *Cracticus destructor*, was occasionally heard, and on one occasion it was noticed, apparently in conjunction with a hawk, hunting an unfortunate Dusky Minah, *Manorhina obscura*. When the bird took refuge in a bush the Butcher-bird hunted it out, and then the hawk, which was circling above, swooped down on it, and the bird had to dodge the hawk and make for another bush as best it could, only to be turned out again by the Butcher-bird. They soon passed out of sight, and I do not know which bird secured the Minah. Near Katanning I heard the beautiful notes of the Bell-bird, *Oreoica cristata*, which seem to be very local in their habits ; they are occasionally seen on the ground, but mostly high up in the larger eucalyptus trees, though their nests are generally close to the ground, frequently on the top of a eucalyptus stump, perhaps only a foot or so high, which is well covered with young shoots; their eggs are very prettily marked, and are very similar to those of the Collyrio-

cincla. The bright plumage of the beautiful Western Thickhead, *Pachycephala occidentalis*, was easily discerned in the scrub, and the bird itself was by no means shy; it generally nests in the thickest vegetation. The Rufous-breasted Thickhead, *P. rufiventris*, is usually found in the more open country, especially near water, and is locally called "Joey." Honey-eaters, being a numerous family, are well represented here. The Dusky Minah, *M. obscura*, takes the place of the Noisy Minah, *M. garrula*, in Victoria, and is just as troublesome when you are duck-shooting, for instance, and do not want your presence known; they are very plentiful, but seem to prefer certain localities more than others. The Brown Honey-eater, *Glycyphila ocularis*, is generally found near permanent water, and is plentiful along the river banks. Its note is very similar to that of the Reed Warbler, *Acrocephalus longirostris*; its nest is often built on a thin branch overhanging the water. The Singing Honey-eater, *Ptilotis sonora*, is possibly the most common, and is the favourite foster parent of the young Pallid Cuckoo, *Cuculus pallidus*. I noticed one nest, with young ones in, built in a large fig tree overhanging a house. In cavities and caves among the granite rocks half-finished nests of Swallows, *Hirundo neoxena*, were often noticed, but I never saw a perfect one, and cannot account for the reason why the birds should so often start and not finish. A few Wood-Swallows, Artamus, are always to be seen. The Grey-breasted variety, *A. cinereus*, seem to prefer country where the White Eucalyptus trees grow, and they remain most of the year, whereas I was told that the Masked, *A. personatus*, and Common Wood-Swallow, *A. sordidus*, only came in summer, and then in large flocks; they generally put in an appearance at the same time the grasshoppers are getting plentiful, and leave when those insects disappear in the end of summer. The commonest bird throughout the country is the Yellow-rumped Tit, *Acanthiza chrysorrhoa*; its bulky nests are often seen, and in them is frequently found the egg of the Bronze Cuckoo, *Chalcites plagosus*. They often build their nests in situations that are to a certain extent protected from cats, hawks, &c., as, for instance, in the centre of the Prickly Mimosa, or in the thick top of a dead Jam-wood Acacia tree, and similar places. The Frogmouths, *Podargus phalænoides*, are often more numerous than they appear to be, because of the difficulty of seeing them, as they sit lengthwise on a branch which harmonizes completely with their own colour. They lay three elongated oval white eggs, but one of them is often addled.

At Cottesloe, one of the suburbs of Perth, a Sacred Kingfisher, *Halcyon sanctus*, had built its nest in the hollow of a tree not more than 20 feet away from a private house, where the owners were frequently about; it is rarely they build so close to a habita-

tion. I heard the plaintive cry of these birds wherever I went, but they do not remain here during the winter. Cockatoos were scarce, and the only one I saw was a White-tailed Black Cockatoo, *Calyptorhynchus baudini*. These birds nest in the open forest country, and betray their whereabouts by the noise they make; when they see anyone passing by they come to the entrance of their hole and screech vigorously and then go in again. During the winter I was told that they assembled in large flocks, but otherwise seemed local. The Red-tailed Black Cockatoo, *C. stellatus*, is also found here, but they seem to migrate more towards the inland districts during the nesting season. Parrots were also far from plentiful. The *Barnardius semitorquatus* has the curious habit of picking up the bones lying about a camp and eating any meat they can get off them. This bird is locally called the Twenty-eight Parrot, as its note is supposed to resemble that sound. The only pigeon I noticed was the Brush Bronzewing, *Phaps elegans*, and they have now, according to my informant, disappeared from many districts where formerly they were plentiful. Mallee Fowls, *Lipoa ocellata*, are more numerous further inland than near the coast. One of their mounds was seen, the superstructure of which was composed of coarse ironstone gravel more than sand—a good weight on the fragile eggs. When a bird is driven by a dog to fly and take refuge in a tree, it often alights on the thick top of the Mallee with its wings stretched out, instead of resting on a bough in the ordinary way, and when disturbed scrambles off again and flies a short distance on to another tree, as it cannot fly far at a time, but the scrub being, as a rule, so dense, it is easily lost sight of. A few Bustards, *Eupodotis australis*, are generally to be found in the open country; their eggs are frequently very light in colour, more so than I have noticed them on the eastern side of Australia; they devour large quantities of grasshoppers during the summer months, besides other insects. Both the White-necked Heron, *Notophoyx pacifica*, and the White-fronted Heron, *Notophoyx novæ-hollandiæ*, were noticed nesting near the swamps not far from Perth, and also the Little Bittern, *Ardetta pusilla*, Black Bittern, *Dupetor gouldi*, and Common Bittern, *Botaurus pœciloptilus*. We found a nest of the latter built in bulrushes, containing five fresh eggs. In the same swamps, which are mostly dry in summer, we saw Black Duck, *Anas superciliosa*, Teal, *Nettion gibberifrons*, Blue-billed Ducks, *Erismatura australis*, and Musk Ducks, *Biziura lobata*. The males of the latter are fond of uttering a sharp whistling sound, and at the same time striking the water with their wings; they utter the note every few minutes and keep it up for a considerable time, but directly they are disturbed quickly dive out of sight; otherwise these birds are seldom heard. Emus are scattered generally over the country, but are not plentiful. I noticed both the Spotted variety,

Dromæus irroratus, and ordinary one, *D. novæ-hollandiæ*. An opinion exists that all Western Australian Emus are of the Spotted kind, but it is not so. One cannot well identify them unless a specimen is secured, as the difference between the two birds is not very noticeable. The original type, as we know, came from South Australia.

Near Katanning Mr. Turner, of the Survey Department, found a curious toad about 2 feet below the surface of the soil, under the roots of a large White Gum tree which he was having grubbed up. The creature is now living well in confinement. It is very soft, and of a dark greyish-brown colour, and is apparently very helpless. Mason Wasps were often seen, and one found had built an elongated home of mud with fourteen compartments in it—quite different to any I had seen before.

I have lately received from Mr. Bradshaw, of the Victoria River district, a claw of the curious crab, *Parthenope horrida*, which I take the opportunity of showing this evening, as it is a wonderful instance of protective mimicry.

What I have brought before you this evening is but a brief and incomplete sketch of a few of the objects noticed in this very interesting country as I hurried through it on my recent visit. I barely had a month there, and much of that time was spent in travelling, as the distances from one place to another are considerable.

I have to thank Mr. J. G. Luehmann, our Government Botanist, for very kindly naming the specimens of flowers I brought over with me.

[The paper was illustrated with a series of about sixty lantern slides.—Ed. *Vict. Nat.*]

South Australian Ornithological Association.—The first annual meeting of this Association was held in Adelaide on 2nd March last, when a very satisfactory report of the year's work was presented. The committee had been engaged on a list of Australian birds for the use of the members, which was nearing completion. Several members had made extended excursions, and brought the results of their observations before the monthly meetings, when also many interesting specimens had been exhibited. Dr. A. M. Morgan was re-elected president, with Mr. A. H. C. Zietz, F.L.S., as vice-president, and Mr. J. W. Mellor as hon. secretary and treasurer.

Victorian Fungi.—The following fungi, new for Victoria, were collected by Mr. C. French, jun., at Mount Macedon in January last:—*Glocosporium hedycaryi*, Ccoke and Mass., on *Hedycarya cunninghami*, Tul.; *Septoria martiniæ*, Cooke, on *Senecio Bedfordi*, F. v. M.; and *Fabræa rhytismoides*, Sacc., on *Cotula filicula*, J. Hook.

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

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