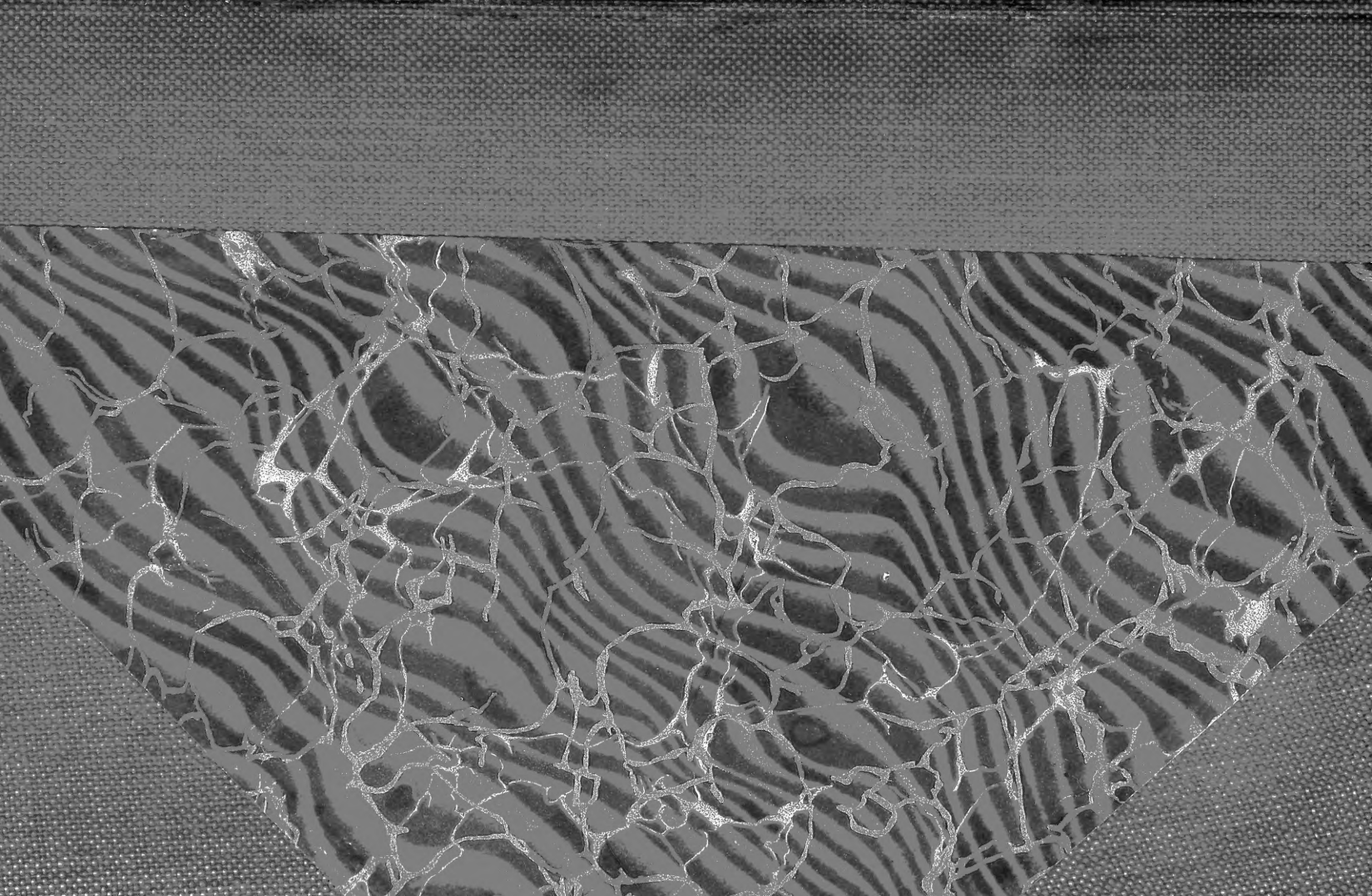

THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

VOL. VII.

MAY, 1890, TO APRIL 1891.

The author of each article is responsible for the facts and opinions he records.

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PROCEEDINGS OF THE FIELD NATURALISTS' CLUB OF VICTORIA.

ANNUAL ADDRESS BY THE PRESIDENT, C. A. TOPP, Esq., M.A., LL.B., F.L.S.

Ladies and Gentlemen,—

It is my pleasant duty as president of the Club to deliver the customary annual epitome of our proceedings during the past—the tenth—year of our existence.

Though the number of new members enrolled during the year is not (as I am informed) quite so large as in some previous years, and the papers read have not been so numerous, I believe I am justified in saying that our prosperity as a club for encouraging the study of natural history is well maintained.

During the year we have to regret the loss of two valued members. The one, the Rev. J. E. Tenison-Woods, whose name is widely known not only throughout Australia, but in the whole scientific world, was an honorary member of this society, and so lately as last year contributed two papers on the geology of Arnhem's Land. For several years Mr. Tenison-Woods was stationed in the Mount Gambier district, and travelled over the country adjacent to the western boundary of our colony, and visited the Western District of Victoria. His "Geological Observations in South Australia" gives a graphic description and luminous explanation of the main geological features of that portion of Australia, and should be in the knapsack or portmanteau of every visitor to Mount Gambier. Mr. Tenison-Woods contributed papers on various occasions to our Royal Society, including one on some tertiary deposits at Portland Bay, another on the glacial period in Victoria, and I believe delivered one or two public lectures at Portland. He was an untiring worker in various branches of natural history, and possessed the power of writing clearly and picturesquely. He died at the comparatively early age of 57, his health having been probably undermined by the hardships to which he had been exposed in his frequent journeys. The other member whose loss we have to deplore, Mr. Henry Watts, was one of our oldest members, a vice-president, and a constant attendant and exhibitor at our meetings. Mr. Watts was an indefatigable microscopical student, and took a special interest in the minute forms of algæ, and his excellent slides have frequently afforded pleasure to visitors and members of the

Club, both at our annual conversaziones and at the monthly meetings.

During the past twelve months several interesting papers have been read. Mr. A. Dendy, whose scientific papers form so important a feature of the Royal Society's transactions, contributed an interesting, and I think I may say an amusing, sketch of the cryptozoic fauna of Walhalla. The same accomplished writer has contributed a paper giving the external characters of a new Australian *Peripatus*.

Mr. Frost's notes on spiders may, it is trusted, lead members to watch more carefully these interesting if unattractive specimens of animal life. What scope for observation there is of the webs and nests of these little creatures, of their mode of capturing and killing their prey, of the particular insects which form the favourite food of each species, of the enemies to which they are exposed, and the protective resemblances which even they possess !

The Rev. F. R. M. Wilson has proved a constant contributor to our journal, having furnished no fewer than six papers or notes on the branch of botany to which he devotes himself. In these papers 52 new species of lichens are described by the author, and 54 others are enumerated as first found in Victoria. It may be hoped that his enthusiasm for this department of botany may prove contagious as there is great need for more observers and collectors throughout the colonies.

Baron von Mueller has continued to give scientific value to our journal by publishing from time to time descriptions of new species of Australian plants, including three (an orchid and two composites) found in Victoria.

Among the papers on entomological subjects which have been read during the year may be mentioned "Contributions towards a Local List of Coleoptera found at Mulwala, New South Wales," by Mr. T. G. Sloane, and "Notes on the Rutherglen Flying Bug Pest," by Mr. C. French, F.L.S., Government Entomologist, in which an interesting account is given of a plague of a small plant bug which appeared almost simultaneously in widely distant localities in Australia early this year, and which was proving very destructive in vineyards. Mr. French has also described, in the pages of the journal, a longicorn beetle new to Victoria. Mr. F. C. Christy has given a useful account of the habits of the Codlin Moth, deduced from his own observations.

Mr. C. French, jun., contributed "Notes of a Collecting Trip to Swan Hill District;" Mr. E. M. Cornwall, a paper on "Collecting Near Home;" and Mr. John Dennant, F.G.S., gave the only paper of the year on a geological subject—"Notes on the Bed of a Dried-up Creek near Coleraine."

Dr. W. Woolls, an honorary member, has been good enough to contribute a paper on the distribution of aquatic plants in New

South Wales—a subject which needs working out in this colony, and which may be commended to those of our members who desire a comparatively fresh field in botany. To Mr. E. D. Atkinson, C.E., another honorary member, we are indebted for a very interesting account of a trip to the islands of Western Bass Straits.

Mr. H. T. Tisdall, F.L.S., has contributed a descriptive paper on the fungi to be found around Melbourne, which should be of service to young botanists who wish to have some knowledge of this interesting division of plant life, and he has also given a pleasantly written descriptive sketch of a winter journey in the mountains. Mr. A. J. Campbell usefully brought under the notice of members of the Club the variety of edible fish brought to the Melbourne market. He has also given a short account of Malden Island, with a description of the birds that frequent it.

The most noteworthy event of the past year to us was the meeting, in the month of January this year, of the Australasian Association for the Advancement of Science, in Melbourne. We may take some pride in the fact that our honoured patron, Baron Ferd. von Mueller, was president; that the general secretary to the association, Professor Spencer, to whose organizing ability and untiring industry the great success of the meeting was so largely due, is one of our most valued members; that half of the papers read in the Biological Section were contributed by members of the Club; and that the only paper read by a lady at the association was one on the diseases of plants by Mrs. Martin, so well known to her fellow-members of this Club for her interest in fungology. The very respectable attendance at the meetings of the Biological Section may be regarded as satisfactory evidence of an increased attention to the study of natural history. A striking evidence of the growing interest in that side of natural history which it is the special province of our Club to develop, was afforded by the large numbers who joined most of the excursions to places of scientific interest. The little handbook of the geology, flora and fauna, meteorology, &c., of Victoria, which was published, will, I think, supply a want which is much felt, not only by visitors to the colony, but by our own young people when they begin to take an interest in the physiography of their country, and it is worth consideration whether an enlarged edition might not be published for general circulation.

During the past year there have been many valuable additions made to our knowledge of Australian natural history. Within the last twelve months Baron von Mueller has published a new edition of his "Census of Australian Plants," in which, besides adding to the list of species and localities, he has indicated the general regional distribution throughout the world of each species; this information cannot but prove of great value in con-

sidering the question of the origin of our flora and its relations to other floras. Our honoured patron has also commenced the publication of a series of descriptive plates on the Salsolaceæ of Australia, an order especially interesting to us as embracing the valuable salt-bushes of the interior plains. Baron von Mueller has also published in the second part of the first volume of the "Transactions" of our Royal Society, descriptions of 80 species of highland plants from New Guinea, collected during the expedition of Sir W. MacGregor to the Owen Stanley Ranges. This collection, as the Baron points out, suggests some curious and difficult problems in regard to the origin of the alpine flora of the island, a considerable portion of it having a close affinity to the flora of Tasmania and Australia, with relationships also to that of Fuegia and Patagonia.

The same publication contains an excellent epitome of the organization of Australian tribes, by another of our members, Mr. A. W. Howitt, dealing with the social organization, tribal government, form of group and individual marriage, and relationship terms. Descriptions of the anatomy of a parasitic worm and of a Land Planarian, by Professor Spencer and Mr. A. Dendy respectively, will also be found in this volume.

Professor M'Coy has published, during the year, two additional decades of the "Prodromus of the Zoology of Victoria," containing descriptions and plates of two lizards, five of our food fishes, the common Cuttlefish, and the Great Red King-Crab, by himself, and descriptions and plates of 41 species of polyzoa by Dr. M'Gillivray, 21 of which have been specifically defined by the author. In the "Proceedings of the Royal Society" will be found also a valuable paper by our late president, Mr. A. H. S. Lucas, being a systematic census of indigenous fish hitherto recorded from Victorian waters. The list includes 233 species, with vernacular names and localities where found, and references.

Important works of the year published in other colonies, dealing with subjects in which our members are interested, are Mr. J. H. Maiden's "Useful Native Plants of Australia" (Sydney), a work which brings together in a compact form material hitherto scattered through various scientific periodicals, and for the accuracy of which its author's name is a guarantee, and Mr. R. M. Johnston's "Geology of Tasmania," which contains memoirs by the author previously only to be found in the Transactions of the Royal Society of Tasmania.

We may now congratulate our fellow-botanists in South Australia in having so excellent an aid to the determination of species of the extra-tropical portion of the colony as is furnished by Professor Ralph Tate's handbook, published this year, which, it is needless to say, is a model of perspicuous arrangement.

In the report of the first meeting of the Australasian Associa-

tion for the Advancement of Science will be found an interesting essay by the same author on the influence of physiographic changes in the distribution of plant life in Australia, delivered by him as the presidential address of the Biological Section. The same work contains an succinct account of the physiography of the Australian Alps, by Mr. James Stirling, who has contributed papers to our journal on the same district.

Other works, published during the year, which will be found valuable to the members who are studying the particular department of natural history which is the subject of the memoir, are "Census of Molluscan Fauna of Australia," by Professor Ralph Tate; "Australian Butterflies," by A. S. Olliff; "Report on Insect and Fungus Pests, Queensland," issued by the Department of Agriculture; "Lichen Flora of Queensland," by John Shirley; "Report on the Government Scientific Expedition to the Bellenden-Ker Range, Queensland," by the Colonial Botanist.

In the "Proceedings of the Linnean Society of New South Wales," Mr. E. Meyrick, F.E.S., has continued his "Revision of Australian Lepidoptera," and describes above a hundred in his last papers; the Rev. G. S. Blackburn continues his notes on Australian Coleoptera; and Mr. F. A. A. Skuse's part 7 of "Diptera of Australia" has been published, bringing the number of species described up to 385.

A matter in which members of the Club will feel an interest is the organization during the year of the Government Entomologist's department. We all felt that it was a matter for congratulation that one of the founders and most enthusiastic supporters of this Club, Mr. C. French, was chosen to fill the responsible position of Government Entomologist. Mr. French informs me that at the offices in the Exhibition Building there is already formed a valuable library of works on economic entomology, which is being daily added to, as well as specimens of insects prejudicial to plant life; and that live specimens are also being kept and reared, and their life-history watched, the number of days' duration of each stage noted, &c. There is also a fine collection of stuffed specimens of the insectivorous birds of Victoria, so that farmers and others may readily learn to recognize birds which are really their friends and should be carefully preserved. The first number of the "Handbook of the Destructive Insects of Victoria," containing ten coloured plates with descriptive letterpress will shortly be issued, the artist being Mr. C. C. Brittlebank, a member of our Club. This number, I understand, will treat of insects injurious to some of our most important fruits, such as apples, pears, apricots.

An increased interest in the preservation of our forests has been shown by the appointment of Mr. G. Perrin, F.L.S., as Chief Inspector, and we may hope that the valuable timber—the

growth, perhaps, of centuries—which still remains in our remoter mountain glens will not be destroyed so recklessly as in the past, and that, by judicious and scientific replanting of valuable and suitable timber trees, we shall endeavour to repair, as far as lies in our power, the wrong we have done to posterity by a short-sighted policy of wholesale clearing of forests.

The various reports of the Commission on Vegetable Products issued during the past two years contain information of interest not only to the farmer and the horticulturist, but to those who, like ourselves, have no pecuniary interest in paying crops, but who desire to see our fields and mountain slopes diversified by the plantation of a variety of forms of vegetation, and to have an opportunity of studying in mass forms of plant life of high economic interest which are not indigenous to our colony, and who are glad to see reasons appealing to the pocket for the preservation and cultivation of some of our native trees and shrubs.

It is with great satisfaction that I am able to inform the Club that the long-continued efforts of the Committee to secure the reservation, for the protection of the native fauna and flora, of Wilson's Promontory, have at last been crowned with success, the Minister of Lands having promised a deputation from this Club a few days since to permanently reserve a large portion of the Promontory as a state forest, under special regulations, and for the preservation of the native fauna and flora, and to appoint a committee of management, to include certain members of the Club. Our thanks are due to Messrs. Gregory and Lucas, by whom this movement was initiated, to the Council of the Royal Society for co-operating in the matter, and to Messrs. L. L. Smith and Groom, M's.P., for their intelligent support of our proposal.

In concluding this address I would urge on members, if they wish the Club to maintain in the future its position as an educative influence in regard to natural history, to continue to take an active part in its proceedings. It may be pleasant to attend the monthly meetings, listen to papers prepared by a few earnest students, the result of their solitary observations, and to examine the specimens of birds, insects, shells, or flowers which a few enthusiastic collectors have brought together; and no doubt a good attendance of members is encouraging to the readers of papers and to exhibitors. Yet it must be remembered that our special work, as the name of our Club shows, is in *the field*, and that unless members join in the excursions and collect and observe for themselves, they lose the best part of the education and pleasure that it is the object of the Club to afford, and that as the older members, through the increasing press of business and other engagements, have to gradually withdraw from taking

the chief share in our work, there is a danger that there will not be others ready to take their places.

I am induced to make these remarks by noticing that the attendance at our excursions has fallen off during the last twelve months.

In regard to papers, it would be satisfactory to have more dealing with the life-history or habits of animals and plants from the personal observation of the writers. There is still an almost unlimited field for observers, for, though year after year it is more difficult to discover new species, as catalogues become more complete, there are countless points in connection with the habits and distribution of the most familiar animals and plants which have not yet been sufficiently observed and recorded, many of which merely require patience and ordinary intelligence to elucidate. I may refer to the methods of fertilization of our native flowers; to the times of flowering and seed ripening in each species in various localities; the particular insects or birds on which fertilization depends, and the provision for self-fertilization, if any; the form of dichogamy, whether protandry or protogyny; the forms of the cotyledonary and primary leaves (a most interesting and suggestive subject); the gall-producing insects, which so frequently deform our native plants; the struggle for existence between our native flora and introduced weeds; the causes which produce the spread of the latter, and the districts they have invaded. The duration of hatching and of the larval and pupal stages of insect life of various species; the length of life of the fully developed insect, and its instincts or psychical manifestations in house-building, care of its young, &c.; the causes of the appearance, at intervals of several years, of swarms of particular species. The forms and materials of the nests of birds; the particular trees, shrubs, or other places where they are built; the period of incubation of eggs; the insects and fruits which form the food, especially in districts remote from settlement; the connection of the colours of birds with their surroundings.

Mr. Dendy informs me that a wide field still remains open for Victorian naturalists in the study of our cryptozoic fauna. The habits, the life-history, the food, the enemies, and the mutual relations of the different members of the little community which dwells in harmony, or otherwise beneath every stone or fallen log are almost unknown to us. The solution of these problems is a peculiarly fitting task for the field naturalist. The cryptozic fauna may be lowly, but it is not insignificant; every little community of these hidden animals is a microcosm in which we may study, in a restricted and convenient area, almost all the biological problems which present themselves for solution in communities of a higher and more extensive character.

If each one of us patiently endeavours to make accurate

observations on some one of these or similar subjects, and gives a record of the result, he will not only be gaining an additional interest and pleasure in nature for himself and a resource for idle and otherwise tedious hours, but the aggregate result of many similar observations will furnish invaluable material for the speculations and generalizations of the fortunate student who is privileged after a complete training in one of our modern biological laboratories to devote his life to the elucidation of the workings of nature.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th April, 1890.

In the absence of the President and Vice-Presidents, Mr. A. Dendy, M.Sc., F.L.S., was voted to the chair, and about fifty members and visitors were present.

A telegram was read from the President, Mr. C. A. Topp, M.A., LL.B., apologizing for absence.

The hon. librarian reported the receipt of the following donations to the library :—"Handbook for the Melbourne Meeting of the Australasian Association for the Advancement of Science, 1890," from the Association; and "Journal of Pharmacy," April, 1890.

Mr. A. Dendy, F.L.S., reported that the excursion to Cheltenham, on Saturday, 15th March, had been fairly attended, and that owing to the advantages offered by a low tide a considerable number of specimens, principally sponges, had been obtained.

On a ballot being taken, Miss Turner, of Ringwood, was duly elected a member of the Club.

Mrs. Martin drew attention to certain discrepancies between the report of the ascent of Mount Bellenden-Ker, in North Queensland, by the Government expedition, and that by Mr. Sayer, which had been read before the Club, and published in the *Naturalist* for July, 1887.

PAPER READ.

By Mr. G. Lyell, entitled "Notes of a Lepidopterist at Ferntree Gully." The author gave a brief account of a couple of hours spent there with a net on a Saturday afternoon, when he succeeded in taking eleven species of butterflies and nine of moths. He exhibited a number of specimens in illustration of his paper.

NATURAL HISTORY NOTES.

A number of interesting notes on various subjects were contributed by members.

Mr. J. G. Luehmann called the attention of members to several species of the saltbush family which are common about Melbourne, referring more particularly to the formation of the flowers, &c., and exhibiting *Rhagodia billardieri*, R. Brown; *Chenopodium carinatum*, R. Brown; and *Atriplex cinereum*, Poiret, as examples, and drawing diagrams on the blackboard in illustration of his remarks.

Mr. A. Dendy, F.L.S., called attention to some unsettled points in the anatomy and life history of Planarian Worms, illustrating his remarks with specimens and by sketches on the blackboard.

Mr. C. Frost referred to a larval or pupal form of insect, to which attention had been called by Mr. A. Dendy, F.L.S., in his paper, "Zoological Notes of a Trip to Walhalla," and stated that from a similar pupa a dipterous insect had emerged, specimens of which he exhibited to the meeting.

Mr. D. Best read a few notes of a brief holiday spent at Thorpdale, South Gippsland, which he thought would prove a good district for naturalists.

Mr. F. G. A. Barnard mentioned a rather singular instance of a parrakeet having escaped from confinement and returning at intervals to its former home.

Mr. G. Lyell described the singular actions of some butterflies (*Papilio macleayanus*), as witnessed by him in the Dandenong Ranges, and recorded elsewhere in this journal.

The following were the principal exhibits of the evening:—By Mr. D. Best.—A case of Australian Buprestid Beetles. By Mr. J. E. Dixon.—Fossils from Corio Bay, Geelong, and Point Addis—viz., Pecten, Terebratula, Clypeaster, Echinus, &c. By Mr. C. French, jun.—Eggs of Wedge-tailed Petrel, from West Australia, Australian Bittern, from Queensland, and Caspian Tern, from Tasmania; also, an orchid (*Pterostylis pedaloglossa*), in bloom, from Cheltenham. By Mr. G. A. Keartland.—Eggs of Straw-necked Ibis, New Holland Goshawk, White-faced Petrel, Native Turkey, and Lunulated Honey-eater; also, birds' eggs and sponges from King Island. By Mr. G. Lyell.—Butterflies (*Heteronympha banksii*, *Xenica lathionella*, and *Epinephile abeona*) taken during March; also, eleven species of butterflies and ten of moths, taken at Lower Ferntree Gully, in illustration of paper. By Mr. J. N. M'Kibbin.—Six species of orchids, in bloom (pot grown)—viz., *Eriochilus autumnalis*, *E. fimbriata*, *Pterostylis pedaloglossa*, *P. aphylla*, *Prasophyllum archeri*, *P. despectans*, and *P. intricatum*. By Baron F. von Mueller, K.C.M.G.—A fern (*Cystopteris fragilis*) new to Victoria, found by Mr. W. Bauerlen, towards Mount Koscuisko. By Mr. F. Spry.—Larvæ, chrysalis, and imago of butterfly (*Pieris tuetonia*).

After the usual *conversazione* the meeting terminated.

NOTES BY A LEPIDOPTERIST.

By Geo. Lyell, Jun.

(Read before Field Naturalists' Club of Victoria, 14th April, 1890.)

On 15th March, two members of our club, despite the counter attractions of Cheltenham, visited Lower Ferntree Gully, in search of lepidoptera. Taking tickets by the 1.30 train, the destination was reached at 3 p.m., and it was decided to try the railway gully before climbing the ranges. Close to the station one of the small skippers, *Taractrocera papyria*, was taken, and contrary to expectation, this proved the only specimen of that family seen during the afternoon. Just outside the railway reserve several *Xenica lathionella*, with its beautiful silver markings, were caught; while *Xenica achanta*, with its conspicuous eye-like spots, fluttered around on all sides.

The ubiquitous common blue *Lycæna phœbe*, it is needless to say, was present in abundance—in fact, it would be a much more notable fact were its absence to be recorded. *Heteronympha merope* and *Xenica kluggi* were also to be met with in every direction.

Following the sides of the gully, the following moths were added:—*Philabota fascialis*, *Coremia vicissata*, *Euphroctis melansomia*, *Procris dolenes*, *Hellata undalis*, as well as the little emerald *Chlorochroma cadmaria* and the prettily tinted *Lithosia bicolor*. At this juncture, an excited rush by one-half of the excursionists up the slope of the hill resulted in the capture of a fine specimen of the handsome butterfly, *Heteronympha banksii*. With such rare game (if the term is allowable) in view, the claims of the ranges were entirely disregarded, and a searching investigation of the bed of the gully at once undertaken. The hunt proved very successful, nearly a dozen specimens being secured. They were caught fluttering among the thickly growing *Veronica billardieri*, a plant that might well be examined earlier in the season for the caterpillars.

In the quest, many were the obstructions met with—sword grass, prickly shrubs, tangled undergrowth, March flies, and perspiration did their best to impede the movements of the expedition. Number two detachment several times came to grief, being tripped up by hidden boughs, and on one occasion falling bodily into the overgrown, though fortunately dry, bed of the creek. A battered *Heteronympha philerope* had to thank its good fortune for the timely arrival on the scene of two of the handsome *H. banksii*, number one detachment unanimously agreeing that "a bird in the hand was *not* worth two in the bush;" or, to put it more correctly, "two butterflies in the bush were worthy more than one under the net." Shortly afterwards *Epinephile abeona* was taken, and also *Pyrameis itea*, and this

closed the list of new captures. The return journey was commenced at 5.25, and town reached by 7.30—the trip being voted most enjoyable.

A specimen of each of the varieties taken is shown on the table to-night. The list, as you will see, comprises eleven species of butterflies and nine of moths—not poor results for a couple of hours' collecting.

A FEW REMARKS ABOUT SNAKES.

By D. Le Souef, Assistant Director of the Melbourne Zoological Gardens.

(Read before Field Naturalists' Club of Victoria, 10th March, 1890.)

A short time ago the Natal Rock Snake in the Zoological Gardens, of about 12 feet in length, swallowed its blanket, a large sized single one, and it also ate a rabbit the same night. It then lay quiet for about three weeks, when it began to get restless, but could not move about very freely, because of its undigested meal; it then with some difficulty disgorged the blanket again, which, when washed, was as good as ever. A fortnight later it was noticed swallowing the same blanket again, but was made to disgorge it before it could accomplish its purpose. Some years ago a large Indian Python swallowed its blanket in a similar way, and after a period of six weeks passed it through, the snake being none the worse.

Not long ago two Tiger Snakes, a large one and a small one, fastened on the same mouse, one at each end. Neither would give way, and the larger snake not only swallowed the mouse, but also the smaller snake, as the latter would not let go its hold of the mouse, and in about ten minutes nothing was to be seen but about two inches of its tail, and that disppeared next day. But in no case do the snakes of this country prey on each other, except accidentally, as in the way I have mentioned; on several occasions I have separated two snakes when trying to swallow the same frog, and when the head of one was well within the jaws of the other. The only snake which lives almost exclusively on other snakes is the Hamadryas of the Oriental region, and it is very useful on that account, although much feared by the natives, being very active and vicious. When they received their first live specimen in the London Zoological Gardens, they found difficulty in being able to obtain a sufficient supply of snakes to feed it on, so those they had, they gave a plentiful supply of food to, and when they were gorged they then gave them to the Hamadryas, which consequently had a double meal.

On several occasions I have been told that snakes committed

suicide, as sometimes when struck with a stick the reptile turned round and bit at the wounded part and shortly after died, presumably from the effects of its own poison. Many animals, as is well known, bite at the place where they have received a wound, and snakes sometimes may do the same thing, but I do not think that they ever die from the effects of their own poison, as I have on many occasions made snakes bite each other, but in no case has death followed. I remember a large Tiger Snake being bitten three times within the space of half an hour by other snakes in the same cage, but it appeared none the worse and lived for more than a year after.

The larger varieties of the lizard, such as the Gould's Monitor *(Varanus gouldii)*, the Lace Lizard *(Varanus varius)*, the Great Cyclodus *(Cyclodus gigas)*, and the Bearded Lizard *(Amphibolurus barbatus)*, do not seem to suffer much from snake-bite, as I have made Tiger Snakes bite specimens of each of those mentioned, but no ill effects ever followed. We know that the smaller varieties of lizards form one of the principal items of food, to the Copper-head Snake especially.

The Singular Behaviour of a Parrakeet.—Some eight or nine months ago I purchased a parrakeet from an itinerant bird seller. It seemed to be a young bird, but was very shy, and after having it for about six months it did not seem a bit more at home than when first purchased. About two months ago I omitted properly to fasten the cage and it escaped. At first it did not go far away, but for several days stayed about in some fruit trees in an adjoining garden, occasionally coming down into our yard to feed on oats and maize I had put down for it. I did not try to catch it, as I hardly thought it worth the trouble of feeding. After staying about for a couple of weeks it went away for a few days, and then for a longer period, and last week it came back to its usual place after an absence of about a month, and remained for a few hours, since which time we have not seen it. My object in mentioning this, to me, singular proceeding on the part of a bird is to inquire whether any other member has had a similar experience.—F. G. A. Barnard, Kew.

Papilio erectheus, caught for the first time in Victoria, was exhibited at the April meeting of the Field Club by Mr. George Lyell, jun. The specimen (a battered one) was taken on the evening of 11th February, in the Dandenong Ranges, and had apparently been driven over from New South Wales by stormy weather.

Field Naturalists' Club of Victoria.

President:
C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularizing the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Any of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. F. G. A. Barnard, Kew at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. 1886-87), 12 numbers, 6s.; Vol. V. (1888-89), 12 numbers, 6s.; each set with title-page and index for binding.

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VOL. VII.—NO. 2. JUNE, 1890.

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— OF —

The Field Naturalists' Club of Victoria.

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

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th May, 1890.

The president, Mr. C. A. Topp, M.A., F.L.S., occupied the chair, and about 55 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library :—"Census of Australian Plants, part 1—Vasculares," 2nd edition, by Baron F. von Mueller, K.C.M.G., from the Government; "Transactions of Royal Society of Victoria," vol. i., part 2, from the Society; "Proceedings of Royal Society of Tasmania," 1889, from the Society; "Proceedings of Linnean Society of New South Wales," 2nd series, vol. iv., part 4, from the Society; "Journal of Bombay Natural History Society," vol. iv., parts 3 and 4, from the Society; "Journal of New York Microscopical Society," vol. vi., part 2, from the Society; and "Journal of Pharmacy," April, 1890.

The hon. secretary read an interesting account by Mr. C. French, F.L.S., of the Club excursion to Oakleigh on Saturday, 19th April, which was fairly attended. Considering the season of the year, a good number of specimens were obtained.

The hon. secretary reported that a deputation from the Club had waited on the hon. the Minister of Lands with reference to the reservation of Wilson's Promontory as a national park, and they had been very favourably received, and a promise given that the greater portion of the Promontory should be reserved as a State forest, the regulations for the control of which would be submitted to the Club for its approval.

On a ballot being taken, the Rev. W. Fielder, Messrs. M. H. Clifford, D. M. Dow, T. Fowler, W. H. A. Pye, and T. Steel were duly elected members of the Club.

Mr. F. G. A. Barnard gave notice of motion that he would move at the next meeting that in rule 10 the words "secretary and assistant secretary" be altered so as to read "and two secretaries."

Messrs. Le Souëf, and G. Lyell, jun., were elected to audit the accounts for the past year. Nominations were then made for the various offices for the year 1890–1.

Baron F. von Mueller, K.C.M.G., then took the chair while the retiring president, Mr. C. A. Topp, M.A., delivered his

address on the work and results of the past year, which appeared in last month's journal.

Baron F. von Mueller, in moving a vote of thanks to the president for his address, referred to the intimate relations of natural science to agriculture and kindred pursuits, and, in speaking of the rust fungus in wheat, said that, when lecturing in Sandhurst in 1865, he had stated that wheat crops near the coast, or on somewhat saline soils, were not nearly so liable to the attacks of rust as those in apparently more suitable positions, and his remarks had since proved to be to a great extent correct.

The evening was set apart for exhibits of birds'-eggs and insects, and the following were the principal exhibits:—By Mr. F. G. A. Barnard.—A case of the more uncommon Victorian insects of different orders, mostly from neighbourhood of Melbourne. By Mr. D. Best.—Three cases of beetles, principally Victorian. By Mr. C. French, F.L.S.—Case of Lepidoptera from Central America; case of Australian and other beetles (Buprestidæ). By Mr. C. French, jun.—Case of rare eggs of Victorian birds; eggs of New Guinea and Australian Cassowaries. By Mr. E. E. Johnson.—60 species of Victorian birds'-eggs, including that of the Gang Gang Cockatoo, exhibited for first time. By Mr. G. A. Keartland.—About 200 kinds of Victorian birds'-eggs, including 40 rare ones. By Mr. G. Lyell, jun.—Butterflies from Tamworth, N.S.W. By Mr. J. Searle.—Butterfly, *Papilio erectheus*, from Wangaratta, Victoria.

After the usual *conversazione* the meeting terminated.

THE CLUB EXCURSION TO OAKLEIGH.

The ordinary monthly excursion of the Field Naturalists' Club took place on Saturday, 19th April, under the leadership of Mr. Ch. French, F.L.S. The members mustered in fair force, and the number was considerably increased by several of the students from the College of Pharmacy, under their instructor, Mr. D. M'Alpine, Lecturer on Biology at Ormond College, taking part in the proceedings.

The season being far advanced, the time (2 p.m.) seemed much too late for a start, the spot chosen being around Oakleigh, on the main Gippsland railway line, and 9¼ miles from Melbourne. Arriving at Oakleigh, a start was made in a direction of about S.E. The day was warm and very pleasant for travelling, and this locality having quite an evil reputation as being infested with snakes, a sharp look-out was kept, as few, if any, of the party wore leggings; the lateness of the season, it was thought, rendered matters in this line comparatively safe. The party (16 in all) now spread themselves out, so that as much ground as possible might be traversed in the limited time at their disposal.

Passing through low-lying land on which grew large quantities of *Selaginella uliginosa*, *Lobelia anceps*, *Haloragis*, &c., &c., we crossed a small rise, on the left side of which is a fence and some traces of former civilization, before the land boom atrocities set in. The advance party were some distance already when a coo-ee from those in the rear announced the capture of a snake, which, although not killed by one of the party (some of whom had begged the specimen from a man who had just despatched it), furnished some very interesting particulars, ascertained by Mr. M'Alpine, who informs me that the heart continued beating for 6½ hours after the vertebræ had been severed. Flukes were also found in its gullet, windpipe, and stomach, of a still undetermined species. A nematode worm, 6 inches in length, was found in the stomach, and is now being determined and described by Dr. Cobb, of Sydney. Not a bad afternoon's work, after all, I think you will say.

Steering in the direction of Mordialloc, we came across scrubby rises, covered with various Epacrids, Acacias, &c. *Eriochilus autumnalis* was, up till the present time, the only orchid seen in bloom, although we presently found a solitary specimen of *Pterostylis aphylla*, a species not uncommon in the Brighton district. About a mile from the Oakleigh station there occurs a thick belt of Tea-tree—*Melaleuca squarrosa*—some plants of which attain quite a respectable height, although, in these districts it usually is little else but a shrub. Plants in bloom were scarce, the season being both too late and too early for them; the principal ones noticed as being in flower were *Styphelia scoparia* (better known to you, perhaps, as *Monotoca scoparia*), *Styphelia humifusa* (the pretty little native cranberry), *Acacia oxycearus* (just budding), *Hakea*, *Melaleuca*, *Wahlenbergia*, *Cassytha*, *Loranthus*, one or two species of Eucalypts; and the always welcome little Native Daisy, *Brachycome graminifolia*, grew here, there, and everywhere. The Melaleuca scrub about here was very dense, and just inside a wire fence grew a number of stunted Eucalypts—*E. viminalis*, *E. pauciflora*, and a dwarf kind of stringybark, possibly *E. obliqua(?)* In the middle of this group was found a solitary specimen of *Acacia linearis*, a species not often occurring so far away from the mountains. The specimen is about 20 ft. high. Steering about due west we came across a scrubby hill, on which some family had commenced to cultivate. We did not envy them their prospect, as the land here is poor in the extreme. Near this humble little homestead, were found some old posts lying upon the ground, relics evidently of some early days post-and-rail fencing. One of the party, whose *forte* is botany and entomology, with a pretty keen eye for whatever may turn up in the natural history line, essayed to lift one of these posts for the purpose of hunting for beetles and like

game, when, to his great astonishment, his hand was within a few inches of a small Copperhead Snake, who had taken up his quarters under the post. To pin the head of the snake to the ground by means of an umbrella, was the work of a moment, although, the ground being of soft sand, the "job" had to be performed carefully, as the snake, although only about 2 ft. in length, was evidently not in a particularly amiable mood; and as Mr. M'Alpine was anxious of securing the specimen alive, the snake was seized by the nape of the neck (after the method adopted by Mr. Le Souef), and safely bagged alive for future observation.

It may be mentioned that both snakes taken were known as the Copperheads (*Hoplocephalus superbus*). It was near to this spot that one of the party (a student from the Pharmacy College) discovered a very singular plant, which the Baron von Mueller says is a monstrous growth of some species of orchid, but as yet he (the Baron) has not been able to satisfy himself of its exact specific position, and would be glad to receive further specimens for scientific examination.

There were a few birds in the neigbourhood such as the Harmonious Thrush, Wattle Bird, Brown Hawk, Magpie, Robin, &c.; but our sportsman, not being a Cockney one, had no desire to shoot all and sundry, so merely contents himself with shooting a few of the smaller birds for his collection.

Insects were of course scarce, and with the exception of a few Trox, Staphylinidæ, Carabs, a spider or two, including the Victorian Katipo (*Lathodectus scelio*), and one or two kinds of Hesperidæ and small moths, very few were seen, the reason being, as in the case of plants—that it was too early for insect life.

The very curious fern, *Schizæa bifida*, is common here, and several specimens were collected.

With the collecting done, the exchange of ideas, and the "bush lectures" in the field, a very pleasant, and we hope instructive, afternoon was spent. Melbourne was reached shortly after dark.

THE RESERVATION OF WILSON'S PROMONTORY.

The proposal that Wilson's Promontory should be reserved as a site for a national park for Victoria, principally with the view of preserving the native fauna and flora, was first made by Mr. J. B. Gregory, LL.M., at a meeting of the Field Naturalists' Club of Victoria, and by Mr. A. H. S. Lucas before the Royal Society, some two years ago; and the project being supported by the Royal Society, the Geographical Society, and the Artists' Society, a joint deputation from the different societies waited on the Minister of Lands and urged the adoption of their scheme.

The Minister, however, gave no definite reply, and nothing further was done in the matter.

Recently, however, several large tracts of land have been recommended for reservation as State forests; and it was determined by the Club to make another effort for the reservation of Wilson's Promontory. Accordingly, on Wednesday, 7th May, a deputation, consisting of Mr. C. A. Topp, M.A., F.L.S., Mr. J. B. Gregory, LL.M., Mr. A. H. S. Lucas, M.A., and Mr. F. G. A. Barnard, introduced by Mr. A. C. Groom, M.L.A., and Dr. L. L. Smith, M.L.A., waited upon the Hon. J. L. Dow, Minister of Lands, and asked that the greater portion of Wilson's Promontory, from Corner Inlet southwards, containing some 50,000 acres, might be permanently reserved from sale and vested in trustees for a national park, for the conservation of the fauna and flora of Victoria. The deputation also urged that the islands surrounding the Promontory should be likewise vested in trustees, so that the seagulls and other birds, as well as seals, which made those islands their temporary homes, should be unmolested. It was explained that the land at the Promontory was of very little value for grazing or agricultural purposes, and that, owing to the poor character of the soil, it was unsuited for the cultivation of trees; while the islands referred to were for the most part barren rocks. Dr. Smith pointed out that the islands would, if reserved in the manner sought, be of service to the Melbourne Aquarium, as fish and seals could be obtained from there. The deputation also asked to have vested in trustees Shallow Inlet, an arm of Waratah Bay, near the neck of Wilson's Promontory.

Mr. Dow said that the Government was thoroughly in accord with the objects which the deputation had in view, and would be glad to assist the Field Naturalists' Club in accomplishing what it desired. A portion in the north of the Promontory, at Mount Singapore, near Corner Inlet, would be cut off for marine residence sites, and the remainder would be permanently reserved for State forest purposes. The Government preferred to adopt this course rather than vest such a large extent of country in trustees, as it had been found that, after a time, few of the trustees appointed to such positions by the Government properly carried out the duties appertaining to their trust. What the deputation desired could be as readily and effectually accomplished in the manner he suggested as by vesting the land in trustees. Suitable regulations would be prepared by the Lands Department and submitted to the Club for its approval; and to allay any fears which outsiders might entertain, he added that the reservation of the land would not interfere in any way with the fishing industry at Waterloo Bay, Refuge Cove, or Corner Inlet. The deputation then withdrew, being very pleased at the success of their mission.

ON THE *ŒCIDIUM* AFFECTING THE *SENECIO VULGARIS*, OR GROUNDSEL.

By Thomas Shearman Ralph, M.R.C.S., Eng., &c.

(Read before the Field Naturalists' Club of Victoria, 11th November 1889.)

I have been induced to undertake a more particular study of this fungus in consequence of having learned from my friend Dr. Bancroft, of Brisbane, that a fungus affecting the rough-skinned lemon was to be found in the seed, besides showing itself in the substance of the leaf—a fact with which I was not previously acquainted.

The *Œcidium*, or Cluster Cup fungus, affects the whole of the stem and leaves of the groundsel; but with the microscope we are able to trace the fine yellow sporular matter into the covering of the seed, and into the seed itself, as well as in some instances into the hairs of the pappus or down which crowns the seed-vessel.

In order to trace the fungus element into the seed, it is needful to decolourize its cover by applying some strong carbolic acid to it when on the glass slide, and heating this over a flame till it begins to boil, when it will be found to have become transparent enough to show the yellow fungus material in the tissues of the seed cover. The Cup fungus proper is clearly visible to the naked eye, generally covering the greater part of the plant; but the mycelium, or root part of the fungus, can be traced in the cells of the stem and leaves by the use of the carbolic acid as above indicated.

The plant is widely distributed, and the fungus will be found upon it sooner or later, climate seemingly having no influence on its development.

The interest which attaches to this fungus is, that it is of the same genus as that which attacks the barberry in the Northern Hemisphere, and passing on to the cereals, affects them with the rust. So well is this known that in some States in America the barberry is condemned to be exterminated in cereal districts. As we have no barberry plants growing in the open country here, it becomes a question if the source of rust in cereals in these colonies can be traced to the prevalence of this fungus in the groundsel, for the hair-furnished seeds can travel far and wide with every wind that blows. Of course there may be other sources of infection; but should it be ascertained that the Cup fungus here plays a similar part to that which flourishes in northern latitudes, it would then be desirable to ascertain the source from whence the groundsel itself becomes affected, for this plant is generally found to be attacked by the fungus when discovered growing among kitchen garden plants. In the Carlton

Gardens no infected plants have been detected as yet; perhaps this absence of the parasite may be due to the abundant supply of tannin in the ground derived from the oak trees growing there.

I know of other plants which are attacked in their seeds, and at the same time are affected by fungi in the interior of the leaf structure, as those of the mango and loquat; so that here we have a large field for investigation, and one which I believe will prove serviceable in the study of vegetable parasites. Some months ago I inoculated two leaves of a Crassula plant with some fungus material from the Cup fungus; these leaves soon withered up and became full of mycelia; the next set of leaves one after another turned yellow and shrivelled up; the stem proper of the plant is exhibiting a crown of leaves supported by a long naked stem, from which many have fallen off, apparently having been similarly affected. The Cup fungus has not been reproduced, but mischief has been done to the plant, which is still under observation.

SOME NOTES ON TRANSFORMATIONS OF AUSTRALIAN LEPIDOPTERA.

By Henry Edwards.

It is somewhat singular that so little attention has been paid to the earlier stages of the moths and butterflies of Australia, for with the exception of Lewin's admirable drawings of 16 species, a few in Professor M'Coy's valuable "Prodromus," and it may be about 50 or 60 species scattered throughout various periodicals, there is nothing to be mentioned with reference to this most interesting branch of entomological study. The value of a knowledge of the preparatory stages is, however, day by day becoming more apparent, and as a help to proper classification of the various groups, its importance cannot well be overrated. I am aware that in the descriptions which follow I have been anticipated by other entomologists in the case of some species, but this is a matter of little moment, as it differs greatly in its effect from making synonyms in the description of the imago, for all eyes see not things alike, and even a score of diagnoses of the earlier stages of a given form may be of use, as some details may escape the eye of one observer and yet be apparent to that of another. It is only by fragments that the superstructure can be built up, and, properly regarded, every fact, however trifling, must prove of value to the student of natural science. It is my intention shortly to publish a "Bibliographical List of Transformations of Australian Lepidoptera," and I beg of all who have notes on the larvæ or pupæ of any species to put them at once into print, so that my proposed list may be as complete as possible. In

the following descriptions the head is always regarded as the first segment.

RHOPALOCERA.

DELIAS TEUTONIA. Don.

Egg.—Cylindrical, slightly narrowing at both ends, longitudinally ribbed with about eight deep furrows. The colour is bright orange, arising from the presence of the young larva, as after exclusion the shell of the egg is pure pearly white. The eggs are deposited on the terminal leaves, a little space apart, looking like a series of miniature ninepins, which they much resemble in shape. Of two clusters which I examined, one contained 25 and the other 19 eggs. Length, 1 mm.

Young larva (on exclusion).—Dull orange yellow. Head and anal segment blackish brown. Each segment bears a series of long hairs, those of the anterior segments being the longest. As they are hatched, the larvæ begin to feed greedily upon the shell of the egg, which they very speedily consume. Length, 2 mm. I regret that owing to the difficulty of procuring the food plant, I was unable to carry the larva beyond the first stage.

Chrysalis.—Dull white, the colours of the mature insect showing through the transparent skin. The head case is pointed and rather rough. The thoracic region highly elevated into a roughened ridge, and bearing at its junction with the abdomen two acute spines. The abdomen is mottled with black, and there is on each segment a small sharp ridge-shaped protuberance, and on each side of this two small sordid-white shining tubercles. The lateral region is broadly white, enclosing the spiracles, which are dull yellow. Wing and antennæ cases ample, the latter very distinctly shown. The chrysalis of the male is invariably one-sixth larger than that of the female. Average length, 18 mm.; width, 4 mm. Food plant—*Capparis mitchellii.*

PAPILIO ERECTHEUS. Don.

Larva (after 1st moult).—The young larva presents a singular general resemblance to that of *P. calchas* of North America, which, like the present species, is, in its earlier stages, very destructive to the foliage of the orange tree. Its ground colour is dull pitchy brown, of a much lighter shade dorsally on the 3rd, 4th, 5th, 8th, 9th, and 10th segments, and clear chalk white on the middle of the 2nd, the whole of the dorsal and lateral regions of the 6th, and the dorsum of the 7th and 12th. The head is jet black, as are also the extreme lateral regions below the spiracles. From all the segments there issue rather long tubercular processes, armed with short setæ. Those of the 2nd segment are the largest, and are directed forwards; the others are nearly upright, or are very slightly directed backwards, these processes being always concolorous with the segments on which

they are placed. The feet, legs, and anal clasps are greyish white. Length, 15 mm.

After 2nd moult.—There is very little change except in size, and in the fact that the white portions are a little clearer than in the previous stage.

After 3rd moult.—The ground colour is now dark yellowish green. Head slate brown, with a white mark in front, like an inverted V. The sides of the head are somewhat ovately swollen, and very glossy, the mouth parts being pitchy. The 2nd segment has 4 tubercles, the two larger on the anterior edge being dull yellow. These are long, spinose, and slightly bent backward. Below these are 2 shorter ones, also yellow, and on the disc are 2 small tubercles tipped with white. The 3rd and 4th segment have each 6 tubercles, all tipped with dull yellow, the 2 subdorsal being the longest. The 5th has only 4 tubercles, all long, and having at their base some pale bluish spots. Posteriorly this segment is purplish black. The 6th, 7th, and 8th have 2 tubercles each, all tipped with dull yellow. On the 9th the tubercles are purplish black, springing from a dark oblique broad streak of the same colour. The 10th and 11th bear each 2 tubercles, dark yellow, tipped with black, and those of the posterior segments are dull yellow throughout, these tubercles being of the spinous character. On the side of the 10th is an obliquely oblong patch of purplish black, enclosing some white dashes. The lateral region enclosing the spiracles is clear white. The anal segment is dull greenish-white, with black blotches, and down the dorsal region run 6 rather oblique lines of pale green, giving a mottled appearance to the surface. The retractile tentacles of the 2nd segment are dull crimson, and are truncate at their tips. Under side wholly greenish-white, the feet and legs dull green, surmounted by a purplish black line. Length, 30 mm. From this stage there is no change to maturity, except in size.

Chrysalis.—When viewed sideways the body is keel-shaped, or much swollen below at the junction of the thorax with the abdomen. The head bears two large broadly triangular roughened processes, elevated above into a ridge. The thorax also bears a roughened dorsal prominence, and is slightly extended laterally into two smaller ones. The wing-covers are broad, and ridged outwardly, particularly where they touch the abdominal segments. The abdomen tapers somewhat suddenly to a point, the two basal segments bearing 4 slightly raised processes, the dorsal pair being the largest. Beneath, the abdomen is flattened and raised into lateral ridges. The colour is brown, mottled with green and black, and the upper part of the abdomen is dull whitish. The whole surface is rough, and there are minute raised black points along the course of the tongue-case, and on the basal portion of the thorax, while the markings of the

wings are clearly distinguished. Spiracles large, ovate, blackish. The anal segment is shaped like an extended horseshoe, much wrinkled, and surrounded by a deep groove. The cremaster is broadly truncate, the attachment being made by strong but fine silken threads. Length, 35 mm.; of head and thorax, 20 mm.; of abdomen, 15 mm.; width of thorax, 9 mm.; of wing-cases, 11 mm.; of base of abdomen, 14 mm.

Ialmenes evagoras. Don.

Chrysalis.—Pitchy black, with dull yellow lines marking the course of the abdominal segments, a yellow line also dividing the head from the thorax. A yellow line also proceeds dorsally from the head to the base of the thorax, and thence around the edges of the wing-covers. The tongue and antennal cases are also edged with yellow. The head is slightly produced in front, and the thorax bears a somewhat elevated ridge, highest in the middle, and swollen at the sides into a faint protuberance. Length, 15 mm.; width, 6 mm. The caterpillars are well known to be gregarious, and to spin a common web on the branches of Acacia, to which they attach themselves by a silken girth, and undergo their transformation with the head downwards. One small branch in my possession bears 34 chrysalides contained in a space of 4½ by 3 inches.

Euploea corinna. Macleay.

Chrysalis.—Short, much swollen about the abdominal region, and raised there above into a hump. The thorax is also raised, but in a less degree. Head truncate in front, eyes and antennal cases quite prominent. The thorax is oblique to its junction with the head. Colour, olivaceous brown with large burnished silver patches, these latter nearly covering the whole surface, and giving the chrysalis a most brilliant and attractive appearance. The eye and wing cases, base of the antennal covers, 3 spots at base of the head, 2 on the sides of the thorax, 2 at its base, a treble macular row on the abdomen, and its under side, are all burnished silver, and on the abdomen are some faint shades of gold. The posterior segments are dark brown, as is also the long, roughened, bifurcate cremaster. Across the centre of the wing-covers, runs a medium-sized olive-brown band, bent at a sharp angle in its centre, and not reaching the base of the wing. Length, 18 mm. Width of abdomen, 10 mm.; of thorax, 7 mm.

Heterocera.

fam., sphingidæ.

Cequosa australasiæ. Bois.

Pupa.—Dark pitchy, cylindrical, gradually tapering posteriorly. Tongue-case flattened against thorax. Antennal cases strongly marked, transversely wrinkled. Head and thorax also rugosely

wrinkled transversely. Wing-cases rather glossy, with irregularly waved striæ. The abdominal segments are smoother than the head and thorax, but have very distinct irregular punctures and some deeply waved wrinkles. Cremaster rough, keeled, and bifurcate at tip. Length—male, 50 mm.; female, 60 mm. Width—male, 18 mm.; female, 23 mm.

From cast skins of the larvæ, the head appears to be produced above into a conical form, the face covered with roughened oblong tubercles, the segments bearing short setiferous spines. Anal segment also with a margin of closely set bristly spines.

FAM., ZYGÆINDÆ.

AGARISTA GLYCINE. Lewin.

After exclusion from egg, the young larvæ are dull yellow in colour, pale olive on the dorsal region, head and three anal segments conspicuously of the yellow shade. Each segment bears 8 black tubercles, carrying a thin bunch of white hairs. The 3 anal segments projected into a hump-like form. The tubercles have a bluish reflection. Feet and abdominal legs blackish orange. Length, 4 mm.

After 1st moult.—Head and 2nd segment orange. Ground colour of other segments clear white, all bearing black tubercular spots, those of 2nd and third being oblong in form, the rest somewhat triangular. These spots are so large as almost to obscure the ground colour of the body. There are dorsal and sub-dorsal slightly interrupted white lines, which run from the base of the 2nd to the base of the 11th segment. The 12th, which is humped, bears a large orange blotch, with black tubercular spots. Anal clasps, feet, and legs dull olive, with black markings. Length, 8 mm. The caterpillar in this stage has the habit of putting out threads, by which it descends from leaf to leaf.

FAM., BOMBYCIDÆ.

NOLA LUGENS. Walk.

Larva (full-grown).—Ground colour pale fawn drab. Head pale chestnut brown, mottled in front with a darker shade. There is a dorsal line of lilac-brown, somewhat waved in its outline, and edged by blotches of pale yellow on segments 4, 5, 6, 7, 10, 11, in the centre of which blotches is a raised pale yellow tubercle. The tubercles are absent on 8 and 9, and the yellow band on these segments is less distinct. There is a sub-dorsal somewhat interrupted narrow band of dark brown, edged with yellowish, and below the spiracles, which are dull yellow, is a darker yellow line. In the male larva the yellow tubercles spoken of above are visible on *all* the segments. Under side, feet, and legs yellowish white. The whole surface is sparsely covered with pale drab hairs, those of the anterior segments being the

longest, and the larva has the singular habit of carrying on these the dry skin of the previous moults. This gives a very curious appearance to the caterpillar, at first sight somewhat like the tufts in the larvæ of *Orgyia*. Length, 15 mm. Food plant—Eucalyptus. Spun cocoons 5th to 10th November. Emerged 19th to 25th November.

Cocoon.—Finely but strongly spun, and in the case of my specimens cemented firmly to the lid and sides of the box in which the transformation was undergone. The colour is dull slate grey, and the cocoon is covered above with chips of the paper lining. The head of the cast skin of the larva is in all cases attached to the forward part of the cocoon. Length—male, 9 mm.; female, 16 mm.

ANTHEREA EUCALYPTI. Scott.

Young larva (on exclusion from egg).—Velvety black, head shining. The 3rd segment bears 3 transverse orange tubercles, behind which are 4 rather indistinct white spots. The 6th segment has 2 orange tubercles, while those of 7th, 8th, and 9th are orange at the base only. They all bear black hairs. Behind number 6, running posteriorly to 10, is a double subdorsal interrupted fine white line. Anal segment with two dull orange raised tubercles. Length, 5 mm.

SPILOSOMA OBLIQUA; Bois. ARDICES CANESCENS; Walk.

Egg.—Spherical, dull yellowish white, changing in about seven days to dull slate colour, the black head of the future larva being seen through the shell. The eggs are laid in irregular masses upon the stem or lower leaves of the food plant. The young larvæ are hatched in from 8 to 9 days, and are sordid white with long black hairs. The head is black, and the 2nd segment is marked transversly with blackish brown. Length, 3 mm.

TEARA TESSELATA; Walk. AGLAOSOMA LAUTA; Scott.

Pupa.—Dark pitchy, very glossy, cylindric-ovate in outline, rounded at both extremities. The abdominal segments are palest at their junction, and irregularly punctate. Wing-cases finely but numerously wrinkled. The cremaster is a slightly raised ridge, divided in the middle, with 8 somewhat bifurcate teeth. The pupa is enclosed in a very thin web on the surface of the ground. Length, 30 mm. Width, 10 mm.

The late Mr. Scott was certainly right in placing this species in a separate genus, as the caterpillars of *Teara* are gregarious, and have the habit of elevating the head and tail when disturbed, as is the case in the species of the North American genus *Datana*.

CALEPTERYX COLESII. Walk.

The female of this large insect lays from 250 to 300 eggs. The pupa is dark pitchy and some of the cocoons, the hairs

from which are very poisonous if they enter the flesh, measure from 4½ to 5 inches.

OPSIRHINA FERVENS. Walk.

Egg.—Globular, slightly flattened on the side of attachment, pale reddish brown in colour, mottled and streaked with dull white. They are deposited singly, or in bunches of 3 or 4.

Larva (full-grown).—Dull slate grey, covered throughout with very short velvety pile, and mottled indistinctly here and there with yellowish and black. Head very broad, of the same width throughout, indented over the mouth parts, which are surmounted by short bristly hairs directed forwards. The 2nd segment is as broad as the head, and from its base runs a double black dorsal line, spreading out on each segment, and terminating on the 11th. Between the 3rd and 4th and the 4th and 5th are black velvety folds, only visible when the larva is in motion; while from the base of 4 is a pair of long filamentary processes, directed forward, and about 4 mm. in length. On 11, directed posteriorly is a large triangular flap raised above the segment, and giving the idea of the blunt caudal appendage of a Sphinx. There is a lateral narrow black line above the spiracles, and from 3rd to 11th inclusive the segments are developed in large corrugated folds. The anal clasps are very wide, and are obtusely angular in form. At the base of all the legs are bunches of short grey hairs. The under side is dull chestnut brown, feet and legs of the same colour. Length, 47 mm.

Pupa.—Pitchy black, rounded before and behind, thorax and wing-covers with waved striæ. Abdomen deeply punctate, each puncture bearing a fine short bristle, those on the terminal segments being extremely thick, and giving a very rough surface. Length, 30 mm.; width, 12 mm.

Cocoon.—Very closely spun, the inner part of tough white silk fibre, outer layer dull drab, loosely placed, and generally with fragments of leaves and twigs intermixed. Length, 40 mm.; width, 20 mm.

Is not *Pinara divisa* (Walk.) = this species?

THYRIDOPTERYX HERRICHII. Westwood.

Larva (full-grown).—Head and 2nd segment sordid white, the markings on the head being very faintly traced, the ornamentation consisting of waved lines and spots of a very pale brown; 2nd segment with broader and stronger lines of brown arranged longitudinally; 3rd segment brown, with 4 pale longitudinal lines. Rest of the body pitchy, as are also the feet and legs. The case is of fine silk, closely compacted, biconical in shape, and with 6 longitudinal raised ridges. Fragments of bark and leaves are attached to the lower extremity.

OIKETICUS SAUNDERSII. Westwood.

Larva (full-grown).—Head chestnut colour, mottled with a darker shade. Body dull pitchy black, segments 2, 3, and 4 with 5 longitudinal streaks of dull orange, and a sordid white dorsal line. The rest of the body is pitchy black, except that on the sides of 5, 6 and 7, above the spiracles, are some oblique dull orange dashes. The head, tarsi, and anterior segments bear a few tawny hairs. Length, 60 mm. Width, 9 mm. This species has made its appearance in Victoria within the past 30 years, and is now extremely abundant, though difficult to raise to the imago. The larva feeds voraciously on the imported *Pinus insignis*, and the case, which is lined with fine drab silk, is ornamented with fragments of the leaves and stems of its food plant.

CORRESPONDENCE.

To the Editor of the Victorian Naturalist.

DEAR SIR,—In the February-March number of the *Naturalist* a letter appears from Mr. C. French, jun., recording the finding of two (2) eggs of the Bronze Cuckoo in one nest.

I do not think that it necessarily follows that the two eggs were laid by the one bird, but would like to have the opinion of older oologists on the matter.

In my note-book, under date 20/2/90, I find the following :— "My attention was attracted to-day by the very peculiar behaviour of a pair of crows and two other birds, who, on closer inspection, proved to be young Channel-bill Cuckoos *(Acythrops novæ hollandiæ)*. I had heard that the crow was the foster parent of this, the largest of our Australian cuckoos, but had never before noted them in company. What struck me as remarkable was the fact that there were two young cuckoos being reared by the one pair of crows."

This, I think, is a parallel case with that of your correspondent. That eggs of two and even three varieties of Cuckoo have been taken in one nest I am well aware, but never before noted two of one species being reared in the same nest.

Trusting this may be of interest to some of my fellow members, yours, &c.,

E. M. CORNWALL.

Townsville, Queensland, 22nd March, 1890.

CURRENT NOTES.

CURIOUS ACTION OF BUTTERFLIES.—The following observation of that prettiest of our Victorian butterflies, *Papilio macleayanus*, may prove of interest to those members of our club who collect Lepidoptera. This butterfly (specimens of

which are exhibited on the table to-night) is accounted a rarity by nearly if not quite all collectors, and being a rapid flyer, and only to be found in the mountainous parts of Gippsland, the opportunities of studying its habits are of comparatively rare occurrence. In January last I visited Sassafras Gully, in the Dandenong Ranges, and while there was fortunate enough to see numbers flying about in their native wilds. The butterflies hover around the flowers of the common dandelion, which appears to be the food-plant of the caterpillars, and while extracting the sweets of the flower, the wings of the insect are kept fluttering up and down in a state of perpetual motion. Whether this is simply to balance themselves, or is a protection against the attacks of birds, is a debatable question. One habit struck me as being very peculiar. While walking along the edge of a mountain stream I was surprised to see one of these butterflies alight close to the water, into which it backed till the whole of the body and the lower part of the hind wings were submerged, the two forelegs alone retaining their hold of the dry land. After remaining in this position for something like half a minute it flew away, apparently refreshed. During the morning I noticed quite a number doing the same thing. In one instance no less than four were to be seen within a space of not more than three yards, and to make sure that I was not deceived I captured several as they rose from the water, and found in each case the body and lower edge of the hind wings quite wet. While in the water the fluttering of the wings, so noticeable at other times, was suspended, and so intent were the butterflies in the enjoyment of their cold bath that they would hardly move, even when actually touched by the net. Apparently the heat of the weather drove them down to the water, as immediately they emerged they flew up again to the hillsides. I have often noticed butterflies of the *Nymphalidæ* family settling near the pools, and apparently imbibing the moisture from the damp sand round the edges, but never before have I seen butterflies enter the water. Possibly it may be a peculiar habit of this particular species or genus. Numbers of the white butterfly, *Pieris harpalyce*, were flying about at the same time, but I noticed none alight near the water.—Geo. Lyell, Jun., South Melbourne.

Australian Birds' Nests and Eggs.—The Trustees of the Australian Museum, Sydney, have now nearly ready for publication a work under the above title, by Mr. A. J. North, F.L.S., an assistant at the Museum, and a member of the Field Naturalists' Club of Victoria. The work will contain 21 plates, and the price will be twelve shillings and sixpence. We believe copies with coloured plates may be obtained at an extra cost of about £2, but it is necessary to communicate with the Museum authorities regarding them.

A New Victorian Butterfly.—In the "Proceedings of the Linnean Society of New South Wales," second series, vol. iv., part 4, page 1,065, just issued, Dr. T. P. Lucas, a former member of the Field Naturalists' Club of Victoria, describes a number of new Australian Lepidoptera, among which is *Heteronympha affinis*, Luc., closely allied to *H. banksii*. Localities, Brisbane and Gippsland.

Australian Lepidoptera.—The Trustees of the Australian Museum, Sydney, announce the publication, in parts, of a work on "Australian Lepidoptera and their Transformations," by the late Alex. Walker Scott, with illustrations drawn from the life by his daughters, Harriet Morgan and Helena Forde. The manuscripts and drawings of the late Mr. A. W. Scott, relating to the life-histories of many of the Australian Lepidoptera, having passed into the possession of the Museum, it has been decided to continue the publication (of which three parts, containing nine coloured plates, were published by Van Voorst, in London, in 1864), which will be edited and revised by Mr. A. S. Olliff, F.E.S., and Mrs. Helena Forde, in parts, each containing three foolscap (17 x 13½) plates, coloured by hand. The publication will commence with part 1 of vol. ii. (price, fifteen shillings), and only those species of which the transformations were known to Mr. Scott will be figured. A reissue of the three earlier parts, forming vol. i., will shortly be available for purchase.

We are very glad to congratulate Mr. D. M'Alpine upon his appointment as Consulting Mycologist to the Victorian Department of Agriculture. We have confidence that the Rust and similar rural troubles will now be dealt with in a scientific manner. With Mr. French to watch the insects, and Mr. M'Alpine to look after the fungi, our farmers' pests should have a rough time of it. Such appointments are evidence of a more enlightened administration, which we very cordially welcome.

Professor M'Coy has issued the twentieth of the Decades of Victorian Zoology, thus completing the second volume. The present Decade contains plates and descriptions of two of our common lizards—*Hinulia whitei* and *H. quoyi*; of three more fishes—the brilliantly-coloured Dragonet, *Callionymus calauropomus*, the Common Red Gurnet, *Neosebastes scorpænoides*, and a new species of *Trachinops*, which appeared suddenly in large numbers in Port Phillip in 1884; of more of Dr. Macgillivray's Polyzoa; of the two butterflies, *Pyrameis kershawi* and *P. itea*, and the handsome moth, *Chelepteryx collesi*; of the crab-lobster, *Ibacus peronii*; and of three of our commonest starfish, *Asterina calcar*, *A. gunni*, and *Tosia aurata*. A goodly number, and the plates are excellent.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

VOL. VII.—NO. 3. JULY, 1890.

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

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THE

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Vol. VII.—No. 3. JULY, 1890. No. 79.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

The tenth annual meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th June, 1890.

The president, Mr. C. A. Topp, M.A., LL.B., F.L.S., occupied the chair, and about 45 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library :—"Records of the Australian Museum," vol. i., part 2, from the Museum; "Transactions of the Geographical Society of Australasia (Victorian Branch)," vol. vii., part 2, from the Society; "Annual Report, Bendigo Science Society," 1889, from the Society; and "Journal of Pharmacy," May, 1890.

The hon. secretary read a brief account, by Mr. D. Le Souëf, of the club excursion to Tooradin on Saturday, 24th May (Queen's Birthday), which was very poorly attended owing to the wet weather prevailing in town, though on reaching Tooradin it turned out quite fine. Few plants were seen in flower; among these may be mentioned *Brachycome graminea*, *Aster glandulosus*, *Aster*, sp., *Senecio spathulatus*, and *Hakea nodosa*. Birds were also somewhat scarce the following only being seen, viz. :—Pied Grallina, Emu Wren, Striated Acanthiza, White-cheeked Honeyeater, Butcher Bird, White-shafted Fantail, Chestnut-breasted Thickhead, and Magpies; the latter, however, were very numerous. Clyde, some 4½ miles nearer town, was suggested as a favourable looking locality for a future excursion.

On a ballot being taken, Messrs. E. Anderson, T. Edwards, and P. R. Scott were duly elected members of the Club.

Annual Report.

The hon. secretary (Mr. F. G. A. Barnard) then read the tenth annual report, which will be printed and distributed to the members as soon as possible. It congratulated the members on the continued prosperity of the Club. Subscriptions for the year 1889-90 were received from 190 members, of whom 22 were ladies and 3 juniors. Nineteen papers, dealing with various branches of natural history, had been read. Numerous donations to the library had been received, and it is intended to publish a catalogue of it. The usual exhibition of wild flowers had been held, but the annual *conversazione* had been postponed for a year,

when it was intended to hold it on a larger scale. Many of the excursions had proved interesting and instructive, and a "camp-out" for ten or twelve days was suggested for the coming spring. The finances of the Club were in a good condition. The publication of the *Victorian Naturalist* was a heavy expense, but its circulation was extending, and a good demand existed for the earlier numbers, some of which were now unobtainable. It was suggested that four plates, illustrating important specimens, should be published during the next year.

The Rev. J. J. Halley, in moving the adoption of the report, congratulated the members on the healthy position of the Club, and suggested that it was not advisable to have too large a balance in hand, and that some of it might be spent in library accommodation. The motion was seconded by Mr. G. Sweet, and carried unanimously.

The hon. treasurer (Mr. D. Best) read the balance-sheet for 1889–90, which showed that the receipts for the year were £160 5s. 11d., and the expenditure £152 10s. 5d., thus adding £7 15s. 6d. to the credit balance of the Club, which now amounts to £71 7s. 6d. It was adopted, on the motion of Messrs. Dendy and Coghill.

The Rev. J. J. Halley proposed a vote of thanks to the retiring office-bearers, specially mentioning Messrs. Barnard and Coghill, who were retiring from the positions of hon. secretary and hon. assistant secretary after six years' service. The motion was seconded by Mr. J. N. M'Kibbin, and carried unanimously.

Messrs. Barnard and Coghill thanked the meeting for its kind recognition of their efforts, and trusted they would still be able to be of some service to the Club.

In accordance with notice of motion, Mr. F. G. A. Barnard moved that the words "secretary and assistant secretary" in Rule 10 be altered so as to read "and two secretaries." Seconded by Professor Spencer, and carried.

OFFICE-BEARERS, 1890–1.

The following office-bearers for 1890–1 were duly elected:—President, Mr. C. A. Topp, M.A., LL.B., F.L.S.; vice-presidents—Professor W. Baldwin Spencer, M.A., and Mr. H. T. Tisdall, F.L.S.; hon. treasurer, Mr. D. Best; hon. librarian, Mr. F. G. A. Barnard; hon. secretaries—Mr. D. Le Souëf, Parkville, and Mr. J. S. Hart, M.A., B.Sc., Brighton; committee—Messrs. A. Dendy, M.Sc., F.L.S., C. French, F.L.S., C. Frost, A. H. S. Lucas, M.A., B.Sc., and F. Wisewould.

On the motion of Professor Spencer and Mr. Coghill, Messrs. Barnard, French, Frost, and Le Souëf were appointed as a committee to report at next meeting as to a suitable locality for a "camp-out" as suggested in the annual report.

NATURAL HISTORY NOTES.

Mr. A. Dendy, M.Sc., reported that he had found a planarian, *Geoplana cœrulea*, at St. Kilda, the species having been recorded only once before.

Mr. C. Frost read a number of notes of cases of illness said to have been caused by bites of the red and black spider *Lathodectus scelio* (Katipo); and also described some experiments made by himself on various animals.

Mr. F. G. A. Barnard read an extract from the report of a recent collecting trip to Mount Kosciusko, N.S.W., published in the "Records of the Australian Museum," in which the author gave some particulars of the occurrence of the moths known to the aboriginals as "Bogongs" or "Boogongs," and said that they had proved identical with a noctuid moth, *Agrotis spina*, which was very common in all parts of Victoria in November last.

The following were the principal exhibits of the evening:—By Mr. D. Best.—Two boxes of Australian Coleoptera, families Lucanidæ, and Chrysomelidæ. By Mr. A. Coles.—Regent Birds in various stages of plumage. By Mr. J. E. Dixon.—Sixty species of Victorian Coleoptera, &c., including several rare species. By Mr. C. French, F.L.S.—Larvæ of moth, *Nyctemera amica*, with larvæ of ichneumon taken from body, obtained at Caulfield; also drawing of moth. By Mr. C. French, jun.—Eggs of Yellow-legged Spoonbill, from Kerang. By Mr. G. Lyell, jun.—Case of Victorian butterflies, viz., *Delias aganippe*, *D. harpalyce*, *D. tuetonia*, *Terias smilax*, and *Papilio macleayanus*. By Baron F. von Mueller, K.C.M.G.—New Australian plants—*Helipterum fitzgibboni*, collected about a hundred miles north of Eucla, W.A., by Mr. J. D. Batt; and *Helipterum incanum*, var. *irvinæ*, from Barrier Ranges, N.S.W., collected by Mrs. Irvine.

After the usual *conversazione* the meeting terminated.

EXCURSION TO PORTARLINGTON, SATURDAY, 15TH FEBRUARY.

THERE was ample accommodation for your party on board the *Courier*. After taking due note of the probably unique congregation of bacteria and their products in the pool, we were glad to find in the last reach of the river that there was a rather fresh head wind, which served to blow away any lingering odours from the vessel. On the mud-flats at the mouth of the Yarra the Pacific Gulls were feeding in a great multitude on the worms and shell-fish, while in marked contrast about half-a-dozen Cormorants sat perched in gloomy isolation watching for a stray fish, or digesting a previously captured breakfast.

As the steamer passed the last Williamstown pier, a shoal of the common large jelly-fish was encountered, whose green tentacles streamed prettily away behind the pellucid disc, producing pretty colour effects as seen through the somewhat similarly tinted water. As none were seen in mid-voyage, or near Portarlington, it seemed that the wind had driven the shoal up to Hobson's Bay.

A strong easterly gale of a few days before had strewn the Portarlington beach with specimens. Hundreds of the perfect tests of Sea-eggs of the two commonest species, *Strongylocentrotus erythrogrammus* and *Amblypneustes ovum*, in places littered the shore. A living specimen of the rare crustacean, *Ibacus peronii*, was one of the first captures. A little further on a pretty green Blenny, *Clinus despicillatus*, was found thrown up on a bank of weed.

The tide was ebbing fast, and your party had the advantage of examining the rocks, sands, and mud-flats under particularly favourable conditions. The shell-beach near to the pier was passed quickly over as it is a feature of Portarlington which can always be examined by visitors. The low reefs which succeed had weathered and softened to a sort of still firmly adhering mud, in which numbers of Modiolæ had formerly found moorings. Their open valves projected conspicuously above the surface, but all were dead shells; no animal was to be seen. On weeds and under the shelter of jutting ledges of the reefs the gorgeous Pheasant Shells, *Phasianella tritonis*, had their headquarters. In no other part of Port Phillip are they more abundant.

On the mud and sand flats the commonest mollusc is a Venus, *Chione conularis*, used for bait by the fishermen, as is *C. lævigatus* at Sandridge. The low rocks were occupied by thousands of periwinkles, of characteristically Australian genera, *Trochocochlea* and *Risella*, and of the air-breathing genus *Siphonaria*.

Under loose stones below low water mark we found the prickly sea-urchins, large black brittle-stars, sea-cucumbers, several kinds of sea-anemones, ear-shells (*Haliotis nævosa*), and cones (*Conus anemone*), whelks (*Fasciolaria coronata*), and good specimens of the pretty orange-red sponge, *Tethya*.

Later on, meeting some old friends, we were introduced to and kindly entertained by Mr. Oaks, who has a pleasant residence close to the rocky shore. This gentleman had gathered many specimens thrown up during the easterly gale before mentioned, and amongst them we noticed fine examples of the Paper Nautilus (*Argonauta oryzata*), of the large scallops (*Pecten fumatus* and *P. asperrimus*), of *Ancillaria marginata*, and of other dwellers in the deeper waters of the bay. The waters must have been stirred to their very depths by the storm.

The excursion was, then, an interesting one. A large number

of marine forms were observed, of which some were taken home alive for more leisured observation. It should perhaps be added that the party consisted of the leader only.

A. H. S. L.

NOTE FROM BOTANIC GARDENS.

An interesting object to visitors to the Melbourne Botanic Gardens who are unfamiliar with the Banana plant, is the *Musa ensete* ("Bruce's Banana"), Abyssinia, of which there are several specimens positioned near that portion of the grounds devoted to medicinal plants. The director, Mr. Guilfoyle, had these *Musas* put out three or four years ago as small plants, and they now vary in height from 10 to 18 ft. The false stems formed by the sheaths of the leaves are in some instances nearly 3 ft. in diameter. The largest of the leaves, which are of a beautiful bright green, and have a thick highly coloured red midrib, on measurement was found to be 12 ft. in length and 3 ft. in width. One of the plants is now flowering. The spike is 4 ft. long, and still indefinitely increasing. The bracts are in the first stage of a rich colour, and as each whorl expands there is exposed to view a new set of floral organs, which ultimately develop into rings of fruit around the spadix. Although one of the hardiest of the genus for ornamental and sub-tropical effects in sheltered positions of groupings, the fruit of this species is said to be very dry and inedible, unlike *Musa sapientum*, *M. cavendishii*, and others of the eighteen or more described species and varieties.—F. P.

Some years ago an effort was made, especially by the Fish Acclimatization Society, Geelong, to stock the streams along this coast with English trout and Californian salmon, and it cannot but be satisfactory, not only to the members of that society but to anglers generally, to learn that the effort has not been fruitless. Lusty specimens of both fish have been seen at various times up and down the streams, and several gentlemen have succeeded in landing nice trout, but the finest seen was a beautifully marked one caught in the Erskine River a few days ago by Mr. W. A. Mountjoy. It measured 19 in. and turned the scale at 2½ lbs. It is questionable, however, whether the fry supplied by the society are not too small and young, and therefore at the mercy of the voracious mountain trout that abound in our creeks and rivers.—*Argus*, "Notes from Lorne."

The efficacy of inoculation against anthrax, according to M. Pasteur's method, is demonstrated by the fact that 30 sheep inoculated in June, 1888, in New South Wales, have been living ever since without injury to their health in company with anthrax-infected animals.

NOTES ON THE GEOGRAPHICAL DISTRIBUTION OF SOME AUSTRALIAN BUPRESTIDÆ.

By C. French, F.L.S., F.R.H.S., Melbourne.

Part I.—Introductory.

The subject of geographical distribution being such a vast one, it has occurred to me that I might possibly be doing some little good by offering a few notes on the distribution of certain kinds of this most splendid family of beetles. It is with this hope that I venture to place before you a few facts, somewhat imperfect I admit, and to secure, if possible, for our own colony, the publication of many localities for both genera and species of the great group of the Buprestidæ, which there are good reasons for believing have not yet been recorded or credited to us as having been captured in Victoria.

As an example I may refer you to the excellent catalogue of Australian Coleoptera published by my esteemed correspondent, Mr. George Masters, F.L.S., of Sydney, N.S.W., in which a large number of species are recorded as having been found in New South Wales, Queensland, &c., but instances of the same insects having been taken in Victoria are rare in the extreme, and these omissions are what I wish and hope to supply in the present notes.

As to the uses of keeping records of observations on the geographical distribution of either plants or animals of any country, I may instance the fact that all scientific zoologists and botanists attach great importance to such matters, as in addition to the great interest centred in such records, it enables the scientific worker to trace the various gradations, and in many cases furnishes a clue to matters that might otherwise be difficult of determination; also in the elucidation and fixing the position of both genera and species.

From the splendid work of Alfred Russell Wallace, of London, on the geographical distribution of animals—and for the possession of which I am indebted to the author, who kindly made me a present of one of the earliest issues of the two handsome volumes so well known to scientists—we shall see what views are held by this celebrated naturalist on the geographical distribution of insects. Winged insects, Mr. Wallace says, as a whole, have perhaps more varied means of dispersal over the globe than any other organized animals. Many of them can fly immense distances, and the more delicate ones are liable to be carried by storms and hurricanes over a wide expanse of ocean. They are often met with far out at sea. Hawk Moths frequently fly on board ships as they approach the shores of tropical countries, and they have sometimes been captured more than 250 miles from the nearest land. Dragon Flies came on board the

Adventure frigate when fifty miles off the coast of South America. A southerly wind brought flies in myriads to Admiral Smyth's ship in the Mediterranean when he was 100 miles distant from the coast of Africa. A large Indian buprestid beetle *(Chysochroa ocellata)* was quite recently caught alive in the Bay of Bengal by Captain Payne, of the barque *William Manson*, 273 miles from the nearest land. Darwin caught a locust 370 miles from land; and in 1844 swarms of locusts several miles in extent, and as thick as the flakes in a heavy snow-storm, visited Madeira. These must have come with perfect safety more than 300 miles; and as they continued flying over the island for a long time, they could evidently have travelled for a much greater distance. Numbers of living beetles, belonging to seven genera, some aquatic and some terrestrial, were caught by Mr. Darwin, in the open sea, seventeen miles from the coast of South America, and they did not seem injured by the salt water.

Almost all the accidental causes that lead to the dispersal of the higher animals would be still more favourable for insects. Floating trees could carry hundreds of insects for one bird or mammal; and so many of the larvæ, eggs, and pupæ of insects have their abode in solid timber, that they might survive being floated immense distances. Great numbers of tropical insects have been captured in the London docks, where they have been brought in foreign timber; and some have emerged from furniture after remaining torpid for many years. Most insects have the power of existing weeks or months without food, and some are very tenacious of life.* Many beetles will survive immersion for hours in strong spirit; and water a few degrees below the boiling point will not always kill them. We can easily understand, therefore, how in the course of ages insects may become dispersed by means which would be quite inadequate in the case of the higher animals. The driftwood and tropical fruits that reach Ireland and the Orkneys, the double cocoanuts that cross the Indian Ocean from the Seychelle Islands to the coast of Sumatra, the winds that carry volcanic dust and ashes for thousands of miles, the hurricanes that travel in their revolving course over wide oceans, all indicate means by which a few insects may at rare intervals be carried to remote regions.

In reading the above remarks, we are at once struck with their applicability in the case of many of the insects of our own colony, and who amongst our field workers have been to Brighton Beach and elsewhere along the shores of Port Phillip and have not observed hundreds of beetles and other insects lying strewed on the sands at about high-water mark? Buprestidæ, Longicorns, Elateridæ, Lucanidæ (with scarcely any limit to other orders, as

* I read a paper on this subject before the Microscopical Society of Victoria some years since.—C.F.

Hymenoptera, Diptera, &c.) all being mixed up like the dead and wounded after a shipwreck—some dead, others dying. The queston naturally asked is, How did these insects come here? Had they been desirous of escaping from the heat of the wooded shores by flying out to sea, becoming tired and blown into the sea by the force of the wind? or had they come from a long distance? And, supposing this last to be the case, how have they escaped the observations of the myriads of fishes, which are ever and anon popping up their heads and snapping up any floating insects which they may come across.

These and other similar matters are to my mind quite worthy of discussion and investigation, and one within the scope of the object sought by the original promoters of this club.

The occurrence of insects in this colony, many of which are well known to be introductions, has often puzzled me. I could of course account for the introduction of timber-feeding kinds, &c., but there are other insects which are mostly carnivorous, as the Dermestidæ, Blattidæ, &c., which are here, and their very undesirable presence is not quite so easy to account for, although they have doubtless come out in the holds of ships with cargo. In the matter of distribution, it is a strange fact that whilst the islands of the great Malayan region teem with the most gorgeous Buprestidæ, the lovely islands of the Polynesian Group have but few genera and species of this family, only a few species of the genus Paracupta, Chalcophora, and some minor kinds having as yet been discovered. (The literature on this subject being scattered and often difficult to obtain, I am open to correction in any of the statements regarding the recent discovery of both Polynesian genera and species.) The rich islands of the West Indies are comparatively poor in fine beetles, and especially in Buprestidæ, but in India and many parts of Africa, fine and large kinds are found. The splendid genera Chrysochroa, Euchroma, and Catoxantha have no representatives in either Australia or Polynesia. The genus Sternocera, noted in many cases for their brilliant metallic colours, is almost confined to these two portions of the globe. In New Zealand, with its endless and magnificent forests and all sorts of variations in geological formation, has, so far as has been ascertained, produced but two species—viz., *Buprestis ensyi* and *eremita*—neither of which are more than two lines in length, and of a dingy colour; whilst in the British Islands, also in the cooler parts of Europe and North America, a large number of genera and species, which, though in many cases are small in size, are handsome—and at times very destructive, the whole group being, in the larval stage, timber-borers.

Turning again to our Australian Buprestids, we find the largest, with few exceptions as *Chalcophora ajax*, *C. vittigera*, *C. waterhousei*, *Calodema regalis*, and a few others which may be

termed tropical, to be found in the driest and most arid parts of Victoria, South and Western Australia, the most showy kinds of the group being actually found in what may fairly be described as desert country, but as we proceed towards the Kimberley district, in the N.W., the Buprestidæ are few, small, and in many cases approach the smaller kinds of tropical Australia, although several of our finest and largest Victorian species are also found in Queensland, but hardly ever extending very far north. In the catalogue lately issued by Mr. Masters, and of which I have before spoken, the total number of described genera of Buprestidæ is 35, the total number of species being 414, of which number our colony is only credited with 7 genera and 33 species; and, with the new species lately described by various authors, I think that we may fairly assume that there are now about between 700 and 800 species known to science as coming from Australia, and as I proceed with the second portion of this paper I shall endeavour, with the aid of my own collection and those of my entomological friends, to point out a large number of authenticated species as having been taken in Victoria, such additions only to be recognized upon the testimony of those who have made the capture themselves, or can furnish authentic data for their statements as to the specimens having been taken in the colony.

I trust therefore that any member of the club having such specimens will bring them forward, so that the matter of their geographical range may be determined, and the same remark will apply to other families of the Coleoptera, and I can only hope that some of our entomological members will, at no distant date, follow up the present series of papers with their own observations on the distribution of the remaining orders of the Coleoptera.

With regard to the plan which I propose to adopt, I have thought it better to follow the most modern system of classifying the various genera, by placing them in systematic sequence according to their natural affinities, and I intend, as far as possible, to exhibit specimens of the various genera, both Australian and extra-Australian—the latter, at least, so far as they are required for the purposes of illustration and comparison.

THE Conservator of Forests is making extensive reservations in the mallee districts, for the purpose of creating forest reservations in that treeless part of the colony. A nursery is now being established at Gunbower Island, on the Murray, near Koondrook, with the view of growing sugar gums and other trees suitable for warm climates, and as soon as they are sufficiently advanced they will be planted on the reservations referred to in the mallee districts, and farmers in that part of Victoria will also be supplied with trees from the nursery.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS,

By Baron von Mueller, K.C.M.G., M. & Ph. D., F.R.S.

Polygala Tepperi.

Herbaceous, erect or ascending, much beset with very short appressed hairlets; leaves rather short, narrow linear, acute; flowers small, axillary or lateral, solitary or in some instances two together; pedicels very short, so also the peduncle if present; bract and bracteoles quite minute, persistent; outer sepals ovate-lanceolar, disconnected; inner sepals greenish, lanceolar, slightly falcate, their venules hardly perceptible; middle lobe of anterior petal conspicuously fringed, lateral petals pale, upwards dilated and nearly truncate; free part of filaments of most of the stamens very short; ripe fruit fully as long as the lateral sepals, acutely bilobed; seeds strophiolate, bearing a whitish silk-like vestiture.

Roebuck-Bay; W. Tepper.

Allied to *P. chinensis*, differing from the narrow form of that species already in often solitary flowers and in longer not rounded fruit-lobes.

Polygala stenoclada, in its typical state, has been sent from Port Darwin by Mr. M. Holtze; the leaves attain two inches in length, the racemes inclusive of the peduncle four inches, the pedicels ¼-inch; the anterior petal is towards the summit blue, and is cleft into only few lobes, which are thickish; the free part of the filaments is conspicuously longer than the anthers; the fruit has rounded-blunt lobes and no marginal expansion. The broad-leaved plant, referred to *P. stenoclada* as a variety by Bentham, has the pedicels shorter, the anterior petal more fringed and pink, and the fruit broader; this plant seems also always dwarfer and less slender, while the leaves are shorter. It approaches *P. chinensis*, but the racemes are elongated. It is now known also from the Don-River (Bird), the Elliot- the Cape- and the Burdekin-River (Bowman), the Kimberley-District (Nyulasy).

Polygala rhinanthoides occurs also at Port Darwin (Holtze), Thursday-Island (Rev. James Chalmers). Leaves may be seen 2½ inches long; the racemes contain in some instances as many as 30 flowers; the inner sepals occur not seldom in a marked way quilateral and acuminate. The plant is very closely related to *P. persicarifolia*.

Polygala arvensis is now known southward as far as the Paroo (Mrs. Spencer). *Polygala leptalea* and *Salomonia oblongifolia* were found also at Port Darwin by Mr. Holtze.

Helipterum fitzgibboni.

Annual, rather dwarf, beset with very short glandule-bearing hairlets; leaves broad-linear, darkish-green, somewhat clasping at

the base, revolute along the margin, usually blunt; headlets small, turbinate-hemispheric, singly terminating branchlets, closely approached by leaves, nodding; involucral bracts in many rows, all acuminated; the outer from reddish to black-brown, ciliolated; lamina of the inner white, comparatively broad, the stipes of these, except the innermost, thin, lanuginous near the lamina; receptacle much depressed; anthers soon almost completely exserted; achenes glabrous, rather pale, truncate, somewhat transparent; bristlets of pappus 6—12, short-plumous, yellowish at and towards the summit.

Tempe-Downs, R. Thornton; near Georgina-River, Alfr. Henry; Finke-River, Rev. H. Kempe; Lady Charlotte's Waters and west of Eringa, W. Tietkens; Nullarbor-Plains, J. Batt; Mount Moore, Edwin Merrall; remotest eastern sources of Swan-River, Miss Alice Eaton.

In the Systema to be inserted near *H. incanum.* The specific name of this exceedingly pretty "Everlasting" was chosen already some years ago in honour of E. G. Fitzgibbon Esq., who through a third of a century so dignifiedly held the onerous office of Melbourne town-clerk, and who with genial and enlightened circumspectness has also constantly promoted science-researches in the greatest of southern cities.

(To be continued.)

NOTES FROM THE ENTOMOLOGICAL DEPARTMENT OF VICTORIA.

THE last of the MSS. for part 1 of the new "Handbook of the Destructive Insects of Victoria," with 13 coloured plates, will be handed to the Government Printer about the end of next week, and I hope to have it out by the end of July, as it is urgently required for the coming spring.

A large number of valuable books have been added to the library, including Walker's "List of the Lepidoptera," 25 vols.; Buckton's "British Aphides," 4 vols.; "Catalogue of Hemiptera, Heteroptera, Hallicidæ, &c.," 16 vols.; "Proceedings of Linnean Society of New South Wales," complete from the beginning, 17 vols.; Baron von Mueller's and Professor M'Coy's works, bound, complete; Scott's "Lepidoptera of Australia," part 1, &c.

Many additions by purchase and exchange have been made to the collections of economic insects of Victoria and elsewhere, with examples of their life-histories, &c.

Communication has been established between this department and similar ones in Europe, America, India, the Cape, and elsewhere, with most favourable results.

The collection of insectivorous birds is being constantly added to, and where obtainable the nests and eggs of same will be shown, the latter presented by C. French, jun.

The plates for part 2 of the "Handbook" are being pushed on as far as time will permit.

First issue of part 1 of "Handbook" will consist of 8,000 copies, bound in limp cloth, after the style of Baron von Mueller's "Papuan Plants," &c. C. F.

New Zealand Entomology.—The prospectus has just been issued of a new book, entitled "A Manual of New Zealand Entomology," by Mr. Geo. Vernon Hudson, Fellow of Entomological Society of London, of Wellington, New Zealand. The work will consist of about 150 pages, and will contain 20 coloured plates, illustrating over 100 species of typical New Zealand insects in their various stages of development. There will also be a popular account of the structure of insects, mode of capturing and preserving entomological specimens, with special reference to New Zealand species. The price to New Zealand subscribers is announced as 10s. 6d. per copy.

Victorian Entomology.—Part 1 of vol. v. of the "Proceedings of the Linnean Society of New South Wales" is just to hand, and contains several papers of interest to Victorian entomologists. Mr. W. H. Miskin, F.E.S., gives a revision of the butterflies of the genus *Ogyris*, some of which are found in Victoria; and also describes several new species of the "blues" and "coppers," family *Lycænidæ*. Mr. F. A. A. Skuse continues his descriptions of Australian Diptera, the *Tipulidæ longipalpi* being treated in this portion; and Mr. T. G. Sloane contributes some observations on *Promecoderus* and allied genera of the Carabidæ beetles.

Excursion to Shelford.—On Queen's Birthday the members of the Gordon College Field Naturalists' and Science Club, Geelong, made an excursion to Shelford. Leaving Geelong about 7 a.m. in a large drag, breakfast was partaken at Leigh Road, and Shelford, about 30 miles, was reached at 11 a.m. Here some little time was spent in inspecting the admirable school museum collected by Mr. J. H. Betheras and his pupils, and the school gardens of the pupils. The oligocene tertiary clay deposit was carefully examined, and a number of well-preserved specimens of shells were obtained. After lunch, a visit was paid to the Valley of the Leigh, where some of the wildest and most romantic scenery in Victoria is to be found. The rocks are of silurian formation, and one cliff is fully 200 feet in height, and well worthy of a visit by students of cryptogamic botany, being covered with mosses and lichens. The view from Golf Hill was much admired, Mounts Elephant, Hesse, and Gellibrand standing out in bold relief. The zoologists of the party did not meet with much success, owing to the season of the year, and Geelong was reached again shortly before midnight.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

Vol. VII.—No. 4. August, 1890.

The Victorian Naturalist:

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— OF —

The Field Naturalists' Club of Victoria.

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

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Vol. VII.—No. 4. AUGUST, 1890. No. 80.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th July, 1890.

In the unavoidable absence of the president, Professor Spencer took the chair, and there was a good attendance of members and visitors. Amongst the latter were Mr. W. J. Ryott Maughan, the secretary of the Queensland Royal Society, and Mr. Leger Wallace, who were briefly welcomed by the chairman on behalf of the Club.

The hon. librarian (Mr. F. G. A. Barnard) read the monthly report of additions to the library. The following have been received:—"Annual Report of Secretary for Mines," 1889, and "Mining Report," March, 1890, from the Mines Department; "Synopsis of Queensland Flora," third supplement, by F. M. Bailey, F.L.S., from the author; "Papers on Australian Conchology," by J. Brazier, C.M.Z.S., from the author; "Notes on Australian Entomology," by T. G. Sloane, from the author; "Proceedings of Royal Society of Victoria," vol. ii., new series, from the Society; "Proceedings of the Royal Society of Tasmania," 1888, from the Society; "Proceedings of the Linnean Society of New South Wales," second series, vol. v., part 1, from the Society; "Journal of the Bombay Natural History Society," vols. iii., parts 1 and 2, iv., parts 1 and 2, v., part 1, from the Society; "Journal of Pharmacy," June, 1890, from the Society; "Transactions of the Royal Geographical Society of Australasia (Victorian Branch)," vol. vii., part 2, from the Society.

On a ballot being taken, Mr. E. Jones was duly elected a member of the Club.

The hon. secretary (Mr. D. Le Souëf) read the report of the sub-committee on the proposed excursion to Kent and Flinders Islands. The report was in favour of the excursion being held during the first fortnight of November, and stated that, if the *Lady Loch* were not available, arrangements could be made with Messrs. Huddart, Parker and Co. for the conveyance of the party. In the course of a short discussion the chairman pointed out that this trip would complete the results obtained from that to King Island. Probably the boundary of the Victorian and Tasmanian zoological districts would coincide with the line of deepest soundings passing through the group, and interesting results might be obtained by parties north and south of this line.

The report was adopted, and a sub-committee, consisting of Messrs. Frost and Le Souëf and Professor Spencer, was appointed to make the necessary arrangements.

Mr. F. G. A. Barnard pointed out that if the whole of the Kew Asylum reserve were sold by the Government, a valuable collecting ground would be destroyed. A strip of some 100 yards should be reserved along either bank of the Yarra.

The secretary was directed to communciate with the Premier on the subject.

Mrs. Martin read an account of work done in cryptogamic botany during the year, by herself and other members, and urged the advisability of establishing sections for the special study of such departments of natural history.

PAPERS READ.

Mr. G. A. Keartland read a paper entitled "Notes on the Australian Teal." Gould and other writers had considered the Chestnut-breasted Teal to be simply the male of the common species in nuptial plumage. It, however, is found at all seasons, and is certainly a distinct species, differing also in minor characters of the skeleton and colour of the eggs. It is especially found in hilly districts.

Professor Spencer described two rare hydroids, *Dehitella atrorubens* and *Ceratella fusca*, lately found for the first time in Port Phillip.

Mr. Luehmann, on behalf of Baron von Mueller, read a paper on some new species of plants—*Eriostemon carruthersi*, *Bassia sucedacea*, *B. luehmanni*, *Helipterum jesseni;* and also mentioned the discovery, by Mr. C. French, jun., of an orchid *Corysanthes unguiculata*, not before known from Victoria.

Mr. Wm. J. Ryott Maughan, the secretary of the Royal Society of Queensland, who was present at the meeting, exhibited a specimen of the *Sechium edule*, or Chocho, which has lately been successfully introduced into Queensland from Jamaica. The plant is perennial, cucurbitaceous, and a strong climber. The fruit weighs about 3½ lbs., and has only one seed, which projects from the end.

The principal exhibits of the evening were as follows:—By Mr. G. A. Keartland.—Common and Chestnut-breasted Teal and eggs. By Professor Spencer.—Two species of Hydroida. By Baron von Mueller.—Dried specimens of the plants above mentioned, drawings of different Bassias, and plates of other Salsolaceæ. By Rev. E. H. Hennell.—Fossil Shells from Muddy Creek and casts from the Moorabool River; Lignite from Harz Mountains, Germany; Lignite (?) from beneath 80 feet basaltic lava at Richmond, showing microscopic iron pyrites; petrified wood, showing the Teredo *in situ*, from the Moorabool River, near Lethbridge

By the Exhibition Trustees.—Three cases of birds from New Guinea, one of Dasyuri, one of Australian Parrots, one of Australian game birds, one of Native Companions, one of Lyre Birds; also, a pair of King Penguins from off the coast of New Zealand. This formed, probably, the finest collection of birds, with but one exception (viz., the exhibit of Mr. Andrews in the early days of the Club), which has been exhibited at our meetings. By Mr. C. French, jun.—The orchid *Corysanthes unguiculata*, from near Cheltenham. By Mr. J. Shephard.—A Rotifer, *Asplanchna brightwellii*. By Mr. F. Spry.—Queensland Lepidoptera; two Victorian butterflies (*Heteronympha banksii* and *H. affinis*) exhibited named for the first time. By Mr. J. Searle.—Land and freshwater shells.

REMARKS ON TEAL.

By G. A. Keartland.

(Read before the Field Naturalists' Club of Victoria, 14th July, 1890.)

In deciding to say a few words about our Teal, I have been influenced chiefly by the lack of interest that has been manifested in them. It is not my intention to dilate on their excellence of flavour, when properly cooked, nor is it my duty to point out their favourite haunt to the sportsman. The object in view is to endeavour, in my humble way, to assist in deciding a point that has been in dispute amongst our ornithologists ever since the days of Gould. During the expedition of a portion of this Club to King Island, in November, 1887, a member of the party—Mr. Frost, I believe—shot a fine specimen of the Chestnut-breasted Teal. This bird was described in the *Naturalist* of January, 1888, as *Anas castanea* (Chestnut-breasted Teal), Eyton. Unfortunately, however, no mention was made of the common sombre ones, which were found on almost every lagoon on the island, and on the sea coast. On mentioning this matter, some time afterwards, to a gentleman who takes great interest in our birds, my limited knowledge of ornithology received a sudden shock. The gentleman at once asked, "Have you never read Gould, or been to the Museum? You ought to know that we have only one Teal in Australia. The bird described by you is simply an adult male in his nuptial dress." This determined me to investigate for myself. In Gould's grand work there is an excellent plate of a pair of these birds. The picture of the male corresponds in every particular with this bird (No. 1), while either of the others might answer for the female. In the letter-press, however, it states that the male bird, on attaining a certain age, assumes this gay plumage as

his nuptial dress, for about three months, or just through the breeding season, and that for the remaining nine months he is clothed in the same modest garb as the female. Thus, you will see, according to the authority mentioned, the male Teal would moult twice within three months. Other authorities, probably quoting from Gould, follow in the same strain. Now this view clashes somewhat with my experience. It is generally known that the breeding months of our Teal are covered by the close season, which is from 1st August to 20th December; therefore, unless one breaks the law, these beautiful birds ought not to be found in any of our collections. I have shot them several times in the open season, and the specimen on the table to-night was shot on 12th June last. In order that there might be no doubt about the date of its death I took the bird in the flesh and showed it to Mr. Kershaw at the Museum on the following day. Whilst I was there Professor M'Coy paid a hurried visit to the room on business of his own, but he saw the bird and said the matter must be looked up. I must state here, in order to show that this is not an isolated specimen, that on the first Monday in May I saw eight pairs of these birds hanging in Mr. Jenkins's shop in Swanston-street. During June there were upwards of thirty, and since the first of this month I have seen many more. I think this conclusively proves that the change of plumage theory is an error. In support of my contention that they are a separate species the following comparisons are worthy of notice:—Two male chestnut-breasted birds turned the scale at 3 lbs. 1 oz., measured 28 inches from tip to tip of wings, and were 20 inches from tip of bill to end of tail. These birds were almost exactly the same weight, but, as showing a probable difference in age, this bird (No. 1) was very tender to skin, and seemed to be a much younger bird than the other. My wife, with an eye to economy and a nice dinner, decided to curry the bodies. They both had the same amount of boiling, but the flesh of this one was over-cooked before the other was tender enough to be eaten. I next selected this pair of sombre Teal (No. 2). This bird proved to be an old male, and when his body was submitted to the same process as his predecessors proved hard and tough when the other was boiled to pieces. This pair of birds weighed 2 lbs. 3 ozs., and measured 18 in. from beak to tail and 26 in. across the wings. The bird numbered 3 is a young male in his first year. It will thus be seen that there is not only a difference in plumage but also in measurement, and a still greater difference in weight. The birds were all in about the same condition, so far as fat and flesh were concerned. After they were cooked I made a still further comparison of the bones. Those of the sombre variety were so much smaller than the others as to be easily distinguished.

It may interest our oologists to know that I have also eggs of

each species. Those of the Chestnut-breasted Teal are a rich cream colour, while the others are white. I have examined eggs from four nests of the sombre birds, and they were all alike ; but I have seen several lots of eggs in other collections, labelled Common Teal, which I feel sure are those of the Chestnut-breasted.

I would like also to point out that, for many years, our duck-shooters have regarded them as distinct varieties. The bright coloured ones are called Mountain Teal and the sombre ones Common Teal.

The habitat of the two kinds are also different. Mr. Jenkins informs me that all the gay birds he gets are from Gippsland, but that his chief supply of the common ones are from the Murray Flats. This agrees with my own experience, for although I have found the two varieties on the same lagoon, I have almost invariably met with the gay birds in pairs, or small flocks of six or seven, while the sombre ones can be seen in hundreds. Whilst the common ones are met with in the waterholes on Keilor Plains and other flat country, you must go to the hilly districts to find the chestnut-breasted ones. In conclusion, I would like to say that what I regard as a mistake on the part of some collectors in naming their eggs may arise from the similarity of the female birds.

[Since writing the foregoing, I have been informed that Dr. Ramsay, of Sydney, holds the same views as myself, and whilst allowing the chestnut-breasted variety to retain the old name, has suggested *Gibberifrons* as the correct name for the common one. I cannot find any other authority to support my opinion, but would like to hear the experience of others on the subject.—G. A. K.]

With regard to Mr. Keartland's paper on the two varieties of Teal, I may quote a few remarks made by Mr. Sclater, the secretary of the London Zoological Gardens, on the subject. He says :—"In August, 1879, we purchased a lot of eighteen Australian ducks, which, at the time of their purchase, I had believed to be the Chestnut-breasted Ducks (*Anas castanea*) in female plumage or non-nuptial dress, but which I now believe to be the *Anas gibberifrons*, or Slender Duck. There were six pairs, but they did not breed in 1880 nor in 1881, but in 1882, in March, a pair hatched out four young birds, which did well. There is no longer any doubt, therefore, that we have to deal with a species, which, however much it may resemble the female of *Anas castanea*, is quite distinct, and of which the sexes, as may be proved by the examination of our breeding birds, are very nearly alike, the female being merely slightly smaller in size and duller in plumage. It is, in fact, the species described in the *Ibis* for

1869 by Dr. Buller, from New Zealand specimens, as *Anas gracilis*, but subsequently identified by Dr. Finsch in 1869 with *Anas gibberifrons*. As regards the synonyms of this species, after the positive statement of Dr. Finsch and Prof. Schlegel, I think we can hardly accept Prof. Hutton's unsupported opinion that *A. gracilis* is distinct from *A. gibberifrons*." It was first discovered by Salomon Müller in Timor, and originally described by him as *Anas gibberifrons*. Both species may be seen in the Melbourne Zoological Gardens.

D. LE SOUEF.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS.

By Baron von Mueller, K.C.M.G., M. & Ph. D., F.R.S.

(Continued.)

Eriostemon Carruthersi.

Rather tall, copiously beset with spreading soft hairlets; leaves crowded, on very short petioles, spreading, from an often rounded base gradually upwards broad-linear, blunt, at the margin recurved; umbels terminal, without any peduncle, while young drooping; calyx comparatively large, its segments lanceolate-linear; petals from slightly to considerably longer than the calyx, greenish or somewhat yellow, linear-lanceolate, channel-folded, scantily and only outside beset with hairlets, contiguous along the margin before expansion; stamens about twice as long as the petals, their filaments red, glabrous, their anthers centrifixed, light-yellow, almost ellipsoid; style as long as the stamens or somewhat longer, red, capillulary-filiform; stigma minute; ovularies glabrous, at the summit straight; disk almost cupular, five-furrowed.

At Mornya, near the Clyde, on sandy coast-land; W. Baeuerlen. Height, 1 to 2½ ft.

Allied to *E. phylicoides*, from which it is separated by more conspicuous vestiture, by the usually greater width of the leaves, by flowers of larger size and on longer pedicels, drooping before full development, by different colour of the petals, by deep-red filaments and style, by glabrous ovularies and perhaps also by carpologic characteristics, the ripe fruit of either plant remaining still unknown, although *E. phylicoides* was described already sixty-five years ago; besides the flowering time is much earlier, from May to July.

Our new species as regards flowers reminds of Diplolaena, especially on account of the colour of the filaments, which seems quite unique in the genus. From *E. Ralstoni* it differs already in indument, smaller leaves, shape of calyx and ovularies.

The finder and myself have bestowed on this particularly handsome and rare plant the name of the honourable J. Carruthers, to mark permanently our recognition of the enlightened views, evinced by the honourable gentleman as Minister of Public Instruction of New South Wales, in which capacity he has also much promoted the interests of the Technologic Museum of Sydney, and therewith Mr. Maiden's and Mr. Baeuerlen's researches.

If Phebalium is to be maintained, then our new plant should be placed in that genus; but this would bring about the necessity of breaking also up the closely allied genus Boronia, on similar considerations.

Bassia luehmanni.

Rather dwarf; leaves very small, from rhomboid- to cuneate-spatular, nearly flat, in the young state as well as the branchlets closely beset with whitish soft hairlets; tube of the calyx very short; spinules several or many, short, very irregular in form, some thinly subulate, others downward dilated, partly connate and variously denticulated; stigmas usually two; seed horizontal.

Near the Finke-River; Rev. W. F. Schwarz.

Vestiture somewhat appressed and shining. Leaves without particular succulence, narrowed into a conspicuous petiole, often ⅛ inch broad. Fruit-calyx very depressed, small, imperfectly beset with hairlets, the closed portion only slightly higher than the seeds, below furrowed.

This species is distinguishable from all others of the section Anisacantha unless *B. Birchii* by greater breadth of the leaves in proportion to their length and by more numerous spinules of the calyx. Irrespective of these characteristics it is separated from *B. divaricata* by the very short calyx-tube, the greater inequality of the spinules and the horizontal position of the seed.

Many of the leaves are quite as broad as those of *Chenopodium microphyllum*, although the two plants stand in sections separated on leaf-characteristics.

The species is dedicated to G. Luehmann, Esq., F.L.S., First Assistant in the Phytologic Department here, who during many years has zealously aided the researches of its founder, and who especially participated in the laborious task of preparing the material for Mr. Graff's extensive series of drawings, with the necessity of renewed investigations for characteristics, and in revising the work of this accomplished artist prior to the lithographic issue.

B. Birchii includes as a variety *B. Cornishiana.*

In Ascherson and Schweinfurth's "Illustration de la Flore d'Egypte," p. 122 (1887) the genus Bassia of Allioni has also been duly restored there for *Kochia latifolia* and *K. muricata,*

whereas Boissier in his "Flora Orientalis" iv., 925–927 (1879) acknowledges Bassia as a section of Kochia in the place of Echinopsilon for six species. The priority of the salsolaceous over the sapotaceous genus is therefore also elsewhere vindicated; but in both instances, just quoted, Chenolea is still kept generically apart. The publication of the seventh decade of "Australian Salsolaceae" just now will afford an opportunity, to see with ease, how completely that genus merges into Bassia. To avoid the repetition of the name *Bassia latifolia* in two orders of plants, it might be desirable, to adopt the species-name for the salsolaceous plant from the genus Londesia (*B. Londesia*), that untenable genus merely resting on this one species.

Passingly it may here be noted, that the *Chenopodium Buchanani*, described and illustrated in the "Transactions of the New Zealand Institute," xxii, 447., pl. 32 (1890), ought to be transferred to Atriplex, it being allied to *A. prostratum*. As just allusion is made to a plant of New Zealand, some notes on the fruit of Hectorella may simultaneously be offered, as that genus pertains also to the *Curvembryonatæ*, the material being kindly supplied by Donald Petrie, Esq., M.A., F.L.S., of Dunedin.

Ripe fruit almost globular or somewhat turbinate, membranous, nearly as long as the sepals, slightly surpassed by the petals, for some time retaining the style and the usually bilobed stigma, bursting irregularly from the summit, measuring about $\frac{1}{6}$ inch. Seeds ripening 2–4, ovate-roundish, slightly compressed, smooth, outside shining-black, about $\frac{1}{16}$ inch long. Albument scanty. Embryo imperfectly annular; cotyledons hardly longer than the radicle. The affinity of the genus to Lyallia, as indicated by Sir Joseph Hooker, is now confirmed also from carpologic characteristics; indeed the alliance is so close, that Hectorella might be regarded as a section of that genus. The fruit accords also with that of Pycnophyllum.

Helipterum Jesseni.

Annual, dwarf, extensively or scantily beset with short hairlets; leaves numerous, filiform-linear, rather blunt, the upper gradually reduced to bracts; headlets constantly quite small, singly terminating stems or branchlets, almost hemispheric; outer involucral bracts comparatively broad, blunt, shining, pale and some partially brown-tinged, many soon relaxed; inner bracts expanding into a short constantly yellow lamina; flowers all bisexual, some of the more central only imperfectly fruit-forming; corollas spreadingly short-lobed; fertile fruits very small, but rather broadish, papillular-rough, compressed, occasionally with one prominent angle; pappus-bristlets generally 8–12, in their whole length plumous-ciliolar, at the base slightly connected, quite white or at and near the upper end yellowish.

Widely distributed through the extra-tropic desert regions.

The exact systematic position of this plant has been long misunderstood. When in 1848 it first was collected by me, I could not identify it with described species, notably *H. hyalospermum*, and thus dedicated it to a University-friend, Dr. Carl Jessen, the subsequent Professor in Greifswald, and this name passed into the Linnaea of 1852, p. 519; but Sonder, on that occasion, united the plant with *H. hyalospermum*, which opinion was also adopted by Bentham in 1866 ("Fl. Austral." iii., 644). This is all the more excusable, as both species are often growing commixedly, and as small forms of *H. hyalospermum* deceptively resemble *H. Jesseni*, though the latter does not seem to reach the extreme of south-western Australia, and is not contained in any of Drummond's collections; whereas it seems to preponderate over the genuine *H. hyalospermum* in the south-eastern regions of Australia. The now separated species is usually smaller in all its organs, the involucre of the young headlet is less turbinate and the lower bracts are generally laxer and less elongated, the receptacle is less rough, the corollas are more dilated upwards, the well-matured achenes are rather less flattened and always without transparent margin, so that the name hyalospermum would not so well apply, and the pappus-bristlets are neither much dilated nor conspicuously connate towards the base. The aspect is much that of *Myriocephalus gracilis*, while *H. hyalospermum* approaches in general appearance more to the small form of *H. cotula*.

Specimens of *H. Jesseni* have been examined on this occasion from the following localities, irrespective of others, the collectors being also indicated :—Gawler-River, Dr. Behr; Wirrabara, Gill; Lake Alexandrina, Murray-River, Burra-Burra, Wimmera, Murrumbidgee, F. v. M.; Richardson-River, Dr. Curdie; Edwards-River, Dr. Mein; Lachlan-River, Brueckner; Darling-River, Wuerfel; Cobar, Andrae; Wagga-Wagga, Hammond; Mount Murchison, Bonney; Caiwarra, Mrs. Cotter; Barrier-Ranges, E. Wehl; Lake Cobham, Baeuerlen; Bulloo and Paroo, L. Morton; Ballandool-River, Locker; apex of St. Vincent's Gulf, Mrs. Matthiesen; Port Augusta, Mrs. Richards; Port Lincoln, J. S. Brown; Upper Spencer's Gulf, Felstead; Port Gregory, Oldfield.

Carefully compared have been now also, from the largely accumulated material of later gains, numerous samples of *H. hyalospermum*, thus from the undermentioned places:—Gawler- and Murray-River, Murrumbidgee, F. v. M.; Edwards-River, Miss Kuentz; Yorke's Peninsula, Miss Salmon; Lake Gilles, Burkitt; Fowler's-Bay, Mrs. Richards; west end of Great Bight, Carey; Mount Rugged, Miss Brookes; Stirling-Range, F. v. M.; Swan-River, Drummond and Preiss; Irvin-River, Miss Guerin; Port Gregory, Spalding; Bowes- and Murchison-

River, Oldfield. No transits have been found between these two species in all the dissections instituted.

Helipterum Jesseni is the seventeenth plant, which among vasculares has been added to the records of species, indigenous to this colony, since two years ago the "Key to the System of Victorian Plants" was issued. The others are:—*Clematis glycinoides*, *Kochia aphylla*, *Eucalyptus Muelleri*, *Cryptandra spatulata*, *Aster Frostii*, *Aster picridifolius*, *Quinetia Urvillei*, *Helichrysum Stirlingi*, *Helipterum læve*, *Calocephalus Drummondi*, *Erechtites mixta*, *Caladenia Cairnsiana*, *Drakæa irritabilis*, *Corysanthes unguiculata*, *Prasophyllum Frenchii*, *Cystopteris fragilis*.

(To be continued.)

NOTE ON A NEW VICTORIAN ORCHID,

By Baron von Mueller, K.C.M.G., F.R.S., &c.

Corysanthes unguiculata, R. Brown.

Until Mr. Fitzgerald issued his splendid drawings and lucid remarks on Australian Orchideæ, the above-named plant was almost exclusively known from Bauer's plate (18) in Endlicher's "Iconographia Generum Plantarum," published 1838, the delineation being augmented by extensive analytic details. The writer had never seen the plant, either in the field or in any collections, to which he had access, unless—as he thinks—he saw plants without any flowers somewhere beyond Brighton, never expecting that it could be this rare floral gem, so long looked for. It may however be readily missed, as being in blossom at the earliest spring, or it might be passed by, regarded from the distance to be *C. pruinosa*.

Bentham indeed informs us ("Flora Austral," vi., 350), that it is wanting in the herbarium of the great orchidographer Lindley, and he had only seen three specimens—one in R. Brown's collection (on which the description in the "Prodromus" p. 328 must have been founded), and two in Cunningham's, all from the vicinity of Port Jackson. Mr. Fitzgerald saw it also in two places only during his many years' excursions in quest of orchids. Thus it was most gratifying, when in the course of this month Mr. Ch. French, jun., through his persevering botanic searches, not only discovered the plant for Victoria and that rather near the metropolis, but more, found it in abundance within a limited area on moist soil amongst *Leptospermum scoparium* and *Melaleuca squarrosa* between Oakleigh and Cheltenham. This will be an indication, how further to search for this species. Anyhow, now all the principal botanic museums can be supplied. The leaves are occasionally somewhat three-lobed and the reddish hue on the under side may sometimes remain much wanting.

THE ZOOLOGICAL AND ACCLIMATIZATION SOCIETY.

THE Council of the Zoological and Acclimatization Society held its fortnightly meeting on Monday, 7th July. The president referred to the great loss which the society had sustained by the death of the late Mr. C. J. Jenner, who had been a most regular attendant at the meetings since his election to the Council in 1883. It was unanimously resolved to send a letter of condolence to Mrs. Jenner. The director reported that the new artificially heated monkey-house was now finished and occupied, and that the orangs and other rare monkeys felt quite at home in its tropical temperature. By the almost simultaneous arrival of the steamer *Australasian* from London and the Cape of Good Hope, the *Bancoora* from Calcutta, and the *Airlie*, a China service steamer, most valuable and interesting additions have been made to the collection; by the *Australasian*, a wild Burrbel sheep, two Prince Albert curasows, an Illiger macaw, a pair of crowned cranes, a black-headed jackal, a Chacma baboon, and a varied collection of European water fowl were received; by the *Bancoora*, a fine Bengal tigress, a female Himalayan bear, a magnificent specimen of the gelada (the largest and rarest of the baboon family, and more like a bear than a monkey), a pair of Cashmere cranes, a large Putna goat (this curious creature is a Goliath among goats, being as large as a small donkey), a pair of Indian otters, a pair of adjutants, a yellow baboon, and an Indian sheep; by the *Airlie*, from China and Singapore, a pair of deer new to the collection, a Mexican ant-eater, and a racoon. The director submitted a schedule of important improvements which have been contemplated for some time past, and it was adopted unanimously. The most important of these is a large exercising-yard for the great carnivora, where the lions and tigers will be seen to much greater advantage than in the ordinary cages. This improvement has been contemplated for some years, but it has been deferred in the hope that the society would some day be in sufficient funds to erect a more commodius carnivora-house, with exercising-yards attached. But as such a building would necessitate an expenditure of some thousands of pounds, and will be for some time beyond the means of the society, the next best course has been adopted. The following stock has been presented since the last meeting, for which the Council desires to return its thanks :—One owl from Mr. M. J. Power, St. Kilda; one ringtail opossum from Mr. Longbottom, Malvern; two opossums from Mr. C. E. Hirst, Spencer-street; one cyclodus from Mr. Hugh Evans, of Beechworth; one native bear from Mr. M. J. Brennan, Melbourne; one Nicobar pigeon, two fruit pigeons, and a great-headed maleo from Mr. George Arnold, Hawthorn; two opossum mice from Mr. H. A. Halliday, Heathcote; two wood duck from Mr. T. Stanford, East Melbourne; one copper-head snake from

Mr. Jas. M'Carthy, Yarraville; one opossum from Mr. W. Anderson, Parkville; two albatross and three giant petrels from Captain Anderson, s. *Fordjham*; one blue-tongued lizard from Mr. A. H. Rosson, Stawell; one deer from Mr. E. Smith, of Parkville; one native bear from Mr. F. H. M'Carthy, Charleville; one kangaroo from Mr. D. S. Drape, North Melbourne; one iguana from Mr. W. Gratton, Violet-Town; one opossum from Miss Withby, St. Kilda.

Insect Wax.—In a few notes on insect wax in a recent *Chemist and Druggist*, Mr. J. R. Jackson, Curator of the Museums, Kew, England, remarks "that the production of insect wax in some countries forms an important branch of commerce, notably in China, where on the branches of *Fraxinus chinensis* and *Ligustrum lucidum* wax is produced in great abundance by an insect, a species of Coccus, *C. perla*. Similar substances occur in other countries, which, if more attention were given to them, might perhaps be utilized. Even the dreaded 'Australian bug,' or, as it is now known, the 'fluted scale-insect,' *Icerya purchasi*, which has become such a pest of late years to many useful plants in New Zealand, California, and South Africa, might perhaps be turned to some profitable account, and the creature would thus cease to be the pest which it is now considered. In some parts of the Cape Colony the orange culture has suffered severely from the attacks of these insects, while a similar misfortune has befallen those in New Zealand and California. But the insect is not at all particular in the choice of plants upon which to make its home, besides which it is extremely prolific, and, added to this, it is said that its abundant waxy excretions protect it from the action of insecticides. That this waxy substance is abundant is readily seen by placing one of the insects on a piece of glass, and heating it over a lamp, when nearly the whole of it melts away."

We are glad to receive intimation of the establishment of the Field Naturalists' Society of New South Wales. We append the list of officers who have been first elected:—Hon. president: Dr. George Bennett, F.R.C.S.E., F.L.S., F.Z.S.; president: J. H. Maiden, F.L.S., F.C.S.; vice-presidents: Dr. Henry A. Ellis, M.B., Ch.B., John Brazier, F.L.S., C.M.Z.S.; hon. treasurer: A. Sidney Oliff, F.E.S.; hon. librarian: Thomas G. Sloane; hon. secretary: Frederick A. A. Skuse; hon. assistant secretary: Alfred Coates; council: J. Carne, F.G.S., W. W. Froggatt, A. J. Haynes, R. Helms, George Masters, Thomas Whitelegge, F.R.M.S. With such an administration, the society is sure to be a success.

VICTORIAN PALÆONTOLOGY.

THE annual report of the Secretary for Mines, Victoria, for 1889, has just been issued from the press, and contains, among other matter of interest to the geologist, a beautiful lithograph of a new fossil fern, *Sphenoptéris warragulensis* (M'Coy), which was obtained by Mr. James Tolmie, of Warragul, in the mesozoic rocks, near a branch of the Lang Lang River, south of Warragul.

Professor M'Coy, C.M.G., F.R.S., &c., in his report on the palæontology of the year, refers at some length to the examination of a large series of fossil fishes and plants from the strata at Broken River, near Mansfield, in a locality which, some twenty-five years ago, he had recommended should be coloured to represent the old red sandstone on the Government geological map. This collection arose from the discovery by Mr. Reginald Murray, Government Geologist, some years ago, of a few specimens loose on the surface, one of which, a large Icthyodorulite, so like *Gyracanthus obliquus* (M'Coy), from the base of the carboniferous series of the north of England, that it seemed only separable as a variety, and would thus indicate the base of the carboniferous period here. Another specimen was a cephalic shield of a fish resembling the Canadian old red sandstone, *Cephalapis campbelltownensis*, which he described as *Rytidaspis murrayi*. As nothing of this sort is found in carboniferous rocks, while Gyracanthus had lately been found in the Canadian Devonian, he represented to the Secretary for Mines the importance of procuring more fossils from the beds, which he considered indicated the base of the Carboniferous series, and top of the Devonian series, in order to determine the age more exactly, it being of importance to fix a base for the true or Palæozoic Carboniferous system of Victoria. The result was that sufficient funds were provided to enable the Rev. A. W. Cresswell, M.A., and Mr. G. Sweet, both members of the Field Naturalists' Club, to employ labourers to open up the locality. The collections made testify to the accuracy of his original suggestion as to the age of the rocks.

The vegetable remains, found by Mr. Sweet in abundance, chiefly belonged to a large species of Lepidodendron, quite different specifically from *L. australe* (M'Coy), from the Avon sandstones, near Bushy Park, South Gippsland, and figured in the decades of the "Palæontology of Victoria." The new species has been named *L. mansfieldense* (M'Coy), as it is common in the locality, and will be figured in the next decade of the "Palæontology." It belongs to a group of species chiefly marking the base of the Carboniferous and Upper Devonian of North America. The researches of Mr. Sweet show that the beds containing the plants are at the top of the Mansfield

series, but still pass conformably into the lower bed from which Mr. Cresswell and himself obtained the fish remains *in situ*.

The collection of fishes has, in the main, a distinctly Devonian *facies*, but still with a strong similarity to Lower Carboniferous in some forms. All the species are new, and figures have been prepared for publication. The most common fossil is that mentioned as so like Gyracanthus, but having no denticles on the two posterior ridges. Professor M'Coy proposes for it the generic name Gyracanthides. It presents so many variations of form as to suggest many spines on different parts of the body, as in some bony fishes, rather than the one or two bony spines in front of the dorsal fins of sharks. The Gyracanthides are also associated with many large bones of the head of true bony fishes, but may not belong to the same creature for all that. The next most common and striking fossil of these beds is a large scale, with the radiating cellular internal structure very nearly of the Upper Devonian Glyptolepis, and about the size and shape of the well-known Upper Old Red Sandstone *Glyptolepis leptopterus*. Scales of this general type are common in Devonian rocks of many countries, but unknown in Carboniferous strata.

The next most abundant fishes are large forms of the family Palæoniscidæ, most closely related to the genus Cosmoptychius, of Traquair, exceeding in size the *C. striatus*, from the Calciferous Sandstone series from Craigleith and other Scotch localities, at the very base of the Carboniferous series. The Mansfield fishes constitute three or four species of a distinct genus, for which he proposes the name Cosmolepides, naming the largest and most abundant *C. sweeti* (M'Coy), after the discoverer. This will also be figured in the forthcoming decades.

The next group of fishes were all collected by Mr. Sweet's party, are species of the family Acanthodidæ, so strikingly abundant in the Devonian rocks of Scotland, Russia, and America, although some degenerate examples also enter into the Carboniferous. The Mansfield specimens are most nearly related to the Diplacanthi of the Old Red Sandstone of Scotland, but form a distinct generic type, of which figures have been prepared. The chief type is nearly related to Diplacanthus, and is named *Chiraropalus langtrei* (M'Coy). Some imperfect remains are probably related to Chirolepis, but with the lateral line so greatly developed and bordered with two rows of greatly enlarged scales, that he has no doubt the generic type should be separated from all those known, and he has named it *Eupleurogmus cresswelli* (M'Coy), after Rev. Mr. Cresswell, who found the only known fragments.

Associated with the last-named fish some examples of the greatest interest—namely, shields of fishes of the group Pteraspidæ (Heterostraci of Ray Lankester)—have been found; these are

absolutely peculiar to the Devonian and Silurian periods, and hitherto found no higher than the Lower Old Red Sandstone of England, in which the type is common. The Mansfield species has very nearly the form and size and internal structure of *Scaphaspis lloydi;* but more specimens are desired, and the name *Pteraspis (?) mansfieldensis* (M'Coy) is only provisionally given.

Besides the foregoing there are large, probably rhizodont teeth, but the internal structure of which has not yet been ascertained; also, some large, undetermined bones, with distinct bone corpuscles, or lacunæ. Professor M'Coy concludes by saying that the mixture of Lower Devonian, Upper Devonian, and types related to some of the Calciferous Sandstone series, at the base of the carboniferous system, is of great interest, and should be illustrated by further collections at Broken River and the overlying conglomorates to the south, to fix the base of the true Carboniferous series in Victoria.

F. G. A. B.

A GROWL.

To the Editor of the Naturalist.

Dear Sir,—Reviewing the "Programme of Excursions" for last year, one finds that of 18 outings the following were the objects, namely:—Botany, 7; entomology, 3; botany and entomology, 4; marine zoology, 3; and ornithology, 1. May I ask why botany and entomology should have the monopoly (77·7 per cent.) whilst ornithology is the solitary exception.

Of ornithology, Alfred Newton, M.A., F.R.S., F.L.S., &c., Professor of Zoology and Comparative Anatomy in the University of Cambridge, states in the "Encyclopædia Britannica" "that there is no group in animated nature that more assuredly deserves the further attention of the highest zoological intellects than birds; and, looking to the perplexities which on all sides beset their scientific study, there is no department of zoology that will better repay the application of those intellects than ornithology."

As there are many young members who, like myself, are devoted to the study of this branch in the Club, and who would gladly avail themselves of the opportunity of an outing, under the leadership of some of the older and more experienced ornithologists, it is to be hoped that the committee who are entrusted with the arrangement of the syllabus for the current year will not make it the usual one-sided affair.—I am, yours, &c.,

DACELO.

THE PEST OF FOXES IN THE COUNTRY.

For some time past the farmers at Muckleford and Walmer have been successful in destroying foxes by distributing slices of poisoned apples upon their properties. The robbers have nevertheless committed great havoc in the poultry yards, and large numbers of turkeys and fowls are reported to have been killed by foxes within the past few weeks. The pests are also numerous at Sandy Creek, and in the vicinity of Mount Tarrangower, where similiar depredations have been committed upon farmyards.

Considerable attention is being given to the increase in the number of foxes in the Bacchus Marsh neighbourhood. Opinions are divided as to whether the good they undoubtedly do in destroying young rabbits is not counterbalanced by their destruction of sheep and poultry. At the Ballan Council meeting on Monday the statement was made that ten foxes had been seen bailing up a flock of sheep. The Council approved of the proposal that all shires should be compelled to pay 5s. per scalp for fox scalps.—*Argus.*

It is a well-known fact in biology that bacteria and bacilli absorb anilin and are killed by it. Two German observers—Stilling and Wortman—have recently considered the possibility of utilizing this property in medical treatment *(Humboldt).* The diffusibility and harmlessness of violet anilin dyes (called, for brevity, "methyl-violet") without arsenic, in small doses, were first demonstrated on rabbits and guinea-pigs. Then certain eye-disorders were produced in those animals, and treated with anilin solution, the results being excellent. The authors proceeded to operate on the human subject. A skin-ulcer on a scrofulous child, which had been treated for a month with the ordinary antiseptic agents without success, was gradually healed by daily dropping a little anilin solution on the sore; and similar good results were had with bad cases of eye-disease. It soon appeared that many surgical cases were open to successful treatment in this way; and that, in general, wounds and sores developing suppuration could be sterilized with anilin. It is also thought that cases of internal inflammation, as in pleuritis and peritonitis, may prove to be not beyond the reach of this order of treatment.—*Nature.*

Erratum.—In the July number, p. 36, l. 34, by a transposition of sentences it is stated that the genus Sternocera is almost confined to Australia and Polynesia. It was intended to state that the genus is confined nearly to India and Africa.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

VOL. VII.—NO. 5. SEPTEMBER, 1890.

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— OF —

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

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 11th August.

In the absence of the President, Professor Spencer, one of the vice-presidents, took the chair, and about fifty members and visitors were present.

The hon. librarian reported the following additions to the library :—"Proceedings of the Royal Society of New South Wales," vol. xxiii., part 2, from the society; "Transactions of the Royal Society of South Australia," vol. xiii., part 1, from the society; "Journal of Pharmacy," July, 1890, from the society; "Proceedings of the Academy of Natural Sciences," Philadelphia, 1890, part 1, from the society; "Transactions of the New Zealand Institute," vols. xxi. and xxii., from the society; "Prodromus of the Zoology of Victoria," decade xx., from the Government; "Wattles and Wattle Bark," by J. H. Maiden, F.L.S., from the Government of New South Wales; "Australian Fungi," by M. C. Cooke, from Baron von Mueller.

On a ballot being taken, Mr. J. W. Begg was elected a member of the Club.

The hon. secretary, Mr. D. Le Souëf, read a report of the sub-committee on the proposed excursion to the islands in Bass Straits.

Mr. F. G. A. Barnard drew attention to a letter in the August number of the *Victorian Naturalist*, signed "Dacelo," and pointed out that members had been invited to make suggestions as to the programme of excursions, but had not taken advantage of the invitation.

A paper by Mr. T. S. Hall, M.A., entitled "Notes on the Geology of the Moonee Ponds District," was then read. It dealt principally with the physical geology of the district between the Moonee Ponds racecourse and the Royal Park, and particularly of a section in the railway cutting near the latter place, a diagram of which was exhibited in illustration of the paper.

Some discussion followed on the origin of the pliocene fossiliferous beds and the gold drifts of the same age, in which the Rev. A. W. Cresswell, Mr. Dennant, and other members took part.

Mr. J. Shephard read a paper on "Pond Life," in which he described captures made in an afternoon's pond hunting near

Brighton. The most noticeable was a Rotifer, *Asplanchna brightwellii*, of which male specimens were obtained, as well as large females with developing young.

Mr. C. Frost drew attention to a paragraph in the last decade of the "Prodromus of Zoology," in which *Agrotis spina* was stated to be a day-flying moth. He believed that, though sometimes seen by day, it was properly a night-flying species. Mr. D. Le Souëf and Mr. C. Lyell confirmed Mr. Frost's statements.

Several newspaper cuttings bearing on natural history were read by the chairman.

The meeting closed with the usual *conversazione*, at which the following were the principal exhibits:—By Mr. A. Coles.—*Austrapia nigra*, the Gorget Paradise Bird, and *Epimachus speciosa*, the Giant Promerops, from North-West New Guinea. By Mr. J. E. Dixon.—Peripatus and Gordius (Hairworm), from the Plenty Ranges. By Mr. C. French.—Egg of Black Cockatoo (*Calyptorhyncus funereus*), from Queensland. By Mr. C. French, jun.—Remarkable egg of the Mallee Hen, from the Wimmera. By Mr. J. Stephen Hart.—Fossils from Moonee Ponds, lent by Mr. A. W. Craig, M.A. By Mr. D. Le Souëf.—Fossil fish from Mount Ararat, Asia Minor. By Baron von Mueller.—Two new Australian plants, *Bassia tatei* (South Australia) and *Scleranthus minusculus* (Victoria). By Mr. J. Searle.—Coleoptera. By Mr. J. Shephard.—A Rotifer, *Notops clavulatus*. By Mr. J. Wing.—An oyster shell covered with spawn of whelk.

REPORT OF SUB-COMMITTEE ON VISIT TO THE EASTERN ISLANDS.

Your committee have met and decided on the following general plans:—

The expedition will start on or about the 15th of November, and will occupy from ten to fourteen days inclusive; it will be divided into two parties; of these one will land on Deal Island and the other on Flinders Island.

Whilst there is little information with regard to Deal Island, the utility of visiting one of the Kent group, which are small, lies in the possible opportunity of determining the limits of the strictly Tasmanian and Australian Fauna and Flora, since the islands lie considerably nearer the Victorian than the Tasmanian coast.

The greater number of members will probably proceed to Flinders Island. From information received about this island, the main camp will probably be at a part opposite Gun-carriage Island. There seems to be no difficulty in procuring boats to move about from point to point along the coast and amongst the neighbouring islands. The party will, in all probability, be able to visit Barren Island, which lies close to the southern portion of

Flinders Island. Two varieties of wallaby, Waterfowl, and game of various kinds appear to be plentiful, and the nature of the country seems favourable for the pursuit of different branches of Natural History. The probable cost to each member taking part in the expedition will be under £5. Members desirous of joining must hand in their names on or before 30th August, stating which party they wish to join. The arrangements regarding tents, commissariat, &c., will be published when the list is complete.

D. LE SOUEF.

NOTES ON THE GEOLOGY OF MOONEE PONDS DISTRICT.

By T. S. Hall, M.A.

(Read before the Field Naturalists' Club of Victoria, 11th August, 1890.)

The lower portion of the Moonee Ponds valley presents many features of interest to the wandering geologist, and its ease of access from the city should make it an excellent ground for those who wish to see, in the field, illustrations of the statements of their text books.

How far to the northward the valley begins we need not inquire, but we find it at Ascot Vale already deep and wide. Flowing down through the valley is the tiny stream that has done the work of carving out the surface into its present form. Near the Moonee Ponds racecourse we find the bed of the stream occupied by sandstones full of glittering flakes of mica. The rocks are tilted up on edge, and are cut by joints which are plainly visible wherever a little cliff is seen. Close to the stone bridge over the creek we find a cliff about 50 feet high, in which the beds are not steeply inclined but gently undulate. Sandstones and soft shales alternate, and in one place is seen a slab, close to the water's edge, on which are still preserved the ripple-marks of the shallow waters of an ancient sea. This bed can be traced for some distance up the cliff as it rises with the dip. A few yards lower down the stream, and almost on a level with it, is a platform of dark soft micaceous shale full of fossils. An examination of these fossils caused Professor M'Coy to identify the deposit as the equivalent of the English May Hill sandstone, which forms the base of the upper silurian. The greater number of fossils are Brachiopods, and figures of several will be found in M'Coy's "Palæontology of Victoria." Besides these forms, the broken stems of Encrinites are common, and a few Star-fish and Trilobites have been found, together with specimens of Orthoceras. A few yards further down the stream we find a large igneous dyke cutting through the strata of the cliff. The shales on each side

become rubbly, or so cut by joints that they break up into small fragments when weathering. The dyke-stone itself is of yellowish-brown colour, and is spotted with dark blotches which a lens will show to be decomposed crystals. The dyke dies away towards the top of the cliff, and in the road cutting above is visible only as a band of spotted clay about a foot in thickness. Close by this clay band is a beautiful example of a fault, which was very conspicuous last year when the road was cut down. The strata on each side of the fault were so very different in texture and colour that the most unobservant could hardly fail to notice it.

If we now walk down the valley towards the railway cutting to the westward of the Zoological gardens, we cross over a deposit of waterworn pebbles and clay, mixed up in a confused manner. This is the alluvial deposit of the creek and its tributary gullies. As we climb the hill towards the railway line, we find the soil changing in colour to a reddish hue, and when we climb the railway fence, in defiance of the caution to trespassers, and enter the cutting, the cause is evident. The strata on top consists of quartz gravel and sand, deeply stained with oxide of iron. About half-way down the cutting we come on a mass of clay which rises high on the south side of the bank. The gravel beds rise up to rest on its flanks, and no trace of stratification is visible in it. A close examination will show many small white spots of a softer material than the rest of the mass. A few yards further to the south and this deposit sinks below the level of the rails. Close to the end of the cutting it again appears, with the same white spots throughout its mass. As we trace it further along nodules make their appearance in it. Some of these have many concentric coats which flake off under the hammer, and in the centre we find a very hard mass, which breaks with difficulty, and which we find to be a dense black basalt. If we now re-examine the bank carefully we see that many of the nodules are much decomposed, and we can trace a series of them, from the dense ones we first examined down to a mere concentric staining in the spotted clay. Thus we see that the clay is merely the result of the decomposition of the basalt *in situ*. Now that we have learned the appearance of decomposed basalt, we can trace this clay in many places ; for instance, a good section is shown on Flemington-road, near the old Powder Magazine, again near the Pig Market, and the same clay is seen in the upper part of the dyke we mentioned, further up the creek.

Underneath the basalt, quite close to the semaphore, appears a yellowish mass of clay. This is part of the same silurian rock we saw to the northward. Here it formed a ridge which was covered by the flow of basalt.

The upper surface of the basalt was once level, or nearly so ; but before the overlying deposits were laid down it had become

scooped into hollows as we see it in the cutting. This denotes a considerable lapse of time between the two deposits.

If the deposit on the top of the basalt be now examined, we find a great deal that will interest us in its physical geology, but which time will prevent our noticing. There is a rich fossil bed which immediately overlies the basalt, except in a few places where it is underlain by a deposit of coarse white sand. The red ochre colour of the fossil-band makes it easily recognizable even at a distance. As is usual in ironstone, we get mostly the casts of fossils, and not the fossils themselves, and this, of course, makes their identification difficult. The forms are all marine, and some are almost indistinguishable from living types. A few forms have been described, but collectors will continually find themselves at a loss for the names of their specimens. Some named specimens will be found in the National Museum. Judged by the fossils the beds are slightly younger than those of Brighton, and are the marine representatives of the middle gold drifts. The underlying basalt is, in some places in the valley, stated to be underlain by a clay bed with fossil leaves in it, but I have not seen this deposit. The late R. Brough Smythe informed me Murchison stated this clay to be, probably, of miocene age. From data gathered elsewhere the age of this, the older basalt, is miocene. Now that we have seen the exact position of the fossil bed—namely, immediately overlying the basalt—we know where to look for it in other places. A similar section to the one in this cutting is displayed in the cutting on the left side of the creek, on the road crossing the stone bridge, close to where we examined the silurian rocks. Near the top of the hill, where the cutting is about 15 feet deep, we find the same spotted clay or decomposed basalt, with the same ferruginous gravel on the top. Close to the junction of the two a careful search will be rewarded by a few fossils, such as cowries and other small shells. The two deposits were evidently continuous, and the whole of the valley between has been carved out by the stream.

The iron, which has stained the gravels their rusty colour, was in all probability derived from the older basalt. Close to the semaphore, in the railway cutting, it will be seen that the decomposed basalt is penetrated in all directions by sheets of ironstone, so that some fragments may be picked up which look almost like a loaf of bread in structure. This is a secondary product. The iron has been washed out of the overlying gravel and penetrated the basalt again. All over the surface of the park will be seen small rounded grains of pea-iron ore. They look as though they are waterworn pebbles, but they are concretious, and when broken open usually have a grain of sand in the middle. This form of ironstone is very characteristic of our recent deposits, especially in the neighbourhood of basalt.

Another characteristic feature is the presence of black sand on the surface of the dry watercourses. It will be found that this is magnetic, and can be gathered in quantities with a magnetized knife-blade. The mineral is magnetite, and is derived from the basalt.

In some places, as on the Saltwater, behind the racecourse, the pliocene fossiliferous beds are overlain by the newer basalt which forms the great western plain of the colony.

The material carried down by the stream has helped to form the great estuary deposit of Batman's Swamp. The fossils found here are all, I believe, recent, though some, like *Arca trapezium*, are now rare where they were then plentiful. The new dock cutting, till recently filled with water, formed an excellent collecting ground for specimens.

Owing to the numerous road-cuttings that have been made since the publication of the geological quarter-sheet, which embraces the area I have spoken of, it will be found that numerous minor corrections will have to be made in the boundaries of the various deposits.

I am afraid that, in condensing my observations, I have had to omit a great deal of important and interesting matter, but I hope that those who wish to learn more of the valley will go there, hammer in hand, day after day, and study it for themselves.

AN AFTERNOON'S POND HUNTING.

By J. Shephard.

(*Read before the Field Naturalists' Club of Victoria, 11th August,* 1890.)

Six weeks ago I went out to visit the ponds in the vicinity of Brighton, in search of microscopic organisms, not expecting to find much of interest, owing to the wet and stormy weather, which I feared would have filled the pools with muddy water.

On returning home to examine the takings, I found, among other animals, a profusion of a species of rotifer, new to me. It was a large specimen, being quite visible to the naked eye when the bottle containing it was held up to the light. Examined with a magnification of fifty diameters, it presented the appearance of a transparent flexible bell, the mouth being fringed with rapidly vibrating cilia. There was a red spot on one side of the mouth; below, the beautiful transparence of the outer case allowed a full view of the interior structure. Immediately underneath the red spot—or so-called eye—there was a pair of sickle-shaped jaws, which occasionally opened and shut to slice up some particle of nutriment brought in by the vortex created by the lashing cilia; the jaws were at the entrance of a tubular cavity, passing down-

wards to a dark mass lying about two-thirds of the total length from the mouth; on either side of this tubular process were two kidney-shaped organs; below, quite at the bottom, was a spherical body made up of granules, each showing the spot and inner spot known as nucleus and nucleolus; down either side were flat bands connecting internally the mouth organs with the bottom of the bell. No organs of prehension were visible, and the rotifer was in constant motion when unconfined, gliding gracefully about with ever a constant stream flowing into the mouth, carrying with it whatever particles or small animals were floating in the neighbourhood. On placing a considerable number in a trough at once, individuals could be seen in which the dark spherical mass at the posterior end was replaced by a young rotifer of about one-fifth of the dimensions of the parent; in others, the mass had something of the form of the adult. Here was undoubtedly the young rotifer developing from the egg, and the form was one which carried its young until fully developed. A few specimens, in a decided minority, seemed to be of a different species; their shape was rudely triangular in one aspect, this being due to a protuberance on one side of the posterior extremity; the interior was destitute of the complicated organs possessed by the form I first attempted to describe, but instead there was a spherical body connected by a process with the protuberance mentioned, and a cord-like body extending down the centre connected upwards with the centre of the fringe of cilia. Furnished with these particulars, and a vivid mental picture of the appearances presented, I applied myself to Hudson and Gosse's "Rotifera," and had little difficulty in identifying the rotifer as *Asplanchna brightwellii*. The second mentioned and smaller form being there figured as the male of the British species. This rotifer I found specially interesting on account of its being the species in which the male rotifer was first discovered by Mr. Brightwell in 1848. The male has no nutritive organs whatever, being replaced by the apparently useless cord-like process passing down the centre, the reproductive organs being the spherical body and the process connecting it with the protuberance. The horseshoe-shaped body in the female being the ovary, while the dark mass encircled by it was described as the stomach, as I had already inferred it to be by the contents, which in some cases included infusorians of such a size as to strain the accommodation to its extreme limit. I was struck with the exact agreement between the figures of the British species in Hudson and Gosse's work and the forms I had taken, and would be glad to hear the opinion of some of our members as to whether *Asplanchna brightwellii* is indigenous, and if so, whether the distribution of the species is world-wide; or, on the other hand, if introduced, how could a form be carried from Europe which apparently does

not deposit an egg, unless it retains vitality, like some rotifers, even when the mud containing them holds but little moisture? This was the form I exhibited on our last evening, but regret being unable to procure any for this evening, as the pond in which there was a great abundance failed to yield any on my last visit.

Before mentioning the further captures made at the same time, I may perhaps, for the sake of such of our members as may not be acquainted with these forms of life, say a few words on the rotifera generally. They are a class of very numerous organisms inhabiting water. Their diversity of form is extreme; one characteristic is common, namely, they all possess cilia of some kind about the head whereby they propel themselves through the water or create minute whirlpools which bring their prey within reach. This peculiarity has obtained for them the appellation "wheel animalcules." Their classification has been a matter of dispute, and at the present time they are classed with the worms. Compared with the infusorians with which they are commonly found associated, they are of high organization, having a complicated masticating apparatus; stomach furnished with glands, supposed to represent the liver; a system of water circulation throughout their bodies; traces of a nervous system; an elaborate arrangement of muscles, chiefly concerned with manipulating the mouth organs; and specialized reproductive organs. Among them there are forms destitute of means of prehension (as *Asplanchna brightwellii*), and are thus ever swimming to and fro; others, possessing a foot, sometimes—conveniently for the observer—remain attached by it, and thoroughly exhaust the water in the vicinity of all particles acceptable to them, which, being done, detach themselves and sail away to other fields; others there are which cannot swim, but remain attached to one place, and must content themselves with such nutriment as currents bring within the influence of their vortex-creating cilia. These include some of the most beautiful forms, such as the tube builders, whose cylindrical residence is in some species built up of little pellets, shaped by a special organ out of the particles obtained along with the food; while in others—which as compared with the last-mentioned are as builders of a mud hut to a bricklayer who makes his own bricks as well as lays them—the tube is plastered together in a homogeneous mass like the stucco on a wall. The free swimmers contain some genera encased in glassy armour; and others, with soft integument, occasionally crawl, looping their bodies after the manner of the caterpillars known as geometers. Their mode of reproduction differs among the rotifera, some carrying the egg until it develops into the perfect animal, when they issue forth into their little world fully equipped for the struggle for existence.

This event I was fortunate in witnessing on an occasion when I had a specimen of *Rotifera vulgaris* under observation, which contained a fully developed young one, when on a sudden it withdrew its "wheels" and bent over to one side, when instantly the young rotifer issued by an opening at the outer angle of the bend, literally leaping into being, and in a few seconds it was anchored by its foot with its cilia and jaws in full operation. Other genera, again, deposit their eggs in the water, where they hatch; while in some cases they remain attached to the outside of the body, and are carried about. In the world of the Rotifera the male is decidedly an inferior person, for of all the species in which the male has been seen, it is found destitute of nutritive organs, of inferior size, and much less numerous than the female. In my own experience I have never positively identified a male except in the case I have mentioned.

To return to the captures on this occasion. A further examination revealed a form much resembling *Asplanchna brightwellii*, but possessing a foot which it had a curious habit of using as a pivot—keeping it pressed to the glass, while it swung its body rapidly round for some time, when it would suddenly dart away. This I identified as *Notops clavulatus*. Further investigation brought to view a tube builder, *Limnias ceratophylli*, which plasters up a brown tube, and although not so lovely a form as *Melicerta ringens*, which I brought to one of our meetings some time ago, is still beautiful, as it protracts its two-lobed disc, wreathed with cilia. My material also contained a Floscularian, which I failed to keep in view long enough to identify the species. It was sessile, and surrounded by a gelatinous sheath into which it could retract itself. The head, when protruded, ended in six knobs, from each of which radiated long straight threads, which required careful observation to trace to their full length. The transparence of the sheath exposed to view the jaws in full operation, and a stomach gorged with food. Eggs were enclosed in the gelatinous sheaths, and one animal I noticed with a smaller form attached to the side of the sheath.

These were the whole of the rotifera found, but there were many other forms of life, among which was the plant *Volvox globator*. The pond was only about 15 feet in diameter, and I did not bring away more than a pint of water. Considering this small gathering contained representatives of four genera of rotifera, and numerous other organisms, I felt amply rewarded for my exertions.

We learn from Mr. Tisdall that the English Foxglove has established itself on the slopes of the Stringer's Creek Valley, near Walhalla. Last season in some parts the banks were purple with them.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS;

By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

(Continued.)

Bassia Tatei.

Rather dwarf, intricately branched, densely beset with appressed hairlets; leaves flat, from broadish- to linear-lanceolar, slightly succulent, many opposite; calyx very inequilateral, on the inner side at the lower part much protruding, with a wide basal cavity, the tube streaked or furrowed, terminated often almost unilaterally by three or less very short spinules, the other side often blunt by protraction upwards and barbellate; stigmas usually two; seed placed diagonally.

At Lake Torrens; Professor Tate.

Height to 2 feet. Leaves to more than half an inch long, but frequently shorter. Fruiting calyx when well formed about ¼ inch long. The remarkable obliquity of the fruit-calyx seems not due to abnormal growth, as the seed is generally well-formed; nevertheless further observations in this respect need to be instituted, the material at present available for examination being scanty.

Systematically this species might be placed nearest to *B. diacantha*, of which *B. uniflora* seems to be only a variety.

Bassia salsuginosa could be regarded as a reduced form of Babbagia, with which it fully shares the habit, so that the genus Osteocarpum, defined in 1854, might be restored, into which Babbagia then would merge. From Bassia as well as from Kochia could be excluded *K. brachyptera*, *K. stelligera* and *K. ciliata* as a generic group, differing from the former chiefly in symmetric flowers, from the latter in the want of membranous fruit-expansions, the name Sclerochlamys, established 1857, serving as an appellation for such a generic complex, though all three with good rights could stand also in Bassia, when regarded in its ampler acceptation.

Scleranthus minusculus.

Annual, dwarf, almost glabrous; leaves linear-semicylindric, dilated toward the base, thence trigonous, sharp pointed; flowers distinctly pedicellate, mostly scattered; tube of the calyx turgid, somewhat streaked; its lobes soon fully twice as long, rigid, narrow, very acute, without any conspicuous marginal membranule, soon much spreading; perigynous ring very narrow; stamens two or one, many times shorter than the calyx-lobes; anthers orange-coloured; styles very short, capillulary; stigmas extremely minute; seed pyriform, its testula yellowish-brown.

On the Murray-River and its lower tributaries. Gathered by the writer first in October, 1848.

Possibly the plant may be sometimes of more than one year's duration, but it never forms the finally thick rhizome of *S. diander*; moreover, as pointed out already—1862, in the "Plants of the Colony of Victoria," i, 216—its flowers are neither much crowded together nor almost sessile, the tube of the calyx is not obconical, the lobes of the calyx are narrower, almost pungent, more spreading, also proportionately longer, and the seeds are less globular. Besides these differences, it should be mentioned, that *S. minusculus* is always a lowland-plant, likes warm tracts of country, and is usually of smaller size; while *S. diander* is here generally an upland-plant, ascending to 4,000 feet, although in the cool and humid clime of Tasmania it occupies also localities close to the seashore, and so Mr. Fullagar has found it even on the Werribee, in Victoria. The outward appearance of *S. minusculus* is almost that of the small form of *S. annuus*.

MICRANTHEUM DEMISSUM.

Dwarf; branchlets beset with short spreading hairlets; leaves ovate- or lanceolar-elliptic, generally soon almost glabrous, at the margin hardly or narrowly recurved; pistillate flowers axillary, solitary; sepals longer than the pedicel, almost elliptic; fruit hardly thrice longer than the sepals, nearly ovate, at the base blunt, towards the summit more attenuated; seeds brownish, shining; strophiole pale, turgid, nearly semiovate, about thrice shorter than the seed.

Near Encounter-Bay and in Kangaroo-Island; Professor Tate, O. Tepper. Closely allied to *M. ericoides*, but still more dwarfed, the leaves mostly broader, the pedicels usually shorter, the sepals somewhat larger, the styles less elongated and the fruit smaller; perhaps the staminate flowers will also prove different. *M. hexandra*, to which the South-Australian species was in first instance referred chiefly on geographic considerations, is a tall highland-plant, larger in all its part and thus already quite distinct; it produces stamens up to nine in number. Both *M. ericoides* and *M. hexandrum* were found on the Clyde by Mr. Baeuerlen, but at different altitudes.

HEMIGENIA BIDDULPHIANA.

Rather dwarf, almost glabrous except the flowers; leaves on very short petioles, comparatively large, simply opposite or some placed ternately, mostly lanceolar, flat or at the margin slightly recurved; flowers in the axils solitary or two together, on very short pedicels; calyx outside conspicuously beset with spreading glandule-bearing hairlets, its lobes hardly half as long as the tube, almost equal, deltoid and somewhat acuminate; corolla nearly thrice as long as the calyx, outside upwards beset with minute spreading hairlets, inside near the orifice bearing crisp hairlets, its lowest lobe scarcely longer than the lateral lobes; anthers of the upper stamens one-

celled, augmented by a large somewhat membraneous blunt appendage; anthers of the lower stamens two-celled, one of the cells distant and diminutive; style glabrous, quite enclosed; stigmas extremely narrow; fruitlets reticular-rough.

Near Mt. Playfair, with *Zieria aspalathoides*; Miss H. S. Biddulph.

Leaves subtle-dotted, when well developed 1½–2 inches long. Bracteoles very short, linear, acute, placed on the pedicel above its base. Calyx ¼–⅓ inch long. Corolla probably white, the two upper lobes considerably shorter than the three lower, its basal portion narrow-cylindric, thence the widening almost campanular. Pollen-grains dark-purplish, when moistened globular and smooth. Fruitlets oblique-obovate, slightly compressed, about ⅛ inch long, outside brown.

As regards size and form of leaves this species comes near *H. incana* and *H. sericea*, which however in several other respects are very different; indeed the plant belongs to the section Diplanthera, but the three West Australian plants constituting that section have much smaller leaves and other distinguishing characteristics. This species approaches nearer to the tropics, than any congener.

(To be continued.)

CORRESPONDENCE.

To the Editor of the Victorian Naturalist.

DEAR SIR,—No doubt Mr. Keartland's important notes on the Australian Teals will be read with interest by every member of the Club. If you will allow me, and without detracting from the value of Mr. Keartland's remarks, there is one point he did not make very clear. On the Club's list of the fauna of King Island the Chestnut-breasted Teal is the only one named, and Mr. Keartland says:—"No mention was made of the common sombre ones, which were found on almost every lagoon on the island, and on the sea-coast." Might it not really be a fact that the sombre ones were the females of the chestnut variety, especially as the birds were in company, and as Mr. Keartland himself, further on in his remarks, states that there is a "similarity of the female bird in both species?"—Yours truly,

THOS. G. CAMPBELL.

18th August, 1890.

NAUTILUS shells (says the *Portland Guardian*) continue to be picked up by fortunate hunters. The search after the shells is very keen, and before daylight numbers of enthusiasts visit the beaches ready to prosecute their searches as soon as the morning breaks.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

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— OF —

The Field Naturalists' Club of Victoria.

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

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th September.

The president, Mr. C. A. Topp, occupied the chair, and about fifty members and visitors were present.

A letter was read from the Premier, stating that it was the intention of the Government to reserve land along the Yarra when the Kew Asylum grounds were sold, though not a strip of the width proposed by the Club. As it was stated that there was no immediate prospect of the land being sold, further discussion of the matter was postponed.

The hon. librarian reported the following additions to the Club's library :—"Mining Reports," June, 1890, from the Secretary for Mines; "Catalogue of Queensland Plants," from the author, Mr. F. M. Bailey, F.L.S.; "Catalogue of Minerals," from English and Co., Philadelphia; "Proceedings of the Royal Geographical Society of Australasia" (Victorian Branch), vol. viii., part 1, from the society; "Journal of the Bombay Natural History Society," v., 2–4, from the society; "Journal of the New York Microscopical Society," vi., 3, from the society; "Journal of Pharmacy," August, from the editor; "Birds of Australia," i., 5, purchased; "Catalogue of Recent Marine Bryozoa," by E. C. Jelly, purchased.

On a ballot being taken, Mr. Peyton Jones, Master Loftus, E. P. Jones, Master Lewis, T. Jones, and Mr. F. H. Reed were elected members of the Club.

Mr. Wisewould moved that a sub-committee, consisting of Misses Cochrane, Halley, Coghill, and Roberts, and Messrs. Tisdall, Barnard, French, and Best, be appointed to make the necessary preparations for the annual show of wild flowers. The motion was seconded by Mr. C. Frost, and carried.

PAPERS READ.

A paper by Mr. C. French, F.L.S., entitled "A Run Through the Heath Ground from Oakleigh to Sandringham," was read by Mr. Best. The excursion described was made on 30th August, and, considering the time of year, was very successful, no less than twelve orchids being obtained in bloom. The most important find, however, was the Club Moss, *Lycopodium laterale*. Besides the plants many insects and birds of interest were noticed.

The route taken was south from Oakleigh station to near Cheltenham, thence across to the sea at Beaumaris, and back along the coast to Sandringham.

The Rev. G. D. Hutton read a paper on "Mimicry," in which he described how the colours of animals have been shown in very many cases to be of service to their possessor, either as a means of concealment, whether for offence or defence, or in some few instances, especially of insects, to serve as a warning to their foes that they are possessed of disagreeable or dangerous qualities. The writer concluded by impressing on the Club the necessity for careful examination of the colours of Australian insects.

In a short discussion which followed, and in which Messrs. Keartland, Le Souef, and Barnard and the President took part, some instances of protective coloration in the native fauna were mentioned.

Mr. T. Steel read a description of a kerosene emulsion which he had used with much success for killing scale insects and other pests.

Mr. Scott showed some sulphur which had been collected from the edges of pools after a storm at Williamstown, and which he believed to have been deposited from the rain.

The following were the principal exhibits:—By Mr. Ernest Anderson.—European Lepidoptera introduced into Victoria—viz., *Pyralis farinalis* (the Meal Moth), *Plutella cruciferarum* (the Tinea of the cabbage), *Tinea rusticella*, *Carpocapsa pomonella* (Codlin Moth), *Tinea sapetzella* (Clothes Moth), *Endrosis fenestrella*, *Agrotis saucia* (Sword-grass Moth). By Mr. F. G. A. Barnard.—Pitta from the Richmond River, N.S.W. By Mr. C. French, jun.—Eggs of Ternlet (*Sternula nereis*), from South Australia. By Mr. G. A. Keartland.—*Egernia cunninghami*, Skink Lizard, and *Chelodina longicollis* (Long-necked Tortoise) and eggs. By Mr. Geo. Lyell, jun.—Micro-Lepidoptera, taken and bred during the month of August. By Baron von Mueller.—New Eucalyptus, *E. Bauerleni*, from Sugarloaf Mt., on the Clyde River, N.S.W.; also hybrid Eucalyptus *Maculato corymbosa*, from the same locality, collected by W. Bauerlen. By Mr. Wing.—Fossiliferous formation containing Encrinites, &c., from a drive at the Victoria Brewery at a depth of 100 feet.

After the usual *conversazione* the meeting terminated.

Kerosene Emulsion for Fruit Trees.—The following recipe was given in the *New Zealand Weekly Herald*:—"½ lb. hard soap boiled in 1 gal. water. To each gallon of above, when nearly cool, but still liquid, add 2 gals. kerosene, and churn well by stirring or mixing with spray pump until cool. When required for use dilute each one part with ten parts of water and spray the affected trees thoroughly."

A RAMBLE THROUGH THE HEATH-GROUND FROM OAKLEIGH TO SANDRINGHAM.

By C. French, F.L.S.

(Read before the Field Naturalists' Club of Victoria, 8th September, 1890.)

Early spring, more especially to those who love flowers, has a peculiar attraction for the field naturalist, whether he remains near home or elects to go further afield. Be this as it may, the writer of these few notes, on Saturday morning, the 30th August, 1890, decided upon making a short walking excursion to the heath ground, the plan agreed upon being to take the early morning train to Oakleigh, and from there walk across to Cheltenham township, on to Beaumaris, and from thence to Sandringham, the two latter places being settlements on the shores of Port Phillip Bay, and formerly known as Gipsy Village and Beaumaris respectively. Starting from the South Yarra railway station, in company with my son, we soon reached Oakleigh, a station about ten miles from Melbourne, on the main Gippsland line of railway. The weather looked somewhat threatening, and we had our waterproofs with us, which, as we afterwards had occasion to find out, was an unnecessary precaution, for the day turned out to be beautifully fine, the sun having emerged from his hiding place and now shone with brilliancy. Leaving Oakleigh and steering in a south-westerly direction, between hedges of *Acacia armata*, which were loaded with fragrant flowers, and passing near the house where Power, the once well-known bushranger, now lives, we soon came on to the heath-ground; and here we found many old favourites—a fine pair, male and female, of the Flame-breasted Robin being perched on a fence within a few yards of us, and seemed to be quite at home, and appeared to be utterly oblivious of the presence of field naturalists. The well-known call of the Harmonious Thrush was also heard here, whilst our youthful oologist kept a sharp look-out for nests, peering into dark and uncanny-looking places in the thickest of the furze (Ulex), which, although so pretty, has become quite a scourge to the owners of land in this and similar districts around Melbourne. It may not be out of place to mention that those of us who like to see the old English plants in Victoria can procure a double form of the furze quite as beautiful as the single one, but which does not seed; so, consequently, it cannot spread. The Epacrids, some of which have been in bloom for some months, are now at their best. *Epacris impressa*, with its charming variety of colours, varying from the purest white to crimson, is to be found here in quantity, although the coloured varieties are evidently becoming scarcer on account of being gathered by children and others. *Sprengelia incarnata*, with its singular blooms and prickly stem, is now in full flower, and we gather some for the table. The head

of a sheep, which had probably lain unobserved for some time, upon dissection, afforded us some larvæ of *Onthophagus kershawi*, a well-known beetle which burrows in the sandy ground around Brighton, Oakleigh, and elsewhere. The larva of this curious beetle is black, and not unlike a gigantic Woodlouse; the perfume emitted by the larvæ of the former insect being the reverse of invigorating. Some years ago, if my memory serves me rightly, our worthy President read a paper entitled "Life on an Old Rail." It is not my intention to write a chapter having for its title "Life on (or in) a Sheep's Head;" but I may state that, before leaving the head, we found specimens of nematode worms, crickets, also some beetles belonging to the Necrophori, or carrion-eaters. Our old friend, *Staphylinus erythrocephalus* (a beetle allied to the so-called "Devil's Coach Horse" of England), some smaller Staphylinds, ants, also many other minute insects, all of which were bottled up for future reference. Near here were also found the handsome caterpillars of the Banksia Moth (*Danima banksiæ*).

Travelling along in the direction of Cheltenham, and "dodging" market gardens as we went along (the days for making "bee-lines" in these districts being passed), we came on a damp flat in which grew great numbers of the Swamp Oak, *Viminaria denudata*, Hakeas, Leptospermum, *Malaleuea squarrosa*, and *M. ericifolia*, dwarf Banksias, and other shrubs. It was here that we found plants (out of flower) of the curious little orchid, *Corysanthes unguiculata*, which, when my companion a few months since discovered it growing and in flower, was new to Victoria, and even unknown to most botanists. The finding of this orchid has afforded Baron von Mueller great pleasure, as he is now able to supply museums with an orchid which very few people had previously seen. This locality seems rich in plants; and, on the edge of the ditch, grew fine specimens (18 inches in length) of *Lycopodium laterale*, a plant which I had thought to be long extinct in this district. *Schizæa fistulosa* is also here, Lindsæa, Ophioglossum, and the common *Pteris aquilina* (var. *esculenta*), being about the only ferns to be found here, if we except, perhaps, Gleichenia, which grows in many places on damp, springy heath-soil. Since our last visit to this district, the rain must have fallen heavily, many of the scrubby Melaleuca flats being under water, which we paddle through, jumping from tussock to tussock of Gahnia and other rush-looking plants. Upon examining the pools of water we found many plants of Myriophyllum, Mimulus, Ranunculus, with Tadpoles, Dytiscidæ, and other aquatic insects. Luzula and other small Cyperaceæ also grew near to the water's edge. In passing many abandoned orchards (the result chiefly of the late land-boom), the trees were found to be swarming with insects, scale, moth, as also lichens, and the estimate which, at my request, has been

prepared, that there are 500 acres of neglected and abandoned orchards within a radius of ten miles of Melbourne, is, I feel certain, greatly below the mark. Skirting a formidable-looking swamp, we found ourselves obliged to cross the headland of a market garden in which grew splendid cabbages and cauliflowers; and, upon questioning the owner (who was accosted, partly as an apology for our having entered his garden without permission), we were informed that the cabbages would have to "lie there and rot," as there were "no ships" to take them away—another incident of the strike. Having parted with our good friend the market gardener, we turned south again, following an old track, and it was here that a Bronzewing Pigeon flew past us. Birds seemed fairly numerous, the Wattled Honey-eaters, Australian Minah, Crow Shrikes, and others being frequently seen during the morning. A very pretty watercourse, the bank of which is clothed with low Honeysuckle (Banksia) afforded us an hour's good amusement, the trees being badly attacked by grubs of both moths and longicorns, and "cut boughs," so well known to field entomologists as the abode of that very elegant beetle, *Uracanthus triangularis*, were also seen, and some of the smaller Banksias were badly attacked by a black scale insect which has been determined as a new species of Lecanium.

The gum trees hereabouts seemed to be suffering very much from the attacks of the larvæ of the common saw-fly, whilst the singular looking lumps or excrescences which could be seen on many young gum saplings are doubtless caused by the singular insects belonging to the Brachyscelidæ. A black micro-fungi (possibly closely allied to *Capnodium citri*) was found attendant, as usual, upon the leaves of the Banksia and other plants on which scale-insects of several kinds had fastened themselves. It was now getting towards noon, so we camped and had lunch, which necessary proceeding was not the least enjoyable part of the programme. Lunch over, we again struck into the heath-ground proper, passing on our way quantities of plants (many of them being old favourites), as *Bossiæa cinerea, Aötus villosus, Drosera whittakeri and D. peltata*, Sprengelia, orchids *Pterostylis cucullata, P. curta*, and a solitary specimen of *P. aphylla*, while that curious fern, *Schizæa bifida*, was more plentiful than we had ever seen it before, *Acacia oxycedrus* and *Styphelia virgatus* being at their best. Passing through some abandoned market gardens, on the surface of which were lying huge preserving melons and, must we confess it, some very hot and tough radishes, and once more in the open, we pushed on towards Cheltenham, and about here we noticed that beautiful but shy bird, the Little Grass Bird *(Sphenœacus gramineus)*. We next came to an old road now barely perceptible, but which I at once recognized as the old road between Dandenong and Cheltenham,

and as I had not seen this road before for close upon thirty-five years, it is to me, at least, a pleasant reminder of old times when surveyors' pegs were few and the land-boomer was not. It was near this place that we came across a swamp, in which was erected a sign-post informing us that we were in "Seaview-street." We climbed along the "street" on an old fence, and soon got out of the water and on to higher ground. The pretty orchid *Lyperanthus nigricans* grew here in thousands, and as these were just showing for flower, a visit in about another month's time would amply repay both time and trouble, the plants of this orchid being spread over a space of about fifty yards, the whole of the surface being covered like a carpet with the leaves of this beautiful plant, and never before had we seen them so plentiful. Cheltenham is now reached, and after a refresher at the hotel (built early in 1855), we start off towards the sea coast, passing on our way the former buildings of many of the old identities of these parts, whose worldly prospects have many of them been vastly improved by the fabulous prices paid for the land by the land-boomers, and these places are now "in rack and ruin," and will probably remain so until the Government step in, and, in justice to the orchardists, compel the owners to either clean or destroy these neglected trees. On the hill sides, the lovely little *Euphrasia brownii*, *Hovea heterophylla*, the trailing Kennedya, with its bright red blooms, are in flower, but a long and patient search failed to bring to light any specimens of that morphological curiosity, *Phylloglossum drummondii*, the month of August being too early in the season for it, and the tiny species of Stylidium and Polypompholyx.

As we approach the coast, near the Great Southern Hotel, which is situated just above the well-known "fossil beds," the vegetation changes, large patches of Muehlenbeckia, beach Ti-Tree *(Leptospermum laevigatum)*, some salt bushes, the arborescent *Styphelia Richei*, and the well-known Coast Honeysuckle *(Banksia integrifolia)* are everywhere to be seen; and close alongside the very picturesque tram line which runs between Cheltenham and Sandringham were found large Myoporums, Alyxia, Lasiopetalum, Corræa, and other coast plants, with Bryum and other mosses; also, some lichens, fungi, and Jungermanniæ. Following along through the dense belts of Ti-Tree a sharp look-out was kept for the nests of Honey-eaters (Meliphagidæ), some kinds of which pretty birds are now laying; but although we found many old nests, none of this season's building were seen, leading us to suspect that we were too early for them. Amongst the undergrowth quantities of the orchids *Pterostylis pedunculata*, *P. curta*, *P. nutans*, and *P. concinna* were seen, and nearer Sandringham a few early-flowering specimens of

Caladenia deformis were collected. To enumerate even a tithe of what we saw in the way of small fungi, as Agarics, pretty Clavarias, and others, as also the numerous sedges, mosses, and other small plants, would be to furnish a list far too long for a paper of this kind. In a paddock formerly belonging to the late Sir Charles Ebden, and long known as Ebden's Paddock, was found a very singular-looking eucalyptus, on which was a scale insect quite new to the writer of these notes, and the identification of the gum my friend Mr. Luehmann has promised to ascertain for me from the Baron. In this paddock grow many large trees of the common wattle *(Acacia decurrens)*, nearly all of which are badly infested with insects of many kinds, as the larvæ of moths, longicorns and other beetles, some specimens of which were secured for the Government collection of economic entomology now in the course of preparation. On the way to Sandringham quantities of the Sweet-scented Acacia *(Acacia suaveolens)* were seen in full bloom, and also the dwarf and local variety of *Acacia juniperina*. *Pimelea octophylla* and *phylicoides* were also plentiful and in flower. The appearance of surveyors' pegs indicated that we were close to the new railway township of Sandringham; so, after adding to our treasures in the shape of a few sprigs of Epacris, *Daviesia ulicina*, &c., we made for the railway station. Insects were scarce, only a few beetles, Diptera, Neuroptera, and Hymenoptera, being taken, in addition to the scale insects alluded to previously; and although we tramped about fifteen miles, no snakes were seen, but persons so travelling should be cautious, as several of these reptiles have been seen within the last two months in this and the Oakleigh district. The number of orchids seen in flower was 12—not so bad for the month of August. We reached home about 6.30 p.m., having had a most enjoyable day's outing amongst the heath-grounds.

CORRESPONDENCE.

To the Editor of the Victorian Naturalist.

Sir,—As some of my remarks on Australian teal were apparently somewhat incomplete, I would like to state, in reply to Mr. Thos. Campbell, that I only heard of two chestnut-breasted birds being shot at King Island, and only saw one myself. During the trip of the first party down the west coast, a number of the sombre birds were seen, and some half-dozen were shot. I had the opportunity of dissecting five. Four proved to be adult males, so that any doubt as to their being females of the chestnut-breasted variety is cleared away.—Yours, &c.,

G. A. KEARTLAND.

North Carlton, 6th September.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS;

By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

(Continued.)

Eucalyptus Bauerleni.

Shrubby or arborescent; branchlets rather robust, angular when young; leaves scattered, on comparatively short petioles, thickly chartaceous, mostly falcate-lanceolar, dark-green on both sides, without conspicuous lustre; their venules subtle, rather close, moderately spreading, the marginal one distinctly removed from the edge of the leaf; oil-dots copious but faint; peduncles axillary, solitary, very short, broadish, compressed, usually three-flowered; pedicels only very little developed or quite obliterated; tube of the calyx almost semi-ovate or more hemi-ellipsoid, slightly angular; operculum somewhat shorter than the tube, its lower part rather depressed, the upper somewhat suddenly ending in a narrow point; stamens all fertile; filaments yellowish-white except the reddish base, infracted before expansion; anthers pale, nearly ovate, opening by longitudinal slits; style short; stigma hardly broader than the style; fruit somewhat large, nearly semi-ovate, its border narrow, slightly channelled; valves three or four, arising considerably below the border, semi-exserted, rather pointed; fertile seeds almost ovate, without any appendage, larger than the sterile seeds, flat or angular on the inner side.

On rocky declivities of the Sugar-Loaf Mountain, towards the sources of the Clyde, at elevations between 2,500 and 4,000 feet, together with *Eriostemon Coxii* and *Hakea Macraeana;* W. Bauerlen.

Thinly few- or many-stemmed, flowering at a height of 5 feet, but attaining to 40 feet. Bark smooth, brownish outside, the outer layers seceding. Leaves to 7 inches long and to 1 inch broad, generally with a reddish edge. Calyx inside near the margin often red. Style usually red. Fruit often fully ⅓-inch long.

This species in many respects approaches *E. goniocalyx*, but the leaves are of a darker green, have the venules more immersed, and are more pellucidly dotted; the peduncles are shorter and bear a lesser number of flowers, the lid is much pointed, almost like that of *E. leucoxylon*, the fruit is larger and nearly as broad as long with elongated and thus much emerging valves, hence more like that of *E. resinifera*, and the leaves of young seedlings are from roundish-oval to elliptic and soon scattered.

It differs from *E. Gunnii* in the marked curvature of the leaves and their thinner venules, reduced inflorescence, constant obliteration of pedicels, somewhat angular calyx-tube, longer

pointed lid, larger fruits less downward attenuated and rather long-valved, also in the foliage of the young seedlings. It recedes mainly from *E. viminalis* in leaves with thinner venules and more conspicuous oil-dots, in the flattened and also often thicker and shorter peduncles, in the angular calyx-tube, in the shape of the operculum, and again in the larger fruits with half-enclosed valves of greater length and narrow rim.

Mr. Bauerlen has sent from near the Clyde also specimens of a Eucalypt, which he considers a hybrid between *E. corymbosa* and *E. maculata*, in which case the characteristics of the former are prevailing; the leaves however are generally narrower, the operculum is double like that of *E. maculata*, and it separates by a clear transverse line; the wood also was found much lighter in colour than that of the genuine *E. corymbosa*, and the bark smooth on the upper portion of the stem as in *E. maculata*. The flowering time proved later than that of the former; as many as 16 flowers occur in an umbel; the fruits are generally not so long as those of *E. corymbosa*.

HELIPTERUM TROEDELII.

Annual, never tall; upper part of the stems and any branches beset with appressed lanuginous vestiture; leaves small, copious, from broad-linear to narrow-lanceolar, nearly flat, soon glabrous; headlets of flowers small, mostly crowded into terminal corymbs; peduncles very short or even some obliterated; involucres almost hemi-ellipsoid, terminating in short white laminas; outer involucral bracts brownish or somewhat colourless, broadish, blunt, glabrous; flowers 12–15; corollas only moderately widened upwards; achenes beset with white silk-like vestiture, those of the central flowers imperfectly developed; pappus white, to about one-third or nearly half its length quite tubular, thence extending into 6–9 imperfectly pennular-plumous bristlets.

Near the Barrier-Ranges; Mrs. Irvine. At Leight's Creeks, beyond Beltana; Mrs. Richards.

Erect or occasionally somewhat depressed. Height, so far as known, to 7 inches. Stems usually several. Leaves ¼–¾ inch long, 1/6 inch broad or narrower; involucre, irrespective of the laminas, ¼–⅓ inch long, the latter nearly half that length. Corollas almost totally enclosed, about as long as the pappus.

Somewhat similar to small forms of *H. corymbiflorum*, but partly glabrous; allied also to *H. strictum*, but the leaves much narrower and the peduncles very short; differing also widely from both and indeed from most congeners in the paucity of the bristlets of the pappus, which moreover is more extensively tubular than that of any other species. The plant shows some external resemblance also to *Helichrysum semifertile*; but the pappus is very different, and so the indument of the achenes.

This neat though small everlasting is dedicated to Charles Troedel, Esq., an honoured friend of the author through many years, from whose splendid lithographic establishment many hundred plates have emanated for works issued by the Phytologic Department of Melbourne. According to strict right of priority the generic name Argyranthus takes precedence over that of Helipterum.

Helipterum rubellum was found near Mount Caroline by Miss Julia Wells.

H. incanum and *H. moschatum* extend to the Warrego; L. Henry.

H. polyphyllum; southward to the Tweed, Rev. B. Scortechini, and to Narrabri, Betche.

H. corymbiflorum; Bowen-Downs, Ch. Birch. Small specimens with single headlets of flowers sent from the Flinders-River by Mr. Th. Gulliver. Rays rarely rosy-red. Illustrated in Wawra and Beck's "Itinera Princ. Coburg." ii., 35, also *H. dimorpholepis*, ii., 36.

H. pterochætum; Mulligan-River; W. H. Cornish.

H. polycephalum; near the Stirling's Range, F. v. M. Occasionally some few of the outer flowers devoid of a pappus.

H. læve; Pulpulla, Josephson; base of Stirling's Range, F. v. M. Corollas very slender.

H. exiguum; near Swansea, Tasmania; A. Simson.

H. dimorpholepis; Severn; Rev. B. Scortechini.

(To be continued.)

MIMICRY IN THE ANIMAL WORLD.

By Rev. George D. Hutton, M.A., B.Sc.

(*Read before the Field Naturalists' Club of Victoria, 8th September*, 1890.)

In bringing this subject under your notice this evening two reasons influenced me. The first is that, unlike most of you here, I have been unable to find time for any field work. I had thus to take up a general subject. The second reason which induced me to take the special subject of mimicry was that, in the course of reading on the results of the travels of naturalists, no examples of mimicry were noted from Australasia. This, I believe, is not due to the fact that none exist, but because no attention has been paid to it. I feel, then, that though this paper contains very few original observations, it may lead to such by suggesting regions of observation to some who have the opportunity of traversing them.

The term mimicry is now pretty much narrowed down to cases in which one species so closely resembles another species, in its form, in its coloration, and in its habit, as to be often mistaken

for it, though the imitator and the imitated may belong to utterly different genera. In this paper I use the term as applying also to cases in which protective imitation refers to objects as well as living organisms.

By a great many people the coloration of animal life is looked upon as something merely fortuitous, something of merely physical significance, but the facts to which I allude further on will, I think, show that the coloration of animals has a very deep *biological* significance.

Colours are produced either by the presence of pigment cells absorbing certain rays of light and reflecting the remainder, or by the interference of rays of light of certain wave-length. This is the cause of the brilliant metallic colours we so often find in the plumage of birds, the surface of the feather, on which the light falls, being so finely divided by the lines of junction of the separate pinnæ. Few animals are brilliantly coloured, but colours whether brilliant or sombre are always an advantage to the possessor. You will notice how uniform is the colour among wild, and how varied it is among domesticated animals. The reason is that protection is assured to tame animals and even the most conspicuous is secure. A white rabbit, say, is an easy mark to the hawk, and cannot long escape, while a grey one is protected by the similarity of its coat to its environment. In Arctic regions the reverse of this would, of course, obtain, and there we find that the animals whose defence or attack consists in concealment are white, imitating their snow-clad surroundings; while in the same region we have the raven black as proverbially, because "it fears no foe," so needs no protective coloration; it preys on carrion, so its approach need be neither silent or concealed. In desert regions, on the other hand, animals are mostly of a brown sandy colour. Here in Australia, the kangaroo when at rest among the timber will often deceive even practised eyes. You would at least think that the gorgeously coloured parrots of our forests would be easily seen, but I have often stood beneath a tree into which I had seen rosellas and lories fly, and could not till they moved distinguish them from the foliage among which they were esconced.

The change of colour in the chameleon is quite another thing. This change is brought about by means of two layers of pigment cells deeply seated in the skin. These can at will be forced upwards, thus changing the whole appearance, and I have heard of a frog accommodating itself to its surroundings by a diffusion of the pigment cells in the skin. When on a mudbank, the skin was a dusky colour, owing to the equal distribution of pigment, but when placed on a sandbank it became yellow, the dark pigment being all aggregated into small black patches. The unconscious change of colour in larvæ and pupæ is well known to many of you, but so

far as I know no adequate explanation has been found. The most common form of protective coloration is brought about by definite markings—*e.g.*, the snipe can with great difficulty be distinguished when standing motionless among the dead vegetation in its favourite haunts. A tiger or leopard skin looks one of the most conspicuous objects, and yet such a famous hunter as Major Walford states that, on one occasion, he was unable to distinguish a tiger not twenty yards off, so closely did its yellow and black stripes resemble the withered stalks and deep shadows of the jungle grass. The defenceless sloth, too, is apparently a most conspicuous object, when seen in a museum, from the oval buff-coloured spot on his back; but a writer as far back as 1810 says:—"The colour and even the shape of the hair are much like withered moss and serve to hide the animal in the trees, but particularly when it has that orange-coloured spot between the shoulders and lies close to the tree; it looks then exactly like a piece of branch, where the rest has been broken off, by which the hunters are often deceived."

You are all familiar with the way in which moths and beetles resemble their surroundings, but there are creatures whose mimicry is so good as to deceive even the clos st view. I have frequently seen a small species of caterpillar common on the red currant bushes, feeling about in search of a new landing place, but when it was disturbed it erected itself and became so rigid and motionless as to exactly resemble a withered leaf-stalk.

The author of "The Naturalist in Nicaragua" once saw a leaf-like locust stand immovable in the midst of a band of insect-eating ants, which ran over its body and legs and did not seem to be aware what a glorious feast was so near their reach. The currant caterpillar to which I referred is, I think, that of one of the geometer moths; and Mr. Weir, of the Britsh Museum, says that, "after being an entomologist for thirty years, he took out his pruning scissors to cut off a spur from a plum tree which he had evidently overlooked in pruning the day before, and he found it to be a caterpillar about two inches long, and even after telling several friends that there was a caterpillar in a space of two inches radius, none of them could see it."

One of the most perfect instances of mimicry was brought under my notice by a gentleman who had spent some years in India. It was a butterfly (probably *Kallima inachis*) the under surface of whose wings resembled a dead leaf. This butterfly settles on a twig; the short tail of the posterior wings just touches it, and looks like a leaf-stalk; from this a dark curved line runs across to the elongated tip of the anterior wings—this is the mib-rib, and from both sides run off oblique nervures. The head and antennæ are quite hidden by the closed upper wings.

That as good examples are to be found in Australia I do not

doubt, and in the course of the coming summer I am sure original notes on mimicry will frequently be read here. Here, for example, is a splendid example of mimicry from French Island. I don't know exactly what it is; it seems to be a Mantis. You see how closely it resembles the tip of a growing gum shoot. Here, too, is a grasshopper whose wings are quite undistinguishable from blades of grass. I should like some of the entomologists present to indicate the habits of the Mantis I have shown. Their knowledge may confirm or destroy my idea that it is a case of "alluring mimicry"—that is, imitation for the purpose of securing its prey; for in India and Java there are species of Mantidæ of genera Gongylus and Hymenopus, which closely resemble flowers. Each is a living trap, and woe befall the insect that seeks to satisfy its hunger from the supposed nectar glands. It will catch a tartar—or, rather, the tartar will catch it.

Those of you who are ornithologists will be able to give examples of birds'-eggs that are left uncovered in open nests. These eggs, I think you will find, will closely appoximate to their surroundings. Of instances I myself know, I may just mention the Sandpiper and the Lapwing.

The examples I have hitherto cited have all as their object or result the rendering inconspicuous the imitators. There are other cases examples of quite the reverse. These would be examples of mimicry in the restricted sense. In this way defenceless creatures, by their resemblance to ones protected in a special way, are themselves protected. It is important not to be taken for what they are—eatable, defenceless creatures. Of the morality of such hypocrisy I shall not here speak. A few instances will prove interesting, and lead to fuller investigation. A sort of generalized instance might be given by a case, say, of a non-union man at the present juncture flaunting the union colours to escape dire consequences of being what he really is. In the insect world special examples of this are numerous. Those insects whom no one can touch with impunity are all conspicuous. The wasp does not need to rely on protective coloration for escaping its foes, and numerous harmless insects are possessed of such a pungent taste or odour that insectivorous creatures avoid them. Three groups of butterflies will serve for examples—viz., the Heliconidæ, Danaidæ, and Acræidæ. All these are gaudily coloured, have almost the same markings on both sides of the wing, have a slow and sluggish flight, and are possessed of a disagreeable odour, most difficult to remove if some of the juice from the body, having been roughly handled, gets on to the fingers. Perhaps some of you whose collections of insects have been attacked by mites may have noticed that some species are untouched. If so, observation would, I believe, show that these are slow fliers, gaudily coloured, and untouched by

birds because of their pungency. That some insects are peculiarly offensive may be proved from the experiment of Mr. A. G. Butler. He placed some caterpillars of the Gooseberry Moth (Abraxas) before a frog, which sprang forward and licked one into its mouth; no sooner had it done so than it found it had made a mistake, and sat with gaping mouth and rolling tongue until it got quit of the nauseous morsel. The fact that certain insects are extremely nauseous explained half of a fact observed by Mr. Bates on the Amazon. Mr. Bates noticed fifteen species of Pieridæ that imitated Heliconidæ so closely as to need the most careful examination to distinguish them. The Heliconidæ are most offensive, and the Pieridæ by their resemblance escape destruction. That one example is sufficient to show what occurs among the Lepidoptera. Other examples will be found in Mr. A. R. Wallace's "Tropical Life," and probably by some of you from nature herself.

Another group of insects in which the most perfect mimicry obtains is the beetle group. Here we find longicorns possessed of a curious resemblance to malacoderms, the former being persecuted by insectivorous birds, while the latter are distasteful and are let alone. A most curious example of mimicry is seen in the case of a beetle of the genus Coloborhombus, which appears at first sight identical with a large Bornean wasp, and the beetle is evidently conscious of the power of its danger signals, as it always moves about with expanded wings.

It is only necessary to mention the names of *Sesia bombiliformis*, *apiformis*, *vespiformis*, to indicate how these clear-winged moths benefit in their stolen garb.

Among vertebrates, too, we can find examples of mimicry. In a genus of snakes (Elaps) a very prominent peculiar colouring is seen. The snake always bears about with him a very legibly written notice to all whom it may concern, especially snake-eating birds and animals, that he is poisonous to eat as well as in biting. Very like this is a harmless edible snake, *Pliocerus equalis*, which from its resemblance to the poisonous species enjoys immunity.

A very good example of mimicry among birds is noticed at great length in A. R. Wallace's "Malay Archipelago." The Friar Birds, with their long, curved, sharp beaks, quite a match for any crow or hawk, are very closely imitated by a timid harmless Oriole, and even a good naturalist has, at first sight, considered an Oriole and a Friar Bird to be the same species.

I have no doubt that investigation would show that among the pelagic fauna there were a great many cases of mimicry, and in fact a Sydney gentlemen has told me that he could not make out a carpet shark till it began to move away, though he knew it was only a few feet off, nearly under the boat.

NOTES FROM THE BOTANIC GARDENS.

A FEATURE being made more prominent in connection with recent improvements here by the director, Mr. Guilfoyle, is the geographical grouping of plants in various beds on the lawns and in plantations, the principal one being that now roughly formed along the southern boundary fence of the gardens, and which is devoted generally to Australian plants. Here have already been placed between four and five hundred species, typical of about two hundred genera. These include some of the most interesting and beautiful of the native flora, such as Boronias, Callistemons, Daviesias, Dillwynias, Eriostemons, Prostantheras, Grevilleas, Hoveas, Melaleucas, Pultenæas, Sprengelias, &c.

In addition to these, in groups adjacent to the plantation, are distinct collections of Eucalypts and Acacias. Some fifty species of the former and forty of the latter (a large number of which have but recently flowered) are contained therein. Apart from this plantation, and in order to show the distinctive local character of some of the Australian vegetation, the plants of Queensland and Northern New South Wales are arranged in separate groups on the lawns. The New Zealand plant groups are in course of formation, and already contain some of the most interesting types of the flora there met with. The collection of varied and interesting trees, shrubs, &c., of America has been so increased, a much larger group than the one in which they are now contained is in progress of preparation. Cape plants may be seen largely together on and about the principal rockery, near the lake.

While this and further geographical arrangements with regard to groupings are being carried out, additions will also be made to the number of truly botanical groups of natural orders, the whole being carefully designed by Mr. Guilfoyle so as to harmonize with and increase the beauty of the landscape and natural scenic effects desired —F. P.

NOTES FROM THE ZOOLOGICAL GARDENS.

WE notice that some improvements have lately been effected in the Zoological Gardens, chief among which is a large new monkey-house, containing five divisions, and heated throughout. The strange and human-like Orang-outans have now more scope to display their antics, which afford much interest and amusement to visitors; other monkeys are also placed here which are unable to withstand our cold weather. Two large aviaries have also recently been constructed, one for Blackbirds and the other for Thrushes, and as the aviaries are well stocked with shrubs, it is hoped that the birds will breed. Several new animals of interest

have been lately added to the collections—namely, the Equine Deer, from Borneo ; some Kit Foxes and a Red Fox, from North America; a Black-backed Jackal and a young Chacma Baboon, from Africa ; a wild Burrhel Sheep, from Northern India ; a pair of Curassows, from North America ; a Great-headed Maleo, from the Celebes ; a Lowan or Mallee Hen and two Brush Turkeys, from Queensland. A pair of Black Swans were nesting at the beginning of last month.—D. Le S.

At a meeting of the Royal Society of Edinburgh, held 16th June, the Hon. Lord M'Laren, vice-president, in the chair, a paper was read on a "List of West Australian Birds, showing their geographical distribution throughout Australia, including Tasmania," by Mr. A. J. Campbell, F.L.S., Melbourne, communicated by the Rev. Dr. M'Gregor. We learn that the paper was much appreciated, and will probably appear in the transactions of the society.

A Hay journal reports :—"No sooner does one plague disappear than another takes its place. We have had our drought, our caterpillars, and our grasshoppers. Now it seems Riverina is to be overrun by frogs. At one station near Hay they may be counted by thousands, and are making great havoc on the young grass."

Australian Trees in France.—The Paris correspondent of the *Chemist and Druggist* (London) in a recent issue says that slips and seedlings of the *Acacia dealbata* (Silver Wattle) and *Eucalyptus viminalis* from Australia have been successfully grown at Antibes, near the Mediterranean, and now begin to yield their peculiar gums. Specimens of gums, kino and acacia, recently examined by Professors Heckel and Schlagdenhaufen, of the Nancy College of Pharmacy, have proved to be in every respect similar to the foreign products, the acacia especially being found entirely soluble, very transparent, and strongly adhesive.

A fisherman named Carstairs (says the *Standard*) one morning called at the Customs department and stated that he and his party left the Gippsland Lakes a week or two back, intending to fish off the Ninety-Mile Beach. The weather proving rough, however, they ran for Kent's Group, in Bass's Straits, and there they were so successful that they propose to obtain a properly-appointed steamer and bring their fish right into market. The principal fish caught on this trip were trevalla, mackerel, and salmon trout, but it is thought that with proper tackle even better results will be obtained. Messrs. Carstairs and Co. propose to ask the Commissioner to renew the offer of a bounty for deep sea fishing

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

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FIELD NATURALISTS' CLUB OF VICTORIA.

EXCURSION TO RINGWOOD, SATURDAY, 13TH SEPT.

As usual this season, the day fixed for this excursion turned out unpleasant in the morning, and finally rain set in. However, about ten members arrived at Ringwood by the 1.20 p.m. train. It was now raining slightly, but the paddocks were very wet. On a consultation being held, five decided to try their luck, the remainder of the party returning to town.

A southerly direction was taken, towards the Dandenong Creek, which it was intended to reach if weather permitted. The members found the country very soft, and were not particularly well rewarded for their perseverance. The orchid *Caladenia deformis*, with its pretty blue flowers, was very conspicuous in many places; others, such as *Pterostylis nutans*, *nana*, and *curta* were also seen; also *C. carnea*, *patersoni*, and two or three Diuris. Of flowering plants nothing particularly rare was seen, though about forty species were noted during the walk; of these, perhaps *Euphrasia brownii* seemed the rarest. On reaching the banks of the creek a fine growth of trees and shrubs was seen. *Acacia dealbata* had made a fine display, but was now over. Bursaria, Prostantheras, Pomaderris, Leptospermum, &c., where here in abundance, and the locality should reward our entomologist later in the season.

In entomology little was done, the weather being too bad. Specimens of butterflies—*Vanessa Kershawi* and *V. itea*—were seen, and several small moths and larvæ taken. A longicorn, Phoracantha (sp.), was about the only other insect taken.

F. G. A. B.

EXCURSION TO CHELTENHAM.

The weather on the day fixed for the Cheltenham excursion—27th September—was even more unpromising than that of the Ringwood one, and it was, therefore, not very surprising that only five members met on the Cheltenham platform, nor that these five immediately began to discuss the best way of getting home again. The rain was coming down in torrents, and the sky had a uniformly grey appearance that boded ill for any change for the better. But we were in a cheerful frame of mind, and preferred to point out how the dark background showed off the beauties of the lightwood and other shrubs in the enclosure opposite to us. That form of amusement being exhausted, two members returned

to town by the next train ; while the others of us determined to take the tram to Sandringham.

At first our environment was certainly gloomy, but at Beaumaris the rain entirely ceased and allowed a little botanizing, though walking in the heath scrub was very like taking a foot-bath. It is needless to say that we obtained many beautiful flowers, but none were of much scientific interest. The Coast Tea Tree (*Leptospermum laevigatum*) was at its best, and, quite on the shore, the Native Currant (*Styphelia richei*) was also covered with its beautifully soft flowers. Amongst the heath, which was still flowering freely, were *Ricinocarpus pinifolius* and the small Tea Tree (*Leptospermum myrsinoides*), the latter not yet well in bloom. The common orchid, *Glossodia major*, was very abundant and of large size, and with it we found *Diuris longifolia*, *D maculata*, *Thelymitra antennifera*, *Caladenia latifolia*, and *C. deformis*. Species of other orders, and worth mentioning as just beginning their flowering season, were *Stylidium graminifolium*, *Caesia vittata*, and *Bulbine bulbosa*.

After some time spent in finding these and numerous other flowers we entered a passing tramcar bound for Sandringham. The sun was now shining brightly, making the Tea Tree on either side less dull and its blossoms even more brilliantly white than usual. The drive along the winding coast road was thus a very pretty one, and made a satisfactory end to an excursion that was certainly not entirely spoiled in spite of its gloomy beginning.

J. STEPHEN HART.

MELTON EXCURSION.

At the appointed time, 11.30, on Saturday, October 11, three members of the Field Naturalists' Club met at the Spencer-street station, and having congratulated themselves that, if the company was not numerous, it was, at all events, select, tickets were obtained, and on approaching the train a cheery voice announced two more members already seated, whilst in an adjoining carriage was a friend who has determined to join our ranks and had been asked to accompany us. A threatening sky and high wind forebode an unpleasant afternoon, but by the time Rockbank was reached all fears on the score of weather were dispelled. Along the train route we frequently saw the pretty Nankeen Kestrel, Crow Shrikes, Ephthianura, and Black-breasted Plover. The latter birds are already through their hatching, and a flock of great size was seen just before reaching Melton. As soon as the train stopped at the latter place a start was made in a south-westerly direction for about half-a-mile, during which Pallid Cuckoos, Rosella Parrakeets, Sordid Wood Swallows, Spotted-sided Finches, Ephthianura, and other well-known birds were met with. During a northerly course of another half-mile our attention was called to the peculiar con-

duct of an Australian Pipit. This bird kept fluttering round the party in a manner which convinced us that her eggs or young were near. As we searched the grass a young bird, evidently out for his first day, flew off, but was pursued and captured. The mother now became bolder and perched on a stump close by, showing evident alarm at our proceedings; but as her offspring was soon liberated, the pair went off rejoicing. Near a fence which skirts the road a pair of Warbling Parrakeets were seen. In a belt of box timber and scrub a hurried search was made for nests, several of which were found in places that defied our climbers. Here we met with many varieties of birds, the most interesting being a Red-capped Robin. Whilst pursuing our search for nests an unfortunate rabbit made his appearance and fell a victim to one of the party. In a short time the nest of a Butcher Bird was found, but the eggs were far advanced. Close by another nest, which proved to be that of the Yellow-tailed Geobasileus, was seen. As the eggs were quite cold they were taken. A pleasant walk of rather more than a mile led to the farm of Mr. Raleigh, a gentleman whose hospitality has been previously enjoyed by several members of this Club. Here one gentleman appointed to meet us later on; but our number was not lessened, as Mr. Charles Raleigh accompanied us into the forest and along some of the dry creeks. Regret was now felt that our party lacked a botanist, as wild flowers were numerous and beautiful, many orchids and some nice ferns attracting attention. As time was short, a circuit of two large paddocks was decided on, in the course of which a young magpie's cries revealed a nest in a most exposed situation, on a dead box tree, on the hill side. Whilst some of us were expressing our wonder at the situation of the nest, another found the eggs of a Wattle Bird in a heavily-foliaged sapling close by. Here the Musk Parrakeet, Pomatorhinus, Yellow-breasted Robin, White-eared Honey-eater, and Scarlet-breasted Robin, among other birds, were noted. A hasty search was now made where, three weeks ago, one of the party discovered the nest of the Little Chthonicola, but without success. The nest found on that occasion was a marvel of concealment, and had the bird remained at home, her domicile would have escaped notice. It was formed in a little hollow in the grass, the live blades of which were worked in the structure, and to make the concealment more complete, pieces of fresh gathered moss were strewn on top. This called to mind Mr. Hutton's paper on "Mimicry," for, although the nest was within two yards of where the finders stood, it took some minutes to find it. I have thus minutely described it, as I have not seen any mention of it previously, and the eggs are not in many collections. A few minutes' walk led to a large dead box tree, on approaching which a Sulphur-crested Cockatoo darted out of a hollow

limb, thus showing her nest. The entrance had been enlarged by these birds with their powerful bills until it looked as though a tomahawk had been at work, and the chips on the ground seemed to support this theory. Here several Wattle Birds' nests were found; but we were again too late, as one contained a young bird, and the others were deserted. A Thick-billed Bronze Cuckoo's egg was next found in the nest of the Yellow-tailed Geobasileus. A start was now made on the return to Mr. Raleigh's, and on the way we were rejoined by our absent member, who had been exploring some of the gullies in company with Mr. Raleigh, sen. The homestead was reached at 5.15, and all were invited to a cup of tea, which proved very acceptable. The party now divided, as Mr. Raleigh volunteered to drive as many as the trap would hold to the station; whilst the others took a much shorter cut across the paddocks. So awkwardly are the roads laid out that the pedestrians reached the station some minutes in advance of the rest, who had to travel about twice the distance. The trip throughout proved a most enjoyable one, the weather being all that could be desired, and all regretted that the time was too short to take more than a flying trip. A list of the birds noted is attached:—Brown Hawk, Nankeen Kestrel, Jardine's Harrier, Welcome Swallow, Sordid Wood Swallow, Great Brown and Sacred Kingfishers, Striated Pardalote, Piping and White-backed Crow Shrikes, Butcher Bird, Pied Grallina, Black-faced Grauculus, White-shouldered Campephaga, Rufus-breasted Thickhead, Harmonious Shrike Thrush, Frontal Shrike Tit, White-shafted and Black Fantails, Scarlet, Yellow-breasted, Hooded, and Red-capped Robins, Superb Warblers, Striated Wren, Acanthisæ, White-fronted Ephthianura, Little Chthonicola, Australian Pipit, Red-eyebrowed and Spotted-sided Finches, Oriole, White-eyed Crow, Chestnut-crowned and Temporal Pomatorhinus; New Holland, White-cheeked, White-plumed, and Yellow-faced Honey-eaters; Wattle Birds, Friar Birds, Garrulous Honey-eaters, Brown and White-throated Tree Creepers; Pallid, Brush and Bronze Cuckoos, White Cockatoos, Pennant's, Rosehill, Warbling, and Musk Parrakeets; Black-breasted Plover, one Slender Teal, and a pair of Southern Stone Plovers.

G. A. KEARTLAND.

REPORT OF CONTINGENT OF MR. KEARTLAND'S EXCURSION.

The party consisted of Messrs. A. J. Campbell, F.L.S., Charles and Tom Brittlebank, and J. Lidgett, the two last named being new members of the Club.

An early start was made from Dunbar, near Myrniong. A

southerly course was taken. After crossing the Myrniong Creek, Werribee River, and the railway line between Bacchus Marsh and Ballan, a forest consisting chiefly of stringybark and ironbark with acacia scrub, and traversed with deep gullies, was invaded. Recrossing the railway line a more north-easterly line was followed, which led down a very deep and secluded valley to what is locally known as the Werribee Gorge—an exceedingly wild and romantic place. From the bed of the river hills tower up on either hand to about 500 feet. Some places are quite precipitous and rocky for about 200 feet to 300 feet from the water's edge. There is plenty of scrub about. The river was followed up to its junction with the Myrniong Creek, and finally the starting point was reached after ten hours' actual travelling and climbing. The probable mileage covered was about ten miles, but from the rough nature of the country it was equal to 25 or 27 miles of ordinary walking. The weather was fine but breezy and the summits of the hills were found to be very *windy* in a double sense.

The number of birds identified was exactly 50 species, nests and eggs being taken of 19, namely :—Boobook Owl—Near the Werribee a bird was flushed from the hollow of a dead gum-tree by a heavy stone being thrown against the barrel. The tree ascended, a hole was quickly chopped and three eggs taken therefrom. A Yellow-tailed Tomtit's nest was taken, in case it contained a Cuckoo's egg. This assumption was proved by finding in the nest the egg of the Bronze Cuckoo. The next nest found was that of the pretty Blue-headed Warbler. The home was artistically placed in a tussock of grass behind a dead fallen wattle, and, strange to say, this nest contained the spotted egg of the Narrow-billed Bronze Cuckoo. At the bottom of a deep gully the neat moss-constructed nest of the Yellow-faced Honey-eater was taken. It contained one egg only and was suspended in an acacia bush which may be distinguished by the glutinous touch of its new-sprouting foliage. Artfully hidden in an adjoining thorny bush was the nest containing a clutch of three eggs of the White-throated Thickhead. Subsquently was discovered another nest of this species, with the handsome male bird closely sitting upon young.

In commanding positions of more secluded gullies, Wedge-tailed Eagle eyries, new and old, were not uncommon. Instances were noted of two and three in one tree. (Three pairs of these noble birds were seen.) An attempt was made to ascend a moderate-sized tree on a steep declivity to one of these eyries, but a glimpse into a yawning abyss below made the stoutest-hearted member of the party forbear. Afterwards, however, when it was found necessary to inspect one of these huge nests, instead of climbing the tree one climbed a few yards up-hill, where, by the aid of a pair of binoculars, or even without them, the nest was

laid bare below. This may give some idea of the steepness of the hills to be negotiated.

The first novel note was the taking the egg of the Narrow-billed Bronze Cuckoo in the nest of the New Holland Honey-eater. This is the first recorded instance of this particular cuckoo being parasitical to a Honey-eater. A second novelty was the taking eggs of the Owlet Night-jar and a nest and egg of the White-throated Tree Creeper in the same hollow. It is a good plan to tap hollow trees or stumps. By so doing a Night-jar was flushed from a hole not many feet from the ground. An application of the tomahawk soon revealed three white eggs of the Night-jar, but they appeared to be resting upon a bed composed of bark, moss, &c., instead of decayed matter of the tree. Further inspection discovered in the centre of this cosy matter, a fractured specimen and the whole egg of the Tree Creeper. In colonial parlance it was a *primâ facie* case of jumping one's claim, for evidently the Tree Creeper had first constructed its comfortable nest in the hollow, which was afterwards appropriated and trodden down by the nocturnal bird for its clutch.

The shapely nest of the Black Fantail and the little White-shafted were observed with eggs. It would have been desecration to have meddled with such elegant homes, their beauty and symmetry simply defying all human art. The sun had now nearly set when the resplendent crimson form of Pennant's Parrakeet was detected in a box-gum. A hasty warning note from the bird caused its lovely mate to emerge from the nest-hole, and with undulating flight the pair crossed a valley. In the meantime it was quickly ascertained that a couple of eggs reposed far below in the hollow, which it was deemed prudent to leave, as darkness was fast approaching and thus closing in a most enjoyable day.

To the nests found with eggs already mentioned may be added the Great Kingfisher (Jackass), Rosella Parrakeet, Red-eye-browed Finch, Black-faced Grauculus, Yellow Robin and the Scarlet.

Subjoined is a full list of the birds identified :—

Allied Harrier	...	Circus gouldii
Wedge-tailed Eagle	...	Aquila audax
Brown Hawk	...	Hieracidea orientalis
Nankeen Kestrel	...	Tinnunculus cenchroides
Boobook Owl	...	Ninox boobook
Owlet Nightjar	...	Ægotheles novæ-hollandiæ
Welcome Swallow	...	Hirundo neoxena
Great Kingfisher	...	Dacelo gigas
Sacred Kingfisher	...	Halcyon sanctus
Wood Swallow	...	Artamus sordidus
Spotted Diamond Bird	...	Pardalotus punctatus
Grey Crow Shrike	...	Strepera cuneicaudata

White-backed Crow Shrike (Magpie)	Gymnorhina leuconota
Butcher Bird	Cracticus torquatus
Pied Grallina	Grallina picata
Black-faced Cuckoo Shrike ...	Graucalus melanops
White-shouldered Caterpillar Catcher	Lalage tricolor
Rufus-breasted Thickhead ...	Pachycephala rufiventris
White-throated Thickhead ...	Pachycephala gutturalis
Harmonious Shrike Thrush ...	Collyriocincla harmonica
White-shafted Fantail ...	Rhipidura albiscapa
Black Fantail	Sauloprocta motacilloides
Scarlet-breasted Robin ...	Petrœca leggii
Yellow-breasted Robin ...	Eöpsaltria australis
Superb Warbler	Malurus cyaneus
White-fronted Scrub Tit ...	Sericornis frontalis
Little Acanthiza	Acanthiza pusilla
Yellow-rumped Tomtit ...	Geobasileus chrysorrhæa
White-fronted Chat ...	Ephthianura albifrons
Australian Pipit	Anthus australis
Red-eyebrowed Finch ...	Estrilda temporalis
Oriole	Mimeta viridis
White-eyed Crow	Corone australis
New Holland Honey-eater ...	Meliornis novæ-hollandiæ
Garrulous Honey-eater (Minah)	Myzantha garrula
Yellow-faced Honey-eater ...	Ptilotis chrysops
Wattled Honey-eater ...	Anthochæra carunculata
Spine-billed Honey-eater ...	Acanthorhynchus tenuirostris
Spiny-cheeked Honey-eater ...	Acanthogenys rufogularis
Lunulated Honey-eater ...	Melithreptus lunulatus
Brown Tree Creeper ...	Climacteris scandens
White-throated Tree Creeper ...	Climacteris leucophœa
Orange-winged Sittella ...	Sittella chrysoptera
Pallid Cuckoo	Cuculus pallida
Fan-tailed Cuckoo ...	Cuculus flabelliformis
Bronze Cuckoo	Chalcites plagosus
Narrow-billed Bronze Cuckoo ...	Chalcites basalis
Pennant's Parrakeet ...	Platycercus pennantii
Rosella Parrakeet	Platycercus eximius
Musk Lorrikeet	Trichoglossus concinnus
Bronze-winged Pigeon ...	Phaps chalcoptera

People who are possessed of first and complete editions of Gould's splendidly-illustrated work on "The Birds of Australia" have a valuable asset, judging from the recent sale of the library of the late William Hartree in London. According to the *Academy* report, this book, with supplement, realized £210.

NOTES OF A COLLECTING TRIP TO PYRAMID HILL.

By Rev. E. Halford Hennell.

(Read before the Field Naturalists' Club of Victoria, 13th Oct., 1890.)

Being invited to effect an exchange with a friend at Pyramid Hill for a week or two, I was glad to avail myself of an opportunity to visit "fresh fields and pastures new," where I might obtain different specimens to add to my collection. I left Melbourne on Friday, the 29th August, by the 5.40 p.m. train, arriving at my destination about midnight, after a rather slow journey, typical of the Victorian railways. Pyramid Hill is situated nearly 155 miles north-west of Melbourne and is 294 ft. above sea level, being on the line to Swan Hill. It takes its name from a hill situated about one mile from the township, which somewhat resembles the outline of one of the Egyptian pyramids.

The next morning, in order to lose no time, I determined to look round and see what might be done to help to rid the district within reach of all (to the local people) noxious reptiles and insects I could get, being well provided with bottles for their accommodation. So, having partaken of an early breakfast, I set out, and was not long in discovering that the only places in which I was likely to be successful were Pyramid Hill, with the adjoining hills, and the various low-lying swamps and waterholes.

After introducing myself to friends I met with one who offered to accompany me, which offer I willingly accepted; so, shortly after, we made a start for the hill. I found that it is composed chiefly of granite rocks, some of these being of a great size. I only noticed one other variety of stone, and that in small quantities. The hill appears just as if it was the result of a strong convulsive upheaval at some remote period, the rocks lying in all conceivable positions; but Mr. J. B. Lillie Mackay, in a lecture on "The Formation and Classification of Rocks," in the School of Mines at Sandhurst, October, 1888, says that granite rocks are "formed of considerable depth beneath the surface. . . . They never come to the surface in the first instance, and when exposed . . . the exposure is due to subsequent erosion of overlying beds," which may be the case in this instance. The hill is, I am informed, some five or six hundred feet high, and is the last and highest of a chain of similar hills. I noticed some of the adjacent rocks are about 30 ft. or 40 ft. in length by 6 ft. to 10 ft. wide, and little more than the surface is exposed above ground. At one part a stone-crushing plant had been erected, and the stone used to ballast a portion of the railway line to Kerang, the quarry being connected by a branch to the main line. Some of the granite is very hard, whilst some is crumbling away, yielding at once to the blows of a hammer; in many instances large portions of the surface on the more level rocks, about one inch in thickness,

may be removed. I do not, however, desire to put forward an opinion on the subject, not being a geologist; but only give the above description *en passant.*

To return to my subject, viz., collecting insects, &c., I now found that the only method to pursue was to overturn as many of the stones as possible. After a few hours' hard work in the sun, we reached the summit, the view from this point being very good indeed, owing doubtless to the level nature of the surrounding country, Mount Hope being plainly visible about six miles away. The day having been spent in climbing about rather than in collecting, I did not obtain very many specimens, still I took two species of butterflies, several beetles, a few small lizards, and others of different orders, and, returning home, we were ready to do justice to a rather late dinner. On the Monday following I saw a quantity of catfish at the local railway station, ready to be sent to the market. They were peculiar in appearance, resembling an eel, but much shorter and thicker, having, I think, four filaments on both upper and lower lips; locality, Kow Swamp, some sixteen miles distant. I spent the afternoon of this day at the hill, taking more lizards, two species of *Lygosoma*, and *Hinulia whitei* (Lacep. sp.), together with various other insects. The mosquitos were very troublesome.

Again, on the following day, Tuesday, the 2nd ultimo, I visited the hill, making this time a larger *detour*, taking in the other hills. This day I captured a different lizard, for the first time. I afterwards managed to secure other specimens, twice taking them in pairs—this, I believe, proves to be the best capture I made during my stay, being a new species of *Tropidalopisma* (*albonotata*, M'Coy). I exhibit three specimens (two full grown, one young).* The Marbled Gecko (*Diplodactylus marmoratus*, Gray), was very plentiful. I also obtained another species of the Gecko. *Re* mosquitos, I cannot say I like them as much as some of our members, for twice I had to leave the hill, owing to them being so numerous. On this occasion they attacked me by dozens; they seemed as if determined to drive me away, for I went round three sides of the hill, and eventually had to leave the field to my enemies. On my way back I decided to try the waterholes; but no sooner did I turn the contents of my net out for inspection than they swarmed round me, so that I retired in their favour again. I ought to add, in justice to them, that their "bark is worse than their bite," for after, say, a dozen stings, you feel very little irritation, the effect not lasting more than an hour or two, and disappearing by the time you reach home. Going again on Friday, the 5th ultimo, after making my way nearly to the summit, I noticed a large lizard, *Egernia cunninghami* (Gray), sunning itself on the ledge of

* Since writing the above, I learn that Mr. C. Frost took this species as far back as October last year.

a high rock just below me, a smaller stone resting on the top, and forming at once a retreat and secure hiding-place for it. Being anxious to secure this specimen, I waited to see if it would come out far enough to enable me to seize it, but after it had played "hide and seek" with me during twenty minutes—for directly I moved it disappeared, and when I stepped back it re-appeared—I was obliged to relinquish my position; however, I obtained another specimen, though not so large, before I left, and brought it down alive. I saw, in the list of exhibits at the last meeting, that one was shown by Mr. G. A. Keartland. The number of centipedes is surprising, some of them, I should think, being quite five inches long. I also took several scorpions, and though they are the same as those in and near Melbourne, yet they differ in colour, being rather reddish or light brown. I did not observe a single specimen of the Planarian worms on which Mr. Dendy has read several interesting papers—it may not have been the right season of the year for them; nor did I see any snakes. Then I spent a few days at Macorna, 16 miles to the north, but only took one or two species of spiders. Again, on the 10th, I went out to the Hill, ready for any spoil that might present itself, but obtained very few specimens. The Katipo, the poisonous spider (I think the same as that of New Zealand), was plentiful amongst the loose stones. The next day, the 11th, the great event of the year, the Agricultural Show, was held, to which, of course, I went; but, in the morning, tried some of the waterholes. Being windy, was not troubled with mosquitos, so was allowed to work in peace. In a large waterhole connected with a swamp I took specimens of *Microperca* and *Retropinna*, both small fish; some Crustacea, small forms of *Astacopsis*, very often called "Yabbies;" also, some *Artemia*, one specimen being a female showing eggs. In other waterholes some *Lepidurus*. These latter are exhibited, and are interesting little creatures when in the water. Of shells, several of the genus *Physa*. Having to return to Melbourne much sooner than I anticipated, I went to the Hill on Monday, the 15th, for the last visit, this time a companion going with me. Although occasional showers of rain fell, forcing us to seek shelter amongst the rocks, and in returning we were thoroughly drenched, on examining my captures found that I had taken the greatest number of species for one day's work. On turning a solitary stone in a field I had already overturned several times, I took the only species of *Carenum* I obtained. Of the Carabidæ *Catradomus lacordairiei* (Bois D.); and *Poecilus prolixus*. Then, soon after, a young and well-marked specimen of *Cyclodus gigas* (Young), the Blue-tongue Lizard. Of the Dyticidæ, I took *Hydrophilus ruficornis* (Castel), *Colymbetes lanceolatus*, some of the genus *Berosus*; altogether thirty-seven species of Coleoptera.

The Lepidoptera were scarce, and too active on the wing to net amongst the rocks. Of Hymenoptera I did not notice any species. Of the Orthoptera, the locusts were beginning to come out. Of the wild flowers I did not see more than six varieties in blossom. I had some specimens of the granite; but, owing to the sudden termination of my visit, I did not revisit the place where I left them.

I am indebted to the kindness of Professor M'Coy for the names of the various specimens, and to Mr. J. A. Kershaw for those of the beetles.

ON A MINERAL OCCURRING IN IGNEOUS ROCK AT YARRAVILLE.

By Thos. Steel, Yarraville.

(Read before the Field Naturalists' Club of Victoria, 13th Oct., 1890.)

The mineral which I wish to bring under the notice of the Club occurs in a rough trachitic dolerite, containing numerous scattered olivine crystals, and more or less scoraceous in structure, which overlies the dense dolerite rock of the district. It is found after the manner common to zeolitic and other minerals, forming incrustrations and concretions in the rock cavities.

The portions lining the cavities are in concretionary layers, and are hard and crystalline, but nodular masses also occur, which, when broken, disclose a thin crystalline crust or shell, surrounding a hard porcellanous or amorphous white mass.

The following are the figures yielded by analysis :—

Water @ 212° F.			·20	
,, on gentle ignition			·65	
Insoluble silica			·08	
Soluble in hydrochloric acid.	Silica		·35	
	Ferric oxide		·07	
	Alumina		26·23	
	Lime		35·36 =	Sulphate of lime ·24; Carbonate of lime 62·96
	Magnesia		3·00	
	Soda		·61	
	Potash		·39	
	Sulphuric acid		·14	
	Carbonic acid		31·70	
			98·78	

Essentially the mineral is, therefore, carbonate of lime, with alumina and a little magnesia and other common bases. There is sufficient carbonic acid present to satisfy the magnesia, which probably exists as carbonate.

Frequently, small nodular or lens-shaped masses are found adhering to one corner of a cavity, and it is seldom that the cavities are completely filled. More rarely, curious spongy-looking masses are met with, composed of irregular masses of the

mineral inclosing and investing cubical pseudomorphs, which, originally have probably been iron pyrites, but which now consist of hydrated ferric oxide. When freshly exposed, the oxide is seen to quite fill the incrusting shell of white mineral, but, after lying a while, shrinkage takes place in the oxide through evaporation of water, and it cracks and shrinks into smaller volume, leaving intact the cubical case.

The nearest approach which I can find to the mineral under consideration is *Dawsonite*, a hydrous aluminum-calcium carbonate,* but the Yarraville mineral is not hydrous. The surfaces of the rock cavities which are not incrusted present a curious vitreous appearance.

VICTORIAN FUNGS NEW TO SCIENCE.

By Henry Thos. Tisdall, F.L.S.

(Read before the Field Naturalists' Club of Victoria, 13th Oct., 1890.)

I always feel in an apologetic mood whenever I bring a paper on fungs before the Club, and yet there is really no need to feel so; for, although the subject is to a certain extent uninteresting to the greater number, the practical utility not being obvious, yet the knowledge of fungs is most important.

When I first commenced to study these plants I trusted that I should find many edible ones, and was ambitious enough to hope that through my instrumentality an important article of food might be added to the Victorian dietary list.

I read of immense quantities of these plants being used as a staple article of food in Russia, Austria, and more particularly in Italy, where thousands of the peasantry live principally on bread and fungs for nearly six weeks in the year. On the slopes of the Apennines and the Alps different kinds of Agaricini, Polyporei, Morels, Helvels, &c., are found in such quantities that they yield a veritable harvest. Those that are not eaten fresh are pickled in barrels for winter use. The inhabitants cook these fungs in various ways, but chiefly as soups and stews.

I have discovered many edible species in Victoria, but I am ashamed to say that I cannot force myself to eat them, and if I am unable to use them, how can I endeavour to press them upon others? I trust that some of the Club less squeamish than myself may imitate the noble example of the man who ate the first oyster, and thus introduced that ugly but delicious morsel to his fellows. I say, I trust that some of you will boldly take the matter up, find such edible species as we have, and having cooked, eaten, and appreciated them, incite others to follow your example.

Unfortunately, many species of fungs are the greatest enemies of the human race. Some destroy our corn, others our wines,

* Dana, "Manual of Mineralogy," 1879, p. 201.

timber, fruit trees—aye, even ourselves, in the shape of fungus growths in the throat, &c., &c.; and it is the experience which we have obtained of the fatal qualities of these plants that renders the knowledge of fungs so important.

The vegetation of Australia differs greatly from that of all other countries, consequently the first botanists who landed on our shores reaped, indeed, a noble harvest. The names of Brown, Mueller, &c., will always be associated with the eucalypts, grevilleas, and the multitude of species, genera, and even orders hitherto unknown to science.

Fungs, however, seem to be cosmopolites, for out of the numbers I have sent during the past fifteen years to Europe for identification comparatively very few have been returned as new to science. And here I should like to bear testimony to the unflagging energy, zeal, and kindness of our government botanist, Baron von Mueller. In spite of the important works on which he has been engaged, he has always managed to find time to name plants for me, advise me how to proceed next, and, above all, to get my fungs properly identified by the greatest European specialists.

As I just now mentioned, I have hitherto been very unsuccessful in finding new plants, but in the list for last year just sent to me by Baron von Mueller I find that I have been successful in obtaining sixteen species new to Victoria, seven of which are new to science.

As our Club is composed of members, some of whom study geology, some entomology, and others various sections of natural history, and may not all, therefore, be acquainted with fungs, I propose to give a rough sketch of the order which embraces the plants I have discovered. They all belong to the order of fungi called Agaricini.

If a common toadstool be gathered, the stem cut off close to the cap or pileus, and it be placed in the natural position over a piece of paper for an hour or so, when it is removed a number of small objects will be found on the paper; these are spores or seed-vessels, shaped somewhat like an egg. These spores fall from a membrane termed a hymenium. On close examination, the hymenium will be found to be closely covered with three kinds of cells. The most numerous are club-shaped, and are borne on slender stalks—these are sterile cells. The second are somewhat larger, are club-shaped, and are also supported on slender stalks, but from the top of each basidium, as it is called, spring four slender stalks, and each stalk (termed a spicule) bears a spore. The third cell is of the same shape but very much larger; it is called a cystidium; its structure and use are still undecided.

In the order Agaricini, the hymenium is spread over the surface of distinct gill-like processes, which are easily divisible into two plates; these gills are always borne on the under side of the cap or pileus.

The order Agaricini is divided into several genera, two of which claim our attention, Agaricus and Hygrophorus.

In the genus Agaricus, the gills are membranaceous, persistent (that is, they do not melt), and the trama or plate over which the hymenium is spread is continuous with the substance of the pileus, and the edge of each gill is acute.

The genus Agaricus contains five distinct series, each series being determined by the colour of its spores, and it is a curious coincidence that each of the series is represented in the plants which I have the pleasure of bringing under your notice this evening. The first series is termed Leucospori and contains those species which have white spores. Leucospori embrace many sub-genera amongst which are *Armillaria* and *Tricholoma*.

The first specimen has been called *Ag.* (*Armillaria*) *insignis*, C. and M.; I found it on the bank of the Yarra, near its confluence with Gardiner's Creek, in April. The stem is very short and thick, whilst the cap or pileus is from three to five inches in diameter.

The next is also a white-spored species *Ag.* (*Tricholoma*) *coarctatus*, C. and M. It is fairly common on the sandy soil under the scrub near Sandringham in the month of August.

The second series of Agaricus is called Hyperodii. Plants of this series have salmon-coloured spores, and I found one new species which Professor Cook has called *Ag.* (*Entoloma*) *Wehlianus*; it was discovered on the bank of the Yarra, near Hawthorn, in April.

The third series, Dermini, has ferruginous or rusty-coloured spores, and is represented in this collection by the new species, *Ag.* (*Hebeloma*) *gigaspora*, C. and M. It was discovered at Eltham, on the bank of the Yarra, in April.

The fourth series, Pratellæ, has brownish purple or brown spores. The new species of this series has been called *Ag.* (*Psalliota*) *elatior*, C. and M.; found on the Yarra bank, near Eltham, in April. It is a small fungus, about 1½ inches in diameter, borne on a long, thin stalk about 5 inches high. I might remark that our common edible mushroom, *Ag. campestris*, is a Pratella.

The fifth and last series, Coprinarii, is easily distinguished by the black spores which fall and discolour the hand of the gatherer. The new species pertaining to this series is called *Ag.* (*Panœlus*) *ovatus*; it grows on manure, and was found during the month of April near Gardiner's Creek.

I mentioned before that I found a representative of a second genus of Agaricini—*Hygrophorus*. This genus is distinguished from Agaricus by the waxy nature of the hymenium. The new species belonging to this genus is called *Hygrophorus candida*, C. and M.; it was found at Sandringham in April.

Ag. (Armillaria) insignis, C. and M.

Found on the bank of the River Yarra, at Toorak, on light soil amongst the grass.

PILEUS.—Convex, gibbous when young, squamose, drab, with brownish scales, very fleshy, edge incurved, 3 to 5 inches in diameter.

STEM.—Bulbous, above the ring pure silky white, below dirty white, with light orange stains, same substances as pileus, tapers slightly towards the base, very thick and short, 2½ inches high.

Hygrophorus candidus, C. and M.

Found at Sandringham, April, on sandy ground.

PILEUS.—Pure white except the centre, which is a light yellowish brown, viscid, slightly striate, convex near margin, but the rest plane, not fleshy, edge incurved; diameter, 1 inch.

STEM.—Attenuated towards base, stuffed, 2½ inches high, white, with stains of a dirty yellowish white.

GILLS.—White, ventricose, not touching.

Ag. (Hebeloma) gigaspora, C. and M. Solitary.

Found at Eltham, near the Yarra Falls, in April, 1889, growing on rich vegetable mould, deep shade.

PILEUS.—Convex, highly umbonate, smooth, yellowish brown, fleshy, ½ to ¾ inch in diameter.

GILLS.—Very deep, adnate, brown.

STEM.—Stuffed loosely, almost hollow, slender, nearly equal, somewhat thicker near base, firm, brown, mycelium very numerous, 2 inches high.

Ag. (Psalliota) elatior, C. and M.

Found at Eltham, near the Yarra, April.

PILEUS.—Brown, squamose, plain, depressed, at centre umbonate, edge even, fairly fleshy, 1 to 1½ inches in diameter.

STEM.—3 to 5 inches high, nearly equal, slightly bulbous near base, silky white, smooth, ring movable and evanescent, stuffed loosely, slightly hollow.

GILLS.—Crowded, distant, ventricose, brown.

Agaricus (Tricholoma) coarctatus, C. and M.

Found in the sandy soil under the scrub, at Sandringham, in the month of August. Cæspitose, often crushed together out of shape.

The pileus is viscid at first, smooth and dry when older, then wrinkled, and finally becomes unevenly cracked, edge even, light yellowish brown, fleshy, 2 inches in diameter.

STEM.—Solid, widens out at the top coalescing with the pileus, nutty, 1½ inches high.

GILLS.—Slightly pink, ventricose.

Ag. (Panœolus) ovatus, C. and M.

Found on manure, Gardiner's Creek (River Yarra), in April, 1889.

PILEUS.—Pure white, campanulate, edges incurved, apex slightly yellowish, somewhat fleshy, slightly squamose, striate, 2 inches in diameter.

STEM.—Nearly equal, slightly bulbous at base, solid, firm, 4½ inches high, white, flesh different from pileus, dewy or pruinose.

GILLS.—Not touching, dusky colour, ventricose, very deep, not crowded, spores.

LIST OF SPECIMENS OF VICTORIAN PLANTS IN CULTIVATION NOW FLOWERING* IN THE MELBOURNE BOTANIC GARDENS.

Acacia crassiuscula
„ longifolia
„ „ var. mucronata
„ retinodes
„ rigens
„ salicina
Aotus villosa
Bauerra rubioides
Billadiera scandens
Calycothrix sullivanii
„ tetragona
Daviesia latifolia
Dillwynia ericifolia
Eriostemon myoporoides
Eutaxia empetrifolia
Grevillea alpina
„ aquifolium
„ confertifolia
„ ilicifolia
„ oleoides
Goodia lotifolia
Hakea eriantha
„ microcarpa
„ saligna
„ ulicina
Kennedya prostrata
Kunzea corifolia
Leptospermum myrsinoides
Leucopogon richei
Melaleuca wilsonii
Micrantheum hexandrum
Myoporum serratum
Olearia myrsinoides
Pimelea humilis
Pittosporum undulatum
Platylobium obtusangulum
Pomaderris elliptica
„ lanigera
„ ligustrina
Pultenæa subumbellata
„ villosa
Westringia rosmarinifolia

MEMBERS will be glad to hear that Prof. Spencer has been elected a member of the Council of the Zoological and Acclimatization Society of Victoria

DRAGON FLIES.—The extraordinary profusion of a species of dragon fly during the earlier days of the present month, in various districts about Melbourne, was commented upon in the public press. At Yarraville the insects were flying about in myriads, from the 2nd to the 5th of October, the weather being very fine and warm. Simultaneously with a break in the weather the insects disappeared, and now not a single individual is to be seen. I have brought a specimen on purpose to submit it to Mr. French, in order that the name may be recorded.—THOS. STEEL.

* October, 1890.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 10s., dating from 1st May.

The Ordinary Meetings for the reading of papers and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

VII

VOL. ~~VIII.~~—NO. 8. DECEMBER, 1890.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

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

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VII

VOL. ~~VIII.~~—No. 8. DECEMBER, 1890. No. 84.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE usual monthly meeting of the Club was held at the Royal Society's Hall on Monday, 13th October. Professor Spencer, one of the vice-presidents, occupied the chair, and about sixty members and visitors were present.

Mr. J. S. Hart read an account of the excursion to Cheltenham on 27th September. On account of the unfavourable weather only five members took part in it, and very little was done. Mr. Barnard read the report of the Ringwood excursion, and Mr. Keartland that of the excursion to Melton, both of which have been given in full. In connection with the last mentioned, Mr. A. J. Campbell forwarded an account of a visit to the same district, in which several interesting ornithological observations were made. .

The hon. librarian reported the following additions to the library :—"Proceedings of the Linnean Society of New South Wales," v., 2, from the society; "Proceedings of the Nova Scotia Institute of Natural Sciences," vii., 3, from the society; "Records of the Australian Museum," No. 4, "Catalogue of the Nests and Eggs of Australian Birds," by A. J. North, from the Museum; "Journal of Pharmacy" for September, from the editor; Broinowski's "Birds of Australia," i., 6, purchased.

On a ballot being taken, Mrs. Albert Miller, Messrs. Geo. Miller, R. Hedger Wallace, and J. Lidgett were elected members of the Club.

Rev. E. H. Hennell read an interesting account of a visit to Pyramid Hill, during which he made collections of various forms of animals, particularly coleoptera and lizards. Amongst the latter was a new species of Tropidalopisma, named by Professor M'Coy *T. albonotata.*

Mr. T. Steel read a paper on "A Mineral occurring in Igneous Rock at Yarraville." This was a mineral allied to Dawsonite, but anhydrous, forming zeolitic deposits in the bluestone. In it were sometimes found pseudomorphs of ferric oxide replacing iron pyrites.

Mr. H. Tisdall, F.L.S., contributed descriptions of seven new species of fungi—six of the genus Agaricus and one of Hygrophorus, which he had obtained during the past year. He also recorded the discovery of nine other species not known before in Victoria. In the course of a general introduction to the systematic part

of the paper he dwelt upon the importance of fungi as an article of food. In this colony a large amount of useful food is wasted by the neglect of species which are perfectly wholesome, on account of their resemblance to poisonous kinds. This point was discussed by Messrs. Anderson, Steel, and other members.

Mr. Steel drew attention to the great number of Dragon Flies which suddenly appeared in Melbourne a short time ago and as suddenly disappeared. He thought it a point which the Club should investigate. Mr. Frost suggested that the cause of their abundance was the large rainfall of the last winter; the ponds and swamps being more numerous and larger, the larvæ would not be subject to the normal amount of destruction. The chairman said that the period at which the wet weather occurred probably had more to do with it than the actual rainfall. This year the latter part of the winter had been very wet. Mr. Le Souef supposed that the cause of the disappearance of the insects was the change of wind, by which large numbers had been blown out into the bay and destroyed.

Several other notes and extracts from newspapers and periodicals bearing on natural history were read.

It was announced that the next meeting would be held on Tuesday, 11th November.

The meeting terminated with the usual *conversazione*, at which the following were the chief exhibits:—By Mr. H. P. C. Ashworth, twelve Victorian birds' skins; by Mr. F. G. A. Barnard, two longicorn beetles (Symphyleites) from the Wimmera, and a butterfly (*Terias smilax*) taken at Kew, 28th September; by Mr. G. Coghill, collection of dried Victorian plants; by Mr. G. French, "North's Catalogue of Australasian Birds' Eggs," curious larva of lepidoptera from the mallee district, and locust dissections; by Mr. C. French, jun., eggs of the White-bellied Sea Eagle (*Haliaetus leucogaster*), from Tasmania; by Rev. E. H. Hennell, cement from Maria Island, specimens from Pyramid Hill, including species of Lepidurus and Lygosoma, *Diplodactylus marmoratus*, *Hinulia whitei*, and *Tropidalopisma albonotata;* by Mr. G. A. Keartland, birds' eggs from Melton; by Mr. Jas. Kershaw, *Hyleora eucalypti*, from Sandringham; by Mr. G. Lyell, jun., eight species of Noctuidæ, taken during September; by Baron von Müller, *Styphelia depressa* (new for Victoria), *Lepidium merralli* (nov. sp.), *Helipterum Troedelii* (nov. sp.), "Iconography of Australian Salsolaceæ" decade 4, "Descriptive Notes of Papuan Plants," ix., Wittrock's "Erythraeæ," iv.; by Mr. T. Steel, mineral described in his paper; by Mr. H. T. Tisdall, drawings and dried specimens of Victorian fungi.

THE usual monthly meeting of the Field Naturalists' Club was held at the Royal Society's Hall on Tuesday, 11th November.

Professor W. Baldwin Spencer occupied the chair, and about fifty members and visitors were present.

Mr. D. Best read an account of the Club excursion to Bacchus Marsh on 10th November. The leader appointed was unable to attend, and perhaps in consequence of this, the locality did not prove so interesting as had been expected, though several good captures were made, and Mr. Sweet obtained good palæontological specimens.

No report was read of the Oakleigh excursion on 25th October, as it had fallen through on account of unfavourable weather.

The chairman announced that Mr. J. Stephen Hart had been compelled to resign the office of secretary of the Club, as his time was fully occupied by private engagements. The Rev. W. Fielder was nominated for the vacant position.

On a ballot being taken, Messrs. T. Bresnahan, T. Brittlebank, and R. S. Sugars were elected members of the Club.

The hon. librarian reported the following additions to the Club's library:—"The English Flora," Weston, 1775; "Catalogue of Museum of Antiquities, Sydney University," "Catalogue of Diptera, Orthoptera, and Hymenoptera of New Zealand," "Catalogue of Coleoptera of New Zealand," and Supplement, from Mr. T. Judd; "Catalogue of Australian Birds—Supplement to Part 1: Accipitres, and Part 2: Striges," "Memoir ii.—Lord Howe Island: its Zoology, &c.," "Records," No. iii., "Annual Report of Trustees," from Australian Museum, Sydney; "Annual Report of Boys' Field Club, Adelaide," from the Club; "Land Shells of Australia," by Dr. J. C. Cox, from the author; "Bulletin of the Department of Agriculture" and "Report of the Commission on Vegetable Products," from the Department of Agriculture.

A paper was read by Mr. Thos. Steel on the so-called Vegetable Caterpillars of New Zealand, describing the various theories as to the time and method of infection, and giving instances in in which other insects and spiders had been attacked in a similar manner by a fungus.

Mr. French's paper on "A Spring Day among the Wild Flowers," was postponed.

Mr. J. H. Gatliff read a description of a new species of Conus, called by him *Conus segravei*.

Baron von Mueller forwarded a description of a new orchid, *Thelymitra elizabethæ*, from Camberwell. This species is closely related to *T. carnea*, from which it differs chiefly in the dark colour of the anther and appendages of the gynostemium.

Mr. D. Le Souef read a list of native birds now breeding in the Zoological Gardens, and a short note on the Freshwater Seal, known to the natives as the Bunyip.

Mr. Steel said he had noticed that efforts were being made to

acclimatize several English song birds, notably the Blackbird and Thrush, and protection was afforded to them here, but in New Zealand, where they had been introduced, they had multplied so greatly that they had caused serious damage to orchards and gardens, and rewards were offered for their destruction. He thought care should be taken not to repeat the mistake already made in the case of the sparrow. Mr. Le Souef said that the birds had many enemies here which were absent from New Zealand, and did not seem to be appreciably increasing in numbers. Mr. F. G. A. Barnard said that he had observed Goldfinches breeding in Studley Park this year for the first time.

The meeting closed with the usual *converzaione*, at which the following were exhibited:—By Mr. F. G. A. Barnard.—*Papilio sthenelus*, from Queensland. By Mr. D. Best.—Australian beetles of the genus Curculio. By Mr. G. Coghill.—Flowers from the Mitta Mitta and Sandringham. By Mr. J. E. Dixon.—78 species of beetles from Beaconsfield and the Plenty Ranges. By Rev. W. Fielder.—Desmids from Yan Yean water. By Mr. J. H. Gatliff.—*Conus anemone, C. rutilus, C. segravei.* By Mr. J. S. Hart.—Apus from Sandringham. By Mr. D. Le Souef.—Sparrows' eggs of various markings. By Mr. G. Lyell, jun.—Rare butterfly, *Xenica hobartia.* By Baron von Mueller.—*Thelymitra elizabethæ* (sp. nov.), *Isoetes drummondi*, from Minyip; *Eremophila gibbosifolia* from Wimmera; *Didiscus glaucifolius* from junction of Murray and Darling; *Astrotriche biddulphiana* (sp. nov.) from Queensland. By Mr. J. Shepherd.—Rotifer *Monostyla quadridentata.* By Mrs. R. Simson.—Living and dried specimens and cast skins of the leaf insect from Seychelles Islands. By Mr. F. Spry.—Australian butterflies, including *Xenica hobartia* from Dandenong Ranges. By Mr. T. Steel.—Series of New Zealand "Vegetable Caterpillar," and a small beetle infested with parasitic mites (Acarus, sp.) By Mr. G. Sweet.—*Gangamopteris spatulata, G. angustifolia*, and *G. obliqua*, fossil plants from Bacchus Marsh.

EXCURSION TO BACCHUS MARSH.

THE Prince of Wales' Birthday is now recognized as one of our annual public holidays, and, as such, is rightly availed of by our Club for one of its usually pleasant excursions. On this occasion the locality selected was Bacchus Marsh, and on Monday last, the 10th November, at the hour appointed—7.50 a.m.—no less than—not the proverbial two men and a boy—nine men and a boy put in an appearance. The train was somewhat late in departing, but we arrived at our destination at about half-past eight when, to our great disappointment, Mr. Brittlebank, who we understood was to meet us at the station, was not observable, nor did we learn anything of him. This was all the more dis-

appointing as none of our party knew much of the district, but members of the Field Naturalists' Club are not easily discouraged, and having ascertained in which direction lay the River Werribee, nine of us, including the aforesaid boy, who by the way proved himself one of the most active, at once made tracks in that direction. Bacchus Marsh is well known as a favourite habitat of the rabbit, and those of our number who were provided with guns obtained a fair amount of sport. The country is very hilly, and, having been long settled, is mostly cleared of timber and scrub, and hence proved very unfavourable for both bird and insect collectors. Insects especially were exceedingly scarce, if we except a species of the Carabus family of beetles, Promecoderus, of which from three to nine specimens were obtainable under almost every piece of bark lying on the ground. Finding the hills so bare of life we descended to the riverside, but here no better luck awaited us. There was little or no scrub except *Hymenanthera banksii*, and from this repeated shakings into the umbrella had no effect in dislodging specimens, if any there existed. Usually this bush, especially on the Yarra, yields good results to the collector, but here, for some reason unknown to us, there was scarcely a living thing on it. The only insects worth recording were a rare greyish-coloured longicorn beetle, known to entomologists as *Omotes eroscicollis*, which was happily secured from off some dry leaves, and a fine specimen of the beautiful butterfly, *Papilio sthenelus*. This latter was captured by Mr. M'Kibbon, who, having fallen behind at an early period of the day, kept his own company for the remainder, and having confined himself to a limited area, was rewarded by the find of the day, for unquestionably his was the best and rarest specimen taken, only some three or four having hitherto been recorded in the colony, although it is of course more common in its first known habitat, Queensland.

The birds most numerous were Rosella Parrots, the Black and White Fly Catcher, and the Fairy Martin, and there were also a few Honey-eaters, Graucalus, &c., as per appended list. The Fairy Martins were very plentiful, and as their nests were also in numbers in the steep river banks, many of their eggs were secured, as was also one very fine nest, which, but for its exceeding brittleness rendering its removal dangerous, would no doubt be exhibited here this evening.

As other evidence of the poverty of Bacchus Marsh as a collecting ground, we may mention that not a single snake was seen, and even of lizards only a very few small ones were seen. Botanical specimens were also very scarce, scarcely any flowers being seen, and the only ones we are able to mention are *Solanum aviculare* and Myoporum (sp.) We must not omit to record that a fox was started by two of our party, one of whom wounded

the animal in the leg, and so made sure of his capture ; but the fox's unequalled cunning stood him in good stead, and he succeeded in completely eluding his pursuers, though whether he will survive to continue his evil deeds is, we think, rather doubtful.

On returning to the station our party was soon found to be intact. The geologist, who had also had the benefit of his own company, and had explored in another direction, having arrived with two bags of fossil-impressed stones, which, if weight be any criterion, proved not only his zeal in the cause of science, but also his ability to carry a heavy load for a considerable distance.

Although this excursion was so barren in results, the day was a most enjoyable one, the weather being very pleasantly cool, and just suited for a country ramble, so that none of the party had any reason to regret their visit to Bacchus Marsh, albeit we expect few of them will revisit it for collecting purposes other than that of rabbits.

The 7.30 train, which should have been the 6.57, brought us safely to Melbourne, from whence we separated to our several homes, feeling all the better for the fresh and bracing air we had inhaled during our temporary absence.

Birds Taken and Noted at Bacchus Marsh, 10th November.

Jardine's Harrier ...	...	Circus assimilis
Welcome Swallow ...	...	Hirundo frontalis
* Fairy Martin ...	...	Lagenaplastes ariel
Laughing Jackass ...	...	Dacelo gigas
Blue-banded Grass Parrakeet	...	Euphemia venusta
Rosella Parrakeet ...	...	Platycercus eximius
Black-faced Graucalus	...	Graucalus melanops
White-backed Crow Shrike	...	Gymnorhina leuconota
Magpie Lark ...	...	Grallina picata
Fantail ...	...	Rhipidura albiscapa
Black Fantail ...	...	Sauloprocta motacilloides
* Superb Warbler ...	...	Malurus cyaneus
Wattled Honey-eater	...	Anthochæra carunculata
Brown Tree Creeper	...	Climacteris scandens
* Australian Pipit ...	...	Anthus australis
Wood Swallow ...	...	Artamus sordidus
Little Acanthiza ...	...	Acanthiza pusilla
Pomatorhinus ...	...	P. temporalis D. B.

After leaving the other members of the party at the bridge over the Lerderderg, our course lay through the township and up the old Ballarat road, where, in the road cuttings, the pliocene gravels are seen flanking an outlier of basalt, and these tertiary outcrops continue for some two miles along the Ballarat road, when occasional sandstones are seen. Leaving the Ballarat road,

* Eggs taken.

the earliest quarries, long since abandoned, are soon encountered. From here to the Bald Hill thick bedded shales, sandstone, and conglomorates crop out, which revealed here and there plant impressions, some being long rush-like forms, while others are recognized as the Gangamopteris, long since described by Professor M'Coy in Decade II. of "Victorian Palæontology." Reaching the quarries at Bald Hill (from which the sandstone used in the building of the old Treasury was obtained) some 50 ft. to 60 ft. of a face may be seen, while many thousands of tons of discarded stones are lying down the hill. The face of the quarry shows in many places the weathering away of the rocks caused by the action of the atmosphere. The lower bed is evidently by far the better stone. The general effect of the weather upon the stone in the quarry is certainly not such as to give one great confidence in its durability either for building or other purposes. The beds dip in a south-easterly direction from 30 to 35 degrees, and the outcrop here appears to be the northern denuded upturned edge of what was once in Lower Mesozoic times an extensive basin, reaching much farther north than the present outcrop; but the northern boundary, of which the action of denudation in the long ages of the past has completely obliterated, clearly passes underneath the tertiary formations of Bacchus Marsh.—G. S.

EXHIBITION OF WILD FLOWERS.

THE annual wild flower show of the Field Naturalists' Club was held on Monday, 6th October, at the Royal Society's Hall. The flowers shown were about as numerous and of very much the same species as in former years, and, in consequence of the favourable weather for two or three days before the show, were in very good condition. It is to be regretted that a deficiency of table space prevented several exhibits from being shown to good advantage. The chief exhibitors were the following:—Mr. F. G. A. Barnard, from Wandin Yallock and the Dandenong State Forest; Mr. G. Coghill, from Eltham, Castlemaine, Tooradin, Elphinstone, and Benalla; Miss Cochrane, from Cheltenham; Mr. A. Elliot, ferns, &c., cultivated at the University Gardens; Mr. C. French, from the Wimmera; Messrs. C. French, jun., and G. French, from Cheltenham and Sandringham; Mr. Frost, from Castlemaine; Mr. Gatliff, from Heathcote; Mr. Guilfoyle, native plants cultivated at the Botanical Gardens; Miss Halley, from Point Lonsdale; Mr. T. S. Hart, from Nar-nar-goon; Mr. King, from Echuca; Mr. Le Souëf, from Heathcote; Miss Roberts, from Oakleigh, Dandenong, and South Preston; Mr. Robinson, from Berwick; Mr. W. Scott, from Eltham; Mr. H. T. Tisdall, from Caulfield and Eltham; Mr. Topp, from Caulfield and Cheltenham; Mr. West, from Phillip Island.

The following is a list of the species exhibited :—

Natural Order.	Species.
Ranunculaceæ ...	Clematis aristata ; C. microphylla (fruit).
	Ranunculus rivularis ; R. lappaceus.
Dilleniaceæ ...	Hibbertia densiflora, fasciculata, obtusifolia.
Lauraceæ ...	Cassytha glabella.
Cruciferæ ...	Cardamine stylosa (?).
Violaceæ ...	Viola betonicifolia ; V. hederacea.
Droseraceæ ...	Drosera auriculata ; D. glanduligera ; D. menziesii ; D. peltata ; D. pygmæa.
Sterculiaceæ ...	Lasiopetalum baueri.
	Commerçonia fraseri (cd.)
Malvaceæ ...	Plagianthus pulchellus.
Geraniaceæ ...	Oxalis corniculata.
Lineæ ...	Linum marginale.
Rutaceæ ...	Eriostemon obovalis ; E. myoporoides (cd.)
	Boronia serrulata (cultivated).
	Correa speciosa.
Tremandreaæ ...	Tetratheca ciliata ; T. ericifolia.
Stackhousiaceæ ...	Stackhousia linarifolia.
Polygaleæ ...	Comesperma ericinum ; C. volubile.
Pittosporeæ ...	Pittosporum undulatum ; P. bicolor.
	Billardiera scandens.
	Marianthus procumbens.
Rhamnaceæ ...	Pomaderris elliptica ; P. lanigera (cd.) ; P. ligustrina (cd.)
	Cryptandra hookeri.
Euphorbiaceæ ...	Amperea spartioides.
	Ricinocarpus pinifolius.
	Micrantheum hexandrum (cd.)
Polygonaceæ ...	Muehlenbeckia adpressa.
Caryophylleæ ...	Spergularia rubra.
	Stellaria pungens.
Salsolaceæ ...	Salicornia arbuscula.
Casuarineæ ...	Casuarina sp. ; C. distyla.
Saxifrageæ ...	Bauera rubioides.
Ficoideæ ...	Mesembrianthemum æquilaterale.
Myrtaceæ ...	Leptospermum myrsinoides ; L. lanigerum ; L. scoparium ; L. laevigatum.
	Melaleuca Wilsoni (cd.) ; M. squarrosa.
	Eucalyptus leucoxylon.
	Thryptomene ciliata.
	Calycothrix sullivani (cd.) ; C. tetragona (cd.)
	Kunzea corifolia (cd.)
Leguminosæ ...	Acacia spinescens ; A. decurrens ; A. verticillata ; A. diffusa ; A. melanoxylon ; A. armata ; A. juniperina ; A. oxycedrus.
	Daviesia latifolia ; D. ulicina ; D. corymbosa.
	Aotus villosus.
	Dillwynia cinerascens ; D. ericifolia ; D. floribunda.
	Platylobium formosum ; P. obtusangulum.
	Bossiæa cinerea ; B. prostrata.
	Goodia lotifolia.
	Templetonia muelleri.
	Indigofera australis.
	Swainsonia procumbens ; S. phacoides.
	Kennedya rubicunda ; K. prostrata ; K. monophylla.
	Glycine clandestina ; G. latrobeana.

Natural Order.	Species.
Leguminosæ ...	Eutaxia empetrifolia (cd.)
	Cassia eremophila.
Proteaceæ ...	Grevillea lanigera ; G. alpina ; G. ericifolia ; G. aquifolia (cd.) ; G. oleoides (cd.) ; G. ilicifolia (cd.) ; G. confertifolia (cd.)
	Hakea microcarpa (cd.) ; H. eriantha (cd.)
	Banksia marginata.
	Isopogon ceratophyllus.
Thymeleæ ...	Pimelea axiflora ; P. humilis ; P. octophyllus ; P. phylicoides ; P. collina.
Loranthaceæ ...	Loranthus pendulus.
Rubiaceæ ...	Galium australe ; G. umbrosum.
Compositæ ...	Helipterum incanum ; H. corymbiflorum ; H. cotula ; H. anthemoides.
	Aster stellulatus.
	Podolepis acuminatus.
	Brachycome diversifolia ; B. cardiocarpa.
	Actinotus sp.
	Erechtites sp.
	Microseris forsteri.
	Millotia tenuifolia.
	Helichrysum semipapposum ; H. scorpioides ; H. apiculatum ; H. lucidum.
	Olearia myrsinoides (cd.)
	Leptorrhynchus squamatus.
	Toxanthus muelleri.
	Calotis erinacea.
	Craspedia richea.
Campanulaceæ ...	Wahlenbergia gracilis.
Stylidiaceæ ...	Stylidium gramineum.
Goodeniaceæ ...	Goodenia geniculata.
	Velleya paradoxa.
Scrophularineæ ...	Euphrasia brownii.
Lentibularineæ ...	Utricularia dichotoma.
Asperifolia ...	Cynoglossum suaveolens.
Labiatæ ...	Prostanthera coccinea.
	Westringia rosmarinifolia.
	Ajuga australis.
Myoporineæ ...	Myoporum serratum ; M. viscosum.
Epacrideæ ...	Leucopogon virgatus ; L. richei.
	Epacris microphylla ; E. impressa ; E. obtusifolia.
	Brachyloma daphnoides.
	Sprengelia incarnata.
Orchideæ ...	Pterostylis obtusa ; P. barbata ; P. nutans ; P. nana ; P. curta ; P. mutica ; P. pedunculata ; P. longifolia ; P. concinna.
	Thelymitra aristata ; T. antennifera ; T. ixioides ; T. epipactoides.
	Caladenia carnea ; C. menziesii ; C. deformis ; C. latifolia ; C patersoni.
	Diuris longifolia ; D. punctata ; D. maculata.
	Prasophyllum fuscum ; P. elatum ; P. patens.
	Cyrtostylis reniformis.
	Glossodia major.
	Lyperanthus nigricans.
Palmæ ...	Livistona australis (cd.)
Irideæ ...	Patersonia longiscapa.
Liliaceæ ...	Arthropodium strictum

Natural Order.		Species.
Liliaceæ	...	Burchardia umbellata
		Cæsia parviflora ; C. vittata.
		Bulbine bulbosa
		Xerotes thunbergi
		Chamæscilla corymbosa.
		Dianella revoluta.
		Xanthorrhœa australis.
		Wurmbea dioica.
Fluviales	...	Potamogeton sp.
Restiaceæ	...	Calostrophus fastigiatus.
Gramineæ	...	Briza media.
		Stipa sp.
		Carex sp.
		Bromus sp.
Filices	...	Adiantum ethiopicum ; A. diaphanum.
		Asplenium bulbiferum ; A. marinum ; A. nidus ; A. umbrosum.
		Aspidium capense ; A. hispidum ; A. molle.
		Blechnum cartilagineum.
		Cyathea boylei.
		Davallia pyxidata.
		Dicksonia antarctica.
		Doodia aspera ; D. caudata.
		Gleichenia dicarpa ; G. flabellata.
		Lomaria alpina ; L. discolor ; L. patersoni.
		Polypodium punctatum ; P. pustulatum ; P. scandens.
		Pteris tremula ; P. umbrosa.
		Todea barbara.
		Cheilanthes tenuifolia.

(All cultivated.)

THE NEW ZEALAND VEGETABLE CATERPILLAR.

By Thos. Steel, Yarraville.

(Read before the Field Naturalists' Club of Victoria, 11th Nov., 1890.)

The remarkable organism commonly known as the New Zealand Vegetable Caterpillar, which at first sight, as its popular name implies, appears to present the anomaly of a combination of the vegetable and animal kingdoms in one individual, has naturally long been an object of interest. A great deal of misapprehension exists as to the real nature of this organism, and from time to time more or less erroneous statements regarding it are published. When we come to look more closely into the matter, we find that the Vegetable Caterpillar is but an example of a widely diffused type of entomogenous fungi. Examining a specimen carefully, it will be seen to consist of what is obviously a caterpillar having projecting from its body a slender spear-like growth, tipped with a brown crust of spore-vessels.

In those parts of New Zealand where the organism is found, the ends of the spikes are to be seen, about the month of March, projecting above the ground in sheltered places.

The caterpillar is that of a handsome bright green moth,

Hepialus virescens (Roberts). This caterpillar feeds on the leaves of the Rata *(Metrosideros)*, and is also stated by Hamilton* to be found on the Papa Namu *(Coprosma grandiflora)*. When its time for assuming the chrysalid state arrives, the caterpillar buries itself in the ground, and up to the time of its doing so no signs of anything out of the common have been observed, though this is probably due to want of observation, and is a subject deserving attention.

The first indication of what has taken place, which we have, is the appearance of the spear-like processes, which are the stipes or bearers of the spore-cases of the fungus, and on digging it up we find that no attempt to assume the chrysalid state has been made. On examination we find that the whole of the internal organs of the caterpillar have disappeared, and have been replaced with a dense mass of mycelium resembling in structure some of the dense corky species of fungi, and consisting of a dense body of mycelium. It becomes now quite evident that the fungus has flourished at the expense of the caterpillar, utilizing the organs of the insect for its own nourishment. Since the parasite was first named, by Berkeley, *Cordyceps robertsii* (Berk.), a good deal of change has been made in the classification of the genus, and the individual under consideration was classed as a Sphæria, but is now, I understand, definitely relegated to the genus Isaria, and so should properly be called *Isaria robertsii* (Berk.)

The mode in which the caterpillar becomes infected with the spores of the fungus has not been exactly observed. It has been suggested by some that the spores are eaten by the caterpillar adhering to the leaves on which it feeds; by others, that the spores enter by the spiracles; and by others, that the insect becomes infected while burying itself to undergo its metamorphosis, the spores being mixed with the earth.

An examination of the specimens which I exhibit to-night shows that there is considerable variation in the size of the caterpillars and in the length of the stipes of the fungus. In all my specimens, also, the stipes proceeds from the first joint of the body, just behind the head, and projects forward in line with the body of the caterpillar. Some specimens, however, have been met with in which a stipes has sprung from each end of the caterpillar, and others where the stipes has arisen from various parts of the body; but these are of uncommon occurrence. My own opinion is that, while infection with the spores of the fungus may take place in any of the three ways indicated, the first two are much the more probable. Were the caterpillar to remain unaffected until it went to bury itself, it is scarcely likely that the fungus would grow as rapidly as to stop all attempts to assume the chrysalis form.

* "Trans. N.Z. Inst.," xviii., 209.

When we consider the excessively small size of fungus spores' and the ease with which they become disseminated, we can readily imagine them lighting on the leaves on which the caterpillar is feeding, and either being eaten with the food or entering by the spiracles. I have not seen any speculation as to the reason of so many of the caterpillars burying themselves before attaining their full size. I think a very probable explanation of this is that, having become infected with the spores in either of the ways indicated, the gradual development of the fungus weakens the caterpillar and induces the disposition to metamorphosis, just as a similar early change of condition is very frequently induced in other caterpillars which have been attacked by ichneumons or other parasitic insects. The reason for the stipes almost invariably springing from the same spot, near the head of the caterpillar, I think is probably due to the position assumed by the caterpillar after burying itself, with its head upwards. Naturally the fungus would seek the shortest direction to the surface. The abnormal examples of the spike growing from other parts of the body may be attributed to accidental differences in position assumed by the caterpillar. Usually there is only a plain stipes, which bears a close resemblance to a miniature spike of the Australian grass-tree ; but in some cases two independent spikes have sprung from the head of the caterpillar, and more commonly the stipes bifurcates at different points. Several of my specimens display this peculiarity.

I have made measurements of the length of the caterpillar, the total length of the stipes, and the length of the portion of the stipes carrying the spore conceptacles, in the specimens in my collection.

Specimen.	Caterpillar. inches.	Stipes. inches.	Spores. inches.	
No. 1	3¾	9	2½	
No. 2	3¼	9¼	3¾	
No. 3	3	5½	2¼	Branching stipes
No. 4	2¾	9¾	2¼	
No. 5	2⅞	5⅞	1½	
No. 6	2¼	6	1½	Branching stipes
No. 7	2½	6¼	3⅝	
No. 8	2⅜	8⅛	2	
No. 9	2⅜	7½ (about)	?	Broken
No. 10	2⅛	8¾	1¾	
No. 11	2¾	3¾	2⅛	

Probably the difference in length of the stipes is due to the varying depths which the different individuals have buried themselves at.

When some of the spore conceptacles from a dried specimen are soaked for a few hours in water, a mass of spores become liberated. These spores are long and slender, and are neatly twisted together into distaff-shaped bundles. Probably these are

the macrospores, and there is most likely some other form of fructification yielding microspores. The conceptacles are arranged closely packed together round the end of the stipes, just like the drupes on the cones of the Australian Macrozamia or of the Pandanus, and much resemble these in shape.

Similar entomogenous fungi have been met with in many different countries, infesting insects, spiders, &c., but the New Zealand species is remarkable for its large dimensions. Hochstetter states that it is eaten by the Maori.* A species occurring in China is much valued by the Chinese as a medicine.

In Fiji, on the Rewa River, I found a fully-matured moth, a species of Bombyx, the body of which was covered all over with slender stipes about a quarter of an inch long, proceeding from a mass of mycelium which filled the body of the insect. The moth was dead when I found it. This specimen I gave to the Hon. Wm. Macleay, of Sydney, in whose collection it now is.

At a meeting of the Linnean Society of New South Wales, in 1887, a collection of these fungi from Mr. Macleay's museum was exhibited, and a short description, taken from the "Proceedings" of the society, will be of interest here :—

"(1) Labelled New South Wales, shows some large lepidopterous larvæ, with the stipes, rising from the tail, as long and as thick as the caterpillar, and terminating in a double or sometimes single large oblong somewhat compressed club. (2) Specimens of the well-known New Zealand Isaria, the stipes springing from the head, and ten inches in length. (3) Specimens from Ash Island of larvæ of *Rhyssonotus nebulosus* in a similar state, the fungus rising from the head in thin stipes and terminating in a small round club. (4) Some cicada pupæ similarly attacked (New South Wales). (5) Larva of an Elater with a number of thread-like growths on the sides of the body (New South Wales). (6) An homopterous insect, with fine thread-like growths from its tail (New South Wales). (7) Two Dipterous insects from Cairns, with a short thick stipes terminating in a round club, springing from the base of each wing, evidently a Cordyceps. (8) Four different species of Hymenoptera from Cairns, but apparently attacked by the same fungus, which springs from all parts of the body in long, very thin and hair-like filaments. (9) A homopterous insect from Cairns, completely enveloped beneath in a growth of short barbed-looking spines. (10) In three spiders, also from Cairns, shortish, thickish, and rather pointed growths spring from different parts of the body. (11) Two wasps from Cuba have a longish stipes rising between the anterior legs."

In *Nature*, vol. xiv., p. 224, mention is made of a specimen from Queensland being exhibited at a meeting of the London

* Hochstetter, "New Zealand," p. 171.

* "Princ. Lo. Soc., N.S.W.," 2nd series, vol. ii., p. 109.

Entomological Society. Most people will have noticed the common house fly, particularly in the autumn, attach itself to windows and other places and become covered with a white cottony-looking growth, which spreads on the glass around the dead fly. This is caused by a fungus, *Sporendonema musci* (Cohn), which kills the fly and afterwards flourishes on its body.* Good examples for the microscope may be obtained by transferring a recently fixed fly to a glass slide, covering with a watch-glass and setting aside for a few weeks. On removing the fly, mycelium and spores of the fungus will be found adhering to the glass.

The whole subject is one of much interest and economic importance. Every bit of information which may aid us in understanding the parasites which affect insects has its value, and I have gone fully into details in the hope that our entomological friends will keep a look-out when collecting, and bring forward any specimens bearing on this subject which may come under their notice.

A very interesting field of study for those who have the opportunity would be the inoculation of various species of caterpillars with the spores of entomogenous and other fungi.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS;

By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

(Continued.) Received November, 1890.

Lepidium Merralli.

Annual, dwarf, weak, nearly or quite glabrous; leaves linear, entire or produced into a few narrow lobes; racemes short; flowers extremely small, unprovided with petals; stamens four; anthers about as broad as long; stigma sessile, fruits quite small, on pedicles of about double their length, rhomboid-orbicular, with a very shallow terminal intrusion, reticular-venulated; seeds yellowish-brown, smooth.

Near Parker's Range; Edwin Merrall. Height 3–5 inches, so far as known. Leaves ⅓–1 inch long. Well developed fruits measuring about $\frac{1}{10}$-inch.

This plant differs from *L. ruderale* in its very short stems, extreme narrowness of leaves, broader pedicels, fruits of lesser size, as broad as long, rather more turgid, conspicuously venulated, somewhat blunter at the edge and with a still smaller terminal emargination.

In *L. Merralli* rather the lower half of the fruit is the broadest, while in *L. ruderale* the reverse takes place. *L. leptopetalum* occurs on the Lachlan-River (F. v. M.); *L. rotundum* at Cooper's Creek (Flierl); *L. monoplocoides* on Yorke's Peninsula (Tepper); *L. foliosum* at Port Fairy (Dattari).

* See "Micrographic Dictionary," 1883, p. 723.

ASTROTRICHA BIDDULPHIANA.

Tall; leaves crowded, comparatively short, broadish-linear, acute, only slightly recurved at the margin, above glabrous, beneath as well as the branches bearing a close very thin pale-brownish stellular indument; umbels amply paniculated, the whole inflorescence glabrous; peduncles elongated; involucral bracts quite small, almost semi-lanceolar; pedicels many times longer than the flowers, capillary thin; calyx-lobes minute, deltoid; breadth of the petals quite half of their length; anthers greyish; young fruit moderately turgid.

Near Mt. Playfair; Mrs. H. Biddulph.

Height to 6 feet; differs from *Astrotricha ledifolia* in still narrower leaves, probably always glabrous panicle, longer and thinner pedicles, rather smaller flowers with seemingly purplish dark-coloured petals and perhaps also in the shape of the ripe fruit, which as yet is not known.

Although from a solitary specimen available the degree of variability of this plant cannot be preconceived, yet the characteristics are such, as to lead to the assumption, that we have in this instance to deal with a plant of real specific distinctiveness, and one which like many others, brought to knowledge already from the same locality, is quite restricted to that region.

The lady-finder has sent from there also *Duboisia Leichhardtii* with fruit, whereby the generic position of that rare and therapeutically important plant is now also affirmed. She collected with the aid of accomplished daughters also *Burtonia foliolosa*, *Goodenia racemosa* and some other rare plants. *A. ledifolia* occurs also on the Genoa; *A. longifolia* on Shoalhaven (Baeuerlen); *A. pterocarpa* between the sources of the Nagoa and Glenlee in the sandstone-gorges (F. Clewett); on Mount Wheeler (Thozet); on the Upper Barcoo (Archer).

THISMIA RODWAYI.

Stem flexuous, short, undivided, colourless; leaves few, scattered, bract-like, rudimentary, semilanceolar, acuminate; flower solitary; involucre close to the flower, consisting of three small semilanceolar appressed bracts, like the leaves colourless; calyx flesh-coloured, somewhat succulent, almost campanulate; lobes much shorter than the tube, semilanceolar-deltoid, spreading; petals emanating from the summit of the calyx-tube, about twice as long as the calyx-lobes, converging, ovate-cuneate, at the summit overlapping and there connate, by the excurrent carinular line apiculate; stamens deflexed, fixed at the summit of the calyx-tube; filaments broad, connate, dark-red towards their base, continued beyond the anther-cells into a pale membranous dilated and minutely biapiculated connective; anther-cells ellipsoid, parallel, slightly distant from each other; style short; stigmas three, bifid; ovulary one-celled, almost hemispheric, excavated

at the top; placentaries nearly cordate; ovules very numerous, the laxe integument much and equally extending beyond the nucleus.

Near the Derwent; L. Rodway.

Length of stem to about three inches. Flower about ⅔-inch long. Ripe fruit not obtained.

This plant connects the genera Thismia and Bagnisia, so that the species of the latter should merge also into Thismia; indeed, Geomitra might likewise be transferred to that genus. If however these three are separately maintained, then the new Tasmanian plant could also be generically isolated, and might then receive the name *Rodwaya thismiacea*.

THELYMITRA ELIZABETHÆ.

Under this name has been distinguished a Thelymitra, as a variety of *T. carnea* or as a distinct species, discovered towards the Yarra, near Camberwell, by Mr. John M'Kibbon. The stature is rather more slender than that of *T. carnea*, and the plant is also in all its parts somewhat smaller. It differs furthermore in having the appendages of the gynostemium dark-purplish or almost black and less papillular-rough, the lobe between the appendages being likewise dark-coloured, while the apex of the anther is also purplish. This rare plant is dedicated to the lady of the finder.

(To be continued.)

CORRESPONDENCE.

To the Editor of the Victorian Naturalist.

DEAR SIR,—Can you or any of your readers inform me where I can obtain a fairly representative collection of Victorian fossils suitable for illustrating lectures on geology? Thanking you in anticipation, I am, yours sincerely,

ERNEST LIDGEY.

Edgevale-road, Kew.

PARASITES ON BEETLE.—I have to submit a small beetle which I found about three weeks ago on a dung heap, and which has attached to it a curious cluster of parasitic mites (Acarus, sp. ?) They are attached to the abdomen of the beetle, on the back, just at the hinder ends of the elytra, some of them evidently adhering to the soft cuticle of the body, whilst others are attached to a bristle-like projection, about a quarter of an inch in length. When I noticed the beetle it was moving along briskly; and besides the fixed parasites, there were three or four very active long-legged mites running freely about on its body. Mr. French informs me that the name of the beetle is *Saprinus laetus*.—T. STEEL.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 1bs., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

The numbers forwarded to any address on receipt of remittance (postal-notes preferred) and postage.

Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

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VOL. ~~VIII.~~—NO. 9. JANUARY 7, 1891.

The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

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

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VII

VOL. ~~VIII.~~—No. 9. JANUARY, 1891. No. 85.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Field Naturalists' Club of Victoria was held on the 8th ult., at the Royal Society's Hall, when the president, Mr. C. A. Topp, M.A., LL.B., F.L.S., occupied the chair.

There was a large attendance of members and visitors, in expectation of receiving a full report of the Kent Group expedition, but owing to the short time which had elapsed since the return, only a short preliminary report could be presented. Upon the proposition of Professor Spencer, it was decided to hold a special meeting to receive the report, and after some discussion Monday evening, December 15, was fixed upon as a suitable date. Some points worthy of note, however, were touched upon in reference to the Kent Group—notably, Mr. A. J. Campbell's graphic notes on a visit to Mutton Bird Island, and Mr. D. Le Souëf's allusion to the marsupials.

Then came a report from Mr. F. G. A. Barnard of an excursion to Lower Fern Tree Gully, the entomological results of which were not very satisfactory.

Mr. A. H. S. Lucas, M.A., B.Sc., brought under the notice of members two "floral monstrosities," the tulip and foxglove furnishing examples. His remarks were illustrated by diagrams, which considerably increased the interest in the subject. Additional examples were supplied by the president and Mr. J. S. Hart.

Mr. C. French had prepared a paper, "A Spring Day amongst the Wild Flowers," and in his unavoidable absence it was read by Mr. D. Best. An intimate knowledge of the country around Melbourne enabled the author to select a pleasant spot near Frankston for his excursion, and to it the audience was guided and beguiled by reminiscences of the old days before the open country had given way to the march of bricks and mortar. Once there we rambled, in thought, amidst a flora in many respects quite equal to that of an English meadow and wood, and the impression left was that many of us miss like opportunities of reviving memories of days spent amidst such surroundings in the home of our birth.

The Rev. J. J. Halley brought under notice of the meeting an interesting reference to the appearance of two specimens of the parrakeet known as the "Princess of Wales." They were seen by

Mr. S. Clark in Adelaide very recently, whilst the only recorded instance of their appearance before relates to Sturt's expedition of 28 years ago.

An interesting extract was handed to the Secretary, referring to the destruction of mosquitos by dragon flies, from which it is evident that fame awaits him who can cultivate the latter in such numbers as to combat successfully against the former.

The members of the Club accepted with regret the resignation, through press of private engagements, of Mr. J. S. Hart, M.A., B.Sc., as a secretary of the Club, and Rev. W. Fielder was elected to fill his place.

Three new members were also elected—viz., Rev. H. Braddock and Messrs. J. C. Caffyn and J. P. Knight.

The hon. librarian reported the following additions to the library :—" Records of the Australian Museum," i., 5, and " Contributions to Queensland Flora," being Bulletin IV. of the Department of Agriculture, Brisbane.

EXHIBITS.

By Mr. E. Anderson.—A series of *Camptogramma correlata* and one specimen of *Gastrophora henricaria* from Coranwarrabool ; a series of *Chrysolarentia vicissata* from ova obtained from Fern Tree Gully ; photographs and photo-lithographs of *Spilsoma obliqua*, *fulvohirta*, and *Pieris harpalyce*, taken by Mr. John Clements. By Mr. F. G. A. Barnard.—Insects from Lower Fern Tree Gully. By Mr. Campbell.—Photographs of Kent Group expedition. By Miss Cochrane.—Paintings of orchids and other wild flowers. By Mr. A. Coles.—Specimens of *Ægialitis bicintus* (Double-banded Dottrell), *Sternula nereis* (Little Tern), *Coturnix pectoralis* (Pectoral Quail), *Cisticola exilis* (Exile Grass Warbler) ; also some sketches taken whilst on a trip to Tarwin River, Gippsland. By Mr. W. Cuthill.—Volcanic bomb ; lava, enclosing olivine chrysolite, from Mount Shadwell, Mortlake. By Mr. J. Gabriel.—Polyzoa, obtained from near Murray Pass. By Mr. J. B. Jennings.—Specimens from Waurn Ponds and Cheltenham, consisting of ear-bones, sharks' teeth, fish palates, and a whale's tusk. By Mr. G. A. Keartland.—Mounted specimens of the Rock Opossum ; pair of Dove-like Prions and eggs ; Diving Petrel and young ; Little Penguin, young, and eggs ; pair of Yellow-bellied Parrakeets ; skins of twenty species of land birds, including Allied Pardalotus, Sericornis, Graucalus, Sooty Crow Shrike, Thickheads, &c.; also specimens of Green Whip Snakes, three varieties of lizards, eggs of Short-tailed Petrel, and pair of shells of the Paper Nautilus. By Mr. George Lyell, jun.—Living larvæ, pupæ, and imagines of the butterfly *Ialmenus evagorus*. By Baron von Mueller.—*Thisma rodwayi* (or *Bagnisia rodwayi*), from south of Tasmania ; *Pilularia globulifera*, found on the Wimmera by Mr.

J. P. Eckert; *Angianthus tenellus*, found near Diapur by Mr. H. Davis. By Mr. J. E. Prince.—Official log and charts of Captain Cook's discovery of Australia, issued by the Admiralty; also the "Willoughby Papers on Ornithology." By Mr. J. Searle.—*Chiloglottis gunii* (green variety). By Mr. D. Le Souëf.—Opossums, Cyclodus, birds' eggs, and shells, from the Kent Group. By the party who recently visited the Kent Group.—About 80 species of vascular plants, amongst which the following are worthy of special notice:—*Didymotheca thesioides*, *Brachycome diversifolia* (var. *lobulosa*), *Ixiolæna supina*, *Cotula integrifolia*, *Myosotis australis*, *Styphelia elliptica*, *Pterostylis barbata*, *Polypodium pustulatum* (var. *diminutum*).

A special meeting of the Club was held on the 15th December to receive the full reports of the expeditions to the Kent Group and the Yarra Falls.

There was a very full attendance of members and friends, and Mr. H. T. Tisdall, F.L.S., occupied the chair.

Mr. D. Le Souëf read an entertaining account of the recent visit to the Kent Group, whilst Professor Spencer undertook to become the exponent for the members of the Yarra Falls party. The latter paper was fully illustrated by lantern slides, which added considerably to the interest of the account. The lantern was in the skilful hands of Mr. T. Searle, and the slides were preparations of photographic views taken by members of the party during the excursion. One view was especially interesting, historically, being the first photograph ever taken of the Yarra Falls. This fact should be of special interest to every member of the Club.

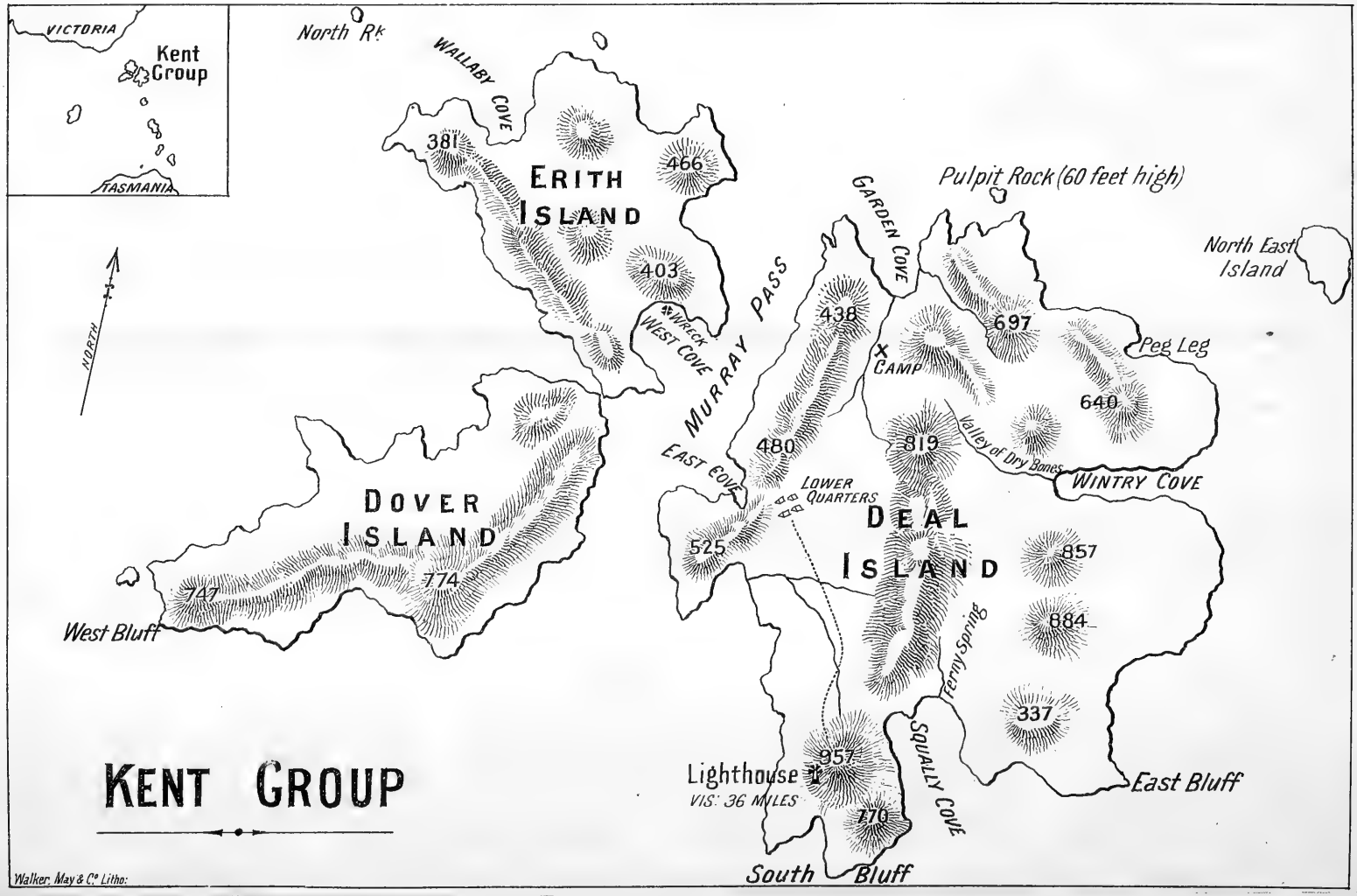
Full reports of both papers will be published, and the attention of every member is specially directed to them, since they bear direct evidence to the thoroughly good work the Club is achieving in every department of its work.

EXCURSION TO BAYSWATER.

THE excursion announced for Bayswater on Saturday, 22nd November, was very poorly attended. Only one member left town by the appointed train, another joined at Glenferrie, and a third at Ringwood. *En route*, from information received, we determined to change the locality of the excursion to the next station, Lower Fern Tree Gully, as being nearer the ranges, and our arrival there quite upset the local station-master. However, after considerable effort he managed to calculate the excess fares and charge us accordingly. We did not get far from the station before we set to work. On turning over a rotten log we found a

number of specimens of the Golden Beetle, *Lamprina rutilans*, in the soft wood, ready to take up another stage of their life in a few days, and some beautifully coloured examples were taken. The orchid *Thelymitra aristata* was rather common about here. We now examined the flowers of *Leptospermum scoparium* for beetles, and though the day was not too warm, and flowers not too plentiful, beetles were scarce. Only about four species of Buprestidæ were taken, common species of other orders, such as Cleridæ, Curculionidæ, Lagridæ, Scarabeidæ, Mordellidæ, &c. Working our way up the hill we got above the growth of Leptospermum, and turned our attention to turning over logs &c., under which we found a number of Planarian Worms, five species or varieties of which were taken for examination by an absent member, but, owing to ignorance as to their habits, they were simply put in a box, and on examination next day were found to be dried up and dead. Collectors securing these uncanny creatures should place something damp in the box with them. Time was getting on, so we retraced our steps down the hill, closely inspecting the Leptospermum again, but not with much better luck. A skipper butterfly was taken, which proves to be a scarce insect, and another seen; but no other rare butterfly was noted; small moths were numerous. Under a stone were found several cocoons, evidently of a hymenopterous insect, and on one of them being opened a spider in a sort of hypnotic state was found enclosed. This we were not surprised at, but the fact of the spider having had all its legs removed at the first joint from the thorax was to us a new item in natural history wonders. Crossing a piece of flat ground, evidently very damp in winter, a large number of flowers of *Utricularia dichotoma* were obtained. These flowers, contrary to many Victorian flowers, last a long time in water, viz., ten or twelve days. Specimens of the smaller grass-tree, *Xanthorrhœa minor*, were obtained here in full bloom. Very few flowers were seen besides those mentioned. After another interview from the station-master about our fares, we left by the 5.45 train, and spent three-quarters of an hour on the Ringwood platform on our way to town, owing to the reduced train service.

Two youths recently discovered a most remarkable bird's nest in a gumtree, near the local bridge (says the Benalla *Standard*). One of them climbed the tree and brought the nest down, when it was found to have been made entirely of wire and one or two pieces of galvanized iron. The way in which it is threaded together is remarkable, and speaks volumes for the ingenuity of the birds, which were probably magpies. Altogether the nest in between 2 ft. and 3 ft. in circumference, and weighs about 3 lbs.


VICTORIA
Kent Group
TASMANIA
North Rk
WALLABY COVE
381
ERITH ISLAND
466
403
WRECK
WEST COVE
MURRAY PASS
NORTH
DOVER ISLAND
747
774
West Bluff
438
GARDEN COVE
Pulpit Rock (60 feet high)
North East Island
697
Peg Leg
CAMP
640
480
819
Valley of Dry Bones
EAST COVE
LOWER QUARTERS
WINTRY COVE
DEAL ISLAND
525
857
884
Ferny Spring
337
957
Lighthouse
VIS: 36 MILES
SQUALLY COVE
East Bluff
170
South Bluff
KENT GROUP
Walker, May & Co Litho:

EXPEDITION OF FIELD NATURALISTS' CLUB TO KENT GROUP, BASS STRAITS.

Kent Group.—Description of Islands.

By D. Le Souef.

The Kent Group of Islands, which we have lately visited, are situated about 50 miles S.E. of Wilson's Promontory, and much nearer Australia than Tasmania. The group is composed of five islands, namely, Deal, Dover, Erith, N.E. and S.W. Islands. Deal Island is the largest, and on it stands the lighthouse. This island is about four miles by two, and is very hilly. The valleys are mostly covered with thick tussocky grass, knee deep, and the hills with dense short scrub, consisting principally of Sheoak, Melaleuca, a small variety of the Eucalyptus, Pine *(Callitris)*, Banksia, Acacias, and Ti-tree. All round the island, except in the coves, are bold granite cliffs, and limestone is plentiful near the surface over all the islands. There are several hills between 500 and 700 feet high, and the height of the land on which the lighthouse is built is over 900 feet. There are several small streams with slightly brackish water.

Erith and Dover Islands are separated from Deal Island by Murray Pass, which is about a mile wide and from 25 to 30 fathoms in depth, and through which a strong five-knot current runs. These two islands are joined by a narrow isthmus just above high water. Erith Island is fairly level in places and covered with grass, Goodenia, pig-face, scrub, and on one part some fair-sized sheoaks. There is a good sheltered sandy beach opposite the pass. The highest point of the island is 568 feet.

Dover Island seems to be altogether rock-bound, and is very hilly, with high cliffs on its west side, its highest point being 774 feet. It is covered with dense short scrub.

S.W. Isle is a barren rock, 323 feet, about eight miles from the lighthouse, and close to the Judgment Rocks. The N.E. Isle, on which the Mutton Bird rookery is situated, is about five acres in extent, and 345 feet high.

Although these islands are so close to Australia, yet their fauna is more closely allied to that of Tasmania, as, although the majority of birds are common to both countries, yet there are six or seven varieties belonging to Tasmania to two belonging to Victoria. Of the reptiles the White-lipped Snake is found in both countries, as are the lizards, insects, and worms, except one lizard, which has not yet been identified, and which is probably not Victorian. The eel is the only freshwater fish found there, and it exists in both Tasmania and Victoria. With regard to plants, Baron von Mueller has kindly named those brought, and states that they all grow in Victoria as well as Tasmania. We should judge that the islands were joined to Tasmania after they had been separated

from the mainland, as so many Australian forms, both of fauna and flora, are absent, and yet the islands are within sight of Wilson's Promontory.

Report of Expedition to Kent Group.

By D. Le Souef.

The expedition, which consisted of Messrs. D. Le Souëf, A. J. Campbell, T. C. Campbell, C. Lane, Jos. Gabriel, G. A. Keartland, and F. W. Ford, left Melbourne on Saturday, 15th November, in the s.s. *Despatch*, starting from the Australian Wharf at 1 o'clock. Early the following morning a call was made at Wilson's Promontory to land a passenger, and our course was then shaped past Rodondo Rock, Devil's Tower, and Judgment Rock; instantaneous photographs were taken of each as we passed by them. On arriving near the Kent Group we were struck with the boldness of the granite cliffs, but we soon steamed into Murray Pass, and into a very pretty little cove, with a nice sandy beach, called the East Cove. The sound of the steamer's whistle soon brought Mr. Brown, the lighthouse-keeper, and his son in sight, and they came out in their boat to assist in landing us and our stores. When everything was safely on the beach we proceeded up a steep incline to the residence of the lighthouse-keeper, and were welcomed with kind hospitality. We shortly after proceeded to Garden Cove, on the other side of the island, about two miles from the landing, and there chose our camping ground; and Mr. Brown kindly sent a dray and a splendid team of bullocks to the beach for our luggage, and brought it down to our camping ground, and long before nightfall we had everything snug.

Deal Island.

Our camp was about 300 yards from the beach, in the cove, and open grass land between, while just behind the three tents was a dense growth of Melaleuca, Sheoak, and other shrubs, which afforded shelter, while a stream, with quantities of fine watercress growing in it, ran past the camp about twenty yards away. We had a beautiful view from our tent doors down the valley, with the blue water in the cove and sea beyond, and on each side high hills covered with vegetation, and on their summits large granite boulders showing above the dark foliage.

Next day (Monday) we started work early—three members went into the scrub to note the different birds; two others went dredging in the Murray Pass, and the rest to fish off the rocks in the cove not far from the camp. Those in the scrub were fortunate in finding four different varieties of eggs—namely, those of the Flame-breasted Robin, the Tasmanian Warbler (in which nest was also the egg of the Bronze Cuckoo), and the egg of the Narrow-billed Bronze Cuckoo, which was found in a newly finished nest of the Sombre-coloured Scrub Tit, in which the rightful owner had not yet laid. The scrub was very thick, and

difficult to get through. The members who were fishing caught Parrot Fish and Australian Rockling, and they reported that both kinds seemed plentiful; a large crayfish was also seen. Those who were dredging also were fairly successful in securing principally Polyzoa.

During the afternoon a visit was paid to the lighthouse, nearly four miles from our camp. It is built on a hill over 900 feet high, and one of the highest points of the island, and close to the steep cliffs that run down to the sea. The lighthouse itself is built of granite quarried hard by, and is a substantial structure. It was erected more than 50 years ago, and has a flash light. The Tasmanian Government intend, I believe, replacing the old light at present used with a new one. The light is visible 36 miles off. The two assistant lighthouse-keepers, Messrs. Franklin and Hutchen, live in quarters close by, while the principal lighthouse-keeper lives about a mile away, at the East Cove, in Murray Pass; there is telephone communication between the two places.

The day being fine, we had a splendid view, and clearly saw the high land of Wilson's Promontory, Rodondo Island, the Devil's Tower, Hogan Group, Curtis Group, and Judgment Rocks. The latter consist of three jagged looking rocks—one large and two small—and they seem to lie in a line. The centre one is the smallest, and there is a level platform on one portion of it which the seals have chosen as one of their breeding grounds, and go there every year, in November, to have their young; a good many get killed by the half-caste sealers from Flinders Island; but it is only when the sea is very smooth that a landing can be effected, which is all in favour of the seals, otherwise the few there are would stand a good chance of being driven away from the islands of Bass Straits. The only other breeding ground near here is Craggy Island, situated between Kent Group and Flinders Island. From our high outlook, turning towards Tasmania, we could see a large portion of the coast line of Flinders Island, also the Two Sisters Islands, the Hummocks, and Craggy Island, and various small rocks, all showing the chain of islands and rocks extending from Wilson's Promontory, *viâ* Kent Group, Flinders and Barren Islands, to Tasmania, the only portions left of the land that once joined the two countries. Before leaving, photographs were taken of the lighthouse and adjacent cliffs, and on our way back to camp a pair of the Yellow-bellied Parrots and a Brush Bronzewing Pigeon were seen; and specimens were obtained of the Tasmanian Fantail, Sombre-coloured Scrub Tit, Tasmanian Warbler, and a hen Grey-tailed Thickhead, and also of a few beetles, spiders, and scorpions. A large White-lipped Snake was seen, but we were unable to capture it. When passing by the principal lighthouse-keeper's quarters, we were surprised to see two English sparrows. We could only account for their presence through their having

been driven over by a strong N.W. wind from our Victorian coasts. As the evening closed in we could hear the penguins uttering their curious cry from a rookery situated on one side of Garden Cove, and they were noisy through the best part of the night. Early on Tuesday morning a visit was paid to the rookery, and we found the birds to be the Little Penguin. It was surprising to see how high up the steep cliffs many of the birds had their nests—in some cases fully 450 feet above the sea level. Many of the birds were sitting on their two white eggs, while others again had downy young ones in different stages of growth. The parent birds fought hard when interfered with, and could use their sharp beak and claws with effect, as those members who incautiously put their hands into their burrows can testify. The birds for the most part made their nests, which consisted of dry grass and weeds, in the cavities under or between the rocks. They breed all round the coasts of these islands, wherever they can secure a sufficient foothold to clamber up. In a few instances we found four eggs in one nest—two good and two addled ones—probably laid by different pairs of birds. At 8 o'clock we all started to visit Erith and Dover Islands, Mr. Brown having kindly promised to row us over. We arrived at East Cove, and found the whaleboat ready, and soon rowed across Murray Pass, landing on a sheltered sandy beach on Erith Island, close to where the wreck of the s.s. *Bulli* lies, with her two masts appearing above water, about 200 yards from the shore. Attempts had been made to raise her, large pontoons having been built for that purpose; but all efforts were apparently unavailing. One of the pontoons is still on the beach, but the other four that were made have been broken up and washed out to sea. The steamer had a cargo of 400 tons of coal, and was entering Murray Pass, when she struck a rock and sprung a leak. She was then brought in here to be beached, but sank before that could be accomplished.

Erith Island.

Two of our members elected to remain in the boat for the purpose of dredging, and were successful in obtaining some specimens of Polyzoa. The rest of us ascended the sandy hillocks to explore the island. There were large numbers of penguins breeding here. The runs they had made on the beach to the places that were most easily ascended over the sand hillocks, to get inland, showed how numerous the birds must be. It looked as if a small flock of sheep had been driven up. There being no stones here under which to make their nests, they burrowed fairly deep holes instead, or laid under the thick tussocks of grass and pig-face, which latter plant was very abundant, and the masses of pink flower looked very beautiful in the bright sun. The first animal caught was a rabbit, which the dog got in a shallow hole. They appear very numerous on this island, where there are no half wild domestic cats to destroy them like there are on Deal Island. Shortly after the dog turned

out a young opossum from under a tussock of grass, and it was secured unhurt, and it is now with another in our Zoological Gardens. We were told to beware of a vicious old billygoat which lives a lonely life on this island, but fortunately we did not come across him in our rambles. Two pairs of the Tasmanian Sooty Crow Shrike were seen, and a newly finished nest formed in a sheoak tree, but not yet laid in. It is a curious fact that these birds seem to keep to this small island, and are seldom seen on the adjacent islands, which are larger. A pair of White-eyed Crows were also seen with their young, which had evidently only lately left their nests. The little White-eyes were numerous among the bushes, and a few of the White-fronted Scrub Tit were seen. A specimen of the Shining Flycatcher was also secured. We saw a pair of the White-bellied Sea Eagle gracefully soaring above our heads until they disappeared in the azure. Their breeding season was probably over, as the young birds are generally fully fledged by the end of November. The vegetation, except in the sheltered hollows, is scanty, but wherever the scrub was absent the tussocky grass grew very thick, and in some hollows the Goodenia flourished, and, being in flower, looked a blaze of yellow in the distance. It is the favourite feeding ground of the Swamp Parrakeet, but none were seen on this occasion. The cliffs round the island were very steep, and no sea-birds seem to breed on them, if we except the Penguin, but in most places it was even too steep for them. Dover Island we did not visit, although it is joined by a narrow isthmus to Erith Island, which the waves break over at high water if the sea is rough, but on the day we were there it was very calm—in fact, we did not see the sea anything but calm once during our stay at the group, except the day we returned home, when it made up for it. The island seemed covered with short, dense scrub, and was very precipitous, and we found climbing about the island we were on quite enough without visiting the other. We all returned to the beach for lunch, which we had on the rocks alongside the old pontoon. One of our members had been fortunate enough to secure a pair of the Yellow-bellied Parrot. During the afternoon we examined the penguin rookery, but found mostly young birds in the burrows, which we left undisturbed. We left early in the afternoon, so as to give plenty of time to dredge on our return, and as the depth of the water across was from twenty to thirty fathoms, we went very slowly, drawing the dredge over the rocky bottom, and, however hard we worked at the oars, it seemed to make very little difference to our pace, and it was a great relief to the rowers when the dredge was hauled in, which it was when we reached the sandy bottom of East Cove. However, several interesting specimens of Polyzoa and Sponges were obtained, including the *Adeona wilsonii*, *Acropora gracilis*, *Adeonellopsis lata* (var.), *Cellaria*

australis, *Caberea grandis*, and others. After hauling the boat into its shed, we started for our camp, reaching there about 5 o'clock. Mr. Gabriel stayed with Mr. Brown, and later on in the evening helped him and his son to row the small boat round to our cove with the seine net. The first haul only brought to shore one garfish, two or three salmon, and some whitebait, but in the next cast about two cwt. of fish were taken, being principally salmon and skip-jacks, with a few mullet, and one small shark. As both the lighthouse people and ourselves were now plentifully supplied, we did not try again, but returned to camp with our spoils. Mr. Gabriel, Mr. Brown, and his son Frank rowed the boat back again, and had a hard pull against an adverse current before they reached the boat shed.

Deal Island.

Some of us started early on Wednesday morning to visit a landslip which we were told existed on the other side of the island. After a walk of about two miles we came to the place, and found that a very small rivulet of water had gradually worn out a large gulch on open country on the lower slope of a hill. The excavation extended about two hundred yards down to the beach of Freestone Cove, and was about fifteen feet deep and twenty feet across. During the heavy rains the sides tumble in, and the friable soil soon gets washed away. We soon clambered down and saw from about three feet from the surface to the bottom small bones sticking out from the sides in thin layers, and also a good many laying loose at the bottom. The majority of the bones evidently belonged to sea-birds, and those exposed to the air were very brittle. At the lowest depth we were fortunate enough to find a fossil jaw-bone of what we have since found to be the Giant Kangaroo *(M. gigas)*. We also collected specimens of all the bones we could find, and they have been submitted to Professor M'Coy, who has kindly examined them, and states that, excepting the jaw-bone, they all belong to small marsupials and birds. We regretted not being able to spend more time at this interesting place. Leaving this "valley of dry bones," we proceeded to some thick swamp ti-tree about a mile away, and had a rough walk along the steep sides of a hill to reach it, passing on our way a few musk bushes in flower. The ti-tree was also flowering, and attracted hundreds of wasps, which flew buzzing round in swarms when disturbed. We found the nest of the Olivaceous Thickhead with two eggs in, and secured a specimen of the Allied Pardalotus. Tracks of opossums were numerous, but we did not obtain a specimen. A pair of Brown Hawks were circling over us while we were hunting through the ti-tree scrub. We returned to camp in time for lunch, and at 2 o'clock we all started for a large penguin rookery on the other side of the hill that overlooked our camp. We had a steep climb down through masses of the Goodenia, pig-face, tussocky grass,

and the Native Hop, which latter plant is found so plentifully in the timbered country of the Dandenong and other ranges. Underneath this thick vegetation the birds had run and quickly hopped under what we had laboriously to push our way through. We found the penguins numerous, but, as before, with mostly hard-set eggs or young birds, and but few fresh eggs were secured. We found some plants of the Asplenium fern growing in a cave overlooking the sea, close to the water's edge. Salt air seems to be essential to these plants, as both here and at King Island it was found growing in exposed situations between the clefts of rocks close to the sea, and in many instances must have had the spray dashed over it. On our return to camp we secured fine specimens of the lizards *Lygosoma* (*Hinulia*) *whitei* and *Lygosoma* (*Hinulia*) *lesueuri*; the latter seemed to vary from those obtained in Victoria. We saw the tracks and burrows of rats in the thick grass, but were unable to secure any for identification.

On Thursday we collected specimens of the plants to be found in our neighbourhood, and a good many different varieties were obtained. We also found a few insects, and a lizard, which was new to us. During the afternoon a few showers of rain fell, and we took the opportunity of doing indoor work that had been put off for a wet day. It cleared up in the evening, and some of us went to the mouth of the small creek that flowed past our tent, and fished for eels (*Anguilla australis*). We made a fire, which was a matter of some difficulty owing to the wood being wet, and then patiently watched our lines. We succeeded in catching four eels in about three-quarters of an hour, by which time our patience was exhausted, so we returned to camp.

Friday turned out a beautiful day, and two members went to the lighthouse, while two more went fishing, and the rest of us, with one of Mr. Brown's sons (Frank) as guide, started off to find some tree ferns, which were said to grow on the other side of the island, but which, so far, we had been unable to find. After a long walk we came to the head of a steep valley that ran down to Storm Bay. There was no scrub of any kind growing in it, and only a very little water trickling down. On descending for some distance, we came to a little hollow that the water had made, about three feet deep and four feet across, and running for a distance of about seven yards, and in this small place we found six different varieties of ferns, including three small specimens of the *Dicksonia antarctica*. Very few had any seed-spores on. None of the plants grew higher than the banks of the hollow, being probably too exposed, there being so little shelter. It seems strange that these ferns should grow here and not in more sheltered and favoured localities on the island, but this is the only place where the two species of tree fern are found. After gathering specimens we left "Ferny Spring" and went to Freestone Cove,

below where we had obtained the bones. We hunted about in the long grass near the beach for opossums, and every now and again the dog commenced barking by a hole under the stones, but each time we hurried up and looked in we saw only a penguin gazing at us. They were not disturbed, with the exception of one, which was killed and used as a bait to try and obtain some crayfish with, which are said to be numerous in this bay; but none were caught this time, although our guide informed us that they had often caught as many as 20 in a morning. Our line was probably too short, but we had no means of lengthening it. Shortly after leaving the beach on our way back to camp, the dog found and killed a very large opossum. It was the first adult specimen that we had seen, and we found it to be the Short-eared Opossum (*Phalangista canina*), common both to Tasmania and Victoria. Later on in the day, when one of our members was forcing his way through thick scrub not far from the camp, he disturbed an opossum with a young one clinging on to its back. He shot the mother and secured the young one unhurt. These animals here do not seem to feed on the leaves of the Eucalyptus trees, as they are generally to be found where those trees are not growing, and we could seldom detect any scratches made by them on the trees, though we looked carefully for them. Their food evidently consists entirely of succulent plants, and they seldom seem to leave the ground. During the day they retire either under stones, if near the sea shore, or under the thick tussocks of grass which grow so abundantly here. The one obtained in the scrub was sleeping under the old up-turned root of a sheoak, and when disturbed never attempted to climb any of the trees, but kept on the ground. On Erith Island, where we obtained our first specimen, we could find no Eucalyptus growing. Another White-lipped Snake was caught not far from the camp, and also a Giant Cyclodus or Blue-tongued Lizard (*C. gigas*). Three of these species were obtained during our stay. They are common to both Victoria and Tasmania; and one of our members secured a Lunulated Honey-eater, a pair of Fire-tailed Finches, and the nest and eggs of the Olivaceous Thickhead.

During the evening the lighthouse-keeper rode to our camp and told us that a party of six half-caste sealers had arrived from Flinders Island to seal on Judgment Rocks, and that they would probably remain about three weeks; so we determined to visit them on the following day. Accordingly, next morning (Saturday) some of us went to East Cove, where they had anchored in their boat, but on arriving we found that they had taken their departure at daybreak. They had heard of our intended visit, and not being sure of our intentions, had gone, probably to the Hogan Group to collect Mutton Birds' eggs. We then went through some thick scrubby country near the lighthouse, and obtained a few

birds and plants. Mr. Campbell went to Freestone Cove and took some photographs of the "Valley of Dry Bones," where we had collected our specimens. He also shot an Olivaceous Thickhead that had a curious malformed bill, the upper and lower mandibles crossing. The bird must have found it difficult to obtain its food. A specimen of the Tasmanian Ground Thrush was shot not far from the camp during the day. In the early morning and evening we always heard these birds whistling cheerily in the scrub.

During the evening some of our members again went eel-fishing, and were fairly successful. A Tope Shark about 3 ft. 6 in. long was also caught with a light line thrown in from the sandy beach.

Next day being Sunday no work was done, and we rose at 7 a.m. instead of 5 a.m., which was much appreciated by some of our members. We all went to the lighthouse during the morning, and then to lunch at Mr. Brown's, and seven of us made a good addition to his family party. During the afternoon a return visit was made to our camp, and we dispensed afternoon tea with the few luxuries that we had, such as cake, Swiss roll, preserved ginger, biscuits, figs, dates, preserved fruit, &c., &c., to our visitors. We were supplied with abundance of fresh milk by the lighthouse-keeper. Arrangements were made for visiting N.E. or Mutton Bird Island on the following day should the weather permit.

N.E. or Mutton Bird Island.

On Monday morning, the weather being beautifully fine, we started for the East Cove, where we found Mr. Brown and his sons and Mr. Hutchen, one of the assistant lighthouse-keepers, ready to start. We were soon all aboard the large whaleboat with our baskets and crooks, and after a good two hours' pull reached the island. The sea being very smooth we managed to land without much difficulty, but if it were at all rough landing would be impossible, there being no sheltered cove, but only rocky sides straight down to the water's edge, except at one place, where it was not quite so steep, and there we managed to land and climb up. The first nests found were those of the Pacific Gull, each with three eggs, and built on the white-flowering pig-face weed on the cliffs. We quickly found the Dove-like Blue Petrel or Whale Bird sitting on their single egg in hollows under the rocks or in small burrows under the thick grass and pig-face plants. They have to be well sheltered, as they and their eggs seem to be at present the principal food of the gulls and falcons. These birds made short work of any eggs left exposed during the temporary absence of its owner. Ascending higher up the cliffs we found some young of the Diving Petrel, but no eggs, they laying early in August. Arriving on the top, which was 346 feet high, we found it covered with long thick tussocky grass and the Goodenia plant. Walking was a matter of difficulty, as one kept breaking

through the ground into the Mutton Bird holes, often to the discomfiture of the inmates. Although we were there the day before the arrival of the main flock of birds, there were already a fair number on the island, and we soon had the baskets we had brought with us filled with their eggs; they only lay one large white one. A few of the male birds were also taken for the light-house-keeper's larder. What the island is like when the rest of the birds come in would be hard to describe, as there is scarcely a square foot on the top of the island without a burrow. They are not deep, but are principally under the matted grass and herbage. We found a good many penguins breeding in the same rookery. Small lizards were numerous, and a few White-lipped Snakes were seen, but none obtained. On another rocky eminence of the island the nest of the Black-cheeked Falcon was found. There were a pair of downy young ones in it about six weeks old. The parent birds were very brave in defending them, and struck the intruder to drive him off, but their little ones were not taken away from them. The remains of the Dove-like Blue Petrel and the Diving Petrel were plentiful about the nest. Not far from the same place, but much closer to the water's edge, the nest of the Sooty Oyster-catcher was found with two fresh eggs in, and from a small burrow hard by the egg, apparently, of the Stormy, Petrel was taken, but the bird itself was absent. Mr. A. J. Campbell took two photographs on the island—one of the members getting Mutton Birds' eggs out of the burrows with their crooks (which saved their hands from the attack of the birds) and the other of our landing place with the boat waiting for us. At 2 o'clock, as the weather was looking threatening, we left, regretting that we were not able to stay longer on this interesting island.

On our return journey the dredge was let down, and some specimens of Polyzoa obtained. On arriving at East Cove, we hauled the boat in its shed and started with our spoils for the camp. Shortly after reaching there, the rain commenced to fall, and continued more or less all night. Next morning (Tuesday) the sky looked very overcast, but we were up early and had our breakfast without any rain. We had hardly finished when it commenced again in earnest, and continued throughout the greater part of the day, but cleared up towards the evening. Being kept indoors, we were enabled to blow and pack the eggs obtained the previous day, and were glad of the opportunity of doing so.

At 7.30 p.m., Mr. Brown and his son Frank, with Mr. Gabriel, arrived at our cove, having rowed round with the small boat, and brought the seine net to fish. The first haul only brought in a few salmon and mullet; but we were more successful the second time, landing a few mullet and thirteen trevalla, the latter weighing about three pounds each. We tried again three times, but did not succeed in catching a solitary fish, and as it was late, and

we were getting cold, a fire was made and a "billy" of water boiled, and a pannican of hot "toddy," with a slice of lemon in, handed to each, and we then returned to camp. Mr. Gabriel helped Mr. Brown to row the boat round to East Cove, and the net was again put out there, and a few salmon and a barracouta caught.

Early next morning (Wednesday) some of us went up the gully near the camp to try and secure some quail we had heard calling out the previous evening; one was seen, but we had not the good fortune to bag it, but were enabled to identify it as the Painted Quail.

About 12 o'clock we struck our tents, and shortly after Mr. W. Brown arrived with the bullock dray. We soon had it loaded with our luggage, which was conveyed to the beach at East Cove, ready to be embarked. While waiting for the arrival of the steamer some photographs of the lighthouse-keeper's quarters were taken, and Mr. Brown's sons caught several penguins for the Melbourne Aquarium. On the voyage over, one of the birds laid an egg in the box, and several passengers inserted their hands with the object of securing it. The birds, however, made such a vigorous onset on the intruding hand with their sharp beaks, that it was quickly withdrawn without the coveted egg being touched. The steamer arrived at 6.30 p.m., and we were soon all on board, and regretfully bade adieu to the islands which had afforded us such a pleasant and instructive time. The wind was blowing strong from the N.W., and there was a high cross sea, but we soon retired to the cabin reserved for our use and tried to rest, but the way the vessel was tossed about by the heavy sea rendered that impossible, except to those accustomed to it, which we were not. The steps descending into our cabin also broke adrift during the night, and helped to keep us awake. The steamer called in at Refuge Cove, at the Wilson's Promontory lighthouse. We passed Cape Schanck at 2 o'clock, and reached our berth at the Australian Wharf at 8 o'clock, very glad that our short sea journey was over.

Memo. by Professor M'Coy on Spirit Specimens from Kent Group.

The only freshwater fish is the *Anguilla australis*, common in Victoria.

Of reptiles there is one snake, the *Hoplocephalus coronoides*, common also in Victoria. There are three species of lizards, of the group inhabiting herbage, of the genus Lygosoma, the commonest of which is the *Lygosoma* (*Hinulia*) *whitei*, very common in Victoria. The second is probably a variety of the *Lygosoma* (*Hinulia*) *lesueuri* (*australis* of Gray), and the other I have not seen before, but will be glad to figure it shortly.

The few insects and Planaria seem all Victorian forms, and of these I have had the advantage of Mr. Kershaw's opinion.

National Museum,
28th November, 1890.

My Dear Mr. Le Souef,—I have cleaned the fragments of skull, and have no doubt they are of the Tasmanian and Victorian Paddymelon (*Halmaturusb illardieri*) and the Old Man Kangaroo (*Macropus major*)—I believe not now living in the island. The fragments of body bones are chiefly birds', with a few belonging to the above marsupials.—Ever truly yours,

Frederick M'Coy.

D. Le Souef, Esq,

Remarks on the Birds of Kent Group.

By A. J. Campbell, F.L.S.

With regard to the birds, we were not disappointed. Two Victorian species, new for Bass Straits islands, were shot—namely, the White-fronted Scrub-Tit (*Sericornis frontalis*), and the Lunulated Honey-eater (*Melithreptus lunulatus*). It has been conjectured that their progenitors may have been carried to their insular quarters by the north-west gales that sometimes prevail; this is likewise the only agency to account for the presence of the European sparrow, which no doubt came from Victoria.

Six or seven species seemed to lean to the other (Tasmanian) side—namely the Yellow-bellied Parrakeet, Sooty Crow-Shrike, a Graucalus or Cuckoo-Shrike, the Grey-tailed Thickhead (at once noticed by its very pale yellow breast, in contrast to the brighter colouring of the Continental variety), the Tasmanian Fantail (noted for its more dusky colour), the Tasmanian Warbler or Tit (*Acanthiza*), and the insular variety of the Mountain, or, more properly speaking, Ground Thrush.

The Ground Thrushes, considered by many persons to be very silent birds, were amongst the most pleasant recollections of our camp. Before sunrise their matins ascended in subdued whistle-like notes from the scrubby hill above our tents. Not till the stilly twilight were the soft notes again heard, as if the birds were chanting low to the goodness of a closing day.

The balance of the 54 species, including sea-birds, is common both to Victoria and Tasmania. One only need be mentioned—the pretty Flame-breasted Robin, so common about our gardens in winter time—which was here found plentiful. Right merrily did they cheer our camp, especially at early morn, with antiphonal singing, rapidly answering each other from tree top to tree top, or from rocky eminence to grassy bank. We were evidently at suitable breeding grounds, several nests being observed with eggs or young. A photograph taken represents a nest cleft in the side

of a Eucalypt tree. It is a somewhat remarkable circumstance that these robins' nests are rarely, if ever, taken on the mainland, but in Tasmania and the intermediate islands.

The Fire-tailed Finches were beautiful visitors to our camping site, their lovely dark-grey pencilled plumage being most strikingly enhanced by pink beak and rump of brilliant scarlet.

When the name Thickhead is mentioned, invariably the risibility of some members of the Club appears easily provoked, but I assure them if they had the skinning of some of these birds they would find, when negotiating the head, they would frequently be in danger of splitting the skin, from the large size of the cranium; therefore, in this respect, the birds have been aptly named *Pachycephala*. Two varieties of Thickheads were obtained—the Grey-tailed and the Olivaceous. Of the former, both the male and female possess very sweet notes—the latter has several peculiar strong notes, while the bird is hard to discover in the thick tangle of undergrowth where it loves to dwell.

Touching the sea-fowl, we enjoyed glorious experiences amongst them. The first to come conspicuously under our notice were the penguins. They filled the night air with weird-like calls, which arose everywhere from the bold, rocky shores around.

Our leader appointed an afternoon to visit the rookery on the camp side of Murray Pass. The locality was an ascent from the sea of about 1 in 2 for about 300 to 400 feet. Where the rocks permitted thick crops of yellow-flowering *Goodenia* and tussocky grass flourished under sheoaks. Hereabouts we found many nooks in crevices of rock or under herbage tenanted with a penguin sitting upon a pair of eggs or downy young. With considerable spirit and with a free use of bill and claws the birds defended their offspring—(in parenthesis, it may be added, to the discomfiture of one or two of the party). It was decidedly noticed how highly odoriferous most of the burrows were; some we calculated had been constantly occupied since the days of Captain Cook.

At half-past seven, the morning of the 24th November, ten of us, including lighthouse-keepers, man the whaleboat. At the steer oar is a typical Norseman—hardy, keen-eyed, and of bulky frame—in whose skill we have implicit confidence. We pull away to North-East or what is locally called Mutton Bird Island, supposed to be a good rookery for various sea-birds, and which has not been visited for seven years or more. Fortunately the sea is calm, for we understand the landing is difficult. Approaching the island we see it is about half a mile across and between 200 and 300 feet high—a huge, coarse granite rock, with beetling walls all round. We steer for a slight indentation upon the side, which seems our only chance by which to scramble to the summit. The rocks are prettily decorated with grey-coloured lichens and bright green pig-face weed, which, with white starry flowers, trails over in

many parts. The feathered inhabitants now become alarmed at our presence. A pair of Sooty Oyster-catchers leave their nest with shrieking calls. Pacific Gulls, which were gracefully posed upon pinnacles of jagged rock on our left, are now circling on high with hoarse bark-like notes; others are just quitting nests on rocky ledges adorned with the white-flowering pig-face weed. Except the trusty Norseman and his son, who remain to keep the boat off the rocks, one by one we all spring ashore as the swell offers opportunity. Our first revelation is the discovery of that charming little sea-wanderer, the Dove-like Blue Petrel, breeding in numbers in the crevices of rock or under the matted roots of pig-face weed. Then the young, nearly feathered, of the little Diving Petrel is secured, and appears to have been hatched about September. Of course we find penguins, and on the top of the island amongst the coarse herbage, which is knee deep, and in burrows, are countless Mutton Birds or Short-tailed Petrels, mostly sitting upon newly laid eggs. The eggs proved of extreme utility for camp purposes. By this time at a particular point of the island a pair of Bleak-cheeked Falcons fly round over head with angry cries. None of us dare attempt to gain their eyrie except our leader, who has to forge a part of his way in a horizontal position on account of the dangerous ledges of rock. The birds are not slow to take advantage of his defenceless position, and boldly attack him in the rear. When the nest is reached, lo! it only contains fledglings in white down.

We look towards the main (Deal) island, distant about two miles, and behold a grand picture. An easterly wind has brought up clouds, which are gathering about and enveloping the hill-caps in a most picturesque manner. A change of weather is imminent, and as the barometer has been tumbling down for the last twenty-four hours we deem it prudent to return to camp, dredging by the way. Shortly after 4 o'clock, loaded with the spoils of the day, we arrive safely under canvas just as the rain begins to descend.

Here follows the list of birds identified:—

(NOTE.—All species common to Victoria and Tasmania except when indicated to the contrary. * Eggs obtained. † Skins seen.)

Circus approximans, Bonap. ...	Allied Harrier
*Astur approximans, Vigors and Horsf.	Goshawk
†Accipiter cirrhocephalus, Vieillot	Sparrowhawk
Haliætus leucogaster, Gmelin	White-bellied Sea Eagle
Falco melanogenys, Gould ...	Black-cheeked Falcon
†Hieracidea orientalis, Schlegel	Brown Hawk

Ninox — ?	Owl
†Platycercus flaviventris, Temm.	Yellow-bellied Parrakeet. Tas.
†Pezoporus formosus, Latham	Swamp Parrakeet
†Cuculus flabelliformis, Latham	Fantailed Cuckoo
*Cuculus plagosus, Latham ...	Bronze Cuckoo
*Cuculus basalis, Horsf. ...	Narrow-billed Bronze Cuckoo
†Halcyon sanctus, Vig. and Horsf.	Sacred Halcyon
Corone australis, Gould ...	White-eyed Crow
†Strepera fuliginosa, Gould ...	Sooty Crow-Shrike. Tas.
†Graucalus parvirostris (?), Gould	Tasmanian Cuckoo-Shrike. Tas.
*†Pachycephala olivacea, Vigors and Horsf.	Olivaceous Thickhead
*†Pachycephala glaucura, Gould	Grey-tailed Thickhead. Tas.
†Rhipidura saturata, Sharpe ...	Tasmanian Fantail. Tas.
†Myiagra nitida, Gould ...	Shining Flycatcher
*†Petroica phœnicea, Gould ...	Flame-breasted Robin
†Geocichla macrorhyncha, Gould	Tasmanian Ground Thrush. Tas.
†Sericornis humilis, Gould ...	Sombre-coloured Scrub-Tit
†Sericornis frontalis, Vig. and Horsf.	White-fronted Scrub-Tit. Vic.
*†Acanthiza diemenensis, Gould	Tasmanian Warbler. Tas.
†Melithreptus lunulatus, Shaw	Lunulated Honey-eater. Vic.
Glycyphila fulvifrons, Lewin ...	Fulvous-fronted Honey-eater
Meliornis novæ-hollandiæ, Latham	New Holland Honey-eater
†Meliornis australasiana, Shaw	Tasmanian Honey-eater
†Zosterops cærulescens, Latham	White-eye
†Pardalotus affinus, Gould ...	Allied Diamond-Bird
Hirundo neoxena, Gould ...	Welcome Swallow
Petrochelidon nigricans, Vieill.	Tree Swallow
*†Estrelda bella, Latham ...	Fire-tailed Finch
*Anthus australis, Vigors and Horsf.	Australian Pipit
Artamus sordidus, Latham ...	Wood Swallow
†Phaps elegans, Temm. ...	Brush Bronzewing Pigeon
Synöicus — ?	Swamp Quail
Turnix varius, Latham ...	Varied Turnix-Quail
†Lobivanellus lobatus, Latham	Wat led Plover
*Hæmatopus unicolor, Wagler	Sooty Oyster-catcher
*Larus pacificus, Latham ...	Pacific Gull
Larus novæ-hollandiæ, Stephens	Silver Gull
*†Puffinus brevicaudus, Brandt ...	Short-tailed Petrel (Mutton Bird)
*†Prion turtur, Banks ...	Dove-like Blue Petrel

†Halodroma urinatrix, Latham	Diving Petrel
Sula serrator, Banks ...	Australian Gannet
Phalacrocorax carbo, Linn. ...	Australian Cormorant
Phalacrocorax leucogaster, Gould	White-breasted Cormorant
Cygnus atratus, Latham ...	Black Swan
Anas superciliosa, Gmelin ...	Wild Duck
Anas castanea, Eyton	Chestnut-breasted Teal
*†Eudyptula minor, Forster ...	Little Penguin.

Reported having been seen by the lighthouse people—

Acanthochæra (probably inauris, Gould)	Watttle Bird

NOTE.—*Sericornis frontalis.*—Compared with those of the mainland in general appearance, the Kent Group specimens possess a lighter colouring of the upper surface, likewise the reddish or brownish tinge on the rump is not so conspicuous, while the bill is decidedly larger. Dimensions in centimetres—total length, 12 ; wing, 6 ; tail, 5 ; bill, 1.8 ; tarsi, 2.45 ; irides pearly on yellowish white. Two specimens were shot on Erith Island.

It should be mentioned that, in the same drift with the fossil jaw-bone of the Old Man Kangaroo and the more recent bones of the wallaby, numerous bones of apparently several species of birds, most probably sea-fowl, were found.

LIST OF FISH CAUGHT AT KENT ISLANDS.

BY J. GABRIEL.

Arripis georgianus, C. and V. ...	Ruffy
A. truttaceus, C. and V. ...	Salmon (so called)
Thersites atun, C. and V. ...	Barracouta
Caranx georgianus, C. and V. ...	Silver Trevally
Seriola lalandii, C. and V. ...	Yellowtail
Temnodon saltator, Bl. ...	Skipjack
Scomber australasicus, C. and V.	Southern Mackerel
Trigla kumu, L. and G. ...	Kumu Gurnard
Mugil grandis, Cast. ...	Sand Mullet
Agonostoma diemensis, Rich. ...	Mullet
Labrichthys, sp.	Parrot Fish
Genypterus australis, Cast. ...	Rockling
Hemiramphus intermedius, Cant.	Garfish
Engraulis antarcticus ...	Whitebait

The Sydney Whiting was also obtained, and we caught the Cuttlefish, *Sepioteuthis australis*, Q. and G.

Polyzoa from Kent Islands, collected by J. Gabriel, November, 1890

Amphiblestrum cervicornis
„ flemingii
Aetea dilatata
Adeona wilsonii
Acropora gracilis
Adeonellopsis lata (var.)
Bracebridgia pyriformis
Beania decumbens
„ magellanica
Biflustra perfragilis
Bugula neritina
Chorizopora vittata
„ brogniartii
Crisia setosa
„ margaritacea
„ acropora
Cellaria australis
Cellepora intermedia
„ spicata
„ glomerulata
„ bispinata
„ longirostris
Calpidium ponderosum
„ ornatum
Caberea darwinii
„ grandis
Canda arachnoides
Cellularia cuspidata
Cribrilina monosceros
Calwellia bicornis
„ gracilis
Catenicella plagiostoma
„ margaritacea
„ hastata
„ formosa
Catenicella alata
„ umbonata
Cyclicopora longipora
Dimetopia spicata
„ hirsuta
„ cornuta
Flustra denticulata
Farciminaria uncinata
Hornera foliacea
„ robusta
Hiantopora ferox
Idmonea radians
„ milneana
„ interjuncta
Lepralia pertusa
Lichenopora wilsonii
„ holdsworthii
Membranipora membranacea
„ pyrula
„ serrata
Menipea crystallina
„ tricellata
Mucronella vultur
„ tricuspis (young cells
Pustulipora australis
Porella marsupium
Retepora porcelana
„ aurantacea
„ monilifera
„ fissa
Scrupocellaria scrupea
„ ornithorhynchus
Schizoporella ridleyi
Smittia landsborouii
Tubucellaria hirsuta

And several others to be named.

Plants brought from Kent's Group by Members of the Victorian Field Naturalists' Club, November, 1890.

Lepidium ruderale, Linné
Cakile maritima, Scopoli
Comesperma volubile, Labillardière
Drosera auriculata, Backhouse
Correa speciosa, Andrews
Zygophyllum billardieri, De Candolle. A small form with succulent leaves
Bursaria spinosa, Cavanilles

Pelargonium australe, Willdenow
Geranium pilosum, Forster
Casuarina quadrivalvis, Labillardière
Claytonia calyptrata, F. v. M.
Didymotheca thesioides, J. Hooker
Stellaria pungens, Brogniart
Tetragonia implexicoma, J. Hooker
Rumex brownii, Campdera
Mesembrianthemum australe, Aiton
Pultenæa daphnoides, Wendland
Goodia lotifolia, Salisbury
Swainsonia lessertifolia, De Candolle
Acacia verticillata, Willdenow
Acacia longifolia, Willdenow. A form with small phyllodes
Calycothrix tetragona, Lab.
Melaleuca ericifolia, Smith
Eucalyptus amygdalina, Labillardière. With rigid leaves
Leptospermum lævigatum, F. v. M.
Kunzea corifolia, Reichenbach
Acæna sanguisorbæ, Vahl.
Pimelea linifolia, Smith
Stackhousia linarifolia, Cunningham. A form with broad leaves and tubercular-rough fruitlets
Tillæa verticillaris, De Candolle
Tillæa macrantha, J. Hooker
Haloragis teucrioides, Schlechtendal
Epilobium glabellum, Solander
Pomaderris racemosa, Hooker
Hydrocotyle candollei, F. v. M.
Apium prostratum, Labillardière
Daucus brachiatus, Sieber
Banksia marginata, Cavanilles
Brachycome decipiens, J. Hooker
Brachycome diversifolia, Fischer and Meyer. Besides the normal state also what seems a variety, remarkable for far less height, beset with glandule-bearing hairlets, the leaves doubly pinnatisected; ripe fruits not available for comparison
Aster stellulatus, Labillardière
Aster argophyllus, Labillardière
Lagenophora billardierii, Cassini
Cotula coronopifolia, Linné
Cotula integrifolia, J. Hooker. A form with many ascending stems from the same root
Gnaphalium indutum, J. Hooker
Gnaphalium japonicum, Thun.
Helichrysum lucidum, Henckel. With white involucre
Ixiolæna supina, F. v. M.
Senecio lautus, Forster
Cymbonotus lawsonianus, Gaudichaud
Wahlenbergia gracilis, A. de Candolle
Candollea serrulata, Lab.
Goodenia ovata, Smith
Plantago varia, R. Brown
Myosotis australis, R. Brown
Styphelia oxycedrus, Lab.
Styphelia richei, Labillardière
Styphelia elliptica, Smith
Epacris impressa, Labillardière
Callitris cupressiformis, Vent.
Thelymitra longifolia, Forster
Microtis porrifolia, R. Brown
Pterostylis barbata, Lindley
Bulbine bulbosa, Haworth. A very robust form
Dianella longifolia, R. Brown
Juncus pallidus, R. Brown. A large form
Centrolepis strigosa, Roemer and Schultes

Lepidosperma gladiatum, Lab.
Gahnia filum, F. v. M.
Stipa dichelachne, Steudel
Poa cæspitosa, Forster
Lepturus incurvatus, Trinius
Spinifex hirsutus, Labillardière
Polypodium punctatum, Thun.
Polypodium pustulatum, Forster. A very small form (diminutum), the fronds only 1–2 inches long, but of thick texture, quite entire; the stipes ½ inch long or still shorter.
Asplenium marinum, Linné
Pteris falcata, R. Brown
Pteris aquilina, Linne
Pteris incisa, Thunberg
Lomaria capensis, Willdenow
Lomaria discolor, Willdenow
Dicksonia billardierii, F. v. M.
Funaria hygrometrica, Hedwig.

Immigrated weeds are omitted from this list.

Worthy of special notice among these are:—*Cakile maritima*, *Didymotheca thesioides*; the Brachycome with the multifid leaves; *Ixiolæna supina*, now only refound there since 1802, when R. Brown discovered it in Kent's Group; *Pterostylis barbata*; the minute form of *Polypodium pustulatum*.

29th November, 1890. FERD. VON MUELLER.

KENT GROUP EXPEDITION.—LIST OF PHOTOGRAPHS TAKEN.

Rodondo Island (1,150 feet high)
Devil's Tower (350 feet high) } Taken from s.s. *Despatch*.
Judgment Rock (of Flinders)
Murray Pass from Deal Island (left picture).
" " (right picture).
Lower Light Quarters—Deal Island.
Scene from Lower Light Quarters.
Lighthouse and Upper Quarters.
Deal Island from Lighthouse.
View from Lighthouse.
Camp Quarters, looking northward.
Camp Scene.
Garden Cove, in front of Camp.
Striking Camp.
Boating Party—West Cove, Erith Island.
Deal Island from Erith Island—Masts of s.s. *Bulli* midstream.
Scene from Deal Island—N.E. or Mutton Bird Island in distance.
Deal Island (distant about two miles) from N.E. Island.
Landing Place—N.E. Island.
On the Mutton Bird Rookery—N.E. Island.
Ditto.
Returning from N.E. Island with "Spoils of the Day."
Nest of Pacific Gull.
Nest of Flame-breasted Robin—side of Eucalypt.
Group of Naturalists.
View from the "Valley of Dry Bones."

NOTES ON THE POISONOUS BITE OF *LATRODECTUS SCELIO.*

By C. Frost.

(Read before the Field Naturalists' Club of Victoria, 9th June, 1890.)

The numerous cases of poisonous spider-bite recorded in the press during the past summer led me to make inquiries, in order to test the genuineness of the reports, and, if possible, to establish the identity of the spider. I also determined, should an opportunity occur, to make some further experiments with the black and red spider, *Latrodectus scelio.*

Having captured a rat in the early part of March, I made two spiders of the above species bite it on the upper part of the hind foot, where the skin is thin and devoid of hair. I then placed it in a wire trap, to watch the effects. During the first hour the rat tried its best to get out, but after a while it abandoned all hope of escape, and sat with its tail in one corner of the trap until it died about twenty-two hours after; and as no symptoms of blood-poisoning were exhibited, I concluded it died from fretting. Two days later I caused two other spiders of the same species to bite a dog. The dog gave a slight howl when bitten, and immediately after showed great eagerness to escape from the shed in which the bite took place; but beyond that no symptoms were exhibited, and the dog is still alive. About ten days later I secured another rat, and thinking the skin might be too thick for the falces of the spider to penetrate, I cut through the skin and made the spider bite into the wound. This time I placed the rat in a dark box, with ample room and material to afford concealment; but after keeping it for two days, during which time it ate freely and appeared perfectly healthy, I found other means to destroy it. There can be no doubt that the animals were bitten, for in each case I raised the spider and saw it holding on with its falces buried in the flesh. Despite the negative result of these experiments, however, the evidence which I have obtained leaves no doubt in my mind that the bite is often attended with very serious results.

In a former paper I expressed an opinion that the bite of this species was more poisonous than that of most spiders. This opinion was formed partly on an examination of its prey; and a few days ago, I found suspended in the web of one of this species a small lizard—Macoa—which doubtless had been killed by its bite.

The larger lizards are not affected by snake-poison; therefore it will be interesting to note whether they are also proof against the poison of this spider.

The following particulars of cases treated by several well-known medical men in Victoria—to whom I am deeply indebted for furnishing me with notes—will, I think, be interesting to members of this club:—

Dr. Mueller, Yackandandah, after referring to the case of a child which is detailed in his pamphlet on "The Action of Snake-poison and the Use of Strychnine as an Antidote," p. 11, goes on to say:—"I have lately observed another case, in an adult also, of a very interesting nature, although the symptoms differed apparently from those the child showed. The spider had bitten a young farmer, whilst loading wheat during the late harvest, below the left ankle joint, where the marks were visible when he was brought to me. With him it was more an undue irritation than paralysis of the motor nerve-centres. Only in the legs semi-paralytic symptoms were shown; he was scarcely able to stand, and could not walk without assistance; pulse at the wrists was also unusually quick and somewhat feeble. But the brain symptoms were the most interesting. He had almost lost the sense of his own identity, and stared about him like an idiot, having at the same time strange hallucinations and illusions. The ideo-motor centres were completely upset, and the man was for the time being a complete lunatic. I had some difficulty in restraining him from leaving his bedroom in a hotel without anything but a short shirt on, and, in trying to do so, received an ugly slap from him in the face. He also complained of violent pain in the bitten limb, extending right up into the abdomen, and causing me to combine the strychnine with cocaine. When I applied these remedies hypodermically, the delirium gradually subsided, and he fell into a sound sleep, from which he awoke next morning, so completely himself again, that his wife, anxious to return to her children, had departed with him before I could visit him again. I saw him since then, and was told that beyond a certain weakness in the legs no unpleasant symptoms were felt subsequently."

Dr. Springthorpe, of Collins-street, Melbourne, has supplied me with the following notes of a case treated by him:—"Mr. D., a gentleman in the prime of life, who had been an athlete, was bitten on the right hand by a black and red spider. The hand swelled, and the lymphatics became inflamed, and later on ulcers broke out on his right leg, then on his left leg, beginning from the size of a pin's head, and some of them increasing to the size of a half-crown, and attended with considerable pain. He progressively lost power in both hands, and also in both legs. In his right hand the fingers became quite numbed. The muscles in both arms became wasted, and all movements were interfered with; the same with the legs. He could not write his name, and it was difficult to use his knife and fork. His feet became permanently cold and discoloured, and the sensation was impaired, mainly in the tips of all the fingers and the soles of the feet. He also temporarily lost his sight. The whole case has extended over two years, during which time the patient has never been free

from symptoms. In my opinion, the course of the disease suggests what we call peripheral neuritis. No other cause can be assigned for such a change other than the bite referred to."

In a letter to Mr. C. French, Dr. Nicholson, of Benalla, gives the following notes of a case :—" Mr. C., a strong, muscular man, states that between 6 and 7 o'clock in the morning of the 3rd January, 1878, he felt something bite him on a very tender part of the body. About half an hour afterwards, pain set in on the inner side of each thigh and along the bottom of the belly. The pain continued severe all day, until about 7 o'clock in the evening, when it subsided, except a dull rheumatic pain behind the thigh and down the calves of the legs. He also had a peculiar tingling sensation at the end of his toes. There was only a slight redness at the bitten part. Between 9 and 10 o'clock p.m. he observed that the right leg was bathed in cold perspiration at the calves. The left leg became similarly affected. The perspiration continued during the night to the extent of saturating the bedding. The perspiration was so profuse that it ran down the limbs. Next day he felt slight drowsiness, but was not otherwise affected."

Dr. Colquhoun, of Kingston, also writes :—" I herewith send a spider* which has been doing considerable damage to men in this district. It abounds in sheaves of grain and amongst the peas, and, as the result of its bite, men suffer from intense pain shooting up the limbs, and soon complete motor-paralysis sets in. As far as I can gather from report, there is no loss of sensation. I have myself had but one case so far, and the symptoms were as above, with, however, great depression."

In the foregoing cases I have not been able to obtain proof that the spider was seen at the time of the supposed bite. This important piece of evidence has, however, been furnished me by Dr. Hearn, of Kensington, who, whilst practising at Inglewood, treated in all six cases, in four of which the spider was seen at the time. I regret that he has been unable to supply me with full details, a careful search having failed to disclose the whereabouts of his notes made at the time. The symptoms varied considerably, but acute pain in the back was a constant symptom. In his own case—he being one of the victims—he saw the spider, and brushed it off after feeling the bite. The leading symptom was—besides acute lumbar pains—excessive perspiration, lasting for three days. One patient was twice bitten, and was laid up for six weeks on the first occasion. The second time he recovered in a few hours. One case proved fatal—a child, three months old, dying collapsed about six hours after the bite.

The description received of the spider is, in all cases, " black, with a red stripe down the back"—so its identity is clearly established, as no other spider known in Australia possesses that

**Latrodectus scelio.*

very definite marking. The symptoms, although they vary considerably, agree in several important points, and the fact that the effects of the bite are more severely felt in some cases than in others, may probably be accounted for by the condition of the blood of the victim at the time the bite took place.

All the cases recorded occurred during the hottest months of the year; yet the spider is to be found all the year round, although less active during the winter months. From my knowledge of the habits of this spider, I may state that I think the danger of being bitten is very slight. The darkest and most inaccessible places are chosen for its home, from whence it does not appear until dusk, and then, upon the slightest disturbance it either drops to the ground and feigns death, or retreats to the innermost recess of its abode.

NOTES ON A RARE PANDANACEOUS PLANT;

By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

Pandanus Hombronia.

Hombronia edulis; Gaudichaud, Voyage de la Botanite, botanique planche 22, fig. 17.

Near Cape Caution, at the northern end of Holnicote-Bay; Sir William M'Gregor.

According to a communication received by Mr. F. M. Bailey during his Excellency's recent stay at Brisbane, this species attains a height of about thirty feet; the stem-diameter may reach 10 inches; aerial roots are developed. The material, available for examination, consists of two leaves, showing a length of about five feet and towards the middle a breadth of about six inches; the texture seems less rigid than usual in species of this genus, but the leaves are old; their spinular denticles are mostly erect, at the keel distant and not occurring along its lower portion. The fruits are numerous and according to a note from Mr. Bailey globularly crowded together. I find them to accord fully with the delineation, quoted above, and published quite forty years ago, Walpers in his Annales i., 755, having referred to this atlas already in 1849. The plant of the Bonite-Expedition was obtained on the Mariannes, a group which with the Carolines possesses many litoral plants common also to the shore-region of northern New Guinea. By almost universal accord since many years the genus Hombronia has been placed as a mere section under Pandanus, and this is borne out also by Bentham and J. Hooker's great authority. Baillon, in the 21st fascicle of his Dictionnaire de Botanique, mentions this genus of Gaudichaud simply as belonging to Pandanus. Count Solms-Laubach, 1878, in the Linnæa p. 48, quotes *Hombronia edulis* as perhaps belonging to *Pandanus dubius* (Sprengel, Syst. Veg. iii., 897, anno 1826), but Rumphius represents in vol. iv., on plate lxxx., the

"Daun bagge" or "Haun pantey" of the Malays with leaves spreadingly spinular and with gradually much pointed individual fruits.

The Java-plant may again be different from that of Amboina, particularly so as many species of Pandanus are extraordinarily local, because Kurz (in Seemann's Journal of Botany for 1867, p. 127) describes the leaves as very thick, the aggregated mass of fruits as considerably longer than broad, and the fruits below the middle as cohering or connate by 2–4 together, although in the delineation, tab. 64, they are figured, but perhaps erroneously, as merely in close apposition. They are however very different in form to those of *Hombronia edulis*, and upwards much more slender, even more so than those of Rumphius' species; they are ending indeed pyramidally. As the specific name *edulis* is preoccupied by Du Petit Thouars for a very different Madagascar-Pandanus (Desvaux, Journal de Botanique, 1808, p. 47) as duly recorded by Sprengel, Steudel, Kunth, and Dietrich, we must resort to the name Hombronia as the next available for the designation of the species brought by Sir William M'Gregor, by which means then also the dedication will not be destroyed, no other genus bearing Mons. Hombron's name. Professor I. B. Balfour (in the Journal of the Linn. Soc. xvii., 45) also leaves *Hombronia edulis* still queringly under *Pandanus dubius*. In the series of the Annales des Sciences naturelles here is wanting tome 1 of serié 6 (1876), where Alex. Braun, at page 291, refers to this Hombronia, possibly under a new designation.

ADDITIONAL NOTE ON *ASTROTRICHA BIDDULPHIANA*.

By Baron von Mueller, K.C.M.G., M. & Ph. D., F.R.S.

In the last issue of the *Victorian Naturalist* the abovementioned plant was described, but from flowering specimens only. Since then fruiting branchlets were received from Mrs. Biddulph, so that notes on the carpologic peculiarities, which prove remarkable, can now already be given. Ripe fruit nearly ¼ inch long, about ⅛ inch broad, glabrous, faintly and irregularly corrugate-rough, ovate-ellipsoid, contracted at the commissure, otherwise turgid, terminated by the denticulated short calyx-limb; the two fruitlets spontaneously seceding, on transverse section almost semicylindric, the commissural side broad and nearly flat, between which and the seed-bearing cavity through intrusion of the endocarp two accessory small tubular cells formed either hollow or filled with substance similar to the albument, but perfectly closed, although placed close to the commissure. Seed concave-convex, the sudden prominence along the inner side as extensive as the width of the seed; albument equable. Mrs. Biddulph writes that the flowers are either bluish or purplish-black.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 1bs., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

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

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A SPRING DAY AMONGST THE WILD FLOWERS.

By C. French, F.L.S.

(Read before the Field Naturalists' Club of Victoria, 8th December, 1890.)

The absence in Victoria of a real typical spring has been often referred to by those who, coming fresh from England, miss the splendid sight of the budding elms, sycamores, horse chestnuts, beeches, oaks, &c. What can be more delightful to a lover of Nature in her many phases than a walk on a fine morning in an English spring, when clouds of subdued colour seem to lend such a peaceful aspect to what may be termed the thoroughly English landscape. In Victoria, however, we can offer many advantages, as a bright, clear, blue sky, with sufficient warmth to make one feel comfortable; and although we cannot boast of a distinct season of spring, we have much to be thankful for in the shape of beautiful wild flowers, gay-plumaged birds, brilliantly coloured insects, marvellous fern gullies, and other advantages almost unknown in cooler climates. Turning these matters over in my mind, and having a vivid recollection of both sides of the picture, I resolved to spend a quiet day alone amongst the wild flowers about the heath ground near the coast.

I left Melbourne for Frankston, on the 20th of September, by the early morning train, and as it had been raining somewhat heavily nearly the whole of the previous night, everything looked delightfully fresh and beautiful, the morning being just comfortably warm for travelling. To attempt to note the marvellous changes observable, even in passing through districts at railroad speed, would require a far abler pen than mine; so I shall simply confine myself to noting a few of the principal places, on the present sites of many of which used to be the collecting grounds of former days—now townships, shires, and even towns are built, each having its own share of responsibilities, as well as advantages. One of the first things to strike one upon leaving Flinders-street station is to note the difference between the former very humble residence of the late Governor Latrobe—the site of which can still be noted

—and the palatial, if not very handsome, mansion now occupied by His Excellency the Earl of Hopetoun. What a change has taken place in a comparatively few years! But I am not going to detain you. Richmond Hill—named after the Richmond in dear old England, but a libel upon the latter as regards its natural beauty—then South Yarra, Hawksburn; and it is about here that the great change seems to have taken place, it being but a few years since when these districts were but sparsely populated, the whole locality being little better than a series of sandy wastes, of heath grounds and swamps; and my two dear old friends, the late Count de Castelnau and Dr. Godfrey Howitt—long since called away—have often told me how, when they used to go to South Yarra and Prahran collecting insects, they had to wear long leggings, as these parts were at that time "alive" with snakes. Now, the whole place is densely—in some places too densely—populated!

Travelling along, Caulfield is passed, and it being race-day, strings of people are congregated around the enclosure, waiting, I suppose, to obtain a glimpse of the horses which are to compete for the various events. Here another great change is noticeable, the former "grand stand" (composed of hardwood quartering with a shingle roof) having given place to quite an imposing structure, our former excellent collecting grounds in this favoured district for the botanical and entomological collector having been already "improved" out of existence. Coming to Glen Huntly, near which a splendid reservoir has been built, we pass through between fresh-looking and extensive market gardens; and here the almond trees and cherry plums were in full bloom, a truly lovely sight, and very pleasing to one who has seen similar scenes in the old country. Travelling through the very "flower" of the market-gardening districts, along towards Cheltenham, we pass South Brighton, Highett, and then Cheltenham is reached. A somewhat fossilized little place is Cheltenham, the newly formed township of Mentone having quite left Cheltenham out in the cold. In passing through Mentone, one cannot help wondering why those who selected the site for the township should have chosen a flat for the purpose, when the whole place is surrounded by beautiful heights, known in the early days as Balcombe's Paddock. Mentone is, however, a wonderfully lively little township; and we pass on to Mordialloc, a very "old" place, formerly solely a fishing village. In the early days of Mordialloc there was but one hotel (M'Donald's), and all along in front of the present Rennison's Hotel used to be the so-called "Blacks' Reserve." The Kananook and Mordialloc tribes, having smoked the pipe of peace and agreed to bury the hatchet, used to camp hereabouts and subsist on opossums, snakes, shell-fish, &c., and these, with what they could

beg (or steal) from the very few residents then located here, seemed to be quite sufficient for their requirements, as they looked both sleek and happy, excepting when some goodnatured but injudicious person gave them some rum; then all was Pandemonium and excitement, ending generally in the "survival of the fittest," the "ladies" coming off second best. Around Frankston some of the finest trees of the Coast Honeysuckle *(Banksia integrifolia)* are to be found, and as these were just nicely in bloom, the whole place seemed to be alive with birds, principally honey-eaters, although I could not, in passing, note any particular kinds.

Having passed the "one-mile scrub" we hurry on through Carrum, a most weird and desolate-looking place; and it was near this place that the once well-known half-way house stood, the hospitality of its owner having been proverbial amongst travellers in these parts. Those who have by night crossed this space between Mordialloc and Frankston will well remember the singular bellowing and booming note of the Bittern, and, although the Carrum district is drear in the extreme, a very fair collection of birds'-eggs might be made by a collector were he to remain about here for a few days, more particularly those of the wading birds. A few minutes more and the flats bordering on Frankston appear, and in these, plainly visible from the train, are feathery spikes of *Arundo phragmites*, the common swamp reed; also *Azolla rubra*, which gave to the pool in which it grew quite a reddish appearance. Large quantities of the so-called and misnamed Swamp-Oak, *Viminaria denudata*, grow here, but the cattle, it seemed, had mutilated them very much, as a number of cows were seen grazing in the swamp, and up to their bellies in water. A shrill whistle announced that we were approaching Frankston, and very soon after I was trudging along on my way to the township, which, singularly enough, at most of our up-country places, is nearly always some distance from the railway terminus, thereby often causing much inconvenience to travellers.

Frankston, formerly but a fishing village, is now quite an important place, with large hotels, coffee palaces, banks, &c. In the old days the only hotel here, which was kept by the son of the oldest resident of the district, who has been here for forty-five years, will be long remembered by those who had to travel by land between Melbourne and Schnapper Point.

The Frankston district is a rare place for plants, as close to the township one can find the lovely "Fringe Flower," *Arthropodium tuberosum*, Stackhousia, Stylidium (two or three species), many kinds of Pimeleas, Leptospermums, and other pretty plants, and proceeding a mile or so inland a perfect garden of wild flowers is to be seen. Here it was that our Dr. Morrison found, for the first time near Melbourne, that pretty plant, *Boronia algida*, then

new for these parts. The curious and beautiful *Drosera binata*, with its two-pronged and hayfork-like looking leaves, is not uncommon here; and whilst looking for this we came across quantities of the real Sphagnum Moss (*Sphagnum cristatum*), also a solitary plant of that rare orchid *Lyperanthus burnetti*, found for the first time in Victoria by Mr. Wooster, at Narre-warren.

Walking along towards Cranbourne the heath ground looked simply lovely, vast quantities of *Pimelea octophylla* and *phylicoides* being in full bloom. *Dillwynia cinerascens*, *Bossiæa prostrata*, Sprengelia, Platylobium, Styphelias, Epacris, Hypoxis, Xanthosia, Aotus, *Comesperma volubile* and *ericinum*, and a host of smaller and equally pretty plants, as *Polypompholyx tenella*, *Stylidium calcaratum*, with here and there a stray plant of Euphrasia and *Hovea heterophylla*. Leaving the Cranbourne road and striking across the bush in an easterly direction, a creek is crossed, along the banks of which grew some fine plants of *Pultenæa gunni*, and another somewhat similar species, both of which are strange to these parts. In the creek I noticed quantities of Azolla, Ottelia, a Ranunculus growing on the bottom in about three feet of water, and some other and smaller water plants, amongst which the singular little animal Volvox was darting about, apparently quite at home in its supposed seclusion. A very wet and boggy flat, to which I had been directed, yielded a number of plants in bloom of *Lyperanthus burnetti*, the rare orchid already alluded to, and these were collected and handed over, for herbarium purposes, to Baron von Mueller. Turning westward, and getting more into the timbered country, many birds were seen, including the Brown Hawk, Kestrel, Honey-eater (several), Pied Robin, Emu Wren, &c., &c. Descending the high ground a beautiful view is to be obtained of the You Yangs, Mount Macedon, Dandenong Mountains, &c., the scene from here being a remarkably beautiful one. A curious reddish-brown looking patch lining the edge of a swamp is found to be caused by a quantity of plants of *Leptocarpus brownii*, and near here grew, though sparingly, *Phylloglossum drummondi*, mentioned in my preceding paper. Fimbriaria, another singular and fragile plant, is also common here, as also are *Microtis atrata*, *Thelymitra carnea*, *bicolor*, *ixioides*, and *antennifera*. Those two beautiful orchids, *Caladenia menziesii* and *carnea*, are here, the former in bloom; and as the coast is reached *Caladenia latifolia*, always pretty, is just expanding its light pink flowers. *Lycopodium laterale*, with the tiny *Selaginella preissiana* and *Ophioglossum vulgatum*, grow here in numbers. *Epacris obtusifolia* having taken the place of its more showy and better known companion, *E. impressa*, is at its best, being in full bloom. Stretching towards the coast, quantities of small fungi growing in the sand were passed, as also mosses, the well-known and common

kind, *Funaria hygrometrica*, being widely scattered over a piece of ground which had been burned. Of lichens there seemed to be but few, although a regular search would in all probability repay anyone having the time to devote to these and other specimens of cryptogamic botany.

One good-sized Copper-headed Snake was seen and dispatched, and underneath the damp scrub many kinds of small lizards and frogs were seen. Insects were scarce, only a few very lively Cleridæ, some Dragon Flies, Diptera (mostly Culicidæ), and only a few of the smaller beetles were taken, the heavy rains of the previous evening being partly, no doubt, the cause of their absence.

Between the Hastings road, which was crossed, and the coast there are some deep gullies in which grow a splendid lot of the coral fern, *Gleichenia circinata* (6 or 8 feet high), also large plants of *Indigofera australis*, Pultenæa, Goodia—in fact, almost approaching to the Dandenong Mountain flora—small Dicksonias, *Pteris incisa*, &c. How had they come here? *Calochilus robertsoni*, one of the most beautiful of our native orchids is just showing flower, and it is not far from here where *Spiranthes australis*, one of our rarest Victorian orchids, has been found. A very rough and primeval-looking paddock of large dimensions yielded several fine scale insects, two genera and three species of which have been determined by Mr. Maskell as new to science, and have already been described by him.

As the sun was now fast disappearing, a somewhat smart walk soon lessened the distance between the Gleichenia Creek and the railway station, and after a refresher at "my old hotel" (Davey's), the station was soon reached, and a pleasant chat with the popular Secretary of the Royal Geographical Society helped to pass the time between Frankston and the city, which was reached about 8 p.m.

The finding of the new Coccidæ, and the very pleasant outing which I had had, fully compensated me for any little feeling of tiredness experienced during a somewhat long and roughish tramp through the partially wet scrub.

Mr. Arthur Dendy, F.L.S., Assistant Lecturer in Biology in the University of Melbourne, and one of the members of committee of our Field Club, has been approved for the degree of Doctor of Science in the Victoria University, England. Dr. Dendy has obtained this degree, the first of the rank given by his University, mainly by his work on Sponges and his other original researches at the British Museum, on the *Challenger* staff, at the University of Melbourne with Professor Spencer, and for the Royal Society of Victoria.

SOME NOTES ON TRANSFORMATIONS OF AUSTRALIAN LEPIDOPTERA.—(Second Paper.)

By Henry Edwards.

Rhopalocera.

Pyrameis kershawi. M'Coy.

Chrysalis.—In life pale greenish yellow, with a golden sheen. The whole surface, particularly of the abdominal segments, minutely roughened, and thickly and deeply punctured. The head, thorax, and wing-cases transversely wrinkled. On the thoracic region are 8 raised tubercular points — 4 lateral, 4 dorsal—and on the abdomen is a triple row of such points, the middle one placed anterior to the others, so as to form a triangle. These points are richly tipped with gold. The cremaster is wedge-shaped, truncate. Length, 17 mm.; width, 6 mm.

A comparison with this species and *Pyr. cardui* will show remarkable differences. The raised points on the latter are nearly three times as long as those on *P. kershawi*, while in *cardui*, after the emergence of the imago, the chrysalis case is blotched with black, and has no trace of the golden sheen so visible in *kershawi*. After emergence, the case of *kershawi* becomes a pale fawn drab, almost transparent, the substance being far more delicate and fragile than that of *cardui*. In this regard *kershawi* approaches more closely the allied species *Pyr. caryæ*, Hubn., found on the Pacific Coast of America.

Sphingidæ.

Chœrocampa erotus. Cram.

Pupa.—Tawny wood-brown, with a dorsal row of brown-black blotches, and lateral rows of the same enclosing the spiracles. The surface is everywhere rugosely wrinkled, the abdominal region having also deep irregular foveæ. The wing-covers are smoother, with rows of black dots marking the course of the nervures. Anal segment with a deep pit beneath. Cremaster small, bifurcate, black. Length, 50 mm.; width, 15 mm.

Chœrocampa scrofa. Bois.

Pupa.—Fawn drab, much wrinkled, but very glossy in the interspaces, the surface with small brownish blotches, most conspicuous towards the posterior extremity. Spiracles large, brown. On the wing-covers, which are whitish drab, is a series of interrupted brown lines, very distinctly marked, distinguishing the course of the nervures. The cremaster is much produced, long, and narrowed almost into a point. Length, 30 mm.; width, 10 mm.

Zygænidæ.

Agarista casuarinæ. Don.

Pupa.—Short, almost ovate in outline, dull brown or pitchy. The wing-cases are broadly developed, and covered with very

minute distinct punctures, the antennal cases being strongly displayed. The abdominal segments are roughly and irregularly punctured. The spiracles are large, reniform, with anterior edge much raised, so as to be high above the surface of the segments. The cremaster is blunt, broad, rough, and very much wrinkled. Length, 20 mm.; width, 10 mm. Found under loose bark at foot of eucalyptus, enclosed in a very thin and slight web.

AGARISTA GLYCINE. Lewin.

After 3rd moult.—Head and middle of 2nd segment orange, the former with a waved black band in front, the latter with a broken transverse line anteriorly, and four black spots behind, the sides encroached upon by the white ground colour, marked with black stripes. The rest of the body is white, with transverse rows of black spots, almost resolved into bands. There are a well-defined dorsal and two sub-dorsal lines, clear white. The 12th segment is prominently enlarged into a hump, dull red in the centre, with four black tubercular spots, and black at the extreme sides. The anal clasps and termination of the anal segment are pitchy black, the former with two black longitudinal stripes. Below the black spiracles, and at the base of the feet and abdominal legs, is an orange blotch. Feet and legs pitchy. Length, 18 mm.

After 4th moult.—The larva has now a much lighter appearance, owing to the increased width of the white lateral stripes, which have lost their spot-like appearance, and are now more literally bands. The orange of the head and 2nd segment is now brighter in shade, and the black bands on these more strongly marked. The feet and legs are now wholly dull orange, the former black at their tips, and the orange band at the base brighter in colour. The red of the 11th segment is also brighter, and the long sparse hairs of the body are now pure white. Length, 32 mm.

Full grown.—The ground colour is now very pale yellow, instead of white, but with this exception there is little change, save in an increased intensity of all the markings. Length, 55 mm.

BOMBYCES.

NYCTEMERA AMICA. White.

Pupa. — Short and blunt, the posterior segments abruptly narrowed. Colour dark pitchy, the thorax, head, and wing-cases, as well as all the segments, being edged with dark orange, arranged in inconspicuous blotches. The cocoon is very thin and light, composed of only a few blackish hairs. Length, 15 mm.; width, 5 mm. Found, 20th December, under bark of eucalyptus, the moth emerging 29th December.

I frequently saw this species marked *N. annulata* in Australian

collections, which is an error, *N. annulata* being the following species, found only in New Zealand.

NYCTEMERA ANNULATA. Bois.

Larva.—Head black, shining, narrower than the 2nd segment. Body velvet black, with 3 interrupted lines (dorsal and sub-dorsal) of deep orange, the sub-dorsal lines enclosing the spiracles, which are black. On each segment are 6 glossy blue-black tubercles, from which spring bunches of hairs, those of the dorsal region being black, those of the lateral region ashy drab. Under side dull slate colour, as are also the legs and feet. Length, 20 mm. Food plants, various species of Senecio.

ASURA LYDIA. Don.

Egg.—Golden bronze in colour, obconic, swollen at the upper end and slightly flattened. Laid in long strings, agglutinated together, 30 or 40 eggs being sometimes attached to each other.

TRICHETRA MESOMELAS. Walk.

Pupa.—Dull pitchy, paler at the junction of the segments, enclosed in rather a thick cocoon, dull drab in colour, with which some small fragments of the food plant and other extraneous matter are mingled. Length, 23 mm. Found under the bark of eucalyptus at Geelong. The moth emerged on 27th December, and proved to be a female. She laid a large number of eggs in masses of hairs from the anal tuft. These were pale bluish green in colour, ovate and shining.

ORGYIA TRICOLOR. H. Sch.

Egg.—Perfectly spherical, dull cream colour, the mass containing over 300 eggs, deposited, as usual with the genus, upon the old thin cocoon.

Larva (full grown).—Ground colour velvet-black on the dorsum, dull orange laterally, sub-dorsal region slate-grey. Head bright chestnut brown, segments 2 and 3 with broad transverse stripes of bright orange. On segments 4, 5, 6, 7 are the usual long tufted pencils of hairs, slate-grey; another from the anal segment, and from the base of the head a long series of clubbed hairs directed forwards. On 9 and 10 are raised ,truncately flattened tubercles, sealing-wax red. Each segment has the usual series of tubercles bearing long hairs, pale tawny in colour, giving on the sub-dorsal region the appearance of a double line. Spiracles dull yellow, under side dull orange red, feet and legs of same colour. Length, 35—40 mm. Several species of Acacia.

Cocoon and Pupa.—The former is loosely formed out of the long hairs of the larva, the colour a pale fawn drab; the pupa case, which is plain chestnut, being plainly visible. Length, 18 mm.

Imago (female).—Covered with long silky hairs, fawn drab in colour, the rudimentary wings abruptly truncate. Head, antennæ, and feet darker in colour than the rest of the body. Length, 20 mm.; width, 8 mm.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS;

By Baron von Mueller, K.C.M G., M. & Ph.D., F.R.S.

(Continued.)

Anthotroche Healiana.

Beset with a thick lanuginous greyish tomentum; leaves sessile, cuneate- or elliptic-obovate; flowers few or several together in axillary clusters, without perceptible pedicels; calyx cleft to the middle or deeper into semilanceolar lobes, outside densely lanuginous; corolla hardly exceeding the calyx, its tube longer than the lobes, conspicuously narrowed downward, somewhat cylindric towards the base, the upper portion outside as well as the lobes on both sides laxly tomentose; filaments barbellate at the base; anthers whitish; pistil glabrous; seeds several, with a reticulated testule.

At the sources of Swan River, near Cummening; Mrs. Martha Heal. Leaves reaching a length of nearly 2 inches. Flowers ¼—⅓ inch long.

The plant reminds in aspect of some species of Newcastlia, Dicrastylis and Lachnostachys. It differs from *A. pannosa*, as illustrated by Miers, chiefly in thicker vestiture, generally larger leaves, not so narrow towards the base, more axillary and clustered flowers, in less expanded corolla with narrower tube and shorter lobes, and in more numerous seeds.

(To be continued.)

CORRESPONDENCE.

To the Editor of the Victorian Naturalist.

Dear Sir,—Thinking the following would be not without interest to some of your readers, I send it for insertion in your next issue:—

A New Egg.—Gould, 464, *Peristera histrionica* (Harlequin Bronzewing); locality, Queensland and New South Wales. Egg pure white; length, 1 in. 5 lines; breadth, 12 lines. This description is from well-authenticated eggs in my own collection and from those, also authentic, in the collection of my friend Mr. W. MacGillivray. ERNEST A. DOMBRAIN.

Victoria-road, Auburn, 15th March, 1890.*

IRRITABILITY OF LABELLUM OF PTEROSTYLIS.

To the Editor of the Victorian Naturalist.

Sir,—I beg to bring under your notice an observation I have made on an orchid, *Pterostylis mitchelli*, var. *rufa*, the detailed description of which may be found in Baron von Mueller's excellent work, "Key to the System of Victorian Plants," pp.

* Delayed through having been overlooked.—Ed.

418 and 419. The peculiarity of this pretty orchid is the spontaneous periodic oscillation of the labellum. When I found this plant at the beginning of the present month I noticed the labellum displayed a peculiar motion. This reminded me of the habits of *Candollea*, *Leeuwenhoeckia dubia*, *Brachycome calocarpa*, whose certain floral parts also display a strange mobility on being touched; but as the labellum repeated the oscillation, I watched it closely, and observed that it happened in a precise space of time. I have had the specimens for a week in a glass of water, and observed them in various parts of the day, but always found that no circumstance can be attributed to this singular action of the labellum. The time elapsing between the oscillations varies from ten to twelve minutes, during which time I tried the labellum by jerking it, breathing on it, &c., to continue the motion, but in vain. After the lapse of the said time a slight quivering of the anterior base of the labellum might have been seen, and then suddenly it would jerk, describe an arc of about 80°, and remain in that position for the said time, after which the motion would repeat itself.

I have submitted this observation to Baron F. von Mueller, K.C.M.G., &c., and that gentleman (to whom I owe all my botanical knowledge) informs me he has noticed the jerking of the labellum of *Pterostylis mutica* in 1848, and published it in Schlechtendal's "Linnæa" in 1853; but that he did not know that the oscillation was spontaneous-periodic. He, therefore, thinks that I am the first who has made this observation.

He further says that R. Brown, who collected in Australia from 1802–1805, and founded the genus Pterostylis, did not mention anything about this motion. Also, Billardière, who also observed a Tasmanian species, *P. præcox*, of which he made drawings in 1806 as *Disperis alata*, and rendered a good description of its form, never mentioned anything about the motion of the labellum. Fitzgerald, in his great special work on Australian orchids, has taken notice of the jerking of the labellum, but not of a spontaneous. In 1840 Ronald Gunn has noticed the irritability of the labellum of *P. mutica*, *P. longifolia*, *P. nutans*, from notes in Lindley's "Genera and Species of Orchideous Plants." Thanking you in anticipation, yours,

G. P. ECKERT.

Lutheran School, Minyip, 30th December, 1890.

We have much pleasure in congratulating Professor M'Coy upon the distinction lately conferred upon him by Her Majesty the Queen. Sir Richard Owen, Sir Joseph Hooker, Sir William Dawson, Sir James Hector, Sir William Macleay, and Sir Ferdinand von Mueller make up the list of living biological knights, we believe, and it is matter of congratulation for the Field Club that its two science patrons are amongst so limited a number.

NATIVE BIRDS BREEDING IN THE ROYAL PARK IN 1890.

THE Magpie (*Gymnorhina leuconota*) has bred every year for many seasons past; one, and sometimes two, pair nest.

The Laughing Jackass (*Dacelo gigas*) also breeds regularly every season; one pair.

The Pied Grallina (*Grallina picata*).—Two pairs of this bird nest regularly in the gardens.

The Australian Coot (*Fulica australis*).—A pair of these birds made a nest in a pittosporum bush, in an old sparrow's nest, about ten feet from the ground, and reared three young ones.

The Boobook Owl (*Ninox boobook*).—One pair of these birds breed in the gardens.

The Scarlet Lory Parrot, or Pennant's Parrakeet (*Platycercus pennanti*).—A pair breed regularly every year.

The Sacred Kingfisher (*Halcyon sanctus*).—There are two pairs nesting in the park this season.

The Superb Warbler (*Malurus cyaneus*).—Two pairs are at present nesting in my garden.

The Yellow-rumped Geobasileus (*Acanthiza chrysorrhœa*).—One pair bred this season in the gardens.

The Black Fantail (*Sauloprocta motacilloides*).—Two or three pairs breed yearly.

The Welcome Swallow (*Hirundo neoxena*).—Numbers nest in the buildings in the gardens.

The White-shafted Fantail (*Rhipidura albiscapa*).—One pair generally breed yearly.

The Oriole (*Mimeta viridis*).—These birds breed regularly.

THE PRINCESS OF WALES PARRAKEET.

WE take the following from the *South Australian Register*, 23rd August, 1890, forwarded by the Rev. J. J. Halley :—

"TO THE EDITOR.

"SIR,—I yesterday saw two caged specimens of this almost unknown bird. So far as I can learn, no other living ones have been brought to Adelaide, and the only skins hitherto obtained were those of three birds shot by Mr. F. G. Waterhouse, at Howell's Ponds, near Newcastle Waters, when on his memorable journey across the continent with Stuart twenty-eight years ago. From these skins, which were sent to the late Mr. Gould in London (and afterwards returned to our museum), a drawing was made, and a description was written and published in the 'Supplement to the Birds of Australia.' As represented by that talented and usually very accurate portrayer of birds, however, the colours

are rather more brilliant than in nature. Mr. Gould named the bird *Polytelis alexandræ*, in honour of the Princess of Wales. It is nearly allied to the Rock Pebbler *(Polytelis melanura)*, common on the Murray, and to the Green Leek *(P. barrabandi)* of New South Wales and Gippsland, but may be distinguished at once from all other Australian parrakeets by the patch of pale rose-pink upon its throat. These living specimens are in the possession of Messrs. W. J. Magarey and A. T. Magarey, and were brought to Adelaide some months ago by Mr. T. G. Magarey, having been taken from the nest in the neighbourhood of Charlotte Waters. They are last year's birds, and evidently, from the difference in plumage, male and female. In total length they measure about fifteen inches, the tail being about nine inches. In the male, the top of the head and lower part of the back are of a delicate grey-blue, the back of the neck and upper portion of the back dark olive-green, while the wing coverts are apple-green. On the throat is a patch of pale rose-pink, extending downwards from the beak about an inch, and sideways to just below the ears. The under surface is olive-grey, tinged with green, with a little red on the flanks. The pointed tail is dull green above, showing underneath crimson patches on the inner webs of some of the feathers, the centre feathers being considerably longer than the others. The bill is coral red and the iris orange. The female has most of the colours of the male, but in a much less marked degree, the blue on the head and back being more distinctly grey, and the reds (excepting the rose-pink on the throat, which is almost as bright as in the male) much duller in hue. Though they have not the brilliant plumage of some of our better known parakeets, they have much delicacy of colouring, and are remarkably attractive birds, extremely lively in their actions, very inteligent, and the male a very good talker. Though the specimens brought down by Mr. Waterhouse have disappeared since his connection with the Museum ceased, I am sure that, under the care of Dr. Stirling and of Mr. Zietz (the Assistant Director) anything of such great rarity would be well preserved; and to any other museum or zoological gardens a pair of these birds would be a very valuable acquisition, as probably not one of these institutions in the world contains a single specimen.—I am, sir, &c.,

" M. Symonds Clark.

" Knightsbridge, 20th August.

" P.S.—I learn with pleasure that both of these birds will be on view at the meeting of the Royal Geographical Society to be held on Monday evening, the 25th inst."

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from 1st May.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the "Victorian Naturalist." Annual Subscription, 6s. 6d., post free. (To members free.)

With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

Most of the numbers from the commencement, January, 1884, can be obtained from the Hon. Sec., Mr. D. Le Souëf, Parkville, at sixpence each; or in sets. Vol. I. (1884-85), 16 numbers, 7s. 6d.; Vol. II. (1885-86), 12 numbers, 6s.; Vol. III. (1886-87), 12 numbers, 6s.; Vol. IV. (1887-88) out of print; Vol. V. (1888-89), 12 numbers, 6s.; Vol. VI. (1889-90), 12 numbers, 6s.; each set with title-page and index for binding.

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Copies of the Annual Report and List of Members for 1889-90, with Rules, etc., can be obtained on application to the Hon. Sec.

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REPORT OF A VISIT TO THE YARRA FALLS.

Arrangements had been made for a party of members of the Club to go to the Grampians, but as it appeared to be impracticable to carry out this idea, it was finally decided that the party should make an attempt to reach the Yarra Falls, and should collect in the district lying round about the Wood's Point road between the latter place and Marysville. The Falls have only rarely been visited hitherto, owing to their inaccessibility, and our party is much indebted to the courtesy of Mr. Burslem Gregory and Professor Kernot for very valuable information and advice with regard to the route, and not least for an accurate map of the district, without which it would have been impossible to exactly locate the Falls in the short time at our disposal.

There are two ways of getting to the Falls from the Melbourne side. One is to go up the Yarra valley as far as Reefton, after which a blazed track must be followed for about 30 miles across the hills bounding the south of the valley; the other is to proceed *viâ* Marysville, along the Wood's Point road striking south from the latter along the Tanjil track for some twelve miles, and then turning westwards till the valley of the Yarra is reached close to the source of the river. Acting on the advice of Mr. Gregory and Professor Kernot, we determined to follow the latter plan.

Our party numbered six, viz.:—Messrs. Frost (leader), Ashworth, Best, Lyell, Searle, and Spencer, with Fred. Kirby in charge of stores and horses, of which we had two. We thus included in our number botanical and reptilian, insect, bird, and general collectors, and were fully prepared for hard work and good finds, if only the weather should prove favourable. We may say at once that, even if special arrangements for our discomfort had been made, it could scarcely have been worse during the greater portion of the time, and that, owing to this, collecting was well-nigh impossible in just the part of the district in which we hoped for most. Here also we must mention our indebtedness to our assistant, Fred. Kirby, who spared himself no trouble —often under very trying circumstances—to make the trip a success, and whose assistance any future party of this Club will be fortunate in securing. We had sent our luggage on by road the day before we left Melbourne intending to catch it up at Marysville, and thence to take the dray on as far as we could before having recourse to packing.

On Friday, 21st November, we took the early train to Healesville, one member of our party having preceded us. The coach drive from the latter place to Marysville is well known, and there can be few more beautiful roads in Victoria than that leading from Fernshaw over the Black Spur.

By the roadside between Healesville and Fernshaw, with the exception of a Pultenæa in flower, there is little colour in the scrub, stray specimens of the Fringe Lily (*Arthropodium tuberosum*), *Dianella longifolia*, *Thelymitra longifolia*, and *Caladenia carnea* being noted. As the coach passes along we see, amongst birds, the Spotted Ground Thrush by no means infrequent in the scrub, the Sacred Kingfisher, the White-backed Magpie, Pennant's Parrakeet, the Sulphur-crested Cockatoo, the Pallid Cuckoo, the Rufus-fronted Fantail, the Brown Hawk, and, of course, the Laughing Jackass. The hill butterfly, *Epinephile abeona*, is also noticed. Seven miles brings us to Fernshaw, or rather the site of Fernshaw, which is now a township of the past. Boyle's and Jefferson's are represented simply by the remnants of a solitary brick chimney, and we only pause long enough to change coaches before beginning to climb up the Black Spur. It is a lovely day, and from the coach top we look beyond the deep gully at our feet, filled with ferns and cotton-wood, hazel, musk, dog-wood, and sassafras, away to the ranges of blue hills round about and beyond Mt. Juliet. As the gully thins out near the summit of the crest it becomes bordered with old and gnarled beech trees (*Fagus cunninghami*), and the road leads through a forest of large white gums, high up in the fork of one of which is perched a tree fern. On the northern slope the country becomes much poorer, with smaller gums and somewhat sparser scrub, until the comfortable Narbethong Hotel, kept by Mrs. Miller, is reached. During a short halt the moths *Agarista lewenii* and *latinus* and *Camptagramma correlata* are captured, and the caterpillars of the moth *Nola lugens* are noticed in a half-grown state, whilst those near Melbourne have already emerged. Then we start again for Marysville. Beyond the Acheron—a good stream of water flowing into the Goulburn Valley—the road rises for some miles. Two miles this side of Marysville the lonely and neglected cemetery, out in the wild bush, is passed, and then, looking down from the crest of the ridge, we can see through the trees the little township in the valley beneath, with the high hills in the Mt. Arnold district, away in the distance. Keppel's Hotel is of course our head quarters, and having an hour or two to spare we wander along the track leading to the Stevenson Falls, which, owing to the recent rains are in splendid condition. There is little to note in the way of natural history, beyond the capture of a fine but unfortunately mutilated specimen of the extremely rare moth, *Arhodia lutosaria*. The evening is spent in

TOMMY'S BEND.

making preparations, after the arrival of the stores, for a start in the morning, and by two of us in attempting to catch bears. The missile intended to bring down a bear cannons harmlessly off the latter, and brings down instead the head of one of our party, necessitating a little amateur surgery.

22ND NOVEMBER.—We leave some of our stores in the safe charge of Mrs. Keppel, and start out along the Wood's Point road, being assured that we shall never get anywhere near the Yarra Falls. At one time, when the Wood's Point diggings were in full working order, the road from Marysville was an important one, and well kept, but now it is falling into a bad state, and sees but little traffic. This is the more to be regretted because it passes through beautiful scenery, and is in parts very picturesque. Just outside Marysville is Rubbly Hill, steep and well worthy of its name. The roadside is bright, in parts, with purple patches of *Tetratheca ciliata*, and everywhere shrubs of *Aotus villosa* are gay with orange-coloured masses of blossom, but perhaps the prettiest flower is that of a species of Eriostemon, white, with sometimes a tinge of pale pink. Occasionally we pass clumps of large white gums and blackwood, sometimes the blue gum is seen, but the most common forms are the species *fissilis* and *melliodora*. The road passes up the ridge, keeping to the high ground, and runs at first almost due east towards Mt. Arnold. Some four miles out of Marysville we find ourselves looking over a deep valley filled with acacias and the usual rich scrub, whilst up the opposite mountain side runs a remarkable sassafras gully. With the exception of just this cleft, triangular in form with its long-drawn-out apex reaching nearly to the hill top, the whole of the steep hillside is covered with gums, the sparse foliage of which forms a strong contrast to that of the closely packed sassafras trees, with their dense and bright green mass of leaves—each tree of the typical cone-like shape. The road turns sharply and crosses the head of the valley; as it does so we once more get into the region of beech trees, which border all the valleys falling away to the north and south of the ridge along which we are passing. Another mile brings us to a sharp turn in the road, known as Tommy's Bend, just beyond which we halt for the midday rest.

Along the road collecting had begun as soon as Marysville was left. Two specimens of the Pink-breasted Robin were taken and the Coach-whip Bird, the Brown Tree Creeper, the Striated Acanthiza, and the Bronze Cuckoo noted.

So far as insects were concerned the weather—it is too cold—is not promising. The flowering shrubs of Aotus and Pultenæa yield nothing to the umbrella except a few specimens of a red-coloured Curculio (*Rhinotia*, sp.) Numerous upturned logs yield little, but under the bark of the trees we meet with somewhat better success.

The best capture made is that of two specimens of the rare Leucanid beetle, *Ceratognathus westwoodii.* A very fine dipterous fly is also secured, name unknown, with a body of black and yellow, and posterior legs fully three inches in length. Amongst butterflies, *Xenica hobartia* and *Lycœna erinus* are secured, and amongst moths *Symmœa herodiella.*

The road where we have halted is of a broken-down corduroy nature, and runs through the belt of beech trees bordering the small stream by its side. A short distance further on we pass down a sharp descent, cross a clear stream of water, and begin the ascent of what is locally known as Mount Arnold. This forms a long gradual rise for some three or four miles, in nowise worthy of the name of "mountain."

On the flat, by the water's edge, we find under logs specimens of the land planarians, *Geoplana alba* and *spenceri.*

To our left as we ascend the hill lies a deep gully alive with Lyre Birds. In the scrub Acanthizas and Pennant's Parrakeets are flying about, and of flowers Pultenæas, Aotus, Daviesia, Tetratheca, and Eriostemon are common—white, yellow, and purple being the characteristic colours here and everywhere—yellow much the commonest. Throughout the whole trip we scarcely see a red flower, not meeting even with a single specimen of the orchid *Dipodium punctatum.* When once the crest is reached the road begins to descend rapidly into the valley of the Cumberland Creek, and just over the crest we stop to photograph what is undoubtedly the finest piece of the road. On the left side the hill runs up covered with a dense growth of tree ferns, from amongst which rise large beech trees, above which again tower the white gums. Just in this spot is what is known as the "Queen's Hut," a log-house for the accommodation of roadmen. A more picturesque spot could not have been chosen.

From this part of the road follows the top of the ridge of the Dividing Range running in a general south-easterly direction, and forming the boundary line between County Evelyn on the south and Wonnangatta on the north. Half our party makes a detour to see and photograph the Cumberland Falls, lying on the south side of the road. There is unfortunately no track made to them; and, with our cameras, we go through the scrub where the wood-splitters have been at work, and then, with strong assistance from the force of gravity, manage to get to the bottom of the deep gorge, down the head of which the falls tumble. The trees meet overhead, keeping the valley dark and cool, and the falls, with their setting of tree ferns, are certainly more beautiful than those of the Stevenson River, though scarcely anyone takes the trouble to go and see them. To get a photograph the camera must be balanced on a fallen log, the operator finding footing where he can. Even when the balancing is satisfactorily done there remains

V.R. HUT, MOUNT ARNOLD.

CUMBERLAND FALLS.

the difficulty of taking anything like an adequate view of a scene where tree ferns wave gaily about in the darkness of the foreground, whilst behind them is a falling mass of water, the upper part of which, some distance away in a slanting direction, is brightly illumined with sunlight. The photographs taken by no means do justice to the scene, which is really a beautiful one.

Daylight is failing fast as we reach the top of the gorge and regain the road. A small clearing in the trees gives us a view in the sunset across the Cumberland and away to the main valley of the Yarra, down towards which all the hill-ranges dip, every one clothed to its summit with dense forest. Some three miles further on, close to where the Yarra track passes southward to Reefton, we find the tent put up and are soon enjoying our evening meal and rest.

23RD NOVEMBER.—We are up early (4 a.m.), being anxious to press on as far as possible and to reach the Travellers' Rest by evening, close to which the Tanjil track passes off. The road is in very bad condition, suitable only for bullock teams and drivers with the necessary vocabulary at their command. First we have to fill up especially deep ruts with logs, and then watch anxiously to see whether the horses can manage to pull the dray through a nasty bit of bog. A short distance, which has taken some length of time to traverse, brings us to an open piece of ground with a closed-up house, which was once known as the "Scandinavians," the custom of which must have completely fallen off as Wood's Point declined. After consultation, we decide that it will be much the quicker way for us to leave the dray behind and to pack on; so, choosing a sheltered spot among the ferns, we stow away what we can spare, trusting to find the things safe on our return. This occupies some time, and it is past midday when we begin to tramp again. Pennant's Parrakeets and Pink and Yellow-breasted Robins are frequently seen, and Mountain Thrushes and Striated and Spotted Pardalotes not uncommon, whilst the valleys resound with the notes of the Lyre Bird, and the Gang Gang Cockatoos call harshly to one another in the tops of the trees. We cross the heads of many gullies, the creeks in which fall away northwards towards the Goulburn or southwards to the Yarra; and, where the forest opens out a little, we get fine views of the near and distant ranges. The scrub is very thick, and on the flowering asters the fine butterfly, *Papilio macleayanus*, is captured. A number of fine specimens of both sexes of *Xenica hobartia* are captured. This is by no means a common butterfly, and we are fortunate in securing for the first time the male, the capture of which has not before been recorded. A pair has since been given to the National Museum. The shrubs are much the same as before, with here and there specimens of *Banksia collina* and *australis*. Amongst flower, those of species of Pimelia, Daviesia,

Hibbertia, Stackhousia, Wahlenbergia, and one or two Helichrysums, are common, with the little daisy-like Brachycome, whilst only a very few small and stunted specimens of *Epacris impressa* are seen. The absence of Epacris is noticeable everywhere along the track beyond Marysville. The prevailing colour, as usual, is yellow, relieved by patches of white Eriostemon, purple Tetratheca, and here and there the deep blue of *Comesperma volubile.*

There is little of special interest along the road until, about five o'clock, we come in sight of what was formerly known as the Royal Mail, but now as the Yarra Track Hotel. To this, a most comfortable wayside house, we shall return again; but at present our aim, though it is rather late, is to press on whilst daylight lasts; and after, with some difficulty, persuading one or two of our members to leave its comfortable shelter, we tramp on. There are still seven miles between us and the Travellers' Rest, and night falls before we have done much more than half the distance. A sharp turn in the road brings us, about nine o'clock, to the top of a steep descent leading down to a stretch of somewhat level ground, in the centre of which we can see one solitary light twinkling, indicating that we are at our journey's end. We choose the best place available for a camp, and just have the tent up and supper ready when the rain begins to fall—a rain which it is just as well for us that we cannot tell that it is destined to continue for some days.

24TH NOVEMBER.—The morning breaks dark and misty, with a suspicious drizzle: towards 8, as we start, it clears up slightly, and we hope for better things. Mr. and Mrs. Fehrig—a somewhat remarkable couple, the keepers of the so-called Travellers' Rest—come down to see us off. Two of our number are destined to see them again in the course of a few short hours. For three miles we keep to the road, save for a necessary detour through the bush, where a great freshly fallen gum tree completely blocks the road. At first the road leads round the head of a gully with beech trees, but then turns northward and crosses two or three ridges covered with poor gum trees and with scrub composed most largely of mountain ash *(Panax dendroides),* amongst which grow fine specimens of silver wattle. It is raining hard, and the country looks very dreary and forsaken when we emerge from the woods into an open part where the ground is covered with numberless fallen trees. Here the Tanjil track turns off southwards along the ridge forming the watershed between the Thompson River on the east, in Tanjil County, and the Yarra on the west, in Evelyn County. The track was made by Government surveyors some years ago, and consists of a clearing twelve yards wide through the forest; gradually it has become blocked up by fallen timber and scrub, never having since been cleared, and being now never used. It is, as we found, quite

TANJIL TRACK.

CAMP TANJIL TRACK.

impracticable for horses, save for a short distance. Great trees have fallen in thick patches across the track, the scrub on either side and, in fact, often along the track is very dense, and to take a horse along would necessitate the constant cutting of new tracks round fallen timber, large detours having to be made.

We halt for a time and then pass into the scrub. The woods for the first part are composed of white gum and stringy-bark, with numerous small blue gum saplings in the scrub, but curiously not a single fully grown tree of this species was to be seen. Gradually the scrub closed in around us, and in torrents of rain we were climbing over logs and pushing our way through Bursarias, Panax shrubs, and Asters of various kinds. After a mile, and making several detours with the horses, we have to halt and cut through a fallen tree where the scrub and timber is too thick to force a way round them. We are drenched to the skin, and then after another mile find ourselves at the entrance to a gully blocked by the huge trunk of a fallen white gum. It is pretty miserable, and we clamber on to the trunk to try and see above the scrub where our track leads to. Two of our party, not seeing much chance of collecting in such a district, and under such climatic conditions, decide to turn back and seek shelter under the hospitable roof of Mr. and Mrs. Fehrig. Four of us, intent on somehow getting to the Falls, determine to go on, and pushing our way through the gully—attacked by numerous leeches—we mount a rise, and after a mile of hard work are glad to camp in a small open spot. The ground is thick with *Lomaria procera*, but, after cutting the scrub down, we put the tent up and attempt to light a fire. The rain seems to have penetrated to the interior of the logs, and it takes us two hours to get a good fire going; and then, for a short interval, it clears up, and we feel better. It is only for a short time, however, and then the rain comes down in torrents, and all night long pours down upon the tent.

25TH NOVEMBER.—We wake early to find it still drenching wet. Our billies and pannikins are arranged with care to intercept the main streams falling from the roof, and, surrounded by a sea of mud, we make ourselves as comfortable as we can—two of us smoking, two of us sleeping, and waking only when summoned to meals. It is useless attempting to go out, so we make the best of it, and are by no means entirely miserable. Kirby's time is occupied in valiant struggles to keep the fire going, in which, much to our comfort and his own discomfort, he is successful. Work done, *nil.*

26TH NOVEMBER.—All through the night it had rained, and the morning breaks with little promise of anything better. We do not care to face the tramp to the Falls, for we saw that it was useless to take the horses any further, in such weather, and so

determine to stay in camp another day and to wait patiently for the morrow. Towards midday, to our joy, it clears up. We spend the time collecting in the scrub round about. The ash trees here and everywhere about the track have their leaves matted together by the webs of a tortrix moth. The caterpillar is a large green and black one, and a number are taken home. Owing to inability, however, to obtain the food plant, only one has since emerged, and the imago proves to be a large red-brown moth with a double white line across each wing, and is as yet unnamed. Under fallen logs and the bark of trees we are successful in finding numerous specimens of land planarians. The most common form is *Geoplana spenceri*. Next in abundance is a new species now found for the first time, and to be known as *G. dendyi*.* The animal measures, at its greatest length, some 5 inches, and in width ¼ inch. Its upper surface is usually of dark green colour, and its ventral somewhat lighter, with patches of blue along the median line, varying in extent in different animals. The tip has the orange colour typical of land planarians, whilst along the back run two light yellowish lines, separated from each other by a narrow median line of ground colour. The body when at rest has, in transverse section, a characteristic triangular shape. The sides of the body are covered with blue-white spots, easily seen under the lens. This species is common in these parts, and occurs in the high ground from the source of the Yarra back to nearly Marysville, though it has not as yet been found in the Yarra valley, where *G. spenceri* is plentiful.

In this same part we find another new form, which is now called *G. frosti*,* after the leader of our party. When at rest it is somewhat flat and leaf-like. Its upper surface is of a dark brown or green colour, with a bluish "bloom" like that of a fruit. The ventral surface is light yellow coloured, with brown speckles, absent along the median line, and along the back run, as in *G. dendyi*, two light lines separated by a median dark one. This is not very common, and its distribution is identical with that of *G. dendyi*, from which, however, it can be clearly distinguished by its light ventral surface and flattened shape when at rest.

In the same part we find stray specimens of *G. walhallæ*, *G. alba*, *G. mediolineata*, and *G. sulphurea* (now for the first time recorded from Victoria, having only previously been found in New South Wales), together with two examples of the rare and curious land Nemertean. This is worm-like in shape, and about ¾ inch in length, with a light yellow coloured body and a brown stripe along its back. It lives under the bark of trees, and has the power of putting out a curious white proboscis from the

* See "Proceedings of Royal Society of Victoria," 1890, plates xi. and xii., where *G. dendyi* and *frosti* are fully described and figured.

anterior tip. This is shot out with great rapidity, and is, doubtless, of use in catching its prey; at the same time, it appears to serve partly as an organ of locomotion. We watched the creature shoot out its proboscis, and then, fixing the extremity, use this as a fixed point on which to draw the body forward, the proboscis meanwhile gradually passing back into its sheath.

A pair of large Darelli caterpillars are found under the bark of a dead silver wattle. One has since emerged (9th January), and proves to be a variety of the well-known *Loelia australasiæ*, though much smaller than those to be found in Melbourne.

Under the logs and bark we find the customary collection of spiders, beetles, centipedes, and myriapods, together with those curious spider-like forms, the Phalangidæ. Scorpions are very rare. Not uncommon also is a species of earth-worm, belonging, apparently, to the genus *Megascolides* (probably a new species), and hence allied to the giant Gippsland earth-worm. It measures at most 8 inches in length and ¾ inch in width.

Of spiders, all along the track species of the following genera are common on open webs:—Epeira, Gasteracantha, Tetragnatha, and Argiope, whilst the pretty little red-jewelled Arcys, with Tholia, Linyphea, and Tharpyna, come into the umbrella when shaking shrubs for coleoptera. Amaurobius and Clubonia are found in holes and crevices in the bark of trees, where they form a small ragged sort of web outside, with a tubular structure leading into their retreat. Species of Thomisus, Drassus, Lampona, Voconia, Xysticus, and Philodromus are frequent under loose bark.

Associated with Mygale, and sometimes Latrodectus, under logs, are various species of the spider-like Phalangida, of which we take examples of *Phalangida australis* and *Tricenobunus bicarinatus* (male and female).

During the rain we had seen a female of the little Sombre Sericornis several times in the bushes near our camp fire; our presence seemed to disturb her, and, when it is fine, we see that she has a nest close by with three young ones in. Our ornithologist receives strict instructions to let her alone. Close by, also, the squeaking of a young magpie reveals the presence of its nest in a tall tree, and the nests of the White-shafted Fantail and Little Brown Acanthiza—the latter with three eggs—are taken close to camp.

Of reptiles a species of Lygosoma and *Hinulia quoyii* are common, and specimens of *Carlia melanopogon* are secured.

There is very little trace of mammalian life. Opossums are heard, but the only form taken is the marsupial rat, *Antechinus swainsoni*.

In the afternoon the scrub becomes comparatively dry and we take our cameras down to a gully near at hand thick with tree

ferns *(Dicksonia antarctica)* and beautiful specimens of beech trees. On the fern trunks grow the usual epiphytic ferns, such as *Polypodium australe, Asplenium laxum, Aspidium capense, Hymenophyllum tunbridgense* and *nitidum,* and *Trichomanes venosum.* The creek lies to the east of the ridge and runs southwards to join the Thompson River.

The evening continues fine, and we are glad of the quiet time in camp and the opportunity of doing a little collecting and of getting our things dry.

27TH NOVEMBER.—We are up early and leave camp at 5.30 a.m., Kirby remaining in charge. We have determined to tramp on, as our time is short, and we shall not be able to camp nearer to the Falls. It is thus necessary for us, for the country is rough, to carry as little as we can; accordingly we start with a very small amount of provisions, just enough to last us till we reach camp again (late the same evening, we hope), and two of us with cameras. Between us and the point at which we turn off the Tanjil track there lie only six or seven miles, and beyond that about five more to the Falls.

The ground as we pass along is covered mile after mile with the fern *Lomaria procera,* mixed in parts with *Blechnum cartilagineum.* The ferns are just high enough to hide the numberless fallen logs, and hence we stumble about and progress is slow. All along we are struck with the strong growth of the orchid *Caladenia carnea* and of the little violet, *Viola hederacea.* The former are all of the pure white variety, and there are often as many as five and even six flowers on the one stalk. After about three or four miles we mount a ridge on which the vegetation changes from that elsewhere along the track, and reminds those of us who have been in Croajingolong somewhat of that of Goon Murk in the Coast Range. There are no gum trees, their place being taken by the silver wattle, the boughs of which are frequently bent downwards like those of a spruce fir; perhaps, as suggested in the case of Goon Murk, it is the weight of snow they must carry in the winter time which causes them when young to assume this form. The scrub is composed mainly of Asters, *Prostanthera lasiantha,* the Pepper Tree, *Drimys aromatica,* and the shrub-like Native Fuchsia, *Correa lawrenciana,* which reaches a height of from fifteen to twenty feet, and is now in flower. On the ground we find *Styphelia macraei* and a species of Schelhammera, both of these again recalling Goon Murk. Further on we cross several ridges separated by valleys with streams running eastwards to the Thompson, for our track keeps on the east side of the ridge separating the latter from the Yarra valley. The gullies contain a rich vegetation of ferns, Dicksonias, Todeas, Davallias, Lomarias, and Pteris, with pittosporums, blackwoods, sassafras, and beeches. Of birds, the Lyre Bird is plentiful, and two or three times we come across the Black Cockatoo.

After some six miles the country changes completely, and we find ourselves in a great beech forest. The change from gums is most refreshing, and the deep shade and flickering shadows, the trunks all moss-covered, and the ground deep in ferns, call to mind an old English wood. There is little or no scrub, and the warm brown colour of the young shoots with which all the trees are covered, mingled with the deep green of the older foliage, give a depth and warmth of colour quite absent from the ordinary Victorian forest, and resembling more than anything else an English oak wood in spring time. It is curious to note that everywhere the trunks and branches of the beeches are characterized by a thick covering of mosses of various kinds, whilst the silver wattles are equally remarkable for a covering of lichens, even though the two trees grow next to one another, whilst a gum tree close by will be comparatively bare.

In the middle of the wood are the remnants of an old surveyors' camp, occupied during the cutting of the track, and in the centre of the camp is a tree marked "To Matlock." This is the termination of the clearing, and to the east runs a blazed track across the Thompson River into the Tanjil district, while on the west Whitelaw's track leads to the Yarra Valley and on to Reefton. The track consists, for the most part, of blazes at considerable intervals, and, starting from the camp in an unexpected direction, is not easy to find at first. After some search, and by means of the compass and the directions given to us by Professor Kernot and Mr. Gregory, we strike the right one; several lines of blazes run out from the camp, passing up a high ridge to the south of the camp and then turning to the south-west. It has taken us about four hours to reach the spot, and before us there lie five more miles to the Falls, with only blazes to guide us. On the ridge we find ourselves in a forest of white gums. After a long, gradual ascent, during which it was rather difficult to follow the blazes, owing to the scrub and to the heavy timber having fallen across the line, we pass down a steep descent, where the ground is one mass of a species of Adiantum, and cross the first tributary of the Yarra. Then comes a steep hillside covered with silver wattle, on which the track is difficult to follow, and a gradual descent through a wood with many sassafras trees to the small second tributary of the Yarra. For the most part scrub is absent, and progress is only difficult and tiring on account of the ferns. Another ridge is crossed in a slanting direction, and then we come to the third and largest tributary, which is already a considerable-sized stream, though, doubtless, at the present time, swollen out by the recent heavy rains. This stream, on which lie the Falls, can easily be recognized, as close by it, where the track crosses over a log, are three marked trees—one with the name of Professor Kernot, another with F. N. C., and a third with the names of two others

who have recently been there. It is now about noon, and we agree to meet at the same spot in two hours. The Falls lie some distance down the stream, and those of us with cameras hurry on to make the most of our time. We keep not far from the stream, which is bordered by a fringe of ferns and scrub, and in parts tumbles along noisily over rocks. In the scrub the Lyre Birds are numerous, some playing on their mounds; but we are too anxious to make the Falls, which we can hear in the distance, to delay long to watch them. On a branch overhanging the water, however, the nest of the Pink-breasted Robin is taken, containing three eggs; this being the first time, we believe, on which the *eggs* have been taken in Victoria. The butterflies *Xenica hobartia* and *Papilio macleayanus* are captured, and also the small Emerald Moth, *Asthena pulchraria*. After two miles we find ourselves suddenly at the head of a deep gorge, cut out amongst the mountains and gradually broadening out in shape like the letter V from the point at which we stand. The descent beneath our feet, at the apex of the gorge, goes down abruptly for at least 1,000 feet, with great granite rock masses projecting everywhere. Down this the water disappears in a series of great leaps. The scene is a fine one. Just as it comes to the edge of the gorge the stream is divided into two by a great block of granite. At the bottom of the first fall the two streams unite into a single one, which at once throws itself down in a mass of white spray for at least 150 feet; then comes a series of small leaps, then another large one, and so on until the bottom of the gorge is reached. From where we stand we can see the first few falls and hear the roaring of the water as it plunges from ledge to ledge, but cannot see the bottom of the gorge by reason of the dense vegetation clothing the mountain sides. Away in the distance the gorge opens out until it joins the main valley of the Yarra, hemmed in by range after range of hills—purple, blue, and grey, as they gradually fade away towards the horizon.

It is no easy matter to clamber with our cameras down the almost precipitous side of the gorge close to the waterfall; both hands are really needed to hold on to the rocks and trees during the descent. It is quite impossible also to get anything like a comprehensive view of the falls without getting some distance away on to one of the far hillsides and cutting down a few trees and plenty of scrub. Two or three times we try to fix our cameras on projecting rock ledges, but the spray drenches ourselves and the cameras in half a minute, and we are forced to beat a retreat. At best any view we can get in the very limited time at our disposal can only give some idea of perhaps one of the many leaps which altogether make up the Yarra Falls, and can give no idea whatever of the grandeur of their surroundings.

We make an attempt to measure the height, but in clambering

YARRA FALLS.

round a big rock mass, the aneroid rolls into the stream, and in a very short space of time probably measures the total height, though it lies where we cannot read it. We cannot reach the bottom, but so far as we can judge, comparing it with the height of the Stevenson Falls which have been measured accurately, the lowest point we reach is fully 600 feet below the top, and we are nowhere near the bottom—apparently little more than half way. Professor Kernot estimated the height at 1,000 feet, and this may probably be taken as within the mark. Some day we hope to return with more time to spare, for there is comparatively little difficulty in getting there, granted good weather, time to spare, and an accurate knowledge of the track. We had execrable weather, a short time, and though good guidance in direction, naturally not so good an idea of the way as we now possess. Perhaps, however, we owe to the bad weather the opportunity of seeing the Falls at their very best, and so must not complain too much.

Our time is more than gone before we begin to think of getting up the gorge again. It was somewhat risky work getting down in a hurry; it is more than difficult to retrace our steps with rapidity, and somewhat tired out, we find, to our disappointment, that, instead of reaching the head of the Falls, we have certainly got to the top of the gorge, but somewhat behind the head, and in thick scrub with too much climbing grass to make progress easy or pleasant. To add to our misfortunes, we lose our way and follow up the wrong stream, and after retracing our steps and being thoroughly tired out, are relieved to hear the guns fired by those at the rendezvous, where we arrive at 4 o'clock instead of half-past two.

Then commences the tramp back to camp. It is nearly seven by the time we make the old surveyors' camp, and after resting a short time under the beeches, we pass along the Tanjil track, determined to get on as far as we can in the daylight. Darkness comes on and finds us lost in the depth of a gully with no trace of the track amongst ferns, scrub, and fallen timber. There is nothing for it but either to light a fire and wait for the morning or attempt to go on in the moonlight. We determine to do the latter, and so, lighting a fire to warm ourselves, for it has grown damp and chilly, we sit down and wait till the moon rises. Fortunately it is a clear night and the moon nearly full, so after an hour's spell we start. Every two or three hundred yards or so we lose the track, and then one goes on to find a blaze, the rest following when he is successful. Spaces among the trees are deceptive in daylight, still more so in the comparative darkness, and we get along very slowly, stumbling over fern roots and against hidden logs innumerable. At length, close upon four o'clock in the morning, and just as the light is breaking, we make the camp, and after a

good meal, and watching the sunrise, turn in for a few hours' rest.

28TH NOVEMBER.—We are up rather late—about ten o'clock—and strike camp at noon to retrace our steps to the Wood's Point road. Despite the rain we have grown to like the Tanjil camp, and leave it with regret. Fortunately it keeps fine whilst we make our way through the scrub. Nothing can be much more depressing than the latter in wet weather; it always seems to grow just to the right height to soak your legs through and through, and to send showers of cold spray down your neck. As we pass along we note, amongst birds, in addition to those already named, the Wonga Wonga Pigeon, the Harmonious Shrike-Thrush, and the White-eyed Zosterops.

Of course, after an hour or two it begins to rain hard, and we can do little collecting, and trudge along the road till the Travellers' Rest is reached. Here Mr. and Mrs. Fehrig tell us that they entertained our two friends during the heavy rains whilst we were in camp, and that reluctantly they had left their hospitable roof, feeling it to be their duty to collect in the country where it would be impossible for us to stay for any length of time. Along the road we collect numerous specimens of the land planarians already mentioned, with the coleoptera and myriapoda commonly found beneath logs; and as evening comes on we are relieved to find our friends comfortably housed at the Yarra Track Hotel, where we determined to spend the night rather than to camp out in the wet. They also were relieved to see us return safely, for the heavy rains had delayed us for one or two days.

We are rather struck with the curious reticence of the two who stayed in the Travellers' Rest with regard to their enjoyment of the visit, but from remarks let fall every now and then we judge that neither the language of, nor the viands provided by, the host and hostess—the latter item consisting apparently mainly of sour kraut and gooseberry wine—were very enticing. Monday and Tuesday they had been forced to spend indoors, but on Wednesday, with promise of a little clearing in the weather and the memory of the two previous days strong upon them, they had, at the sound and sight of some remarkable culinary operation, turned and fled, never again to enter the door of the Travellers' Rest. Once out of sight of the latter they began to collect. Very many logs were overturned on the way to the Yarra Track Hotel, and though under each were many individual specimens, yet these were, as usual, representative of only a very few genera and species, the most numerous being *Lissotus cancroides*, *Homalosoma dingo*, *Homalosoma* (sp.), *Notonomus* (two species), and *Carenum* (sp.) Owing to the heavy rains the flowering shrubs and gum saplings yielded but poor results, almost the only thing shaken from them being Chrysomelas of the genus Paropsis.

The next day, Thursday, they went in the morning to see the Frank Falls on a stream about a mile away through the bush. The water descends in a single leap for some eighty feet from the mountain side into a deep and narrow gorge. With its luxuriant setting of tree ferns and the sunlight making rainbows in the spray, it forms a lovely sight, well worth the tramp through the scrub and the hard scramble up and down the precipitous sides of the gorge.

The bright sunlight and warmth of the day gave rise to hopes that in collecting the luck might have changed, but it was not so, and vigorous shakes of shrubs and saplings into the umbrella yielded nothing new. Nor was any better fortune experienced with the dry branches of fallen trees—only representatives of the same old genera were to be seen. Getting tired of these non-successful attempts, attention was turned again to the logs, but still in vain, and the day passed without any notable additions to the list of captures.

One of the most noticeable points, so far as the botany is concerned, was the great number of plants of the little orchid *Chiloglottis gunnii*—green and brown varieties. These are scattered all over the ground for a mile or two round about Shaw's Hotel. Usually the leaves lie prone, but in many cases the seeds have fallen under the edges of logs, when to get to the light the leaves have to grow upwards, and so assume a more or less upright position with stalks.

Friday was fine and warm, and the morning was spent in wandering along the recently cut Yarra Track, which leads down from close by the Yarra Track Hotel to the river, where prospectors are at work. This track cuts the river much nearer to its source than the old Reefton one, though at present it is not continued on to the southern side. The same species of coleoptera as before mentioned were found, together with examples of *Papilio macleayanus* and *Xenica hobartia* amongst butterflies. The logs also yielded many specimens of planarians, the chief forms being *Geoplana alba*, *spenceri*, and *dendyi*, of which two blue-coloured specimens were found, and a single one of *G. macmahoni*.

We spend the evening in resting, smoking, comparing notes, and arranging our photographic apparatus, and are by no means sorry to have a good shelter from the rain, which again falls in torrents. We can strongly recommend the Yarra Track Hotel as a most comfortable one to use as headquarters from which to explore the neighbourhood. The streams around, some falling down to the Yarra, some to the Goulburn valley, are rich in blackfish, and offer strong attractions to the followers of Izaak Walton. Of rambles through bush and scrub, up and down mountain sides, there are endless numbers for those who care to

get away from beaten tracks, and granted fine weather and the right season—we were evidently a little too early—it must be a good collecting ground. As with the Keppels in Marysville, so with the Shaws at the Yarra Track, the traveller will find himself in excellent hands so far as catering and his general comfort is concerned.

29TH NOVEMBER.—We were sorry to leave, but were anxious to get back to the Scandinavians', some eleven miles nearer to Marysville and to collect in that part. Two of us are up early (4 a.m.), and out collecting. One of the most notable points is the great quantity of planarians under the logs, all, or very nearly all, being of the dark varieties. The specimens of *G. alba* found were remarkably dark in colour—orange and grey—and it would appear as if the centre of distribution of *G. spenceri*, *dendyi*, and *frosti* must lie in this hill country. The yellow-coloured species so common elsewhere, as at Macedon and parts of Gippsland, were here almost entirely absent, only two single specimens being found east of Marysville, despite continuous searchings under logs and the bark of very many trees. They feed on various forms of arthropods—crustaceans, insects, and myriapods—which live with them under the logs and bark, and the numerous empty cases of these testify to their voracity. So voracious are they that our scarabee conceived a strong antipathy to what, lacking in true vermian sympathies, he called "those sticky beasts." It is interesting to watch their method of capturing a strong insect like a beetle, which one would have thought would have been too much for them. One, whilst we were watching, inadvertently walked over the worm's body; at once it stuck to the slime which the beast puts out and in a comparatively short time, despite its wriggles, the planarian coiled its soft body round the beetle, whose legs and biting parts were glued together and then inserting its muscular proboscis which is put out from the middle of the under surface into one of the soft-jointed parts of the beetle, it fed at leisure. Probably the planarian has enemies which feed upon it, but at present we do not know who these are, for it does not seem that birds will touch them; at any rate, when Dr. Dendy, elsewhere, tried to feed hens with them they declined to have anything to do with the planarians. The sticky secretion which covers their body is at once annoying to the palate of an animal like a bird, and serves to glue together the mandibles of any creature like a beetle or scolopendra which attempts to bite them. Most of them live in dark places but some crawl out into the open; those which do the latter, so far as we have seen, are the bright yellow ones which are so attractively coloured that if relished by birds they would be snapped up at once. Possibly this may come under the head of "warning colours."

CAMP AT SCANDINAVIANS.

Leaving the hotel we take the road traversed before, Kirby going on ahead to find the dray and take it to our camping ground. The warmth and sunlight have tempted the lizards to come out, and we note amongst them *Hinulia quoyii* and a species of Lygosoma. The scrub, though bright with masses of blossom—Pultenæas, *Aotus villosa*, *Tetratheca ciliata*, Eriostemon (sp.), Goodenias, *Goodia lotifolia*, Daviesias, and Hibbertias—still yields comparatively little in the way of insect life. Amongst butterflies *Xenica hobartia* is fairly numerous; and of moths *Philabota fascialis* and *Nyctemera amica* are taken.

In the scrub the Fire-tailed and Spotted-sided Finch are seen, together with the Wattled Honey-eater and that lovely little creature the Long-tailed Superb Warbler, of which we did not see many specimens during our trip. By the roadside a fine native bear (*Phascolarctos cinereus*) is seen climbing up a gum with a young one clinging to its back in the usual fashion, and as we approach the Scandinavians' the trees are alive with the gaily-coloured Pennant's Parrakeets, which swarm in this part, whilst very common also is the female of the Satin Bower Bird.

Arrived at the closed up accommodation house, we find Kirby there before us with the dray, and our things safe, but fairly well soaked with the heavy rains. We had hoped—it was then midday—to have some hours' good collecting, but were doomed to disappointment. The wind comes up strongly, bringing great masses of black clouds and making the tall gum trees sway about and creak in a suspicious way. Then the rain falls in torrents and we are glad to seek refuge in the old deserted house, which we sweep out and make as clean as possible. Collecting was out of the question, so we make up a huge fire and sit round it smoking and talking. An attempt is made to catch moths by lights and sugaring, but it is of no avail, and we turn in, once more hoping for fine weather in the morning.

30TH NOVEMBER.—We get up at 4.30 a.m. to find the shrubs near the house alive with Pennant's Parrakeets and Satin Bower Birds. Early in the morning it is fine, but about six the rain comes on and we can do nothing. Fortunately after midday it cleared up, but we have then to start for Marysville and thus the day which we had spent at the Scandinavians' was rendered fruitless, from a collecting point of view, by the wet weather. A pair of beautiful Gang Gang Cockatoos is secured, with the White-shafted Fantail and the Brown and White-throated Tree Creepers. Having plenty of time to spare, we loiter on the road, both to enjoy the scenery, which is here very fine, and to search for animals. On the Marysville side of the Cumberland Creek we are fortunate in securing several specimens of the Leucanid beetle *Lissotus howittanus*; these were taken, of course, under logs, but only in this particular part; had any occurred in other portions of the

district traversed, they would almost certainly have been noticed under some of the numberless logs upturned by one or another of the party. Strangely, also, the specimens taken were nearly all males, as is true of the examples of the other species of the same genus, *Lissotus cancroides*. It grows dark as we come down Rubbly Hill into Marysville, which is perhaps just as well, as the choice of our wardrobes is somewhat limited, and our clothes not so new or entire as when we left the hotel eight days before. We did ample justice to Mrs. Keppel's well-stocked table.

1ST DECEMBER.—Our party now begins to break up, some of us having to return to Melbourne; the rest spend an hour or two at the Stevenson Falls photographing, and then turn homewards along the Healesville road. The weather is at last all that could be wished for, and makes the tramp delightful. Just after leaving Marysville our coleopterist shakes into his umbrella a large Geometer Moth, with drab upper wings and pink lower ones with a large blue-black spot underneath. This moth is unknown at the National Museum, but probably belongs to the genus Chlenias. A caterpillar, presumably of the same, captured with the moth, has since turned into the chrysalis, but has not yet emerged. Passing the cemetery, the gum forest becomes somewhat monotonous for a few miles until the Acheron is reached. The mania for ringing the trees seems to have come upon the owners of the land on the hill above the river; and very soon what was formerly a thick forest will become a dreary hillside of gaunt dead trunks, whitening in the sunlight. Some little way across the river, and close to where the Buxton road passes off, is a fine patch of *Leptospermum myrsinoides* in full flower; our coleopterist advances joyfully, umbrella in hand and twinkle in his eye, thinking that at last his time has come; he shakes vigorously, and secures for his reward plenty of dead flowers and leaves, but not a single insect. However, the collecting is not all in vain, for some very good specimens of different genera are found elsewhere, especially of Clerus, with Elaters and a few Longicorns.

Passing on, the Piping Crow Shrike is noted, with the Rufous-fronted Fantail, the Shining Flycatcher, and Black-faced Grauculus, and the note of the Coach-whip Bird is heard. A specimen also of the Common Porcupine *(Echidna hystrix)* is captured, and two of the lizard, *Cyclodus nigro-luteus*, which are carried home alive. The only snake seen is a single example of the Copperhead *(Hoplocephalus superbus)*, which unfortunately escapes into the grass alive from the side of the road, where it had been basking in the sunshine.

Soon Narbethong is reached, and then begins the ascent of the Black Spur. At first the road rises gradually, and then more steeply, until we come to the region of tall gums, and look through a clearing in the trees miles away to the north, over the

valley of the Goulburn. Far away the purple peaks of the Cathedral Hill, near Alexandra, with its bold outline, stand out clearly amongst the ranges which fade away behind it into the dim distance. As the road winds round the crest of the Spur it cuts across the top of a deep gully filled with a luxuriant growth of sassafras, beech, silver wattle, hazel, musk, and great tree ferns *(Dicksonia antarctica)*; while higher still up the hillside a fire has cleared out all the scrub, and burnt black the stems of the hill ferns *(Alsophila australis)*. It is noticed, with regard to the wattles, that as the gullies are approached *Acacia decurrens* disappear and gives place to *Acacia dealbata*. The descent to Fernshaw is rapidly made, and we camp for the night in a lovely spot by the Watts River, from which Kirby—who is an enthusiastic fisher—succeeds in extracting one blackfish. Near to Fernshaw are seen the Boobook Owl and the Nankeen Kestrel.

2ND DECEMBER.—The scene is so lovely, with the mists melting away up the mountain sides and the river noisily flowing along over its stony bed, that we cannot help regretting that, in the interests of the large towns, this beautiful spot is practically closed to travellers. Of course, the coach road still leads through it; but to pass by in the heat and dust of the day is very different from wandering along by the river or up the Spur as the evening draws on and the far away hills are gradually deepening in colour until the sunlight touches only their summits and leaves the valleys in deep shade. To see any spot at its best, and to thoroughly enjoy it, one must live there from day to day. Here in Australia, especially, the evening with its soft rich colours and warm after-glows and the early morning with its mists and subdued but clear brightness, seem as if they were designed to compensate for the harsh hot light of the midday when everything stands out distinctly and there is no blending of colour or of form.

Leaving our camp, we again take the Healesville road. A considerable number of the beautiful *Papilio macleayanus* are flying about, and in the Leptospermum scrub a few insects are captured, including the longicorn *Trichomesia newmani*. From the road close to the Gracedale Hotel the works in connection with the new Watts River scheme can be seen on the opposite hillside. After wandering leisurely along we reach Healesville late in the afternoon.

3RD DECEMBER.—A few hours are spent at Yarra Glen, where numbers of the pretty blue butterfly, *Ialmenus evagorus*, are captured, with their pupæ in scores on the young wattle. We also add to our list two more planarians, *Geoplana munda* and *hoggii*. The former is widely distributed, being found in New South

Wales, and in Victoria on the Dandenongs, at Macedon, and in the Cape Otway district.

Taking the midday train to Melbourne, we brought our trip to a conclusion ; and though the weather had been decidedly against us, and had sadly interfered with collecting—in fact, had made this impossible in what should have been our best ground—we had reached our destination—the Yarra Falls—and were well satisfied with what we had seen, even if not quite content with what we had done.

LIST OF PLANTS.

Ranunculaceæ	...	Clematis aristata, microphylla. Ranunculus, several sp.
Dilleniaceæ	...	Hibbertia virgata, densa.
Magnoliaceæ	...	Drymis aromatica.
Monimieæ	...	Doryphora sassafras.
Violaceæ	...	Viola hederacea.
Pittosporeæ	...	Pittosporum bicolor, undulatum, myrsine, variabile. Bursaria spinosa. Billardiera scandens.
Droseraceæ	...	Drosera glanduligera, peltata, auriculata.
Polygaleæ	...	Comesperma volubile.
Tremandreæ	...	Tetratheca ciliata.
Rutaceæ	...	Eriostemon, 2 sp. Correa speciosa, lawrenciana.
Stackhousiæ	...	Stackhousia linarifolia.
Leguminoseæ	...	Daviesia ulicina, latifolia. Aotus villosa. Pultenæa, several sp. Dillwynia, sp. Platylobium obtusangulum. Goodia lotifolia. Indigofera australis. Acacia juniperina, myrtifolia, linearis, verticillata, leprosa, melanoxylon, decurrens, dealbata.
Myrtaceæ	...	Leptospermum myrsinoides, scoparium. Eucalyptus fissilis, amygdalina (var. regnans), melliodora, globulus.
Cupuliferæ	...	Fagus cunninghamii.
Rhamnaceæ	...	Pomaderris, sp.
Araliaceæ	...	Panax dendroides.
Proteaceæ	...	Hakea ulicina, nodosa. Banksia collina, australis. Lomatia fraseri.
Thymeleæ	...	Pimelea axiflora, ligustrina, humilis.
Compositæ	...	Brachycome graminea. Aster stellulatus, argophylla. Helichrysum scorpioides, semipapposum. Senecio bedfordii. Microseris forsteri.
Campanulaceæ	...	Lobelia gibbosa. Wahlenbergia gracilis.
Candolleaceæ	...	Candollea graminifolia.
Goodeniaceæ	...	Goodenia ovata, geniculata.
Scrophularineæ	...	Euphrasia, sp.
Bignonaceæ	...	Tecoma australis.
Labiatæ	...	Prostanthera lasiantha, rotundifolia.
Epacrideæ	...	Styphelia, sp., macraei. Epacris impressa.
Orchideæ	...	Thelymitra longifolia. Diuris longifolia. Prasophyllum, sp. Pterostylis nutans. Caladenia carnea (white var.) Chiloglottis gunnii.
Liliaceæ	...	Dianella longifolia, tasmanica. Burchardia umbellata. Arthropodium tuberosum. Xanthorrhœa minor. Schelhammera, sp. Eustrephus, sp.

Filices ... Polypodium australe, pustulatum, grammitidis, punctatum. Asplenium laxus, odontites, umbrosum. Adiantum æthiopicum. Aspidium decompositum, aculeatum, capense. Davallia dubia. Lomaria lanceolata, discolor, patersoni. Dicksonia antarctica. Alsophila australis. Pteris comans, aquilina (var. esculenta), incisa, falcata, tremula. Blechnum cartilagineum. Hymenophyllum tunbridgense, nitidum, crispum. Trichomanes venosum. Todea barbara.

LIST OF VERTEBRATA.

MAMMALIA.—*Monotremata.*—Echidna hystrix. *Marsupialia.*—Halmaturus sp., Phascolarctos cinereus. Dasyurus viverrinus. Phascogale (Antechinus) swainsonii. Hypsiprimnus cuniculatus.

REPTILIA.—*Lacertilia.*—Cyclodus nigro-luteus. Hinulia quoyii. Carlia melanopogon. Lygosoma, sp. *Ophidia.*—Hoplocephalus superbus.

AVES.—

Hieracidea berigora, Vig. and Hors.—Brown Hawk
Tinnunculus cenchroides, Vig. and Hors.—Nankeen Kestrel
Astur novæ-hollandiæ, Gmel.—White Goshawk
Ninox boobook, Lath.—Boobook Owl
Hirundo frontalis, Quoy and Gaim.—Welcome Swallow
Dacelo gigas, Bodd.—Great Brown Kingfisher
Halcyon sanctus, Vig. and Hors.—Sacred Kingfisher
Artamus sordidus, Lath.—Sordid Wood Swallow
Pardalotus punctatus, Temm.—Spotted Pardalote
Pardalotus striatus, Temm.—Striated Pardalote
Gymnorhina tibicen, Lath.—Piping Crow Shrike
Gymnorhina leuconota, Gould—White-backed Crow Shrike
Grallina picata, Lath.—Pied Grallina
Grauculus melanops, Lath.—Black-faced Granculus
Pachycephala gutturalis, Lath.—White-throated Thickhead
Colluricincla harmonica, Lath.—Harmonious Shrike Thrush
Rhipidura albiscapa, Gould—White-shafted Fantail
Rhipidura rufifrons, Lath.—Rufus-fronted Fantail
Myiagra rubecula, Lath.—Shining Flycatcher
Eurythrodryas rhodinogaster, Drap.—Pink-breasted Robin
Petrœca phœnicea, Gould—Flame-breasted Robin
Eopsaltria australis, Lath.—Yellow-breasted Robin
Menura victoriæ, Gould—Lyre Bird
Psophodes crepitans, Vig. and Hors.—Coach-whip Bird
Malurus cyaneus, Lath.—Superb Warbler
Malurus longicaudus, Gould—Long-tailed Superb Warbler
Sericornis humilis, Gould—Sombre Sericornis
Acanthiza pusilla, Lath.—Little Brown Acanthiza
Acanthiza lineata, Gould—Striated Acanthiza
Geobasileus chrysorrhœa, Quoy and Gaim.—Yellow-rumped Geobasileus
Anthus australis, Vig. and Hors.—Australian Pipit
Estrilda bella, Lath.—Fire-tailed Finch
Estrilda guttata, Shaw—Spotted-sided Finch
Cinclosoma punctatum, Lath.—Spotted Ground Thrush
Oreocincla lunulata, Lath.—Mountain Thrush
Ptilonorhynchus halosericeus, Kuhl.—Satin Bower Bird

AVES. —*Continued.*

Ptilotis leucotis, Lath.—White-eared Honey-eater
Ptilotis penicillata, Gould—White-plumed Honey-eater
Acanthorhynchus tenuirostris, Lath.—Spine-billed Honey-eater
Anthochœra carunculata, Lath.—Wattled Honey-eater
Zosterops cærulescens, Lath.—Grey-backed Zostrops
Climacteris scandens, Temm.—Brown Tree Creeper
Climacteris leucophea, Lath.—White-throated Tree Creeper
Sittella chrysoptera, Lath.—Orange-winged Sittella
Cacomantis pallida, Lath.—Pallid Cuckoo
Chalcites plagosus, Lath.—Bronze Cuckoo
Plictolophus galerita, Lath.—Great Sulphur-crested Cockatoo
Calyptorhynchus funereus, Shaw—Funereal Cockatoo
Callocephalon galeatum, Lath.—Gang Gang Cockatoo
Aprosmictus scapulatus, Bechs.—King Lory Parrakeet
Platycercus pennantii, Lath.—Pennant's Parrakeet
Platycercus eximius, Shaw—Rose Hill Parrakeet
Leucosarcia picata, Lath.—Wonga Wonga Pigeon.

LIST OF INVERTEBRATA.

ARTHROPODA.

(1) *Crustacea.*—The Land Crab and Land Amphipod (Talitrus? sp.)

(2) *Arachnida.*

(*a*) *Araneidæ*—Species of the following genera :— Mygale, Amaurobius, Lycosa, Epeira, Arcys, Tetragnatha, Gasteracantha, Argiope, Tholia, Linyphea, Theridium, Latrodectus, Thomisus, Voconia, Xysticus, Philodromus, Drassus, Lampona, Clubonia, Dalomodes, Salticus, Tharpyna.

(*b*) *Phalangidæ.*—Phalangida australis. Triænobunus bicarinatus, male and female forms.

(3) *Myriapoda.*—Two species of millipedes and three of centipedes.

(4) *Insecta.*

(*a*) Coleoptera.

Carabidæ—Homalosoma dingo, and two other species. Caladromus lacordairei. Carenum, three species. Notonomus, three species. Cteropus, two species. Philophlæus, sp. Adelum, 7 species. Promecoderus, sp.

Lucanidæ—Lissotus howittanus, cancroides. Ceratognathus westwoodii.

Longicornæ — Tryphocharia, sp. Trichomesia newmani. Stenoderus concolor. Mecynopus semivitreus, and two other species. Pempsamacra vestita, dispersa. Yoedia, sp.

Dyhastini—Cryptodus, two species.

Curculionidæ—Rhinotia, two species, ten unknown species

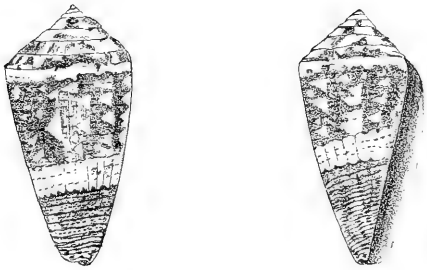
Mordellidæ—Three specimens, names unknown.

Cistelidæ—Atractus viridis, and two other species.

Chrysomelidæ—Ten specimens, names unknown, and eleven species of Paropsis.

Buprestidæ—Cisseis, sp. Anthaxia, sp.

Also species of Tenebrionidæ, Coprini, Staphylinidæ, Malacodermidæ and Lajoridæ. In all about 100 genera are represented.



CONUS SEGRAVEI, sp. nov.

ARTHROPODA. —*Continued.*

(*b*) Lepidoptera.

Butterflies.—Papilio macleayanus, Delias harpalyce, Belenois teutonia, Heteronympha merope, Epinephile abeona, Pyrameis kershawii, Pyrameis itea, Xenica hobartia, Xenica achanta, Ialmenus evagores, Chrysophanus erinus, Lycæna bœtica, Lycæna Phœbe, Taractrocera papyria, Hesperia ornata.

Moths.—Agarista latinus, Agarista lewenii, Dasypodia selenephora, Helioches armigera, Lucania entranca, Camptagramma correlata, Camptagramma strangulata, Arhodia lutosaria, Chærocampa scrofa, Procris vividipulvernulenta, Eulechria leucopsina, Setina trifurcata, Rhinodia rostraria, Macaria australaria, Panagra hypenaria, Panagra confluaria, Panagra plusiata, Coremia vicissata, Asthena pulchraria, Acidalia rubraria, Mecyna ornithopteralis, Endotricha pyrosalis, Thinasotia lativittalis, Hednota relatalis, Symmoca herodiella, Lœlia australasiæ, Nola lugens, Philabota fascialis, Nyctemera amica.

VERMES.

(1) *Turbellaria.*—Geoplana spenceri, dendyi (sp. n.), frosti (sp. n.), alba, mediolineata, hoggii, munda, sulphurea (now recorded for the first time for Victoria), macmahoni, walhallæ.

(2) *Chætopoda.*—Three species, one probably a new species of the genus Megascolides.

(3) *Hirudinea.*—Geobdella, sp.

(4) *Nemertea.*—Two specimens from under the bark of trees.

DESCRIPTION OF A NEW VICTORIAN CONE.

By J. H. GATLIFF.

CONUS SEGRAVEI. Spec. nov.

Spire somewhat concavely elevated, coarsely concentrically striated and slightly grooved, maculated with orange brown; base closely striately grooved, striæ slightly waved. Shoulder angle well defined.

Orange brown, with irregularly-sized tentoriform white reticulations, encircled with many dotted lines of rather darker colour, narrow white band at the shoulder, and another broader one below the middle of the body whorl.

Interior, roseate. Length, 1.25 inches.

Shoreham, Western Port, Victoria.

Differs from the common species, *C. anemone*, Lam., owing to the absence of the ridged striæ on the body whorl, so strongly characteristic of that species. Mr. Segrave (after whom the shell is named) found four other specimens, much worn.

It belongs to Tryon's Section 7, Ammirales, of the genus Conus.

Two views of the shell are given in the accompanying plate.

DESCRIPTIONS OF NEW AUSTRALIAN PLANTS, WITH OCCASIONAL OTHER ANNOTATIONS;

By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

(Continued.)

Haplostichanthus.

Sepals three, deltoid, early valvate; petals six, uniseriate-valvate in bud, completely connate towards the base, thus forming a six-lobed corolla, three of the lobes deltoid, three doubly as long and almost semi-elliptic, all remaining much connivent; torus depressed; stamens about 30, ob-pyramidate-cuneate, their connectives at the summit slightly convex or almost truncate and somewhat peltate, concealing the cells; ovularies six, with sessile depressed stigmas; fruit unknown. Shrub with comparatively small chartaceous leaves, and with short-stalked, solitary, dark-coloured flowers of remarkable smallness.

This new anonaceous genus seems best placed into the tribe of Mitrophoreæ, but it agrees with the otherwise very different Hexalobus in the downward conspicuously connate petals. As regards the six petaline parts, placed in a single row, this plant seems to stand alone in the whole order, large as it is. The circumscription however of many of the genera needs revision also in this order, as much new material has been obtained during later years, affecting the generic limits as drawn formerly. The style and stigma offer good notes for primary distinctions also.

Haplostichanthus Johnsoni.

Mount Bartle-Frere; Stephen Johnson.

Aspect—that of *Alphonsea Zeylanica*.

Young branchlets thinly pubescent. Leaves almost sessile, rather narrowly lanceolar, acuminate, but at the base obliquely rounded, when young scantily beset with appressed hairlets, subsequently glabrescent, paler green beneath, from one to three inches long, ⅓ to nearly 1 inch broad, thinly venulated. Peduncles recurved, measuring at flowering time ⅓ inch or less, occasionally supported at the base by a spinescently indurated bud. Sepals about $\frac{1}{16}$ inch long, pale-brown. Flowers as small as those of *Bocagea pisocarpa*, *Polyalthia Moorii* and *Papowia australis*, measuring, even when flattened out, only ⅓ inch in diameter. Corolla outside beset with minute appressed hairlets, the connate portion quite as long as the three deltoid lobes, without any sutural indications; the three longer lobes somewhat triangular at the summit. Stamens only about $\frac{1}{24}$ inch long. Ovularies silky, during anthesis not emerging beyond the stamens.

CERATOPETALUM VIRCHOWII.

Leaves rather large, glabrous; stipules deltoid, early dropping; leaflets three or occasionally two, on conspicuous stalklets, ovate-lanceolar, bluntly acuminated, devoid of perceptible crenulations, thinly reticular-venulated; flowers in ample cymous panicles; calyx-tube as well as pedicels and peduncles beset with spreading very short hairlets; calyx-lobes somewhat pale-reddish beneath, dark-purplish above; petals absent; apex of anthers extremely short; styles glabrous; summit of ovulary beset with minute hairlets; fruit one-seeded; testule brown, glabrous; albument copious; cotyledones foliaceous, dark-green, ovate-orbicular, flexuous, much longer than the radicle.

On Mount Bartle-Frere, in the higher region; Stephen Johnson.

After the lapse of sixty years, since the second species became known, this third and evidently rare congener has been discovered, the first (on which Sir James Smith established the genus) having become elucidated nearly one hundred years ago. Our present plant is easily distinguished from the two other congeners by the leaflets being only faintly crenulated, and in having stalklets from ⅓ to 1 inch long, the articulation thus taking place at the junction of the stalklets with the leafstalk; moreover the venular reticulation of the leaflets is less prominent than in either of the two other species. In some respects it stands between the two, it having normally trifoliate leaves like *C. gummiferum*, though of much larger size, while it is devoid of petals like *C. apetalum*; the nearest approach however is to the last mentioned congener. This is the first record of the genus as represented also in Queensland. Occasionally two seeds are matured in the fruits of *C. gummiferum*, and therefore likely also in the two other species and in Schizomeria.

This small tribute from the Australian floral world is gratulatorily offered to Professor Rudolph Virchow at the time of the public celebration of his 70th birthday, so that his illustrious name may be identified for ever also with the living creation of this part of our planet, where his great pathologic teachings have not less contributed to the advancement of medical science than in other parts of the globe, not to speak of his also to us here important anthropologic researches.

QUINTINIA QUATREFAGESII.

Viscidulous; leaves from lanceolar- to rhomboid-ovate, short-acuminate, with no perceptible denticulations, dark-green above, pale-brownish beneath and there the costular primary venules prominent, the secondary venules on both pages concealed; racemes amply paniculate; flowers particularly small, on short pedicels; tube of the calyx angularly five-lined; calyx-lobes

deltoid, minute; petals deltoid-semielliptic, ciliolar-barellate inside at the base; stamens somewhat beset with hairlets, the filaments about half as long as the anthers; united styles 3–4, very short, but comparatively thick; disc expanded, slightly undulate, glabrous; stigmas hardly turgid; ovulary 3–4-celled.

On the summit of Mt. Bartle-Frere, at an elevation of about 5,000 feet; Stephen Johnson.

This new species agrees with *Q. Sieberi* in its inflorescence, although the flowers are even smaller than those of *Q. Fawkneri*, while the leaves are more like those of *Q. Verdoni*, but singularly remarkable for their brownish tinge on the under side, where the dark costular but almost straight primary venulation becomes very conspicuous in the absence of secondary well-visible venules; as regards the proportionate length of the stigmas to the styles, our new plant differs from the four other known species. The leaves remind of those of some Fagus: they are broad in comparison to their length. Ripe fruit became not available for examination.

Since a long time it has been my wish, to dedicate a memorable plant of the Australian flora to the venerable Professor Jean Louis Armand de Quatrefages, now an octogenarian, who since more than half a century advanced anthropologic and zoologic researches in a manner, which had important bearing also on the autochthones, as well as on the fauna of the lower invertebrata of these far southern colonies. The plant, which now bears his celebrated name, is restricted to the loftiest heights of intra-tropical Australia.

Among the plants gathered by Mr. Johnson is also a Schelhammera, which under the name of *S. pedunculata*, either requires specific distinction, or should perhaps be regarded as a gigantic form of *S. multiflora;* but the leaves are to 7 inches long and 2 inches broad, are much acuminated, provided with a distinct though very short petiole, particularly pellucid, and furthermore have the transverse secondary venules closer; besides the umbels are stalked, their peduncles varying in length from 1 to 1½ inches, and the fruits are considerably larger. The praeflorescence of sepals and petals is the same as in *S. undulata* and *S. multiflora.* The abovenamed collector further brought as new, what appears to be a Wendlandia, but the corolla-tube is outside beset with a silklike vestiture, and bears the stamens at its base; hence the specific name basistemonea would be an apt one; ripe fruits were not obtained.

SCHISTOCARPÆA.

Calyx deeply five-cleft, its lobes semilanceolar, deciduous. Petals orbicular-rhomboid, short-stipitate, longitudinally rolled inward. Stamens hardly longer than the petals, much concealed

by them. Filaments filiform. Anthers almost ovate, basifixed, longitudinally dehiscent. Style very firm, longer than the stigmas. Disc slightly undular at the margin. Ovulary three-celled, almost fully emerged. Fruit roundish, somewhat turgidly trilobed, by the persistent short calyx-tube surrounded only at the base; exocarp crustaceous, irregularly trivalvular; endocarp receding, thinly pergamenous, each of the three portions splitting to near their base along the inner side, much ruptured and twisted on the outer side. Seeds roundish, very convex at the outer side, much flattened and somewhat trigonous at the inner side; testula chartaceous; albument none; cotyledons outward very convex; radicle minute, ovate, included.

This genus must stand near Colubrina, to which it could be referred as a section; but the course of the primary venules of the leaves is different, the calyx-tube under the fruit is shorter and less completely adherent, the cotyledons are outward very turgid and the albument is wanting. The last-mentioned characteristic this new plant of ours has in common with Scutia and Dallachyra, but both have a fruit of different structure, ours approaching that of Macrorhamnus.

Schistocarpæa Johnsoni.

On Mount Bartle-Frere; Stephen Johnson.

A plant of laurinaceous aspect.

Leaves on very short stalks, scattered, of firm texture, mostly lanceolar-ovate, acuminated, entire, glabrous, 3 to 7 inches long, 1—2½ inches broad, shining on both sides but paler beneath, their primary venules rather distant, costular-adscending; their ultimate venules reticularly joined. Stipules semi-lanceolar, fugacious. Panicles small or even diminutive, axillary and terminal, formed by cymous clusters of flowers, beset with short scattered hairlets. Bracts very small, varying from almost lanceolar to nearly deltoid. Calyx about ⅛ inch long. Petals somewhat short than the calyx, membraneous, pale-yellowish, as well as the stamens glabrous. Style and ovulary bearing short hairlets. Ripe fruit measuring rather more than ⅓ inch, dark outside, glabrous; valves of the exocarp somewhat bifid from the summit; endocarp of each fruitlet after secession divaricately spreading. Seeds about ⅕ inch measurement; testule greyish-brown, without lustre, irregularly reticulate-rugular. Embryo almost amygdaline. *Colubrina Travancorica*, doubtfully admitted by Beddome into that genus, has some resemblance to our new species, but the leaves are almost opposite, bear some indument and are distinctly serrulated; and as the mature fruit remains unknown, the generic position continues also dubious.

PROTECTION OF NEW ZEALAND SEA BIRDS.

An interesting petition has been presented to the House of Representatives, New Zealand, by Sir George Grey, from Sir James Hector and some 2,000 residents of Wellington, praying the House to pass an act regulating the capture and destruction of sea birds on the main and outlying islands of New Zealand. The petitioners particularly submitted—1. That the capture of sea birds for the purpose of extracting oil should be prohibited. 2. That the taking of eggs, except for food, and the capture of sea birds at breeding places, for their skins and feathers, should be prohibited. The petition gives curious information. Certain persons have commenced to capture sea birds and boil them down for oil. The penguins on the Bounty Group are estimated not to exceed three millions, and the penguins in all the islands together are estimated not to exceed six millions. These birds are gathered together on easily accessible rocks, and a party of four or five men could, the petitioners assert, with ease in one day capture every penguin on the Snares; in a few weeks all on the Auckland Group; in two or three days all on Campbell Island; in one day all on the Antipodes; in a fortnight all on the Bounty Group; and in a short additional time would virtually exterminate these birds as they come on shore to breed. The amount of oil to be obtained by all this destruction would be 1,000 tons. Certain persons purpose visiting island after island for the purpose of boiling down all the penguins. Terns, gulls, albatrosses, and particularly mutton birds, which are now an available article of food, are to be treated in the same way. The petitioners complain of eggs being taken from the nesting grounds of the albatross.—*The Australasian.*

Of the important subject above mentioned, and coming nearer home, it may be remembered that one of our members contributed a paper on the "Protection of Native Birds," at the Australasian Science Association which met at Sydney, 1888. A sub-committee was appointed to deal with the matter, and was re-appointed at the Melbourne Congress, 1890, but up to the present has not been called together. The New Zealand Congress is now on the *tapis*, and it is questionable whether the association is performing its best work in galloping annually from capital to capital while allowing useful work undertaken at its previous meetings to lapse.—A. J. C.

Field Naturalists' Club of Victoria.

President:

C. A. TOPP, M.A., LL.B., F.L.S.

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With the view of popularising the study of the Natural History of the Colony, correspondence, notes, and queries relating to this subject are invited for insertion, and should be addressed to the Editor at the Wesley College, Prahran.

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