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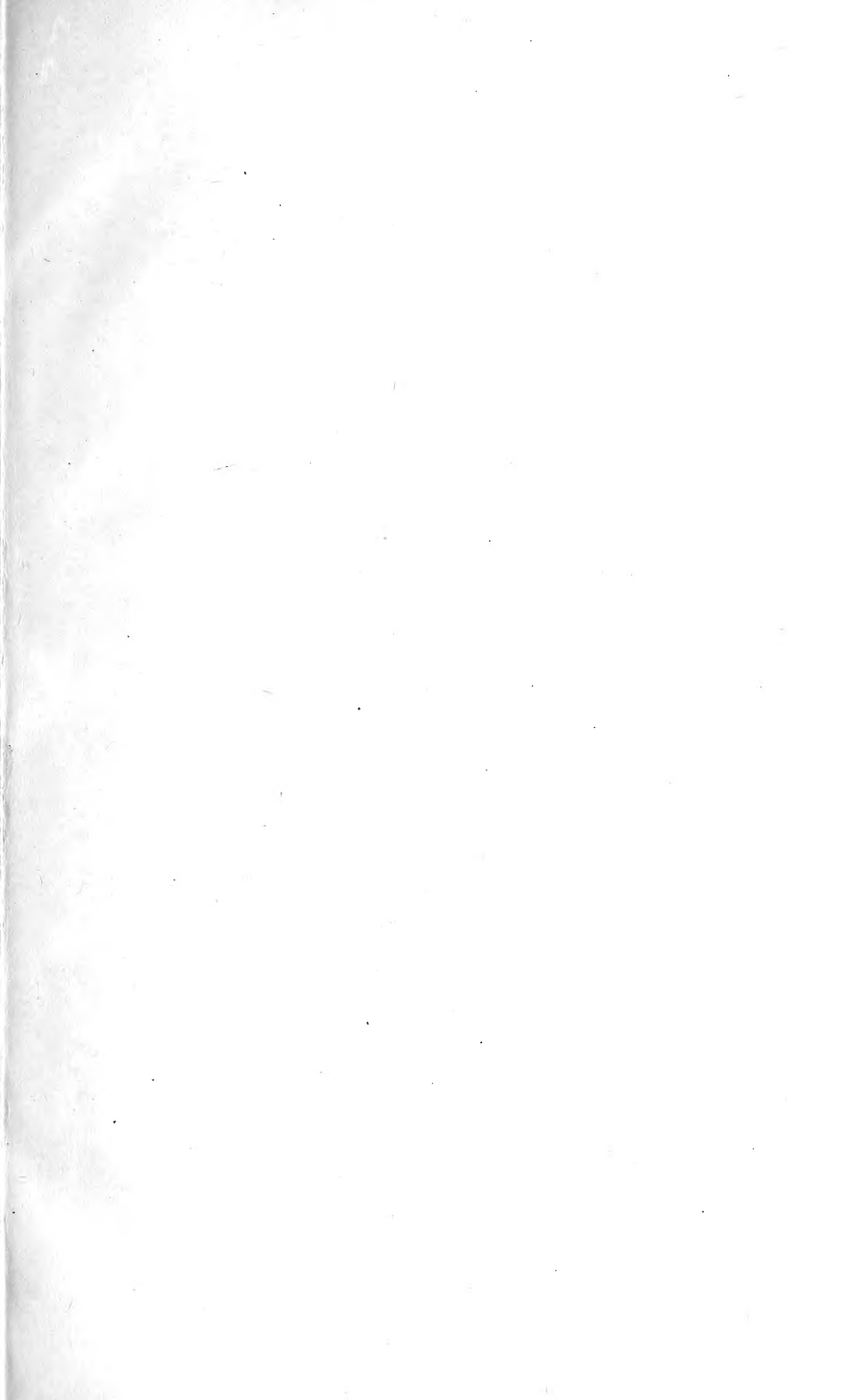
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INDEX TO VICTORIAN NATURALIST.

VOL. VI.

	PAGE		PAGE
Apple or Codlin Moth, The	- 164	Field Naturalists' Club—	
Aquatic Plants in N.S.W.	- 176	Conversazione, The Ninth	
<i>Aster Frostii</i> - - -	- 167	Annual - - - -	45
Australian Plants, New		Meeting, The Ninth Annual	75
38, 54, 87, 104, 118, 126,	166	Proceedings, 41, 42, 44, 73,	
Barnard, Presentation to Mr.	90	75, 89, 105, 121, 138, 153,	
Bass Straits, Trip to Islands of	156	154, 169	
Beetle, A Remarkable Longi-		Geology of Tasmania - - -	56
corn - - - -	- 120	<i>Gompholobium Eatonice</i> - - -	38
Birds of Melton, The - - -	70	Habits and Senses of Spiders	147
Bird Notes - - - -	- 152, 164	<i>Helichrysum Stirlingii</i> - - -	166
Book—Geology of Tasmania -	56	Lichens from the Victorian	
Botany of Croajingolong, The	34	Alps - - - -	- 178
Butterflies of Victoria, Notes on	83	Lichens from Western Australia	180
<i>Chloanthes Teckiana</i> - - -	104	Lichens of East Gippsland, The	57
<i>Chorilæna Hasselli</i> - - -	87	Lichens New to Science - - -	61
Codlin or Apple Moth, The -	164	Lichens, New Victorian - - -	77
Coleoptera of Mulwala,		<i>Zogania Choretroides</i> - - -	118
N.S.W., The - - - -	117	Longicorn Beetle New for	
Coleraine, A Dried-up Creek		Victoria - - - -	- 120
near - - - -	- 145	Malden Island, Notes from -	123
Collecting Trip to Swan Hill	95	Melton, The Birds of - - -	70
Correspondence <i>re</i> Bronze		Mirboo, Excursion to North	77, 91
Cuckoo - - - -	- 168	Moth, The Apple or Codlin -	164
Correspondence, Protection of		Mountains, A Winter Journey	
Birds - - - -	- 152	in the - - - -	- 139
Creek-bed, A Dried-up, near		Mulwala, N.S.W., The Coleop-	
Coleraine - - - -	- 145	tera of - - - -	- 117
Croajingolong, Botany of - -	34	Nancarrow, The late R. H. -	56
Croajingolong, Trip to - - -	1	Notes from Malden Island -	123
Croajingolong, Zoology of -	32	<i>Oldenlandia Psychotrioides</i> -	54
Cuckoo, Notes <i>re</i> Bronze -	168	Orchid, A New Victorian -	126
Distribution of Aquatic Plants		Peripatus, New Australian -	173
in N.S.W., Notes on the -	176	Plants, New Australian, 38, 54,	
East Gippsland, Lichens of -	57	87, 104, 118, 126, 166	
Excursion to North Mirboo	77, 91	Protection of Birds, The -	152
Fish, A Basket of - - - -	111	Rutherglen Flying-Bug Pest,	
Fungi of Season, The - - -	107	Notes on the - - - -	170
Fungus, A Curious - - - -	119	Senses and Habits of Spiders	147

	PAGE		PAGE
Spiders, Habits and Senses of	147	Victorian Plants, New	- 166
Swan Hill, A Collecting Trip to	95	Victorian Tall Trees	- 88
Tasmania, The Geology of	- 56	Walhalla, Zoology of Trip to	- 128
Trees, Tall Victorian	- 88	Watts, The late H.	- 138
Trip to Croajingolong	- 1	Western Australia, Collecting	
Trip to Islands of Bass Straits	156	in - - - -	- 168
Victoria, Notes on the Butter-		Wild Flowers, Exhibition of	- 106
flies of - - -	- 83	Winter Journey in the Moun-	
Victorian Fish	- 111	tains, A - - -	- 139
Victorian Fungi	- 107	Zoological Notes of Trip to	
Victorian Lichens, New	60, 77	Walhalla - - -	- 128
Victorian Orchid, New	- 126	Zoology of Croajingolong, The	32

E R R A T A .

- Page 53, line 31.—Insert “with small blunt leaves” after *Dammara Palmerstonii*.
- Page 54, line 2.—For “*Ballaria*” read “*Baltaria*.”
- Page 84, line 18.—For “*Iunonia*” read “*Junonia*.”
- Page 130, line 33 from top.—For “samples” read “examples.”
- Page 132, line 3 from bottom.—Insert comma after “end,” and for “larger” read “longer.”
- Page 133, lines 21 and 22 from top.—For “*Geonemestes*” read “*Geonemertes*.”
- Page 133, line 26 from top.—Erase comma after doubtful.
- Page 133, lines 13 and 14 from bottom.—For “arms” read “anus.”
- Page 133, line 7 from bottom.—For “Van” read “von.”
- Page 134, line 9 from top.—For “Van” read “von.”
- Page 136, line 8 from bottom.—For “*Amphibolura*” read “*Amphibolurus*.”
- Page 136, line 6 from bottom.—For “an” read “our.”

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MAY-JUNE, 1889.

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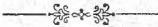
CONTENTS.

	PAGE
TRIP TO CROAJINGOLONG. BY PROFESSOR BALDWIN SPENCER AND C. FRENCH, F.L.S.	I
DESCRIPTION OF A NEW GOMPHOLOBIUM FROM SOUTH-WESTERN AUSTRALIA, WITH NOTES ON OTHER SPECIES OF THAT GENUS. BY BARON VON MUELLER, K.C.M.G., M. AND PH. D., F.R.S.	38

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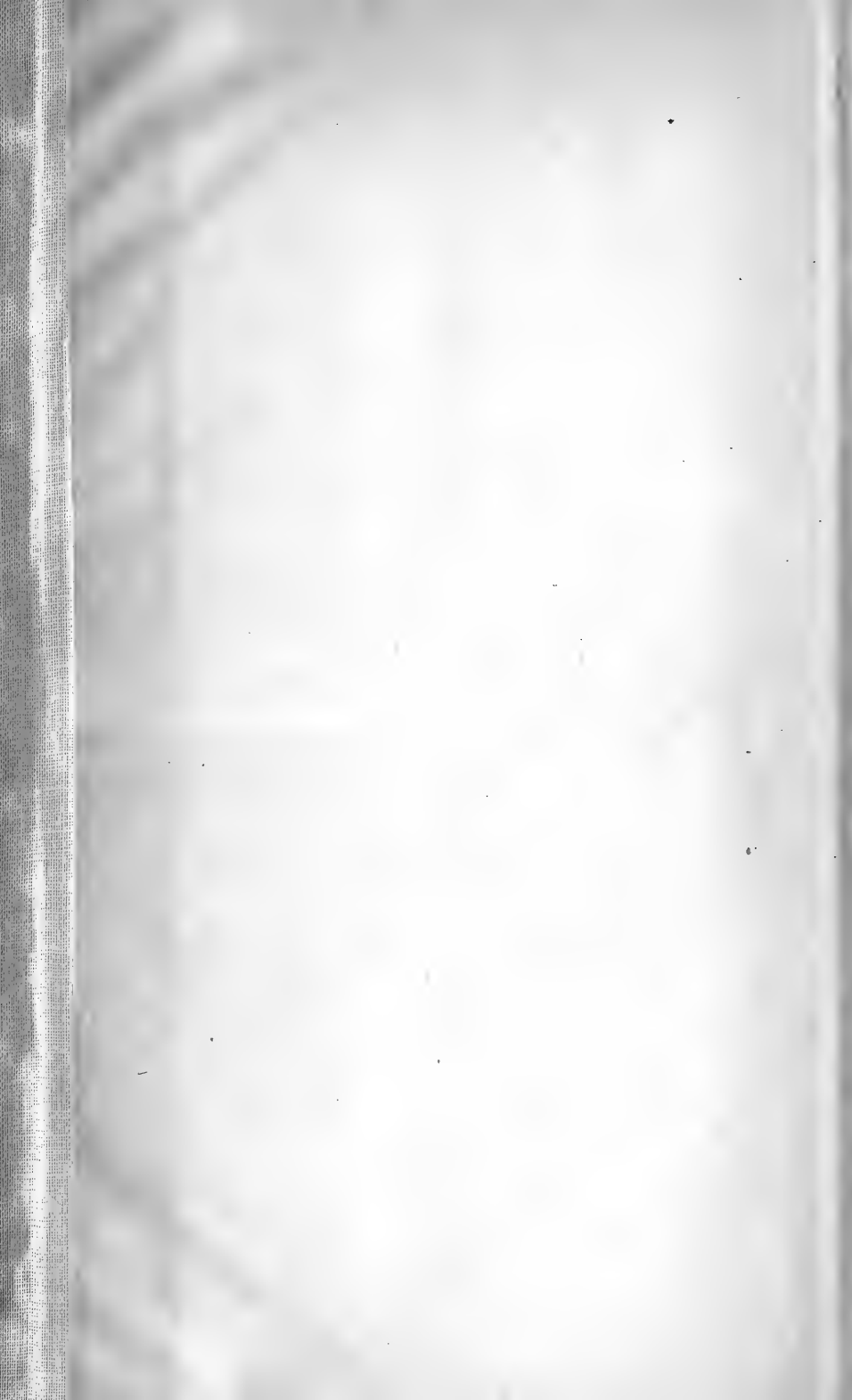
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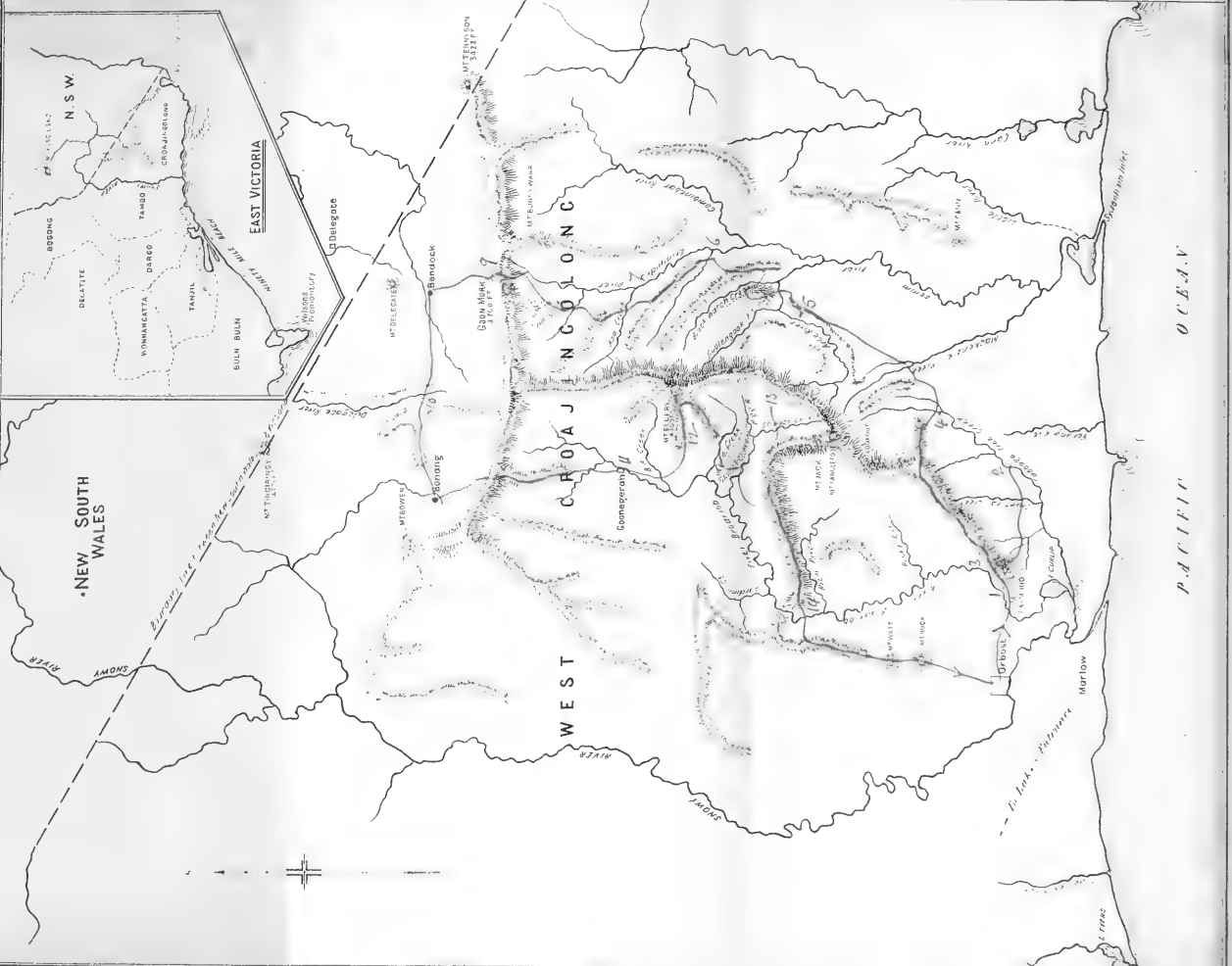
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Victorian Naturalist.

VOL. VI.—Nos. 1-2. MAY-JUNE, 1889.

No. 65:—66

TRIP TO CROAJINGOLONG.

BY PROFESSOR BALDWIN SPENCER AND C. FRENCH, F.L.S.

THE trip of which the following is an account was first proposed to the Club by Baron von Mueller, who was anxious that advantage should be taken of the tracks now being cut through the district of Croajingolong. To him the Club is indebted for the kindly interest he has taken in the work, and for the naming of the rarer forms of plants brought back.* It may be mentioned that considerable difficulty was experienced in the trip, owing to the extent of ground which had to be covered in a comparatively short time, and to the fact that the great scarcity of food for horses rendered long marches frequently imperative; also, over a considerable portion of the country recent bush fires have completely destroyed its vegetation. This was especially the case in the district round about Bonang, where otherwise the flora would probably have been most interesting.

The party which started on 28th December for Croajingolong was but a small one when compared with the large number of field naturalists who mustered on the deck of the *Lady Loch* last year bound for King Island. We only numbered five in all—Messrs. French, Frost, Jackson, Searle, and Spencer. Through the courtesy of Mr. Prevot, the station-master at Prince's Bridge, we were relieved of all trouble with regard to extra luggage. Two members of the club, bound for Morwell, accompanied us as far as that; and, after a hot journey, we reached Sale at 1 p.m. Sale may be described as small, sleepy, and respectable, and we were by no means sorry when the coach put some distance between us and the township. The road leads along by the River Thompson, bordering upon which are rich alluvial flats, clear of water now, but doubtless deeply flooded in rainy seasons. The coach deposits its load, and the waggon its luggage, at a bridge built over the Latrobe River, close to the junction of this with the Thompson. We have just time to get on board the *Dargo*, and safely stow our luggage away, when the little steamer starts, and we are off at a good rate down the Latrobe. Ten miles of river have to be passed along before the "Lakes" are

* The authors are much indebted for assistance to Messrs. Frost and Searle: to the former for information with respect especially to birds, and to the latter for measurements of heights and distances.

reached. The river is not more than twenty yards wide at most, and we can see nothing except the thin stream of water leading down between dense growths on either side of reeds, ti-trees, and gum trees. A line of green on the water's edge, above this the bare stems of the ti-trees, then another line of thick green, with here and there masses of white blossom, and above this the tops of the low gums.

Having noted along the river the presence of *Eucalyptus rostrata*, and *Stuartiana*, *Cassinia*, *Arundo phragmites*, *Cyperus*, *Gahnia*, *Typha angustifolia*, *Senecio lautus*, *Melaleuca ericifolia*, &c., &c., we hear the sound of the dinner-bell, reminding us that we have eaten nothing since leaving town early in the morning. Coming up on deck again we find the steamer just entering the first of the Lakes—Wellington. As far as scenery is concerned the Lakes—that is, the larger ones, which we are now passing across—are singularly devoid of it. There is a great extent of water (now fortunately quite smooth), which stretches away on every side of us to the low-lying scrub and wood-covered banks. Sea-gulls are hovering around the boat, and black swan and duck are simply to be counted by the acre. On board is a party of red-coats, whose shooting would inspire the greatest confidence in the hearts of any enemies of Australia. After an hour or two of what they probably call sport, they contrived, by some chance, to wing one poor shag.

From Lake Wellington a narrow channel leads across an intervening belt of low-lying land to Lake Victoria, and at the eastern end of this the steamer passes up a small channel and reaches Paynesville. Here passengers for the entrance tranship to the steamer *Omeo*, and we are soon crossing the east end of the lake known as Lake King. The scenery improves: the shores rise into low hills, clothed with trees, and as the sun sets we enter a small bend, and, turning abruptly, see the hotel at Rosherville, or Metung, with its six Lombardy poplars, forming a strange and refreshing contrast to the gums and ti-tree. Leaving Rosherville the stretch of water, which is too narrow to be called a lake, is bounded on the left hand, as we face towards the entrance, by high hills which descend abruptly to the water's edge. Rounding Jimmy's Point, or Kalimna, as the blacks called it, the steamer enters the narrow strait of water leading eastward to the Entrance. Only a very thin belt of scrub-covered sand-hills separates this from the sea. A new cutting is now being made through the sand-hills: the operations have been carried on for now some length of time, and it will be a great advantage when they are completed and a satisfactory entrance made to the lakes. The present one is some distance to the east of the cutting, and, as is well known, is liable to shift its position, whilst its shallowness makes it almost useless. Shortly

before 9 o'clock we land at the pier at the Lakes' Entrance, or Cunninghame; and, after a drive of a mile through the wood in the darkness, and in apparent imminent danger of an upset every minute, reach the hotel, which lies exactly opposite the Entrance itself.

SATURDAY, 29TH DECEMBER.—We spend the morning in a fruitless attempt to find someone who can drive us on to Orbost, and have to be content with a promise that we can have a coach next morning. Around the hotel the woods are full of fine specimens of *Banksia serrata* in flower and fruit, and on the sand we amuse the few natives who are watching us at a distance by what appear to be our somewhat irrational movements. We are, in reality, busily engaged in pursuing and capturing numbers of the beetle—*Cicindela ypsilon*. Seen from a distance, the sight of a grave elderly gentleman suddenly starting off at full speed after no apparent object, and as suddenly pouncing down upon nothing in particular but sand, is a rather curious one. Close by the seashore, sheltered on the one hand by a steep hillside, and on the other by a thick wood, we come across a small group of trees quite distinct from the coast vegetation by which it is surrounded. It is almost within a stone's throw of the sea, and though the woods all round are filled simply with gum trees and Banksias, we find growing in this sheltered spot this little group of trees, which, to use a geological term, looks like an outlier of the luxuriant vegetation of the inland region. We notice the Lilypilli (*Eugenia smithii*), *Smilax australis*, *Hedycarya cunninghami*, *Aster argophyllus*, *Senecio bedfordi*, *Lyonsia straminea*, and *Elæocarpus cyaneus*.

SUNDAY, 30TH DECEMBER.—We leave the hotel before seven a.m., the coach being more than comfortably filled with our five selves and the great amount of baggage which we have thought it necessary to take, though it is only fair to add that this includes all our stores and collecting material. The woods are alive with bell-birds as we mount the hill leading up to Roadknight's Hotel. The view from this is very fine: to the south it looks over the sea, right beneath it is the entrance and away to the west is the narrow strait of water leading to the lakes, with the hilly country inland, and between it and the sea a narrow strip of sand—for miles the coast line can be traced as it passes along the dreary "Ninety-mile Beach." We are fortunate in seeing two schooners tugged out over the bar: it must be weary work waiting inside, or beating about outside, until the worthy Captain Quayle, who acts as pilot at the entrance, gives the signal that the water on the bar is deep enough.

From Roadknight's Hotel the road leads through the wood, which is here largely made up of the "yellow box," running more or less parallel to the sea, of which every now and then we get

glimpses until after some six miles we descend a cliff side and walk over the sand beach separating Lake Tyers from the open ocean. The low hills bounding the lake are prettily wooded, and amongst the trees can be seen the little church of the native settlement, around which the houses cluster much as if it were an English village. The sand beach lies very low, and the waters of the lake and sea must, at times, communicate with each other. The lake is alive with fish and game. A mile's walk leads across to the low sandhills bounding what must once have been the eastern side of the entrance from the sea, and we pass over a stretch of sandy ground, on which grow *Salicornia australis*, *Samolus repens*, *Mesembryanthemum australe*, *Mimulus repens*, *Spinifex hirsutus* and *Cuscuta*. The ground rises slightly, leading on to sand ridges covered with *Leptospermum laevigatum*, *Myoporum insulare*, &c. ; and then leads inland into woods with *Eucalyptus melliodora*, *sieberiana*, *polyanthemos* and *botryoides*, silver wattle, *Banksia serrata*, *australis*, *integrifolia*, and *Exocarpos*. Flowers are chiefly conspicuous by their absence, and we only find blue and pink *Comesperma*, *Goodenia*, *Dillwynia*, and the orchids *Dipodium punctatum* and *Cryptostylis longifolia*. For twenty miles the road passes through the same kind of country: the woods have recently been fired, and the scenery grows very monotonous. Some twenty-five miles from the entrance we reach a bush accommodation house, now called the Tydesley Hotel: it is a welcome break in the long ride, and after a short rest we start again for Orbost. Twelve miles driving through the same kind of country brings us to a sharp descent in the road, and leads on to the rich alluvial flats of the Snowy River: these are now green with crops of maize, and form a strong contrast to the desolate country through which we have been passing. The Snowy River, about thirty or forty yards wide, and flowing between deep banks, is crossed in a punt, there being at present no bridge: when one is built, it is to be hoped that the Government will still retain the services of the present "puntsman" as toll collector, or, if such an official be not wanted, in some position in which he may have the chance, by his calm, imperturbable manner, which allows of no undue haste, of demonstrating beyond doubt that there is plenty of time for everything, and no need for hurry in Orbost. It is most refreshing, when the traveller is at all anxious to cross the river, to hear in response to a cheerful "coo-ee" the reply, "Wait till o'ive filled my poipe," and to see the speaker quietly sit down on the opposite bank, pull cut, after some searching, his plug of tobacco, and then with great deliberation cut off the necessary amount, fill his pipe, and light up. The face, too, with its circle of rough hair, deeply furrowed forehead and mouth, all drawn down to the one corner, which grasps a



Fig. 1

short clay pipe black with age, is not easily forgotten. However, he seems to be a master of the art of punting, and we are soon across the stream, and then, within a few minutes after leaving the river, are in the middle of Orbost. The township at present consists of one main street, with indications of one or two others, and gives promise of rising to importance in future years, when the now wild district of Croajingolong shall have become settled, and its valleys and mountain-sides brought under cultivation.

Arrived in Orbost, we soon find our way to the house of Mr. James Cameron, who had very kindly taken a considerable amount of interest in our trip, and to whom we are indebted for valuable assistance in several ways.

Our chief difficulty concerns the engaging a guide and pack-horses; but, after some delay this is accomplished, though we find that the preparations occupy so much time that it is New Year's Day before we leave Orbost.

Before going further, it may be as well to indicate briefly the principal sources of our knowledge with regard to Croajingolong.

Many years ago now the Baron von Mueller traversed the eastern part of the country, and since that time, when he, amongst other things, discovered the presence of the Waratah, practically very little fresh information concerning the botany has been acquired. The geodetic survey party entered the district in 1870, when the boundary line between Victoria and New South Wales was marked out. Of this party Mr. Ellery was the head; under him were Messrs. Turton and Newton, with C. Walter as photographer and botanical collector. They completed the triangulation from Lakes Entrance to Mount Taylor, and also erected beacons on the highest points. It was during this trip that the party noticed the high point of Mount Ellery, which was named in honour of the government astronomer, although they afterwards discovered that the blacks had named it Goonegerah, or "Egg" Mountain, from the shape of the stone on its summit. The photographs of Mr. Walter of Mount Ellery were copied in the *Australian News*. Since then, in more recent years, surveyors have been at work and tracks cut through the country; these tracks now bear the names of those who cut them, as Bruce's and Whitelaw's. Still more recently Mr. Merrall passed across, and recorded his observations, which had reference chiefly to the topography of the district, in a paper contributed to the Victorian branch of the Royal Geographical Society of Australasia; and, lastly, some valuable information is to be found in a paper by Mr. James Stirling, F.G.S., read before the Royal Society of Victoria in November last. Mr. Stirling had exceptional opportunities of seeing the district whilst in charge, during a considerable time, of Government prospecting parties, and his most valuable contributions

concern the topography and the broad geological features of the district. There still remains, especially with regard to the geology, which as yet has only been examined in a very general way, much work to be done; but it is of such a description that it can only be carried on by those who have the opportunity of spending a considerable amount of time in examining small areas. Mr. Stirling very kindly forwarded to us a copy of the departmental map, on which he had laid down the general course of the hill ranges and the broad geological features of the country, so far as they are to be gathered from a journey along the tracks.

The difficulties attendant on any examination which lies outside the tracks can only be appreciated by those who have attempted it either here or in similar parts. To leave the track is to get into dense scrub or jungle; and on such a trip as ours, whilst to a certain extent we did do this, yet all that is practicable to do is to gain a general idea of the country and to collect more or less along the tracks. It must be remembered, too, that tracks in Croajingolong are themselves but very little frequented, and are often in a very wild state.

1ST JANUARY, 1889.—To return to our trip. It is the afternoon of New Year's Day when we leave Orbost. Our party consists of the original five, with now the addition of our guide, Crawford. Three horses carry our packs; the struggle between them for the honour of first place on the track or in the scrub is a matter of some concern to us. We soon find out that our guide has a wonderful, and, for ourselves, most useful knowledge of the country, and takes great interest, especially, in the geology of the district, being well acquainted with the general lay of the formations.

Leaving Orbost, the track soon leads into the bush, and at first skirts the hills overlooking the flats of the Snowy River to the south. The forest is composed principally of stringybarks, with fewer ironbarks, and has, in parts, recently been burnt. *Comesperma ericinum* is in flower, and *Lomatia fraseri* and *Dipodium punctatum*, but very little else, and the track leads over a succession of rather low ridges, of which the highest is 400 feet. After nine miles we come to the Brodribb River, flowing in a very pretty valley shut in with hills. Close by the river is a group of Lillypillies and cotton trees, and beneath their shade, amongst the usual ferns, is a beautiful growth of *Davallia dicksonioides*. The river is some 50 feet wide, and we have to carry the baggage across by the trunk of a fallen tree. Our camp for the night (1)* lies by the side of a deep pool of water, the haunt of a platypus, which we disturb and see no more; and, after a very hot day, we

* The numbers in brackets correspond with the numbers on the map, and refer to the positions of the different camps.

spend the evening bathing and smoking. By the camp there is a spot in which has lived for some time a large tiger snake. It has been seen here by several persons, at considerable intervals; but, though anxious to secure it, we cannot get a glimpse of the animal.

WEDNESDAY, 2ND JANUARY.—Leaving camp, we take Bruce's track, leading north-east. To the south-east rises Mount Raymond, a granite peak which forms the southernmost point of the central watershed of Western Croajingolong. Our way lies up a long spur leading up to the M'Culloch Range. After walking for four miles we come to a surveyor's camp at Raymond Creek, and there we put up a tent, in which to leave the greater part of our stores whilst we make a divergence so as to see the Cabbage Tree Creek. Leaving the track, we pass southwards into the scrub in the direction of Mount Raymond. The day is very hot, and the horses, lightly laden, make rather too quick progress for those of us who are on foot. The scrub is thick, and composed of *Persoonia* (6 ft. to 15 ft. high), *Bursaria spinosa*, *Acacia discolor* and *linearis*; on the ground is a thick growth of star and coral ferns and bracken, which, together with the fallen logs they conceal from view, and patches of sword-grass, make travelling very tedious and as uncomfortable as possible, more especially as the sun is beating down upon us, and there is not a breath of fresh air. Of flowers, we find the orchids *Dipodium punctatum* and *Caleana major*, with *Wahlenbergia* and *Lobelia simplicicaulis*. This kind of work goes on for some miles, until at last we pass out on to a somewhat open stretch of ground where is an outcrop of granite: we have hitherto been on silurian schists and sandstones. Turning more to the east, and leaving Mount Raymond to the right hand, we mount a recently fired ridge and descend through jungle to a creek, which we call Todea Creek, on account of the rich growth of the fern along its banks. Here, unfortunately, we lost our only collecting umbrella: it is lost in the jungle, and will doubtless, when found by some selector, give rise to not a little conjecture concerning the ways and manners of the previous inhabitants of the land. After passing another stream, which from the nature of its immediate surroundings we name Muddy Creek, we mount a ridge and pass through scrub where the ground is covered with *Lycopodium densum* in fruit, together with the shrubs and flowers we have seen before, and the same species of gums. The creek at the base of the hill forms a good stream of water, and having been first traced for some considerable distance by our guide, we call it Crawford's Creek: along its banks *Restio tetraphyllus* is growing beautifully, together with the usual ferns, and crossing the stream by a small bridge made by Crawford, we find ourselves on a flat piece of ground covered with *Leptospermum*

myrsinoides in flower, and can only regret the loss of our umbrella.

At length, after a walk of about sixteen miles, we reach the Cabbage Tree Creek, and, for the sake of fresh air, pitch our camp on the top of a hill 500 feet high overlooking the creek (2). The vegetation below is very thick indeed, and the evening is coming on; but we can just make out the tops of a group of palms down in the valley beneath us. As we put the tents up amongst the Banksias on the hill top it comes on to rain heavily, but fortunately clears off later on, and allows us to get dry again, and we hope for a fine day to spend amongst the palms.

THURSDAY, 3RD JANUARY.—Leaving camp about 8 a.m., we go down to the bank of the creek, the whole hillside being covered with *Goodia lotifolia* in fruit. The stream is some twenty-five feet wide, and flows through a dense mass of vegetation, prominent among which are great Dicksonias and Todeas. We cross by a mossy trunk, and, turning to the right in a fern gully, see a solitary palm, with its head standing out high above the other trees. Continuing along by the creek the vegetation grows very thick, and *Smilax* and *Clematis* too frequent for walking to be pleasant. The trees are principally white-gums of various sizes, with Lilypillies, musk, *Pittosporum bicolor*, *Elæocarpus*, and the cotton tree; and amongst ferns we note the usual Dicksonias and Alsophilas, with *Hymenophyllum nitens* and *crispatum*, *Polypodium scandens*, *Blechnum cartilagineum*, *Asplenium laxum*, *Gleichenia circinata* and *flabellata*, *Lomaria pattersoni*, *discolor*, and *procera*, and *Pteris umbrosa* and *incisa*. Amongst the trees are many young cabbage palms of various heights, varying from one to fifty feet, and after some time we find a small clearing, at one side of which is a group of five tall ones standing out clearly (fig. 3). Their tall, thin, ringed trunks, running up to a height of more than 100 feet, are each covered by a tuft of leaves, the long finger-like processes of which hang down and give a very characteristic appearance to the trees. Directly the heads of the palms grow out into the open above the general vegetation of the valley, the sun's heat seems to scorch the leaves up, and they have a brown, withered appearance. The most beautiful are, certainly, the young trees, from 30 to 60 feet in height (fig. 2), which are still sheltered from the direct rays of the sun. Their leaves are both larger in size than those of the older trees and of a beautiful fresh green colour. As they die off they are replaced by a constant growth of new ones, and, when withering, hang down for some time by the side of the trunk, and finally fall off. Beneath the trees we find plenty of seeds lying upon the ground.

As soon as we left camp it had begun to rain, and all day long it goes on pouring in torrents, but we are determined to see as much as we can, and also, if possible, to get a sketch or two

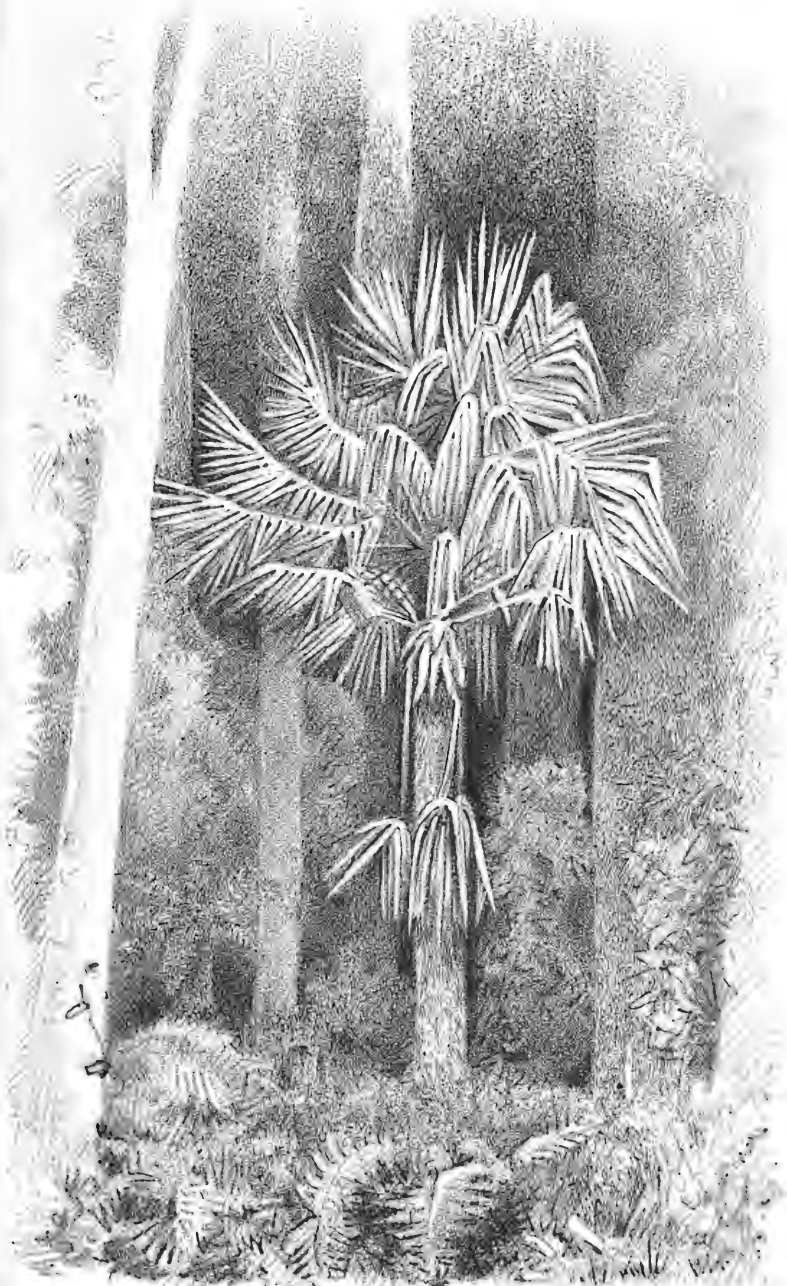
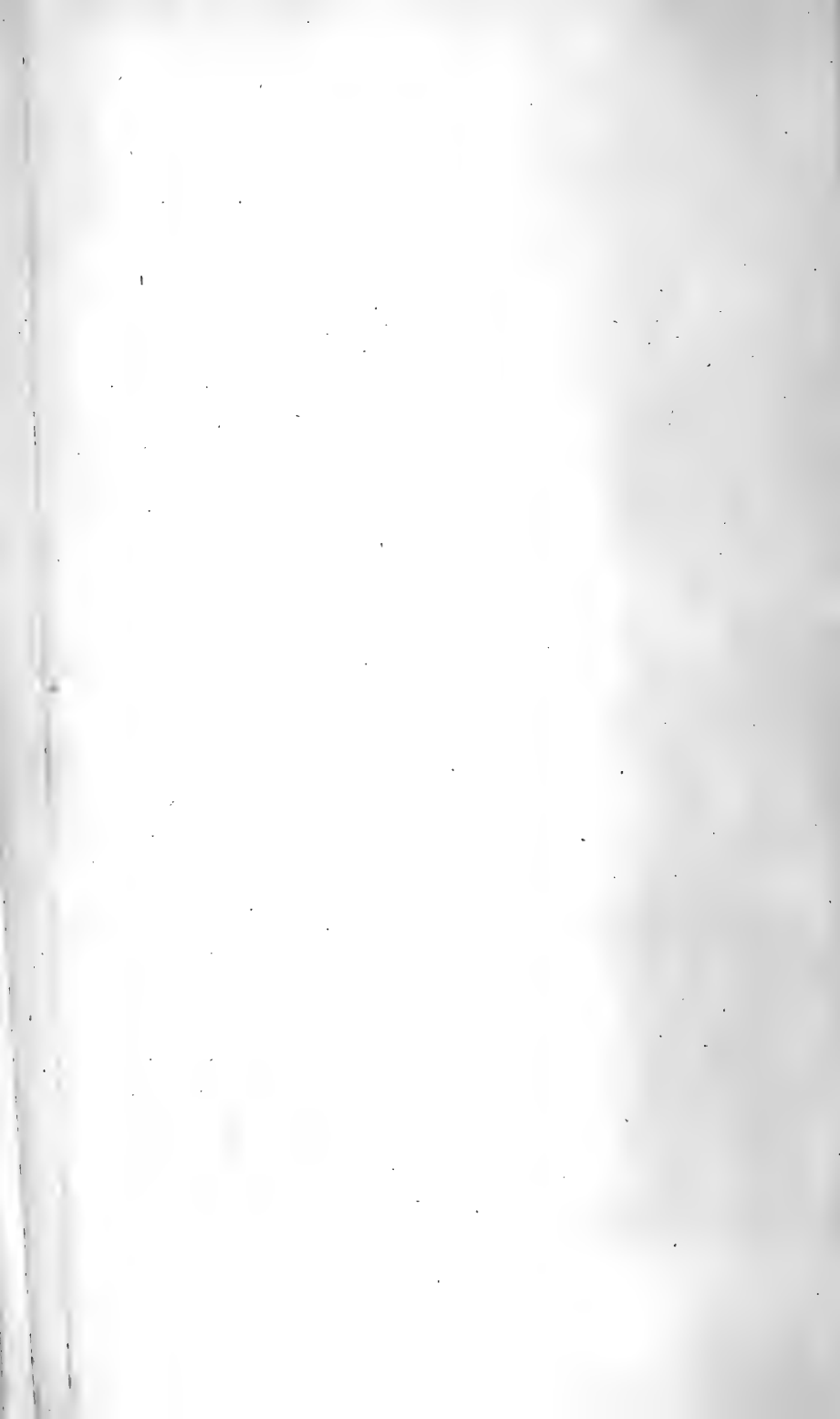


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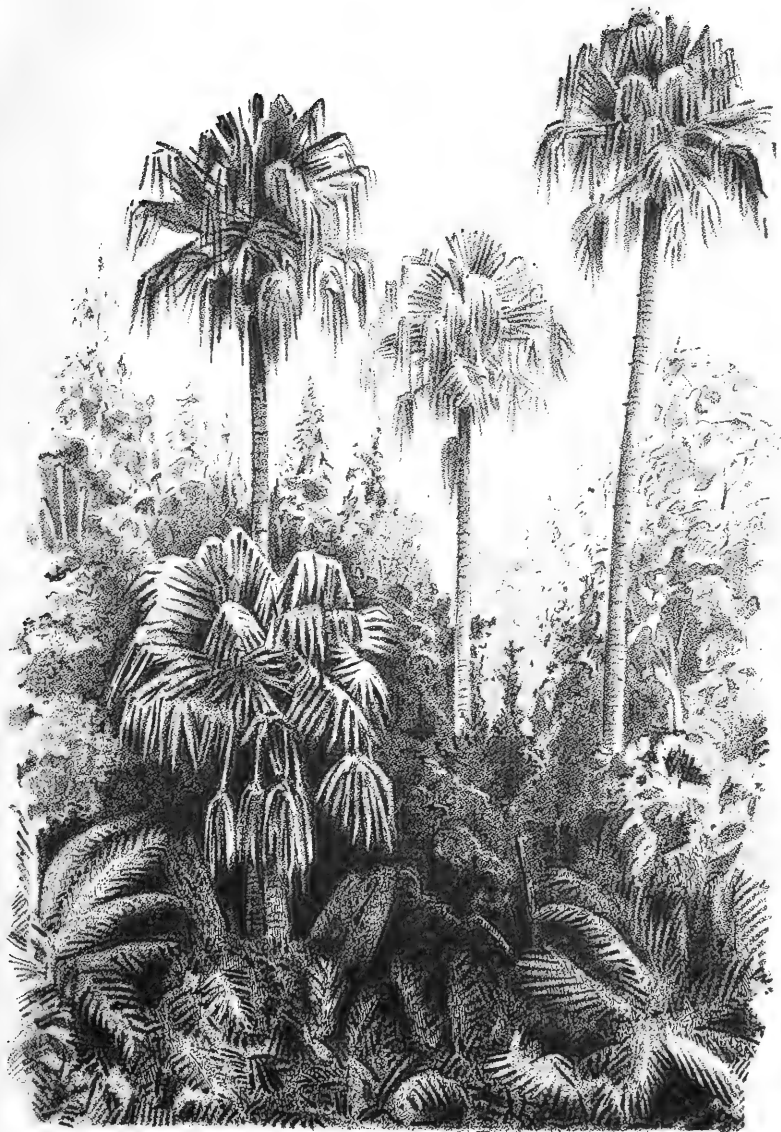


Fig. 3

of the palm trees. A soaking wet day is not an ideal one for sketching out in the open, especially amongst thick foliage. The ground by the side of the creek is very rich, and the jungle dense with matted growth of Clematis, Smilax, and bracken fern, Dicksonias and Alsophilas. These, with young gum trees, prevent us from getting any good view of the palms, and it takes hours of hard work cutting down trees and the undergrowth of scrub before we can get anything like a satisfactory view. All the time it has been pouring in torrents, and we are drenched to the skin; however, by the united labours of the party we do manage to get a few rough sketches, though the dripping "pioneers" resting from their toils, and the "special artist" under his "mia-mia" of fern fronds, present rather a pitiable, if not ludicrous sight. Fortunately, there are no living creatures, save cockatoos and lyre-birds, to pay any attention to the strange habits of "field naturalists."

The Cabbage Palm (*Livistona australis*) is not, of course, by any means rare in certain parts. The curious point about these particular ones is that they are found only in this one spot, within a short distance of the sea coast, in Victoria, and considerably to the south of the region to which they are otherwise confined. Their existence in this part was first made known scientifically by Baron von Mueller, who passed over the Snowy in the early days, before Orbost was thought of, and when the natives were far from friendly. At this time the Macmillans seem to have had an outlying hut on the west bank of the Snowy. How the palms came to occupy this position is a problem which can never be positively settled. Two theories are possible. One is that they are relics of a flora which was once spread widely over Southern Australia in times past, when perhaps the climate was warmer than it is now. If this be so, then these palms alone remain in this particular spot as relics of a flora elsewhere lost. It is very difficult to believe that this is the case, and difficult to understand why they should have been preserved in this particular spot when they were lost in other parts where the conditions as to climate, soil, and vegetation are apparently quite similar, or, at any rate, so similar that the plant would, if it depended upon these conditions, have as much chance of life in the one spot as in the other. A second theory is perhaps better, though it must be, of course, a matter of conjecture. We may suppose that, at some period, the seeds have been brought to this spot from the part of Australia where the palms flourish. Two agents of transmission are possible—one is water, the other is birds. The palms grow by the side of rivers, into which their seeds must often fall, and at times be carried out to sea. Darwin has shown, first, that some seeds can even withstand immersion in salt water for 133 days; and, secondly, that being eaten by birds will not prevent the

germination of certain seeds, if by any means they pass out of the body again; as, for example, when birds disgorge their food after retaining it in the body for a considerable length of time. In the case of the palm trees, it is possible that the seeds were carried to the spot where now the trees flourish by water or birds, or perhaps partly by both agencies, and that, falling on the ground, two or three seeds perhaps germinated and gave rise to the present small colony of palms.* It is more easy to understand why they are so extremely limited in distribution in Victoria on the theory that the seeds have been at some time brought to the Cabbage Tree Creek, rather than on the theory that these palms are the relics of a once widely distributed group, and that the conditions remained favourable for their permanence only along the banks of this creek. Probably there are many places in Victoria in which the seeds, if sown, would germinate; but the chances against their reaching such spots by natural means, and in fit condition for germination, are enormous, and the two conditions, we may suppose, have only been fulfilled in this instance. We spend the day searching about the banks of the creek, and return to our camp as evening comes on, satisfied with what we have seen, and, after having been soaked through since the early morning, are grateful for a fine night and a large camp fire, and, not least, for a little of the medical comforts prescribed by our most experienced member.

FRIDAY, 4TH JANUARY.—The horses have wandered some few miles away, which gives us a further opportunity of looking around. The white goshawk is flying about, but out of range; so is the common sulphur-crested cockatoo, and down in the gullies we can hear the lyre-bird. As we retrace our steps to Bruce's track we follow as nearly as possible the path by which we came and once more get thoroughly wet as we push our way through the dripping scrub. In the thick grass we find a large land shell, a species of *Bulinus*, which is not uncommon in the district. The principal birds which we see, both in the scrub here and elsewhere, are the scrub and yellow-breasted robins, the blue and long-tailed wrens, the little brown *Acanthiza*, the Australian pipit, the New Holland and wattled honey-eaters, the grey-backed sosterops and brown tree-creeper, the frontal shrike-tit and fan-tailed cuckoo (at Crawford's Creek), the white-shafted and rufus-fronted fantail, the white-fronted *Sericornis*, the black-faced *Grauculus*, and the forty-spotted pardalote. Everywhere in the woods we see and hear the pied and white-backed crow-shrikes and the piping magpie, the coach-whip bird, the lyre-bird, the

* A member of the club suggested, during a discussion on this point, that the seeds might possibly have been carried to this point in the "dilly" bags which the blacks were accustomed to carry with them on their marches.

Gang Gang cockatoo, with the king lory and Pennant's parrakeet, and, of course, the laughing jackass. After walking twelve miles we reach our stores, and have to put our tents up, whilst the rain falls heavily; though, fortunately, in the course of the evening it clears off, and we manage to get tolerably dry (3). We are visited in the evening by Mr. Lees, the surveyor in charge of the camp close at hand. He most kindly offered us any assistance which lay in his power in the matter of stores, &c., and our best thanks are due to him for his kindness. Some of our party paid a visit to his camp in the evening.

SATURDAY, 5TH JANUARY.—By invitation, we breakfast early with Mr. Lees in the survey camp, and are enabled through his kindness to send letters into Orbost. It is still early when we part, as our paths lie in different directions, and we are soon passing along Bruce's track leading north-east. We are now on a long spur leading up to the M'Culloch Range, and the ground gradually rises: the forest is composed principally of young stringybarks, with burnt trunks from which young foliage is sprouting out, giving a curious appearance to the trees. The hills are composed of silurian rocks until after about five miles, according to the survey measurements, a change comes, and the track passes over a bed of conglomerate with large quartz fragments.

It may here be mentioned that the traveller in Croajingolong finds two or three different styles of measurements of distances. The first is the surveyor's; this appears to be taken in a straight line from tree to tree along the track, without paying any regard to the ups and downs and roundaboutness of the track. The second is the idea of distance of those who ride on horseback, and which, greater than the former, is considerably less than the mileage as registered by the pedometer of our party as we tramp along on foot.

After less than a mile's walk we pass off the conglomerate on to silurian sandstones. The track now bends round, turning south-east, and looking through the trees over a valley to the north, we can see the central points of the M'Culloch Range, Mount Lookout, and behind this Mount Tanglefoot. Both are conical peaks clothed with forest to their tops.

After eight miles' walk we halt for the midday rest in a gully just before starting a steep climb on to the range. The valley is filled with large white-gums, amongst which we see the cotton tree and *Pittosporum*, with *Smilax* and supplejack, and the dark leaves of *Lyonsia straminea*. Southwards from the gully runs one of the streams which form the Cabbage Tree Creek. After a short halt we start up the hillside, and, leaving the sandstone, pass on to granite. In Mr. Stirling's map this granite is apparently omitted, but it continues from this point for some six

or seven miles with little interruption. Over the top of the spur it passes into a gneissic formation, succeeding this is a band of quartzite, then granite again, and descending the hill on the opposite side silurian sandstones again appear near the base, and the same formation then continues for some long distance northward.

As we mount the ridge the track turns northward, and at a height of 1,200 feet we see the first blue-gum amongst a forest composed principally of stringybarks and ironbarks and white-gums. Here and elsewhere we notice that when the blue-gum appears the ironbark disappears. This is of interest, because in such parts of Victoria as Neerim the blue-gum and ironbark (*E. sieberiana*) are always found together. The blue-gums are frequent on to the top of the ridge, where at the highest point the aneroid registers 1,800 feet. In his recent paper Mr. Stirling has curiously not noticed the presence of the blue-gum, though it is to be found in plenty in several parts of Western Croajingolong.

Close to the highest point Whitelaw's track passes off to the north along the M'Culloch Range, leading by the side of Mounts Lookout, Tanglefoot, and Jack to the Miners' track. Bruce's track now leads eastward, and from the side of the high ridge on which we are travelling a very fine view is obtained. The hill runs down steeply into a deep gorge beneath us. To the south lies the undulating, densely-wooded country drained by the Cabbage Tree Creek and Yeerung River, and away in the dim distance we can just see the level line of the sea. The track turns more to the south, and, after a walk of about 16 miles, we descend a steep hillside, and find ourselves in an old surveyor's camp, in a lovely spot, just where one of the heads of the Cabbage Tree Creek takes a bend, and where, on the inner side of the curve, is a small piece of comparatively flat land (4).

The hills around are high and covered with forest and thick scrub. The river, which contains beautiful blackfish, is shut in with fern trees, Lilypilli, *Elæocarpus*, *Pittosporum bicolor*, and the usual creepers, and just before our tents, rising directly from the water's edge, is a beautiful waratah plant some 30 feet high. The Victorian waratah was first described by the Baron von Mueller from Croajingolong in 1860. He discovered the plant growing along the valley of the Genoa River in Eastern Croajingolong, though there the plant does not attain the great size (from 20 ft. to 50 ft.) which it does in the western district. Baron von Mueller named it *Telopea oreades*, regarding it as a new species, in which Bentham agrees with him. Sir Joseph Hooker, however, regards it as a variety of the Tasmanian *T. truncata*, with downy stem. It is worth noting that though we saw hundreds of specimens during our journey not one of the very many examined bore this character. Jays and white and black and Gang Gang

cockatoos are all around, and as evening comes on we hear the mo-poke, and above the camp the half-whistling, half-grating sound made by a flying longicorn beetle. The sound seems to come from all around, and there is no wonder that the blacks regarded it as something uncanny.

SUNDAY, 6TH JANUARY.—We spend the day searching in the gully along the river banks and on the hillsides around, but find nothing of any special interest, there being a somewhat remarkable dearth of animal life, and, save the waratah, nothing of special interest botanically. One waratah we find which attains a height of 50 feet.

MONDAY, 7TH JANUARY.—Leaving camp we mount a ridge, and very shortly descend again and cross another of the heads of the Cabbage Tree Creek, beyond which a stretch of undulating country, with no features of any special interest, watered by the M'Kenzie and its tributary streams. The M'Kenzie rises in Tanglefoot, and flows south to join the Bemm River near its mouth. In its course alluvial gold has not very long ago been found, and we come across a party of prospectors searching the country. The track leads through a gully beside the stream, in which *Tristania laurina* grows to a great size, and amongst other ferns we note the presence of *Hymenophyllum tunbridgiense*. In the gully, also, we see the satin bower-bird. By the side of the M'Kenzie is a small bark hut, on one of the few level pieces of country which we have come across. East of the stream we pass the prospectors' camp, and, mounting on to a ridge, halt for lunch, after two or three miles' walk through forest, part of which has recently been burnt. The country is fairly good. The trees are principally stringybark, with at times blue and white gums and messmate. There is a great sameness in all the country in this part: first a ridge covered with the usual scrub of young gums and native cherries, Acacias, Persoonias, and various Asters; Goodia in fruit, Comesperma in flower everywhere, with Goodenias, Dilwynnias, Lobelias, Scævola, Wahlenbergia, Helichrysum, and Dipodium. Acre after acre of ground is covered with the beautiful coral and star ferns, of which one never grows tired, or with *Pteris aquilina* and *incisa* and *Davallia dubia*. After the ridge comes a creek with a dense growth of gully vegetation, and on the rich soil large white-gums growing, then another ridge and another creek, and so on mile after mile.

In the afternoon we walk along a high ridge (1,700 ft.) which bears away to the north-east, and then turning more north we hear the sound, and can just catch sight of the waters of the Arte River, falling down over rocks from the hillside. The track keeps by the side of the Arte for some distance as it runs north to join the Goolengook, but before reaching this we camp for the night by the side of the former. There is no good camping ground;

but we have come nearly twenty miles, and, not having by any means rushed along, it is growing late, so we must choose the best available spot, and, clearing a space, we pitch the tents, and make ourselves as comfortable as we can for the evening and night (5).

TUESDAY, 8TH JANUARY.—Just before starting, and when, fortunately, we are all out in the open, a tree falls between our two tents, catching the corner of one and flattening it out. Had it fallen in the night, at any rate one member of the party would have gone the rest of the trip minus his toes, and we are thankful that matters are no worse. We leave the uncomfortable camp without regret and again strike north, till we descend sharply to the Goolengook, by the side of which is a small flat, now overgrown with a rank growth of grass. In the valley the soil is rich, and there are some fine white gums. Beyond the river, in the angle between the Goolengook and the Black Watch Creeks, is a high ridge running down from the north, separating the two rivers, both of which rise near Mount Ellery. In half a mile we ascend 400 feet from the creek, and here stop to put up a tent, in which to store part of our provisions, as we intend to come near this spot on our return journey. From our tent we have a fine view of the country away to the north. We are looking up the valley of the Goolengook. On each side the hills come down into the broad valley, blocking up the northern end of which is Mount Ellery with its two main peaks, one of which is made prominent by being crowned with a large mass of granite which stands out clearly against the sky. Save for this single block of granite, there is nothing to be seen but one vast extent of forest, looking down upon which the tree-tops appear to form a perfectly flat field. Up the hill on which we stand the track winds, with the pack-horses in single file. In the middle distance everything is purple, and beyond this range after range of blue hills falls into the valley, until, in the far distance, the large mass of Mount Ellery closes in the scene.

Just beyond our tent Bruce's is joined by the Miners' track, coming in from the west. Still rising, we reach a height of 1,100 feet, and cross to the southern side of the ridge, where the country has recently been fired, and descend 600 feet very abruptly, in a zigzag course, to the Black Watch Creek. Only a very few years ago gold was discovered in the creek and a "rush" took place. It was soon over, however, and now nothing remains but a few dangerous holes hidden by scrub, a broken-down bark hut, and a rudimentary letter-box on a tree. A mile's scramble through jungle and scrub brings us to a curious little geological formation, first discovered by Crawford, and not yet described; in fact, no one has yet seen it besides the few miners who took part in the Black Watch "rush." On the east side of the creek, lying

directly on the silurian sandstones and slates of which the steep hills are formed, is a little cliff, at most 200 feet long by 60 feet high, with a roughly semicircular face turned towards the creek, and on its top a flat platform covered with grass and *Senecio laetus*. The main mass of the cliff is formed of limestone, above which comes a layer of very moist, black-coloured soil, some 10 feet deep, though this does not appear to extend to the face of the cliff, and above the soil layers of moss, upon which lime has been deposited, so that they now form a crisp surface. At the present time water drips over the cliff face, upon which stalactites are formed as evaporation of the trickling water goes on. Where the lime has come from it is difficult to say; but it must be dissolved by the water at a spot some considerable distance away, as there is no limestone in the near neighbourhood, nor does there seem to be any other formation similar to this in the district. The deep layer of black soil on the surface must have been formed at a time when the water was not, as it is now, depositing lime; and this layer is curious, inasmuch as it is quite different in appearance from the soil on the hillsides around, which is much lighter coloured.

We halt beside the creek at midday for some little time, under the shelter of the *Tristanias* and fern trees, and then climb the steep hill leading to the north from the valley: the track goes up in a zig-zag for 600 feet, and from the top of the ridge (1,450 feet) we have fine views to the south-east, looking over the hills bordering the eastern side of the Bemm valley to the much less hilly region beyond, through which the Cann River flows. The track passes to the east side of the ridge, and we again find blue-gum trees; whilst on the opposite side of the deep gorge rises a ridge apparently covered with nothing but blue-gum forest. Then comes a long gradual descent along a spur leading down to the Erinundra valley, through poor land, with only small stringybark gums, between which we can see the high ranges away to the north-west, and after an interesting walk of $12\frac{1}{2}$ miles, we pitch our tents on a fair-sized level patch of ground near the spot at which the Buldah Creek joins the Erinundra (6). On the flat are the remains of an old bark shed, and what was once a garden for the use of the surveyor's camp. The trees on the flat—where, as the rank vegetation shows, the soil is rich—are principally white-gum, and a curious feature is to be noted with regard to them and also to the trees along the valley for some little way, and that is, that the mistletoe which has grown freely on them is all dead, though the trees are living: this not only occurs on one or two, but on all the gums around.

WEDNESDAY, 9TH JANUARY.—The day is a very hot one. Two of our number go off into the hills with Crawford to the head of the Buldah Creek, $4\frac{1}{2}$ miles away through thick scrub and

jungle, to see a curious geological formation, which however turns out to be a silurian mica schist. At the head of the creek, at a height of 2,025 feet, the fern *Cyathea cunninghami* is found growing. The other three spend the day in the neighbourhood of the camp, hunting by the river, which is here overhung by large *Tristanias*, on whose trunks are endless epiphytic ferns, such as *Hymenophyllum tunbridgense*; whilst in the water *Chara*, in fruit, is found, and plenty of the river weed, *Potamogeton natans*, also in fruit. One of the most striking features of this part is the number and large size of the *Tristanias*, which, with their great trunks covered with mosses, ferns, and lichens, overhang the river along its whole course. During the morning the heat is intense, and a few sparks from the camp fire set the bush on fire: we have no little difficulty in extinguishing it, and have to take the tents down hurriedly and carry all our stores for safety down to the bank of the river. In the afternoon we chase a copper-head snake into a waterhole by the river, and after being totally immersed for $1\frac{1}{2}$ hours it comes to the surface quite fresh: here and elsewhere it is noticeable that the snakes take to water with ease—in fact, coming across a snake in a gully the first thing it does is to make for the stream and dive in. Late in the afternoon we pack up and about five start for our next camping ground, which is only a few miles ahead.

Our way leads along by the Erinundra, which runs almost due south, having hollowed out for itself a deep gorge as it flows down from the coast range. We mount on to the side of a ridge, and then, descending, strike and cross the river. The scrub is very thick with tall bracken fern and *Davallia dubia* and *Goodias*, which are fast obliterating the track: now and then we pass waratahs, and the river is overhung, as usual, by fine trees of *Tristania laurina* and *Pittosporum bicolor*. After keeping for some distance to the east of the river, we cross where it takes a sudden bend round the base of a ridge up which the track leads amongst cotton trees, Acacias, Banksias, and great numbers of fine specimens, some at least 15 feet high, of *Humea elegans*. As evening comes on, after a short walk of 6 miles, we descend to the river valley, cross the Ada, which runs down to join the Erinundra from the mountains on the west, and find ourselves in a small flat where is a bark shed, which we utilize as a sleeping place for the night: the shed only boasts, of course, of a roof supported on four poles, and on the windward side we hang up our tents as a protection (7). Down by the river is seen, for the first time on our trip, the fern *Lomaria capensis*, which, though so common elsewhere, appears to be rare in Croajingolong.

THURSDAY, 10TH JANUARY.—Our camp seems to be rather a lively place: whilst enjoying a quiet breakfast, a large copper-head, apparently frightened, makes for the spot on which our

senior member is gracefully reclining after the Turkish fashion. He arises hastily, so does the rest of the camp, and in two minutes the beast is safely bagged (alive). Again we sit down, and in less than ten minutes comes another stampede. This time it is a large tiger snake, which makes for just the same spot, but only to find, almost before he has time to realize his position, that his head is transferred to alcohol.

Leaving camp about eight o'clock we still travel northwards by the river side, along the valley, and then climb a ridge. The scrub is very thick, containing many cotton trees. The principal gum is the white one, but at times we come across blue-gum and now and then small blackwoods: in the whole district there are but few of these, and none of any large size. We are now and have been since a short distance before the last camp was reached, walking over granite, and large boulders of this lie in the beds of the small creeks descending from the hillside. The track gradually descends through burnt country, from the ridge to the Erinundra, and we halt for two or three hours by the side of a beautiful creek, the bed of which is made of large moss-grown granite masses. After lunch we spend some time searching along the creek, where the growth of ferns is very thick and fallen logs numberless. Every now and then we come across a lyre-bird showing his tail, and hear plenty of others in the scrub all around. A snake or two dive into the stream, but there is nothing of special interest beyond the usual gully vegetation and any number of bulldog ants and leeches. We had been warned before going that we should be plagued with any number of large and genuine Ticks; but all that we can say, from our own experience of Croajingolong is, that they are chiefly remarkable for their absence. We only saw one all the time, and that attacked one member of our party at the Lakes' Entrance, whilst we were yet on the verge of civilization.

By the side of the Erinundra the land is rich, and, after leaving our halting place, we pass some fine white-gums. The vegetation along the track is very thick, principally, as usual, Acacias, Persoonias, Goodias, young gums, with, on the ridge, *Comesperma ericinum*, the flower of which we are soon to lose sight of. Sword-grass and the climbing grass (*Erharta juncea*) make us willing to keep to the track, where, though much overgrown along the valley, we can get along without entire loss of clothes and flesh. As we pass onwards the valley gets more and more hemmed in by hills, which increase in height, and becomes proportionately narrower; the river cannot be seen for the growth of the Lilypilli, *Elæocarpus*, *Tristania*, *Pittosporum*, and here and there blackwood, which overhang it. The track leads up a steep hillside, and as we descend the other side, looking down upon the valley beneath, we can just, in the distance, catch a glimpse of falling waters

as the Erinundra tumbles over great granite masses at the foot of Mount Goon Murk. The scene is a very fine one. Right in front the Coast Ranges, nearly 4,000 feet high, block the way to the north; to the right rises Mount Bungywarra, peaked, and crowned to its summit with forest; to the left we are shut in by lofty white-gums running up the mountain side; and beneath us the hill runs down steeply to the densely wooded valley. The track descends rapidly, and after an easy day's march of nine miles we camp at the base of Goon Murk, close by a lovely group of *Humea elegans*, in full bloom, some of them being from 15 to 20 feet high (fig. 4). The Erinundra is here formed by the union of two streams. One close to our camp (8) comes down from the west of the mountain, through what, from its nature, has been called the "gorge of foaming waters;" the other descends on the east side, and the two, joining together, flow south along the deep gorge which they have hollowed out for themselves. Though it is but early in the afternoon, the sunlight has left the valley; and as evening comes on we can see it, long after we are in deep shade, lighting up the tops of the mountains. It is a perfect spot for a camp—at any rate, from a picturesque point of view—and we wander up the stream which runs down the gorge till further progress is barred by dense vegetation and great granite rocks, over and through narrow clefts between which the water rushes down.

FRIDAY, 11TH JANUARY.—This is perhaps our most interesting day, and is spent in climbing up the steep coast range. Very regretfully we leave the camp, with its waratahs and Humeas, whilst it is still in shade, and crossing the river, immediately begin the steep ascent of Goon Murk. The hill rises very steeply for 3,100 feet, then the track falls 100 feet, and leads through a fern gully, with a stream flowing away to the eastern branch of the Erinundra. We leave the granite and pass again on to silurian sandstones, extending to the gully. Up the first part of the ascent the forest is composed of fine white-gums, with blue-gums, stringy and iron barks. The cotton tree is abundant and large; so is the pepper tree and the *Persoonia*, which is known locally as the "gebung," and, in addition, waratahs of all sizes up to 40 feet abound. Of ferns, the most common is *Lomaria procera*; and amongst flowers those of *Comesperma ericinum* and *Dipodium punctatum*, which have accompanied us everywhere since leaving Orbest, disappear entirely. Not only here, but elsewhere in the trip, the absence of flowers is very disappointing, and we soon learn, to our regret, that we are two months too late for them.

Reaching the gully, we spend some little time in wandering up it, searching for animals and plants: for the first time we meet with the sassafras, which here assumes a curious growth, its branches hanging down somewhat like those of a spruce, and

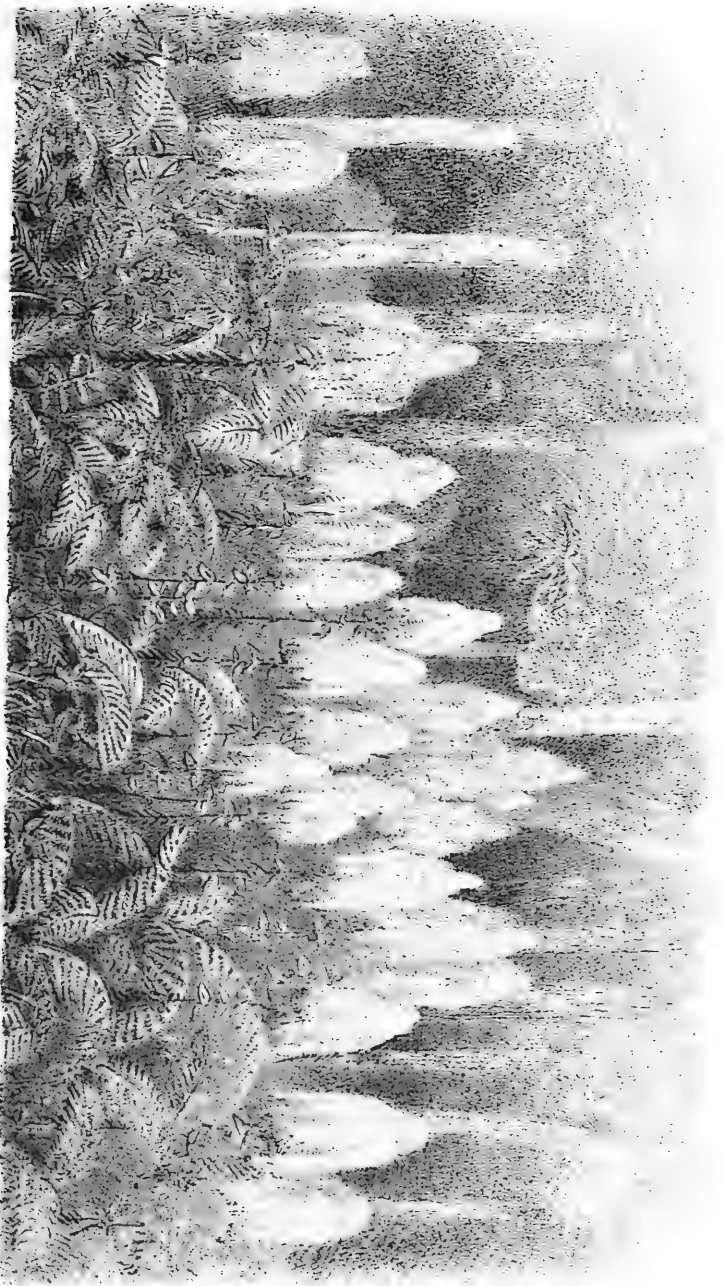


Fig. 4

giving a fir-like appearance to the tree; on its roots grows *Sisyrrinchium pulchellum*. *Pittosporum bicolor*, musk and hazel, and pepper trees abound; and of ferns the gully is full of the usual *Dicksonia* and *Alsophila*, with *Lomaria procera* and *pattersoni*, *Blechnum cartilagineum*, *Davallia dubia*, *Asplenium laxum*, *Aspidium aculeatum*, *Polypodium billardieri* and *punctatum*, *Doodia caudata*, and various species of *Hymenophyllum*.*

Crossing the little creek we pass again for about a mile on to granite. The track, which is here a very good one, gradually ascends, leading for some distance amongst sassafras, waratah, hazel, musk, pepper trees, and fine white-gums. Again we pass on to silurian rock, and after between three and four miles from the gully, halt at an elevation of 3,200 ft., by the side of a stream flowing southward. In the afternoon, walking on for some little distance, the character of the country changes: it becomes very boggy, and we pass through a small wood of *Leptospermum* 50 ft. high and upwards, with long strips of paper-like bark hanging down the stem; on from this the ground rises somewhat sharply, and we meet again with *Persoonias*, musk, cotton trees, sassafras, pepper trees, and waratahs, and large specimens of *Elæocarpus*, and then along the final rise we see, for the first time, the conifer *Nageia alpina* and *Prostanthera walteri*, though the latter is not in flower. Both of these are of interest, as, according to Baron von Mueller this is the lowest elevation (3,400 ft.), at which the conifer has yet been found; whilst this species of *Prostanthera* is confined to Croajingolong, where it was first found and sent to Baron von Mueller by Mr. Walter. Amongst other sub-alpine plants are seen *Senecio dryadeus*, *Gaultiera hispida*, *Lagenophora gunni*, *Noteleœa longifolia*, *Styphelia macraei* and *montana*, and *Helichrysum thyrsoides*. The track rises to a height of 3,700 ft., and passes on to a level piece of ground of considerable extent covered with grass, and presenting a very park-like appearance. *Veronica derwentia*, species of *Senecio* and *Helichrysum*, *Erharta juncea*, and the snow-grass (*Poa hookeriana*) are plentiful. The growth of the latter—2 ft. in height—is very thick on this, the highest point in the coast range. Of trees there are simply, in this part, the waratah and the silver wattle. The latter is very noticeable as presenting that curious fir-like appearance which has already been noted in the case of the sassafras on the range, but which is still more marked in the case of the wattle. What produces this curious effect it is difficult to imagine; at the same time it is, perhaps, worth noting that it is only found on the trees high up on the mountains,

* Here and in other parts various forms of worms, insects, &c., were collected, and cryptogams which have not, as yet, been identified. Through-out the journey fungi were collected and preserved in alcohol.

where for considerable lengths of time they are snow-covered, and it may be just possible that it is the weight of the snow which the branches have to bear that, when they are young and flexible, causes them to grow in this manner; at the same time, if this be the reason, it is curious that the effect is not universal, though this may be due to the different methods of growth of the branches in various kinds of trees and their power of resistance to downward pressure.

Close to the top of Goon Murk our botanist found a species of the composite *Erichthites*, which Baron von Mueller states is new to Victoria, being only known previously from Western Australia.

The north side of the range, at least towards the eastern end, presents a great contrast to the south side. There are no deep gorges and almost precipitous hillsides, but the country gently slopes away towards the border between Victoria and New South Wales, and the streams draining it flow quietly along without excavating for themselves deep valleys. From the top of Goon Murk we travel on down the north side. For some time we have waratahs, and musk and hazel and "gebungs," the latter bearing fruit, which is said to be edible. It is round, perhaps half an inch in diameter, with a smooth yellowish leathery skin when ripe, and a stone inside to which the pulpy, almost slimy, green mesocarp clings persistently. On attempting to eat it you gain a good idea of what boiled leather must be like.

Leaving the waratahs and hazel behind, and still gradually descending, we come to a different class of country. It is much more open, with grass and low white-gums. On the bank of a creek we find *Sphagnum* moss growing, with *Lomaria alpina* (seen here for the first time), and *L. fluviatilis*; *Dianella* abounds, and so does *Stylidium*, whose red blossoms take the place of the red *Dipodium punctatum*, which was as constantly seen south of the range as *Stylidium* now is to the north.

Amongst other plants are present — *Drymophila cyanocarpa*, *Beckæa gunniana*, *Veronica gracilis*, *Mimulus repens*, and everywhere the little *Viola hederacea*. After a most interesting day we camp for the night on a little bit of rising ground by the side of a large open flat, enclosed by low hills with woods of stringybark and white-gums (9). Part of the flat is occupied by a bog, many acres in extent, of *Sphagnum* moss. A stream of clear, deep water, with grassy banks, runs through the flat, on which cattle are grazing, and as the sun sets and a low white mist rises the whole scene calls to mind an English meadow backed by woods and with a clear rivulet wandering lazily across it. However, the ferocious bites of the bull-dog ants, whom we have innocently dispossessed, and as night comes on the howling of a pack of dingoes in the distance, and every now and then the screech of a phalanger as

it flies from tree to tree, serve to remind us that we are in a land which, though undoubtedly not possessing many advantages belonging to the old country, is yet of much greater interest to us as naturalists.

SATURDAY, 12TH JANUARY.—We start early from camp, being anxious to reach Bendoc and camp some little distance on the other side. Our way still lies through forest with moderately-sized gums—stringybark, white-gums and messmates—and now and then a waratah, but only very few of these. *Styidium* and *Dianella* are flowering in abundance. The country is uninteresting, and falls gradually away to the north, making walking very enjoyable and easy. We begin to see signs of civilization—first cattle-yards, then water-races connected with the old diggings, and old diggers' holes in the yellow-red silurian sandstone of which the country is formed. Some miles on we cross a flat covered with a luxuriant growth of grass, on which cattle are feeding, but which in winter must be simply a bog; then the ground becomes slightly more undulating, with long rolling ridges, until at last we come to a small settlement, with a few bark houses, and then the rough track opens out into a road which winds through the wood and brings us to cleared land, across which we can see the few houses forming the township of Bendoc, and, rising behind this the conical peak of Delegate Hill, lying on the border-line between Victoria and New South Wales.

It is a long time since we have seen any civilized human beings, but this morning Bendoc is full of people, as one of its few inhabitants has just died, and the funeral is to take place to-day. The dwellers in the country side have evidently gathered into the township from far and near, and the sight is one which, for its quaintness and simplicity, we shall not easily forget. One old man comes walking up the broad street, whom we at once instinctively put down as the "oldest inhabitant" of the district, and whose general appearance would form a delightful sketch for anyone on the look-out for character studies. Carrying in his hand an old handleless umbrella, which, with his clothes, must have weathered many a Sabbath storm, he wears light tweed trousers, an open evening-dress waistcoat, a short, what had once been black, coat, but which in time of need would now easily serve as a mirror; on his head an ancient felt hat, reduced by constant battering to an average height of perhaps $4\frac{1}{2}$ inches, and to complete his toilet, a brilliant new red handkerchief, tied in a *negligé* manner, where a collar should have been. To describe the scene is, however, scarcely within the legitimate scope of an article for a field naturalists' club, but the recollection of the anxious looks cast along the road by which the hearse was expected to arrive, and the sight of the structure when at last it did appear, drawn by two remarkable steeds, of whom one had

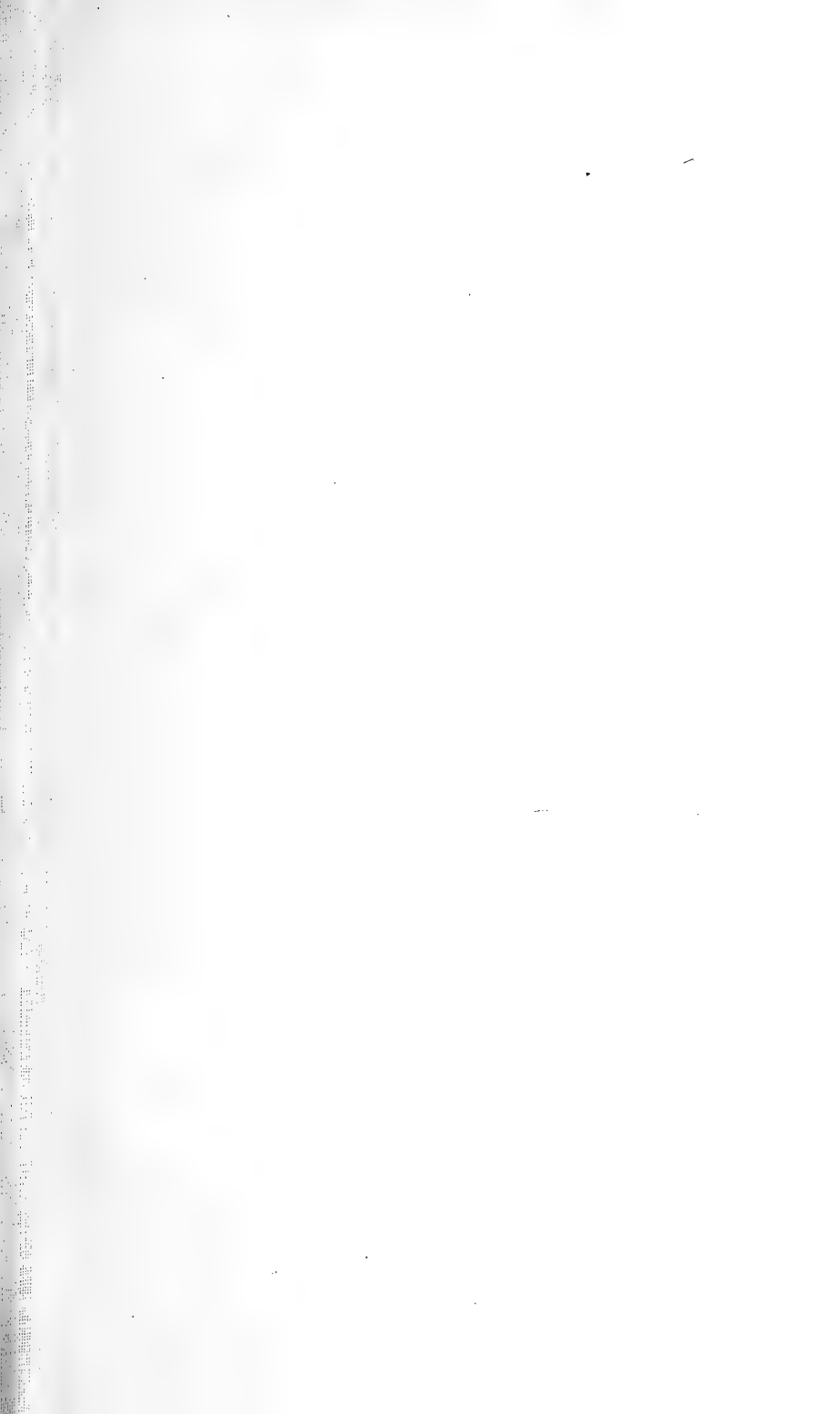
its foal running by its side, and driven by an individual who combined in his own person the professions of architect, builder, and coachman of the curious "greenhouse"-on-wheels which served as a hearse, and the design of which revealed the Gothic spirit latent in the architect—the recollection of these will remain with us for long. Nor are we likely to soon forget the quaintness of the scene as the funeral procession, with its long string of men and women on horseback, and an intermingling of a strange variety of vehicles, moved off down the wide street of Bendoc. We seemed to be carried far away from the civilization of the nineteenth century.

As to Bendoc itself, it is purely a mining township, the total population of which cannot number much more than sixty or seventy souls in all. In times past the river beds in the neighbourhood were worked for alluvial gold, and traces of the old workings are to be seen everywhere. Then came a time of depression, when the school-house and the police station were almost, if not quite, the only inhabited houses. Now the township is livelier again, and promises to make progress. Various mines, as the Eclipse and Morning Star, are being worked in the neighbourhood, and gold obtained, of which the kindness of Mr. Dudley, the hotelkeeper, enabled us to bring away specimens.

In the creek behind the hotel *Ranunculus aquaticus* grows in abundance, and the leaves of the young gums are covered with various species of beetles of the genus *Paropsis*.

We could not obtain all the stores we wanted in Bendoc, where it was terribly hot, so after having looked around for some time, written and obtained letters, telegraphed, and dined in a civilized manner, we started again at 3 p.m., glad once more to get into the woods. The country here is undulating, with rather fine trees—white-gums, stringybarks, messmates, and a few peppermints. Of others, one or two species of Aster, with now and then waratahs, are seen, plenty of *Banksia serrata* and *australis*, and *Acacia discolor* and *linearis*. Everynow and then we come to patches of *Leptospermum myrsinoides*, with the usual accompaniment of Buprestid and other beetles, and in the woods *Stylidium* is much the most frequent flower, the white as well as the common red variety being found. *Bossiaea* and two or three *Pulteneas* are also noticed, and many dwarf grass-trees. The country grows very poor and monotonous, with nothing but low gums, until we reach the river Delegate, on the west side of which lies our camp for the night. The river runs north and south along a broad valley with low-lying hills on either side, and with its sluggish current and the green flats bordering its course forms a strong contrast to the streams flowing to the south from the mountain ranges through deep valleys.

Our tents are pitched on stony ground, and are not by any



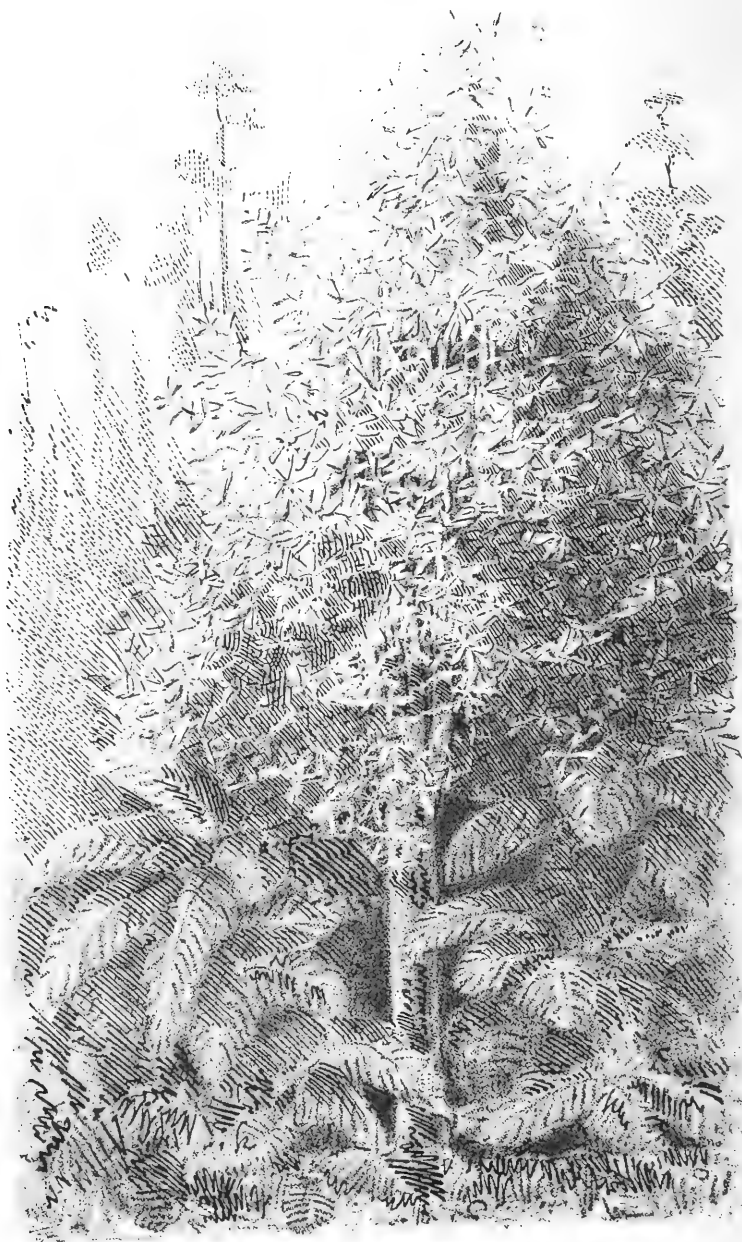


Fig. 5

means comfortable (10). There is no chance of getting away from the ants, as "bull-dogs" and "jumpers" abound everywhere, and it is not cheerful to find three or four "bull-dogs" promenading your rug as you go to lie down, or to wake up feeling something alive and prickly, and to find you have a scorpion for a bed-fellow. Such are our experiences this evening, and we leave the camp in the morning without very much regret.

SUNDAY, 13TH JANUARY.—We take the road east to Bonang. Leaving the Delegate, the country improves. The gums, white and stringybark, increase in size; waratahs appear, growing near to a creek known, from the fact of its having been successfully worked for gold by Chinamen, as Chinaman's Creek. The road rises considerably, until the aneroid indicates 3,400 ft. We are on the side of a hill sloping away so steeply to the north that the road has had to be banked up, and, going round sharp bends, is protected by rails. Where the trees are at all thin, which is but seldom, we can see across the deep gorge beneath to the mountains opposite, and beyond them on to range after range of the hills which lie in the Omeo district. To the left of us, as we face north, is Mount Bowen; whilst in the distance, on the right, we can see Mount Tingiringy. The road descends, sloping along the length of the hill until a little further on we pass on to the crest of the descending hill, and can see the blue mountains away to the north, with the flats of Bonang just beneath us, and to the south the spurs leading up to Mount Goonegerah in the middle distance and Mount Ellery in the background. The hill on which we are has been recently fired, and the track turns suddenly down its face, passes through a valley rich with waratahs, and cottonwood trees and ferns, and leads down to the River Bonang. On the brow of the hill we cross an outcrop of hornblende granite, which apparently comes north, from the direction of Mount Ellery. At the river the track joins the one which runs up from Orbost to the township of Bonang, and, crossing the race which supplies the Rising Sun Mine, runs north-east for $1\frac{1}{2}$ miles till we reach the large farm accommodation house, which serves also as post-office and store. The station lies in a flat, 2,500 ft. above sea level, of considerable size, which is now quite cleared and covered with green fields. There is nothing else to be seen but this one house, though there are a few others close to the mine, and a few bark huts just where the tramway from the mine crosses the track. All around are the mountains, covered with monotonous gum forests, and, altogether, Bonang is not an inviting place.

Close to the river is the beginning of a new track which is now being cut by the surveyors, and which will run almost up to Mount Ellery. Unfortunately for us, as we pass south to Goonegerah, we find the hills very recently fired, which makes it

not worth while halting in what would doubtless otherwise have been a good district for collecting. From the river the track slightly rises, and then we begin to descend in zigzag curves the steep side of what is known as Little Bill's Hill. We are travelling now on granite, and the track, which is a very fair one, has had to be cut out of the hillside. The afternoon becomes very oppressive. There is a thunderstorm in the distance and the clouds are heavy, with a lurid light in the sky behind them, which serves to make the hills, by contrast, look dark and purple, and the deep gorges darker still. To the south the sky is laden with the dense smoke of large bush-fires, and the scene is made still more weird by a sudden storm of wind rushing in a narrow path up the valley, and making the trees bend and creak as it passes along; one big tree which blocks the path has evidently fallen not many hours ago, and we stand still, watching to see if any amongst those immediately around us is going to follow its example. The trees on the hill we are descending are still burning, and the fire has even swept up the fern gullies, destroying all the vegetation. It looks almost as weird and unearthly as the "black country" at home.

We are now once more on the south of the coast range, though at this western end there is by no means the contrast between the northern and southern sides of the mountains which obtains at the east end. We are anxious, if possible, to reach the station at Goonegerah before nightfall, and press on, leaving the horses to follow more slowly. The road leads into a narrow track passing along the valley of the Brodribb as it runs south from the coast range. We cross a creek where the *Todea* is growing luxuriantly—almost the only green thing we can see. To the right of us bush-fires are burning on the hillsides, the ground we are traversing is all hot and burnt, and to our left Mount Goonegerah, a high-peaked hill, rises. The valley begins to expand, and crossing a branch of the Brodribb, the valley of which is filled with large masses of granite, we come out on to open cultivated flats, in the middle of which is Reed's station. The homestead is well placed, not far from the river, with a fine view of Mount Ellery and the surrounding mountains, and serves as an accommodation house (11). It was nearly dark when we arrived, and we are very glad to have a good meal, and more especially, perhaps, one which we had not cooked for ourselves. We are made very comfortable for the night, and spend an enjoyable evening, smoking in a garden filled with old English flowers.

MONDAY, 14TH JANUARY.—We leave Goonegerah with the intention of climbing Mount Ellery, and are prepared for some rather stiff work, as there will be no track after we leave the one going south to Orbost. A little distance from the station we cross the Brodribb, and then, after four or five miles of country with nothing of special interest, we strike off to the east into the scrub.

The land is poor, with small stringybarks. The lesser grass-tree is present; and, for the first time, we come across a patch of bottle-brush trees (*Calistemon*); they have, however, done flowering, and are in fruit. We have come again into the region of *Comesperma ericinum* and *Goodia lotifolia* which abound everywhere. *Lomatia fraseri* is in flower, with the blue *Lobelia* and *Wahlenbergia*; but, except these and an occasional *Dipodium*, there is very little to give colour to the scrub. We soon pass off the granite on to silurian slates, and climb a steep, recently fired ridge where the soil is very thin and walking most uncomfortable. On the top we pause for a little while, as fortunately the trees are thin, to gain some idea, if possible, of the best way to attempt Mount Ellery, which we can see lying almost due east of us, and having settled which ridge to ascend, and stopped to bag a copperhead snake, go down the steep hillside to the B. A. Creek, where, in the shade of the ferns and *Pittosporums* we halt for lunch. Crossing the creek, we begin to mount the spur, which leads at first slightly to the south of east. The scrub of young gums, *Acacias*, *Pultenæas*, and *Goodias* is annoying, and walking becomes more tiring as we get higher up, and the ground is thickly covered with ferns and rotten logs and withered vegetation. The trees are stringy and iron barks, and the messmate, and down in the gullies we can see the white-gum. Progress is so difficult that it is six o'clock before we have done more than five miles along the ridge, and we are obliged to camp, where evidently from the marks on the trees the blacks have done before us (12). Previous to lighting a fire, some of us have to clear a space of dead ferns and branches which lie thick upon the ground, whilst others go in search of water; the latter is some distance away, and the getting it occupies nearly two hours, owing to the thickness of the scrub and the abundance of *Smilax* and *Clematis*. A dearth of water after such a fatiguing day, and in such hot weather, is somewhat depressing, and hence this spot received the name of Starvation Camp.

TUESDAY, 15TH JANUARY.—The horses could go no further, so, leaving them, we start for the mountain, still keeping to the summit of the ridge on which we had been travelling yesterday; the undergrowth of ferns is very thick, and the fallen logs very numerous, so that our progress is again slow. After rather more than two miles we make a slight descent, where the ridge joins the main peak, and then commence the ascent of the latter. The scrub grows thicker, and *Smilax* and supple-jack, sword and climbing grass hinder us everywhere. The vegetation is richer than on the ridge: *Elæocarpus*, *Pittosporum bicolor*, waratahs, musk and cottonwood trees, and small blackwoods are plentiful; and there are acres of *Lomaria procera*, *Blechnum*, *Pteris*, and *Gleichenia*. Now and then we get a little respite when we come

to a patch of fern trees ; but this is only for a short time, and then comes the climbing over rotten logs and the vain attempt to proceed, with a festoon of Smilax grasping you round the legs and one of Clematis encircling your neck. Reaching the height of 3,000 ft., we find the silurian gives place to a granite formation. As far as distance measured horizontally goes, we have traversed the greater length of the mountain—in fact, we are just under the peak, which we can see above us through the trees, though we have still a height of 1,300 ft. to climb. On the south-west side, at all events, the main mass of Ellery is of silurian slates and sandstones. Just where we pass on to the granite is a belt of silver-wattle trees ; fine specimens of stringybark are present, and scrubs of *Prostanthera lasianthos*. As we mount we come to huge masses of granite, some 50 ft. high, weathered quite smooth and covered with lichens. They are thrown about in great confusion, and we have to make our way often on hands and feet through crevices between them. Except for the lyre-bird's call, everything is perfectly silent, and there is a strange dearth of animal life. The mists are coming on as we get nearer to the top, and at length, after a stiff climb over an enormous pile of granite masses which form the summit of the mountain, we stand by the side of one 75 ft. high, which is perched upon the others, and forms the prominent peak of the mountain, only to find that we are enveloped in a thick mist, and can see nothing whatever but the granite masses around us and the tops of the gum trees on the mountain side below (fig. 1). The cairn which was on the summit of the large block has gone, and only the rotten remnants of a ladder which once led up to it remain as evidence of the surveying party which first climbed the mountain. Since they left very few others have been to the top. Right amongst the rocks on the summit we found *Prostanthera walteri* in blossom—the same species already seen on Goon Murk—whilst the very highest plant obtained was growing up the side of the large rock, where the aneroid registered 4,225 ft., and was a waratah.* Apparently the snow and cold weather to which it must be exposed make no difference to it. On the summit also *E. stuartiana* was in flower, as also a species of *Lomatia* and *Aster*. Carefully climbing down from the granite masses, the deep crevices between which do not look inviting, we halt at their base for a rest and a smoke. It has been tiring work, and we have passed no stream, and on a hot day the want of water is not pleasant. Progress down hill, owing to the scrub and logs, is almost as

* The range of height within which the waratah grows in Croajingolong is thus from about 300 ft. to 4,300 ft: it grows just as freely on the summits of the highest hills (as Goon Murk) as it does along the river valleys.

slow as up hill. We take a somewhat different course going back, and are fortunate enough to strike a creek at about a height of 3,000 ft. ; along the creek the sassafras is growing. We have got below the mists again, and strike our old track close by where, though now overgrown with scrub and ferns, are evident relics of the camp made by the surveyors when first the mountain was climbed. We have only walked ten miles, but evening comes on as we reach our camp, with clothes considerably less entire than when we started.

WEDNESDAY, 16TH JANUARY.—We leave Starvation Camp with little regret, and take the top of the ridge by which we had ascended, for some distance, then, turning more to the south-east, branch off from our first track and descend by a spur more to the west. This leads down to a small creek running up to Mount Ellery ; in fact, it was the head of this creek which we struck in our descent yesterday. Crossing the creek we traverse two ridges, and then descend into the valley of the St. Patrick River. A hurricane has evidently very recently swept up the valley, and the track is covered with fallen timber, principally of white-gum, one large tree of which lies across our path, its leaves still green and fresh. As we pass along a branch falls, just grazing the saddle of one of our pack-horses. We camp by the side of the stream, climbing over the trunk of a large *Tristania laurina*, which overhangs the water. The creek is shut in by a dense growth of Lilypilli, Elæocarpus, musk, hazel, and tree ferns ; and we see again the sassafras, which is not often met with in the district. Ferns are abundant, and amongst these we notice *Trichomanes pyxidiferum*, and, for the first time, *Aspidium decompositum*. On the branches of the *Tristania* by the stream grows the rare, black, horsehair-like fungus, *Marasmius equicrinis*, only once before recorded from Victoria. After searching down by the creek we start up the hill on the opposite side. The scrub is largely made up, as usual, of *Acacia discolor* and *linearis*, *Goodia lotifolia* (the pods of which are popping all around), *Bursaria spinosa*, *Pultenæa*, and *Comesperma ericinum*, with star and coral ferns and the common bracken. On the top we come into a dense wood of young gum saplings—stringybark. Here, again, the hurricane seems to have swept through in a narrow path, and the track, which is not much to boast of at the best, is much impeded with fallen timber. The difficulty is, that the trees are so close together that there is scarcely room for the pack-horses to get between them when they have to go into the scrub to get round the uprooted trees. The ridge leads south to the range, which runs westward across the country from the M'Culloch hills, and after some few miles we join the mining track, and turn east to the St. Patrick River. We are walking along the northern side of the ridge, close to the crest, and have a fine view of the

north-western part of the district, looking away over the valleys of the Big River and the Brodribb, with Mount Ellery in the centre, and the coast range far away in the distance, with the high peaks of Goon Murk to the east and Mount Bowen to the west. It is perfectly clear, and the scene, with the deep gorge at our feet, and the hills all shades of purple and blue, with the shadows of the clouds passing slowly across them, is most beautiful. Mount Ellery, especially, has such a lovely purple-blue tint that we almost forgive it for the useless trouble it had given us yesterday. The track, still skirting the ridge, turns slightly to the south and begins to fall. In the scrub are great masses of the beautiful blue berries of *Dianella*. After descending for two miles we cross the St. Patrick River, and find the relics of an old camp on the east bank, where is a small flat. Here we pitch the tents close by the stream (13). We are in a basin, surrounded by densely wooded hills. The St. Patrick flows down from Mounts Tanglefoot and Jack in a valley formed by two ranges of hills, which run roughly parallel to one another, and then lead up to Tanglefoot. In the valley, and close to our camp, the waratah flourishes.

THURSDAY, 17TH JANUARY.—Early in the morning one of our party, who has been much troubled with an injured hand, leaves, taking one of our horses to travel on ahead to Orbost, and thence as soon as possible to Sale. Crawford sets off to bring back the stores which we had left in a tent where the mining track, by the side of which we are camped, joins Bruce's. The rest of us make ready for a day's search in the neighbourhood of the camp. As we set out, however, the rain comes on in torrents, and as the scrub is thick with swordgrass, climbing grass, *Clematis*, and *Smilax*, we give up the attempt, and are forced to spend the day in camp. Some distance up the river are falls, which are said by the one party which has seen them to be very fine, but the sight of these we must leave for another trip. There seem to be more birds in the scrub around this part than elsewhere. Amongst others are the king lory, the Gang Gang, the sulphur-crested, and black cockatoos, and Pennant's parakeet; the orange-winged sitella, the bell and coach-whip birds, the black-throated and New Holland honey-eaters, the red-eyebrowed and fire-tailed finch, the blue and long-tailed wrens, fantails, robins, and many others, and at night the wonga pigeon is heard.

FRIDAY, 18TH JANUARY.—We leave camp, cross the St. Patrick, and go back along the mining track. Instead of turning north on our old track towards Mt. Ellery, we continue eastwards, passing along the ridge running from the M'Culloch Range to the Brodribb. The track leads at first along a hillside, on which the vegetation is, perhaps, more tropical-like in its luxuriance than anywhere else, and the scene is made still more beautiful by the glimpses which we get of the blue peaks of the M'Culloch hills.

The trees are principally very large white-gums, Lilypilli, *Elæocarpus*, with its blue berries, Drymis, *Panax sambucifolius*, waratahs and blackwood, with *Vitis hypoglauca*, and long festoons of Smilax and Clematis. The tree ferns are very fine indeed, and the ground thick with Lomarias and Gleichenias. When the Lilypilli and waratah are in bloom these gullies and hillsides, with their dense luxuriant jungle growth, must present a wonderful blaze of colour. As it is, the white flowers of Stackhousia, Pimelia, Lomatia, and Bursaria, the pink Comesperma and red Dipodium, the blue of large clusters of Dianella berries and Lobelia and Scævola flowers, and the violet of the fringed lilies serve to relieve the monotony of dull green. The track winds about somewhat, and skirts first the north and then the south side of the ridge, giving us alternately views of Mt. Ellery, backed by the coast ranges, and of the M'Culloch and lower ranges to the south.

The highest point we touch is 1,500 feet, and a steep descent brings us once more down to the river Brodribb, where it runs in a sharp bend round the western end of the ridge we have been traversing all day. We camp on a small flat 450 feet above the sea level, the hills rising directly from the stream in the form of an amphitheatre on the opposite (western) side (14).

It may be noted that in the ordinance map the Sardine Creek is wrongly marked as joining the Brodribb just at this point. In reality it enters half-a-mile higher up, and not just where the main stream takes this sharp bend to flow round the end of the hill ridge of silurian rocks running east and west.

SATURDAY, 19TH JANUARY.—We cross the Brodribb, which is here a good-sized stream some 40 ft. wide, and join the track which passes south from Bonang to Orbost, and which we had quitted when we struck east from Goonegerah to Mt. Ellery. The track keeps to the hills, and lies for the most part along silurian strata, save where in two places—one soon after leaving the Brodribb, and another on Mt. Watt—a strip of granite runs across from the east. We soon reach the height of 1,300 ft., and have very fine views, giving us a good idea of the general lay of the country, for we can see the whole district from Mt. Raymond in the south to the coast ranges in the north. The track then passes over Mt. Watt, where we halt for lunch, and then, rising to 1,700 ft., crosses the very top of Mt. Buck. The great idea of the original cutters of the track would seem to have been that of scaling every possible hill, and avoiding every opportunity of gentle gradients, and they have succeeded admirably. However, from Mt. Buck we get a fine view south, with Orbost and the Snowy flats and Lake Curlip on the Brodribb, and away in the distance the sandhills and breakers on the beach at Marlow. The hills have lately been fired, and look desolate in the extreme. In parts not a blade of grass is to be seen. From the foot of Mt.

Buck the road—for the track widens out as we approach civilization—passes over gently undulating and most monotonously uninteresting country, until, after a tramp of more than 300 miles on foot through one of the wildest and finest parts of Victoria, we once more find ourselves in Orbost.

Here we spend a quiet Sunday, arranging our packages. On Monday evening we are at Lakes' Entrance, with no worse a mishap than a broken axle, due to the remarkable avidity for deep water-holes displayed by our youthful Jehu, and Tuesday finds us—looking scarcely as reputable, even, as when we started—enjoying a lazy steam along the lakes, and enduring a miserably hot journey into Melbourne.

GENERAL TOPOGRAPHY OF THE DISTRICT.

Western Croajingolong is essentially a mountainous, or, to speak more correctly geologically, a hilly country—that is, the present surface configuration is due, in the main, to the effects of sub-aërial denudation acting upon rock masses of different degrees of hardness. The general lay of the formation, as far as this can be determined from observations along the tracks, has been already described by Mr. Stirling,* and in the main our observations agree with his. The woodcuts appended to his paper serve admirably to illustrate the nature of a general section through the country. As yet, nothing of the nature of detailed observations have been made.

The main mass of the district is undoubtedly composed of silurian rock (slates, shales, and sandstones), through which, in the form of knobs or bands of varying length and width, masses of granite have forced their way. Thus the country, enclosed by a series of lines drawn from Camp 1 to Camp 14, then on to where the track crosses the B. A. Creek, then nearly due east to where the Ada joins the Erinundra, and then following south-west again by the track to Camp 1, is in the main composed of silurian slates and shales, with, in parts, overlying conglomerates, as on the ridge leading up to the M'Culloch Range. Through this mass of silurian strata granite has forced its way, forming now the peaks of Mounts Ellery and Raymond, the highest points of the M'Culloch Hills—Mounts Lookout, Tanglefoot, and Jack—and certainly the highest point on this ridge passed over by our track. On either side of the latter mass of granite, especially on the east, lie metamorphic rocks, schists, gneiss, and quartzites. To the north of this district there appear to be two main bands of granite, running south; the one on the east, from Goon Murk to the Ada River; the one on the west, from Bonang to the junction of the

* "Proceedings of Royal Society of Victoria," 1888.

Brodrigg and the B. A. Creek. Between them lies, probably, a mass of silurian rock ; certainly, the granite on Mount Ellery is not continuous, on the surface, with the band to the east or west of it. North of the coast range again lies silurian rock—sandstones to the east, between Goon Murk and Bendoc ; slates to the west, on the Bonang side. Mr. Stirling has described a long band of granite stretching from north to south along the Cann River.

Speaking generally, we may regard the district of West Croajingolong as composed, in the main, of lower and upper silurian strata—slates, shales, sandstones, more rarely conglomerates, and at times metamorphosed by contact with irruptive rocks. The latter are in the form of (1) continuous bands of granite or (2) a series of knobs of granite, both running along lines lying roughly north and south. It is interesting to note that, in the former case, they are traversed along their length by river valleys. Thus, on the west, the course of the Brodrigg lies along a belt of granite in its northern, and again in its southern part, between Camp 14 (shown on the map) and its junction with the Rocky River. Again, the Erinundra traverses the whole length of the belt of granite from Mount Goon Murk to the south of the Ada, and the still longer belt away to the east is traversed by nearly the whole length of the Cann River. On the other hand, where we find isolated knobs of granite, as down the centre of the district in Mount Ellery or on the summit of Goon Murk or Mounts Watt and Raymond, there the rock masses stand out, forming prominent peaks and ridges.

The weathering of the granite on Mount Ellery is most striking. It has become formed on the surface into a great accumulation of huge boulders from 20 ft. to 75 ft. in height, which lie piled up on one another in indescribable confusion. One huge mass, the egg shape of which gave to the mountain the native name of "Goonegerah," stands out high above the dense forest, which, save in this instance alone, clothes to their summits the long ridges and many peaks of this wild district.

Denudation has finally resulted in the formation of two main watersheds in West Croajingolong. Of these, the first is known as the Coast Range, and runs roughly east and west, from Mount Bowen, through Goon Murk, to Mount Tennyson ; the second runs roughly north and south, from the Coast Range in the north, through Mount Ellery, its culminating point, then on to the M'Culloch Hills, with Mounts Tanglefoot, Jack, and Lookout, and then south to Mount Raymond. From the M'Culloch Range a narrow ridge runs west to the Brodrigg, to a spot where the river has apparently cut a narrow gorge across it, and then joins a range passing south to Mounts Watt and Buck. These watersheds divide the west portion of the county into three main parts.

(1.) One lying to north of the Coast Range. This is drained by tributaries such as the Bonang and Delegate rivers, flowing away north to join the Snowy.

(2.) An eastern portion, in which the rivers flow mainly south. There are two chief streams—the Cann, on the east; the Bemm with its tributaries, the Erinundra, Ada, Black Watch, Goolengook, and Mackenzie, on the west. In addition there are lesser streams, such as the Yeerung River, and the Cabbage Tree Creek, which turns west, round the base of Mount Raymond, to join the Brodribb.

(3.) A western portion drained by the eastern tributaries of the Snowy, and again divided into a northern and southern part by the ridge running across from the M'Culloch Hills to the Sardine Creek. The principal stream is the Brodribb. North of the ridge this receives the B. A. Creek and St. Patrick River, and south of the ridge it is joined by the Rich and Rocky rivers, and close to the sea by the Cabbage Tree Creek as before said.

The whole country inland from the coast district is extremely well watered, the streams running in deep and often very narrow gorges, which only at intervals widen out into broad valleys, whilst flats of any size are of rare occurrence. North of the Coast Range, on the east side, the country is much more open, the rivers not running in such deep valleys, and the ground gently rising and falling. This difference is ascribed by Mr. Stirling to the difference in the rainfall on the north and south sides of the range. It may, perhaps, be due in part to this, but the reason is more probably to be found, in the main, in the difference in geological formations. Those around Bendoc are of a yellow-red silurian sandstone, without the hard slates which characterize the formations to the south of the range. These sandstones have probably allowed of more equal denudation, and this will account for the gradual falling away of the country from Goon Murk down to Bendoc. On the eastern side, again, around Bonang, the denudation has been more unequal, and the rivers have hollowed out deep valleys: this is associated with the presence of the harder slates, through which, as near Bonang, runs a band of irruptive granite.

ZOOLOGY.

Of the higher forms of life there was, as we were led to believe before leaving Orbost, a remarkable dearth. Kangaroos, wombats, platypus, bandicoots, phalangers, and opossums were the only mammals seen during the whole journey, and these, save the phalangers, were exceedingly few in number, and we went whole days without catching sight of one. This is, of course, partly

to be accounted for by the density of the scrub, into which, in most parts, it was simply useless to penetrate, as progress would be, perhaps, at the rate of a few yards per minute. At night packs of dingoes were to be heard howling in the distance, but none came close to the camp. Various forms of lizards were captured, the large lace lizard being abundant. Snakes were to be found in plenty, the copperhead (*Hoplocephalus superbus*) being the most frequent. The tiger snake (*H. curtus*) was captured, and also the black snake (*Pseudechis porphyriacus*).

The insects collected were very numerous, but a list of them cannot as yet be given. Perhaps as far as insect life is concerned the most noticeable feature is the vast number of ant-hills in every part. Over large areas the mounds of the "jumper" ants are so thick as to call to mind the "mole-hills" at home. A hard search was made for *Peripatus*, but though this has recently been found for the second time in Victoria, and the locality was an eminently likely one, the search was unsuccessful. Amongst molluscs, a species of *Bulimus* is abundant in certain parts, and various forms of chætopod and planarian worms were found: amongst the former, the largest—a perichæte worm—measures 6 in. to 8 in. in length and $\frac{1}{2}$ in. in diameter. Of birds, the following list (kindly supplied to us by Mr. C. Frost) gives the names of those noted. The density of the scrub again interfered very much with the procuring of specimens of birds as of mammals:—

Astur novæ-hollandiæ	Malurus longicaudus
Alcyone azurea	Stipiturus malachurus
Artamus sordidus	Hylacola pyrrhopygia
Pardalotus quadragintus	Sericornis frontalis
Strepera graculina	Acanthiza pusilla
Gymnorhina leuconota	Dacelo gigas
" tibicen	Ninox boobook
Grallina picata	Anthus australis
Graculus melanops	Cincloranthus rufescens
Collyriocincla harmonica	Estrela bella
Falcunculus frontalis	" temporalis
Rhipidura albescalba	Ptilonorhynchus holosericeus
" rufifrons	Meliornis novæ-hollandiæ
Gerygone fusca	Anthochoera carunculata
Petroeca multicolor	Philemon corniculatus
" phœnicea	Melithreptus gularis
Dymodes brunneopygia	Acanthorhynchus tenuirostris
Eopsaltria australis	Manorhina melanophrys
Menura victoriæ	Zosterops cœrulescens
Psophodes crepitans	Climacteris scandens
Malurus cyaneus	Cacomantis flabelliformis

Sittella chrysoptera
 Plectolophus galeritus
 Callocephalon galeatum
 Aprosmictus scapulatus
 Platycercus pennantii

Leucoscarcia picata
 Phaps chalcoptera
 Nycticorax caledonicus
 Turnix varius.

BOTANY.

Exclusive of introduced forms and lower cryptogams, the total number of species collected was over 300. The great majority are the common forms met with on the Dandenong Ranges, in Gippsland, and elsewhere, and the list which follows only contains the names of the rarer and more interesting forms.

The most striking features in the flora are perhaps the occurrence of the cabbage tree palm (*Livistona australis*), and of the waratah (*Telopea oreades*). The existence of this latter species, peculiar to Victoria, was first of all discovered by Baron von Mueller, during his journeying through the Genoa district in East Croajingolong. As first described by Mr. Stirling, it grows to a still greater height in the western part of the country, forming a tree which may reach the height of 50 ft. The same fact was noticed by our party, the tree being exceedingly plentiful, and growing with equal profusion and strength in the deepest valleys and on the tops of the highest hills, as Mounts Goon Murk and Ellery. The lithograph which accompanies this article gives put a poor idea of the tree, but it is the first time it has been figured; there is the usual difficulty of the density of the surrounding vegetation, which hinders a good view being obtained, and to get this rough sketch it was necessary to clear away, with considerable work, the trees around.

Another point of interest is the existence of large examples of the graceful plant, *Humea elegans*, which, in full bloom, we found growing to a height of 20 ft. and upwards. These, in black and white illustrations, such as the one accompanying this article, look rather like white funeral plumes, but in reality the delicate cream-coloured heads tinged with a shade of salmon-pink and darker streaks of umber, are beautiful objects when seen standing out in front of a dense background of ferns, waratahs, and Acacias. Another point of interest is the existence of a species of *Erechthites* (*E. mixta*) found on Goon Murk, and new to Victoria, whilst the *Nageia alpina*, found by the party at an elevation of some 3,000 feet, is the lowest habitat yet recorded for this, which is, strictly speaking, an alpine conifer. Of other forms perhaps the most interesting is the *Prostanthera walteri*, a species peculiar to this part of Croajingolong, and only seen on the tops of two of the highest peaks—Mounts Ellery and Goon Murk. On the latter is a great growth also of the snow grass (*Poa hookeriana*). In both

places the curious spruce-like growth of the waratah, sassafras, and silver wattle, already referred to, was noted.

With regard to negative features, perhaps the most striking is the absence, in this western part, of *Acacia verticillata* and *A. juniperina* (the latter is recorded by Mr. Stirling from further east, on the Cann River), and of beech trees, whilst the blackwoods (*A. melanoxylon*) are comparatively rare, and, when they do occur, are but of small size.

Amongst ferns there is a noticeable absence of *Lomaria capensis* (only once seen), whereas it is elsewhere the commonest of mountain-stream ferns.

In his paper read before the Royal Society, Mr. Stirling has divided the area under discussion into four separate regions, each containing a more or less distinct series of forms. The regions named by him are—(1) the coastal, (2) the inland, (3) the ridges, (4) the sub-alpine.

The coastal region certainly here, as elsewhere, may be regarded as distinct from the rest of the country. At the same time the line bounding it inland can be but vaguely drawn, and it is worth while drawing attention again to the curious little "outlier," as it were, of the inland vegetation found in a little sheltered spot near Lakes' Entrance, and within a stone's-throw of the sea. Perhaps this is a relic of the vegetation when what is now the coastal region was inland—when the land stretched further to the south than now it does. The difficulty is greater when we come to deal with the inland part of the country. Mr. Stirling recognizes two regions between the coastal and the more open table-lands north of the Coast Range, and to which he applies the name of "sub-alpine." Our observations lead to the conclusion that the lists of plants which he gives as characteristic respectively of these two regions are by no means peculiar to either of the two—in fact nearly, if not quite, all of them were found by ourselves growing with equal profusion either in the gullies and river flats or on the ridges, and we find that not more than three regions can be distinguished in the district, viz.—(1) coastal, (2) inland, (3) sub-alpine.

(1.) *The Coastal*.—This extends from the seashore to, perhaps, a distance of some five or six miles inland, and is distinguished by the presence of the following forms. This list includes only forms which do not occur in other parts, and which may hence be regarded as distinctive of this region:—*Leptospermum leavigatum*, *Styphelia richei*, *Acacia longifolia*, variety *Sophora*. *A. suaveolens*, *Banksia integrifolia*, *Calocephalus brownii*, *Aster axillaris*, *Salicornia australis*, *Cakile maritima*, *Cuscuta australis*, *Mesembryanthemum australe*, *M. equilaterale*, *distichilis maritima*, *Atriplex cinereum*, *Chenopodium murale*, *Spinifex hirsutus*, *Stipa teretifolia*, *Tetragona implexiconia*.

(2.) *The Inland*.—This extends from some five or six miles distance from the coast up to the Coast Range, and includes all within this district save, as far as is yet known, the top of the peak of Mount Ellery, and, perhaps, when examined, it will be found to include also the top of the peaks of Mounts Jack, Lookout, and Tanglefoot. This district is characterized (1) by the presence of a great number of forms, some of which are mentioned below, and (2) by the absence of certain forms characteristic of the third region. Some of the principal forms present as these:—*Telopea oreades*, *Aster argophyllus*, *Atherosperma moschatum*, Eucalypts such as *E. amygdalina*, *globulus*, *sieberiana*, &c., *Prostanthera lasiantha*, *Eugenia smithii*, *Drymis aromatica*, *Correa lawrenciana*, *Goodia lotifolia*, *Smilax australis*, *Clematis aristata*, various *Helichrysa*, Acacias, as *A. discolor* and *dealbata*; *Persoonias*, *Panax sambucifolius*, *Pultenea juniperina*, *Senecio bedfordii*, *Lomatia longifolia*, *Bursaria spinosa*, *Pittosporum undulatum* and *bicolor*, *Tristania laurina*, *Comesperma punctatum*, *Wahlenbergia gracilis*, *Scevola hispida*, *Dipodium punctatum*, and such ferns as *Lomaria procera*, *Blechnum cartilagineum*, *Davallia dubia*, *Doodia caudata* and *Gleichenia circinata* and *flabellata*. The vegetation, in fact, is much the same as that of the Dandenong Ranges and Gippsland, with such forms, in addition, as the Waratah and Lilypilli.

(3.) *The Sub-alpine*.—This comprises the high land at the summit and to the north at the Coast Range, between Mount Goon Murk and Bendoc, together with the summit of Mount Ellery. This, in addition to the presence of such forms as the Waratah, the Eucalypts and Acacias, &c., characteristic of the inland region, is distinct from the latter in the presence of the following forms:—*Nageia alpina*, *Prostanthera walteri*, *Scleranthus biflorus*, *Aster alpina*, *Oxylobium procumbens*, *O. alpestre*, *Poa hookeriana* and *Styphelia macraei*.

The following is a list of a few of the rarer plants collected in flower or fruit:—

* <i>Aster stellulatus</i> , <i>var. quercifolius</i> .	* <i>Drymophila cyanocarpa</i> .
* <i>Aster alpigena</i> .	<i>Daviesia corymbosa</i> , <i>var. mimosoides</i> .
* <i>Aster myrsinoides</i> , <i>var. Acacia penninervis</i> , <i>var. Acacia diffusa</i> .	<i>Dampiera stricta</i>
* <i>Bossiaea buxifolia</i> .	<i>Davallia dicksonioides</i> .
* <i>Beckæa Gunniana</i> .	<i>Eucalyptus botryoides</i> .
<i>Choretrum lateriflorum</i> .	<i>Eucalyptus sieberiana</i> .
* <i>Comesperma retusum</i> .	<i>Eucalyptus globulus</i> .
	<i>Erecthites mixta</i> (<i>new for Victoria</i>).

Those marked * are well worthy of artificial cultivation.

- Elæocarpus cyaneus.
 *Elæocarpus holopetalus.
 Echinopogon ovatus.
 *Gaultheria hispida.
 Helichrysum leucosidium.
 *Helichrysum thyrsoides.
 Helichrysum alatum, *var.*
 *Helichrysum cuneifolium.
 Humea elegans (20 ft. high)
 Hierochloa rariflora.
 Haloragis micrantha.
 Haloragis teucroides.
 Hibbertia billardieri.
 Hibbertia obtusifolia.
 Hydrocotyle tripartita.
 *Geranium pilosum.
 Juncus prismatocarpus.
 Kennedya rubicunda.
 Kunzea peduncularis.
 Lomaria alpina.
 Lagenophora gunni
 Leptospermum, *sp.* (60 ft. high).
 Leptorrhynchus nitidulus
 Lomatia longifolia.
 Marianthus procumbens.
 Myriophyllum pedunculatum.
 Nageia alpina.
 Notelæa longifolia.
 Livistona australis.
 *Oxylobium procumbens.
 *Oxylobium alpestre.
 *Oxylobium ellipticum, *var.*
 longifolium.
 *Panax sambucifolius, *var.*
 angustifolius.
- Polypodium scandens.
 *Panax sambucifolius (*type*).
 Pomax umbellata.
 Pultenæa juniperina.
 *Pultenæa stricta.
 *Prostanthera walteri.
 Plagianthus pulchellus, *var.*
 Poa hookeriana.
 Persoonia linearis.
 Persoonia chamæpuce.
 Potamogeton natans.
 Pteris umbrosa.
 Scirpus crassiuscula.
 Scirpus fluitans.
 Senecio dryadeus.
 *Senecio velleioides.
 Sisyrinchium pulchellum.
 *Styphelia Macræi, lanceolata.
 Styphelia montana.
 Styphelia, *sp.*
 Schœnus axillaris.
 Scleranthus biflorus.
 *Scævola hispida.
 Sarcopetalum Harveyanum.
 *Trachymene billardieri, *var.*
 Tristania laurina.
 *Telopea oreades (50 ft. high).
 *Tetratea, *sp.*
 *Tylophora barbata.
 *Restio tetraphyllus.
 Restio gracilis.
 Uncinia tenella.
 Vitis hypoglauca.
 Vitis boudiniana.
 Xanthosia pilosa.

DESCRIPTION OF ILLUSTRATIONS.

The map is reduced from the one issued by the Lands Department, though on the latter only the course of some of the large streams and the direction of certain tracks are indicated, with the position of some of some of the principal peaks. We are indebted to Mr. Stirling for his kindness in forwarding to us a copy of his map, on which the principal ranges of hills were laid down, which was of much use to us during the journey. On the map the track taken by the party is marked in red, and the course of the rivers

and hill ranges indicated as seen during the trip, and as mapped out in the main by Mr. Stirling.

Figure 1 represents a view of the peak of Mount Ellery, and is copied from a photograph by Mr. Walter. We are indebted to R. L. J. Ellery, Esq., F.R.S., for the loan of the photograph.

Figure 2 represents a young cabbage tree palm, which has not yet grown above the tops of the surrounding trees.

Figure 3 represents a group of full-grown palms, growing by the side of Cabbage Tree Creek.

Figure 4 represents a group of *Humea elegans*, some of which attain the height of from 15 to 20 feet. They are growing in a deep gorge at the base of the Coast Range, close to Goon Murk.

Figure 5 represents a waratah (*Telopea orcadoides*), growing at the head of a gully on Mount Ellery.

Figs. 2, 3, 4, and 5 are from sketches by W. B. Spencer.

DESCRIPTION OF A NEW GOMPHOLOBIUM FROM SOUTH-WESTERN AUSTRALIA, WITH NOTES ON OTHER SPECIES OF THAT GENUS.

BY BARON VON MUELLER, K.C.M.G., M. & PH.D., F.R.S. &c.

GOMPHOLOBIUM EATONLÆ.

Branchlets beset with very short grey hairlets; leaves small, sessile; stipules, none; leaflets three, sessile, revolute along the margin, thus linear-cylindric, recurved-pointed outside somewhat rugulous and from minute sharp elevations rough; flowers axillary, solitary; their stalks short, glabrous, bearing early deciduous blunt bracts at the base and very small acute bracteoles at or near the middle; calyx glabrous outside; its lobes semilanceolar, only about as long as the tube, the upper two slightly shorter and somewhat oblique, all partially beset with minute hairlets inside; upper petal renate-orbicular; lateral petals semihastate-elliptic; lower petals almost semiorbicular-ovate, black-purplish, the others red-purplish, all glabrous and with a conspicuous stalklike narrow base; anthers ellipsoid, quite pale; style glabrous, flattened; stigma minute, ovulary glabrous; ovules few.

Near the eastern sources of Swan-River; Miss Martha Eaton.

G. Baxteri, to which our new plant is nearest allied, differs from it in the development of conspicuous stipules, in generally more slender leaflets, in more deeply cleft calyces with a thin vestiture also outside and with somewhat sticky lobes much thickened along their margin, in petals of seemingly lighter colour with always shorter stalklike base, in a capillary-thin style and in the ovulary being outside beset with hairlets. As regards fruit

these two plants may also be different, but those of *G. Eatonie* are as yet unknown.

G. Baxteri flowers already, when only a few inches high, then being even of erect growth. Maxwell found it also at Cape Arid, but it has not been refound at K. G. S., so that Baxter must have gathered his plant farther eastwardly. As many as nine flowers may be noticed at and near the summit of a branchlet; the calyces are never quite glabrous nor sessile.

G. amplexicaule and *G. ovatum* are not specifically distinct; the former is the best name of the two. Lake Muir, Porongorup and Geographe-Bay (F. v. M.) Cape Leeuwin (Mrs. M'Hard), Bremer-River (Webb). Semi-herbaceous; leaves occasionally to two inches long; upper petal to nearly one-inch broad; seeds ellipsoid, pale-grey. On Stirling-Range I gathered a variety with linear-lanceolar leaves.

G. obcordatum, found at Boxvale by Miss Julia Wells, at Lake Brown by Mr. E. Merrall. Leaflets usually cuneate and retuse, but never really abcordate; hence the specific name might be changed into *G. Turczaninowii*; stalklets occasionally very much shortened.

G. marginatum is sometimes fruit-bearing already at a finger's length. Said to be poisonous. Geographe-Bay and Blackwood-River (F. v. M.), Bremer-River (Webb), eastern sources of Swan-River (Miss Eaton), Pallinup-River (Miss Cronin), between Esperance-Bay and Fraser's Range (Dempster).

G. aristatum, Serpentine River (F. v. M.)

G. tomentosum, Upper Greenough- and Irvine-River, also towards Shark's Bay and at Geographe-Bay (F. v. M.), Israelite-Bay (Miss Brooks), Drummond's collection 202. The exact relation of *G. capitatum*, *G. Preissii*, and even *G. burtonioides* to *G. tomentosum* requires yet to be better ascertained, I being sceptic about their specific validity.

G. viscidulum, near Stirling's Range (Hon. J. Forrest), near Fraser-Range (Dempster). Occasionally somewhat beset with hairlets; leaflets always repressed to the carinular line; fruit oblique-globular, hardly of quarter-inch measurement.

G. Shuttleworthii, Preston- Collie- and Blackwood-River (F. v. M.), Irvine-River (Mrs. Pries), near Mount Churchman (Young) Flowers occasionally solitary. Maxwell collected on the Gordon-River a variety with elongated flower-stalklets. A closely allied plant, perhaps conspecific, was noticed by the writer on Mount Blackwood, remarkable for having the leaves recurved at the upper end; the fruit of this always broader than long.

G. venustum attains a height of 3 feet at Stirling-Range (F. v. M.); occurs also on the Bremer-River (Webb), at Cape Leeuwin

(Mrs. M'Hard). Lower portion of the funicle brown, upper dark and narrower ; seeds ellipsoid, grey outside.

G. Knightianum, Porongorup and Stirling's Range (F. v. M.), Cape Leeuwin (Mrs. M'Hard), Mount Ridley and Russell-Range (Dempster), Israelite-Bay (Miss Brooks), sources of Swan-River (Miss Sewell). Flowering already at a height of three inches, though attaining to three feet.

G. polymorphum extends northward to the Greenough-River (C. Gray) ; found by the writer also on the Warren-River and Stirling-Range. Two leading varieties may be distinguished—(1) the typical, with floxuous or even twining stem and branches, generally somewhat lengthened leaf-stalks, often upwards dilated and occasionally there indented leaflets and mostly purple petals ; (2) the variety best represented by *G. tenue* of Lindley, with rather straight stem and branches, generally shortened leaf-stalks, very narrow leaflets and often yellow petals. (The tendency of twining is also very uncertain in *Cheiranthra linearis*). Occasionally some leaflets occur quite of a cordate-deltoid form ; fruit always considerably longer than broad, its pericarp less firm and outside less dark than in most other species ; ovules occasionally reduced to nine ; seed outside pale or dark brown, but never black, as in some species of the allied genus *Burtonia*.

G. pedunculare (Loddiges), Hume-River (M'Kibbon), Delegate-River (Merrall), Genoa (Baeuerlen), Upper Ovens-River (T. C. Martin), Tumut (J. R. Garland).

G. latifolium, Latrobe-River (Howitt), Snowy-River (Grove), Ulladulla (Baeuerlen). Stalklets in some specimens hardly as long as the calyx.

G. grandiflorum, South to Ulladulla (Baeuerlen). The leaflets may occur in some individual plants quite broadly-linear and blunt.

G. minus, Barwon-River (J. Adcock). Branches not rarely almost glabrous from the commencement ; fruit considerably longer than broad. Mr. Baeuerlen gathered on the sources of the Clyde, at 3,500 feet elevation, a plant not distinguishable, except in elongated pedicels.

G. uncinatum is often procumbent ; branches slightly verrucular-rough ; the lower petals quite dark-coloured towards the upper end. The plant recorded from Paramatta is the following species.

G. glabratum, Lower Clyde (Baeuerlen). Branches slightly verrucular-rough ; fruit obliquely ovate, sphaerical.

G. pinnatum, Clarence- and Richmond-River (Chandler).

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— OF —

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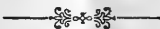
CONTENTS.

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	41
THE ANNUAL CONVERSAZIONE	45
DESCRIPTION OF SOME NEW AUSTRALIAN PLANTS. BY BARON VON MUELLER, K.C.M.G., M. AND PH. D., F.R.S. ...	54
REVIEW—GEOLOGY OF TASMANIA	56

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MELBOURNE.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th April, 1889.

Professor W. Baldwin Spencer, B.A., vice-president, occupied the chair, and about 40 members and visitors were present.

A letter was read from the Lands Department, stating that, in response to the Club's request, about 8,500 acres had been added to the forest reserve in the parishes of Jirrah and Tabbara (Cabbage Tree Creek district).

A letter was read from the hon. secretary of the sub-committee of the Field Naturalists' Section of the Royal Society of South Australia on the protection of the native fauna and flora, with reference to the great destruction of young kangaroos for the sake of their skins, which are perfectly useless for commercial purposes if under 1 lb. in weight. A copy of a letter from a leading tanner in the United States was enclosed, and the committee advocated the protection of kangaroos to a certain extent. The matter was postponed until the next meeting, in order to make further inquiries.

The hon. librarian reported the receipt of the following donations to the library :—“Census of the Molluscan Fauna of Australia,” &c., and “Plants of the Lake Eyre Basin,” &c., by Professor R. Tate, F.G.S., from the author ; “Australian Butterflies,” by Mr. A. Sidney Olliff, F.L.S., from the Natural History Association of New South Wales ; “Proceedings of Linnean Society of New South Wales,” vol. iii., second series, part 4, from the Society ; “Journal of Pharmacy,” March, 1889, from the Society.

The hon. secretary reported that the excursion to Williamstown Back Beach had been well attended, but that the results, partly owing to the state of the tide, had not been particularly noteworthy.

On a ballot being taken, Mrs. J. F. Irvine, Messrs. Walter D. Davies, Jas. Tait, and H. W. Tisdall were duly elected members of the Club.

PAPERS READ.

1. By Mr. D. Best, entitled “A Holiday Trip to North Mirboo.” This was an interesting description of two or three days' collecting in the North Mirboo district, which, on the whole, he considers a good district for naturalists. He obtained several good species of coleoptera and phasmidæ. He referred

to the wanton destruction of birds, ferns, trees, &c., everywhere observable, which created some little discussion, and a resolution was carried calling the attention of the Police Department to the non-enforcement of the Game Act in the country districts.

2. By Mr. F. G. A. Barnard, entitled "Notes on the Victorian Butterflies." The author briefly referred to the various species of butterflies recorded for Victoria, giving their classification and important characteristics. He mentioned that about 80 species had been taken in the colony, but the greater number were confined to the higher parts of the country, while only about 20 were common near Melbourne. He exhibited about 25 species in illustration of his remarks.

The following were the principal exhibits of the evening. By Mr. D. Best.—Coleoptera, phasmidæ, &c., from Mirboo, in illustration of his paper. By Mr. F. G. A. Barnard.—Victorian butterflies, in illustration of his paper. By Mr. C. French, F.L.S.—Rare Victorian beetles, from the Wimmera district. By Mr. C. French, jun.—Eggs of Blue-faced Honey-eater, from New South Wales, Peaceful Dove, from Victoria, Strong-billed Honey-eater, Black-capped Honey-eater, Sombre-coloured Sericornis, and Owlet Nightjar, from Tasmania. By Mr. T. S. Hall.—Pericosmus, from Cheltenham. By Mr. G. Lyell.—Butterflies, *Xenica limbarra*, *X. Kershawi*, and *Heteronympha Banksii*, from Dandenong Ranges. By Baron F. von Mueller, K.C.M.G.—Rare orchid, *Pogonia flabelliformis* (Lindley), from North-west Australia. By Mr. J. Searle.—Orchid, *Eriochilus autumnalis*, in flower, grown by exhibitor.

After the usual *conversazione* the meeting terminated.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th May, 1889.

The president, Mr. A. H. S. Lucas, M.A., B.Sc., occupied the chair, and about sixty members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library:—"Quarterly Mining Reports, December, 1888," from the Mining Department; "Fourth Supplement to Census of Australian Plants," by Baron von Mueller, K.C.M.G., from the Government Botanist; "Proceedings of Royal Society of Queensland," vol. vi., part 1, from the Society; "The Gastropods of the Older Tertiary of Australia," part 2; and "Census of Fauna of the Older Tertiary of Australia," by Prof. R. Tate, F.G.S., from the author; "The Kangaroo, Commercially and Scientifically Treated," by Mr. S. Kennon, from the author; "Journal of Pharmacy," April, 1889; and "Nature," vols. i. to xxvi., from Mr. J. Smith, to whom a special vote of thanks was accorded, on the motion of Messrs. Coghill and French, F.L.S.

The hon. secretary reported that a party of the members had

paid a visit to the Zoological Gardens, Royal Park, where, under the guidance of Mr. D. Le Souëf, assistant director, they had spent a very interesting afternoon.

On a ballot being taken, Miss S. W. Cochrane, Mr. G. D. Carter, M.L.A., Messrs. Harold Carter, R. E. Falls, Jno. Shepherd, and W. G. Turner were duly elected members of the Club.

Papers for future meetings were promised by Mr. C. French, F.L.S., "On the Geographical Distribution of the Australian Buprestidæ," and Mr. P. H. Anderson, "Notes and Experiments on Common Insects."

The letters received from the sub-committee of the Field Naturalists' Section of the Royal Society of South Australia, on the question of the protection of kangaroos, were then read, and created considerable discussion. Mr. S. Kennon, a visitor, at the request of the chairman, made some very interesting remarks on the subject, principally from a commercial point of view, and exhibited samples of leather made from the skins of various native animals, in order to show the great value of the kangaroo hide. Messrs. Le Souëf, Halley, H. Kennon, Coghill, Gatliff, and others, spoke on the question, and it was resolved, on the motion of Messrs. Lucas and Coghill—"That the Club take no steps in the matter of the protection of kangaroos, but that further efforts be made with reference to the reservation of Wilson's Promontory, using its advantages as a reserve for the protection of kangaroos, &c., as a leading feature."

PAPERS READ.

1. By Mr. C. French, jun., entitled "Notes of a Collecting Trip to the Swan Hill District." The author gave an interesting account of a few days spent in the vicinity of Benjeroop, giving some notes on the principal birds and plants which came under his notice.

2. By Mr. T. G. Sloane, entitled "Contributions towards a Local List of the Coleoptera," found at Mulwala, Murray River, N.S.W. This, after a short introduction, consisted almost entirely of a list of the species, and was taken as read, and ordered to be printed.

The hon. secretary read a note from Mr. T. G. Sloane, stating that he was anxious to get Melbourne specimens of the genera *Promecoderus*, *Larticus*, and allied genera of the family *Carabidæ*, for comparison with those of his district, and offering to return them, or send other species in exchange.

Owing to the proximity of the annual *conversazione*, the principal exhibits of the evening were:—By Mr. P. H. Anderson, a young black snake (alive), and by Mr. H. Kennon, a bat (*Molossus Australis*) alive.

After the usual *conversazione* the meeting terminated.

The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th June, 1889.

The Rev. J. J. Halley was voted to the chair, and about fifty members and visitors were present.

A letter was read from the Field Naturalists' Section of the Royal Society of South Australia, stating that the protection of kangaroos and opossums for a limited period during each year had been promised by the Government of that colony.

The hon. librarian reported the receipt of the following donations to the library:—"Proceedings of the Royal Society of New South Wales," vol. xxii., part 2, from the Society; "Proceedings of the Linnean Society of New South Wales," second series, vol. iv., part 1, from the Society; "Journal of New York Microscopical Society," vol. v., part 2, from the Society; "Fifth Annual Report for 1887-8 of the Field Naturalists' Section of the Royal Society of South Australia," from the Section; "Annual Report, 1889, Bendigo Science Society," from the Society; and "Journal of Pharmacy," May, 1889.

The hon. secretary read a report by Mr. T. S. Hall, M.A., of the Club excursion to Mornington on Friday, 24th May (Queen's Birthday), when a very enjoyable and interesting day was spent at the oligocene beds in the vicinity of Balcombe's Bay. The beds consist of a stiff blue clay, and are full of fossils, many of which, however, are very delicate, and require special treatment. Among the principal fossils obtained were specimens of *Placotrochus deltoides*, *Conosmilia*, and other solitary corals; *Spatangidæ* and *Echinidæ*; *Pecten*, *Emarginula*, *Siliquaria*, *Natica*, *Cypræa contusa*, *C. eximia*, *C. platyrhynca* (?), *Trivia avellanoides*, *Voluta Hannafordi* (fragments), *Conus* (four species), *Fusus*, *Murex velificus*; also numerous polyzoa, and other fossils not identified. Living specimens of *Pholas* were found in the clay between the tide marks.

On a ballot being taken, Mr. H. H. Baker, Master C. N. Carter, Dr. Croke, Mr. Jas. Love, and Dr. Snowball were duly elected members of the Club.

Messrs. C. Frost and H. Kennon were elected to audit the Club accounts for the year 1888-9.

Papers for future meetings were promised by Mr. E. M. Cornwall, on "Collecting Near Home," and Mr. C. French, F.L.S., on "Australian Buprestidæ," part 2.

PAPERS READ.

1. By Mr. C. French, F.L.S.—"On the Geographical Distribution of the Australian Buprestidæ," part 1. This was principally introductory, giving some suggestions as to how insects may become distributed from their original habitat. The author

asked the co-operation of other collectors in making a complete list of the Victorian buprestidæ, and trusted that other members would take up other orders and families of insects.

2. By Mr. H. T. Tisdall, F.L.S., entitled "The Fungi of the Season." The author gave a brief account of the more prominent species he had observed this season, which he said was a most favourable one, and mentioned that he had obtained 27 species of fungi, unknown to him, recently. He also exhibited a series of drawings and specimens in illustration of his remarks.

The principal exhibits of the evening were:—By Mr. F. G. A. Barnard.—*Cypræa eximia*, and other fossil shells, corals, &c., from Mornington; also samples of the material of the fossil beds, and lignite, from same locality. By Mr. A. Coles.—A Bronze Ibis, from Boort; nine eggs, portion of seventy-five taken from a boa constrictor, length $17\frac{1}{2}$ feet, girth 23 inches, from Ceylon, which died in Melbourne. By Mr. C. French, F.L.S.—Rare fungus, *Marasmius equicrinis* (F. v. M.) from St. Patrick's River, East Gippsland, recorded only once previously from Victoria. By Mr. C. French, jun.—Eggs of Orange-winged Sitella, White-headed Stilt, Owlet Nightjar, and Satin Bower-bird, from Victoria, Spangled Dronga-Shrike (new), from North Australia, and Strong-billed Honey-eater, from Tasmania. By Mr. H. Grayson.—Series of botanical preparations for the microscope. By Mr. R. Hall.—Specimens of Orange Gorgonia, oysters, crabs, &c., dredged off the Ninety-mile Beach, by Government steamer *Lady Loch*, May, 1889. By Mr. T. S. Hall.—*Murex* sp., and other fossils, from Mornington. By Mr. H. Kennon.—Fossils from Mornington. By Mr. G. Lyell.—Queensland lepidoptera. By Baron F. von Mueller, K.C.M.G.—Dried specimens of *Oldenlandia psychotrioides*, *Fagraea alteniana*, *Morinda hypotephra*, *Symplocos Kelleri* (new plants), collected by Mr. W. Sayer, at Mount Bellenden-Ker, North Queensland, described by exhibitor; also new plants from Port Darwin and North Queensland. By Mr. H. T. Tisdall.—Twelve coloured drawings, in illustration of his paper.

After the usual *conversazione* the meeting terminated.

THE ANNUAL CONVERSAZIONE.

THE ninth annual *conversazione* of the Club was held at the Freemasons' Hall, Collins-street east, Melbourne, on Thursday evening, 16th May, 1889, when there was, as usual, a large attendance of the members and their friends, over 700 ladies and gentlemen being present.

The president, Mr. A. H. S. Lucas, M.A., B.Sc., delivered the

annual address in the upper hall, which was filled by an attentive audience. He said—

LADIES AND GENTLEMEN, MEMBERS OF THE FIELD NATURALISTS'
CLUB OF VICTORIA,

We have now completed the ninth year of existence of our Club, and have, as usual, to rejoice over a vigorous and successful session. Fortunately with us there is no party of opposition, and our work goes on free from hindrance by obstructionists. We have in consequence to record good progress in all departments of our work, and are able to congratulate ourselves upon the thoroughly healthy condition of our society.

We are happy in that we have to mourn over no losses to our membership through death this year. Our accessions, too, exceed our losses from other causes. We are especially glad to note an increase of strength amongst our younger members, which augurs well for the future of the Club.

The monthly meetings have been well attended. We have had much pleasure in welcoming the presence at some of them of our hon. members, Sir James Hector and Prof. Tate, and of a number of other distinguished visitors, attracted to Melbourne by the Centennial Exhibition and by the Medical Congress.

The papers read at these meetings have covered a wide range of topics, and indicate activity in many directions. We have been favoured with communications from two of our hon. members. Rev. Julian E. Tenison-Woods has contributed an epitome of the geology of Arnhem's Land, "which, though discovered over 300 years ago, has only lately been explored." And Prof. Ralph Tate has rescued the *Voluta undulata* group of shells from the confusion into which the nomenclature had fallen. The Baron von Mueller has continued his descriptions and notes of Australian plants. Amongst the new species described are two Victorian plants—a new *goodenia* from the Wimmera and the Murray River flats, and a new orchid from Eastern Gippsland. The number of Victorian vascular plants, *i.e.*, the flowering plants, and the ferns with their allies, now recorded exceeds 1,900. The Rev. F. R. M. Wilson has made further observations on Victorian lichens, and has described a number of new species. Mr. W. M. Bale has given us a systematic list of Victorian hydroids, and Mr. Gatliff has completed his catalogue of Victorian marine shells. In Mr. A. J. Campbell's fifth supplement to his "Oology of Australian Birds" we have descriptions, for the first time, of the eggs of the Spotted Owl and the Spotted Water Crake (obtained in Tasmania by Mr. E. D. Atkinson), of the Spangled Drong-shrike and the Black-cheeked Noddy Tern from Queensland, and of other birds. Mr. C. French has written on the zoology of the Lake Albatutya district, and on the natural history of the Western Wimmera, and Mr. C. French, jun., on a trip to the Upper

Murray. Mr. Barnard and Mr. Brittlebank have furnished interesting observations on the habits of insects, and the former also read a paper giving a succinct account of our Victorian butterflies. A similar paper by Mr. Lucas dealt with the Victorian sharks. Mr. F. R. Godfrey gave an account of the delicate pelagic organisms met with and preserved by him during a long voyage in a sailing vessel. In "Recollections of my Residence in N.W. Australia" the customs and manners of the aboriginals are delineated. Two of our members have visited neighbouring colonies during the year, and we have the result of some of their observations in Mr. Topp's botanical and geological notes on a visit to New South Wales and Mr. Barnard's vivid description of the Jenolan Caves.

The important excursion of the year was that to Eastern Gippsland. The party was small, only five members taking part, as compared with the 26 who explored King Island last season. Those who went to Croajingolong were Prof. Baldwin Spencer, Mr. Charles French, F.L.S., and Messrs. Frost, Searle, and Jackson. A narrative of the trip, containing full particulars of the objects noted in this picturesque and but little known district, appears in the current number of the *Victorian Naturalist*, the journal of our Club. I am happy to be able to add that the issue, which is a double number, is illustrated by a double-page map, and by five lithographed plates. We are especially indebted to Professor Spencer for enabling us to realize from his beautiful pencil and water-colour sketches some of the features of this romantic corner of Victoria. The physiognomy of the vegetation, to borrow a phrase from Humboldt, is to be conceived from the occurrence of cabbage palms "running up to a height of more than 100 feet," of waratahs to a height of 50 feet, and of the elegant composite, *Humea elegans*, to 15 or even 20 feet. The importance of preserving portions of the district from occupation, in order that this gorgeous native vegetation might gladden the eyes of posterity, was so strongly felt by the members of the Club that a deputation was appointed to wait upon the Minister of Lands, and to urge him to make a suitable reservation. In response to this application, Mr. Dow has been pleased to add about 8,500 acres to the forest reserve in the parishes of Jirrah and Tabbara, in the Cabbage Tree Creek district. It is to be hoped, therefore, that the noble palm trees, the only specimens of their order which are indigenous to Victoria, will be secured from destruction.

The year has shown very greatly increased activity amongst workers in biology and geology in Victoria. Our veteran Professor M'Coy has brought out Decades XVI. and XVII. of the "Prodromus of Victorian Zoology," and amongst other forms elucidated are five species, representing as many genera, of those

curious snake-like lizards, of which the English blind-worm is a familiar example, and which, though on the whole more closely related to the lizards, go a long way towards bridging over the gap between the lizards and the snakes. Professor Spencer has completed his "Monograph on the Giant Gippsland Earth-worm," published by the Royal Society of Victoria as part 1 of its "Transactions." It has been received with warm praise, and even with a touch of envy, by the English reviewers. Mr. Dendy has published an account of a new and singular genus of polyzoa, in which the polypes incrust themselves with aggregations of small particles of sand, and of which two species have already been found in Port Phillip. He has also continued his work on the "Sponges," contributing papers, both systematic and histological, to the Royal Society of Victoria, the "Annals and Magazine of Natural History," and to the Q.J.M.S. Results of Dr. Macgillivray's work on the polyzoa appear in the "Prodrusus of Zoology;" and of Mr. Bale's on the hydroids, in the "Proceedings of the Linnean Society of New South Wales." The work of the Port Phillip Biological Survey by the Royal Society has been continued, and reports have been received from specialists on the Crinoids, the Mollusca, and the fish of Port Phillip. Mr. Bracebridge Wilson has devoted his summer, as usual, to work on the marine fauna of the deeper waters of the bay, and we may look for fresh results without fear of disappointment.

I have been favoured by a statement of botanical progress in the following letter from the Baron von Mueller:—

1st May, 1889.

In accordance with your wishes, dear Mr. Lucas, I beg to explain that an "Atlas of Australian Salsolaceæ" is under progress in my department, by the aid of Mr. G. Luehmann, the drawings and lithography by Mr. R. Graff. The object is, to enable pastoralists to ascertain with ease and exactitude the scientific names and characteristics of the rather more than one hundred species of Australian salsolaceæ mostly peculiar to this part of the world. It can be easily foreseen that methodic re-dissemination will have to be resorted to on the runs, to keep up the growth of the most nutritious of these salt-bushes for the herds and flocks, irrespective of the desirability to raise, as new for any suitable locality, such of these salsolaceæ as do not originally exist there. The volume will contain about a hundred plates, will be in conformity with those of the "Myoporinæ" and "Acaciæ," and will likely be finished by the end of this year. I hope, also, to resume, as a bye work, the elaboration of the Papuan plants, and am further eager to finish early, also, the twelfth volume of the "Fragmenta." The supply of the "Census of Australian Plants" being exhausted, a new edition, comprising all supplements, also, since 1882, can, I trust, be early brought out, and in a slightly extended form. That the "Key I." and the seventh (enlarged) edition of the "Select Plants" did appear since your last address you will be aware.—Regardfully yours,

FERD. VON MUELLER.

In Palæontology there is also something to report. Some of our Victorian caves have been opened up, the stalagmitic floor removed, and the bones found beneath preserved. We shall

await with interest Mr. Stirling's account of these presumably pleistocene relics. Most present will probably have read descriptions of the scientific exploration of British caves, and will remember how abundant remains were found of animals long extinct in Britain. Some of the caves proved to have been dens in which hyænas lived, and to which they brought bones, and assuredly also flesh, of mammoth, rhinoceros, hippopotamus, bison, bear, and deer. Others furnished bones and other tokens of occupation or use by man. Something has been already learnt of the predecessors of the present fauna of Australia from a study of the Wellington and other caves in New South Wales, and some of the Tasmanian caves yielded treasure when explored by Mr. Wintle, and we anticipate that cave-hunting will prove as fascinating and as successful in Victoria. A number of the fossils from the Muddy Creek tertiary beds in the Western District have been figured by Professor Tate. But the most important work in this subject during the year has been accomplished in an older formation. One of our members, Mr. George Sweet, has made an extensive examination of the old red sandstone rocks of the Mansfield area. Backed by the Government, his excavations were made on a large scale, and many tons of stuff—the stuff being rock of the hardest description—were removed under his superintendence. His search has been rewarded by the discovery of many fish and plant remains. Some of the fish were in a state of capital preservation, and were so carefully and skilfully relieved of the matrix by Mr. Sweet that Professor M'Coy, who has undertaken the description of the most important of the fossils, is enabled to identify the forms previously known, and to prepare excellent figures of the new species. Mr. Sweet read a paper before the Victorian Royal Society, in which he gave in full the relations of the very numerous beds, and described the mineral character of each, together with the fossils each contained. We are glad to learn that Mr. Sweet purposes to continue his investigations, and to examine the similar beds in other portions of the area.

Such, then, are the principal additions to our knowledge of Victorian natural history made during the year. It is one function of our Society to bring the gains won by those who are prosecuting original researches before our members and the public. But this is by no means our sole duty—to be keen only for that which is brand new, fresh from the study or the laboratory, rejoice though we do to welcome all advance, and to laud all achievements, in pure science. But the great majority of the members of our Club are banded together for the systematic enjoyment, as much as for the systematic study, of Nature. We may have wrestled with the problems of geology, but we have learned to love the forms wrought out by earth-sculpture, the

grandeur of mountain range or sea cliff, the soft beauty of valley or glade. We may have puzzled over the "Key" to work out the name and place of the plants we have gathered, but we remember them best as they grew interwoven in some nook on the moor or in the forest. We may have toiled with scalpel or with microscope to make out the structure of land or sea animals, but we yet have sympathy with bright eye of bird, quick turn of lizard, hum of bee, or chirp of grasshopper, the humble life of the worm in the soil, and the mysteries of the lives lived beneath the waves. And how much we have gained this year in this way we cannot estimate. We have treasured up views of broad outlines, of noble landscapes, and pleasant pictures of detailed beauty; we have filled our common paths in the country with pleasing associations; and we have felt ourselves, and perhaps succeeded in imparting to others, a living interest in the wonderful and beautiful forms of life which exist in such variety around us. And if we had made but this record for the year, who shall say that it has been spent in vain? For it is a great thing to acquire and to communicate to others a knowledge, but, I think, a greater still to acquire and diffuse amongst one's fellows a love, of Nature.

The Rev. J. J. Halley then delivered an interesting lecture, entitled, "Short Stories of Strange Lives." He rapidly sketched the most striking features of the habits of parasitic animals of several classes, and gave an account of some of the more remarkable life-histories. He concluded by giving at length a description of a parasite he had often observed occurring in the muscles and other parts of the common flat-head. He said that nearly every individual he had examined had been infested with the parasites, but that fortunately the *cooked* fish were none the worse for their presence.

A vote of thanks to the President for his address, and to Mr. Halley for his lecture, was moved by the Baron von Mueller. The Baron referred, in the course of his remarks, to the meeting of the Australasian Association for the Advancement of Science, to be held in Melbourne in the summer, and hoped that the Field Club would be well represented by members and papers. He recalled, in an exceedingly interesting manner, his recollections of a meeting of the German Association in 1843. At that meeting were present, amongst others, Oersted, Schleiden, Rammelsberg, Berzelius, and he (the Baron) had never lost the effect of the stimulus which association with such men had afforded. He trusted that young members of the Australasian Association would look back with similar feelings to the meeting at Melbourne.

The vote was seconded by Rev. Dr. Bevan, who congratulated the Club on the hearty welcome they accord to young people.

The main hall was entirely devoted to the exhibits by the members of the Club, and which comprised a large number of both rare and interesting specimens in all branches of natural science. Some idea may be formed of the display when it is remembered that over 1,000 square feet of table space and 300 square feet of wall space were required to accommodate the wants of the exhibitors. The body of the hall was occupied with a series of long tables, with shorter tables across the centre; whilst round the walls were short tables and light wooden stands, covered with dried plants, &c., the stage being occupied with a fine group of Victorian ferns, in pots, from the Botanical Gardens, and several exhibits of live Australian animals and birds, which proved an interesting feature in the *conversazione*.

The following is a list of the exhibitors, with particulars of their more important exhibits:—

Mr. P. H. Anderson, Surrey Hills.—Skull, bones, hide, &c., of dugong (*Halicore Australis*), from North Queensland; collection of geological specimens; specimens of insect anatomy and architecture, with diagrams; several microscopes, with insect dissections and other objects.

Mr. H. H. Baker, Melbourne.—Microscopes, with rare and interesting objects, such as rare diatoms, butterflies' eggs, fungi, &c.

Mr. F. G. A. Barnard, Kew.—Cases of Victorian lepidoptera, case of Queensland butterflies, case of Queensland beetles, a Delicate Owl (mounted), Victorian and other ferns (in pots), growing specimens of *Azolla filiculoides*; also, a live Rosella Parrot (*Platycercus eximius*).

Mr. D. Best, Hawthorn.—Pair of Australian Bee-eaters (*Merops ornatus*), mounted, and bird-skins, from Mulwala, New South Wales; cabinet drawers of Australian coleoptera; case of Australian hymenoptera, and a number of Victorian ferns (in pots).

Mr. G. F. Chamberlin, South Yarra.—A collection of minerals; photographs of Jenolan Caves, Blue Mountains, the Terraces, New Zealand, Gembrook Ranges, Victoria, &c.

Mr. A. Coles, Melbourne.—A large collection of mounted animals, birds, &c., comprising platypus, English otter, porcupine, lion monkey (Ceylon), orang-outang (Borneo), stags' heads (Victoria), Straw-necked Ibis, Grass Owl, Hooded Dottrell, King Quail, Plain Plover, Wedge-tailed Eagle, White Goshawk, Powerful owl, Horned Owl (America), Crested Pigeon (Ceylon), alligators (Queensland), Cobra (Ceylon), &c.

Mr. E. M. Cornwall, South Yarra.—Frame of sea-weeds, &c.; mounted birds and eggs.

Mr. A. Dendy, M.Sc., University.—Live specimens of *Peripatus leuckartii*, from near Ballarat, only recently recorded for Victoria.

Mr. J. E. Dixon, Oakleigh.—Habitations of various Victorian insects, viz. :—Cocoons of moths and micro-lepidoptera, nests of wasps, &c., nests and egg-cocoons of spiders; sea-weed, &c., from New Year Island, Bass' Straits.

Mrs. Flatow, Carlton.—Mounted ferns and sea-weeds; sea-weeds, sponges, shells from Australia and New Zealand; fossil ammonites from Morley Main coalpits, Leeds, England.

Mr. J. Foulke, South Yarra.—A pair of live Southern Stone Plovers.

Mr. C. French, F.L.S., South Yarra.—Case of Australian and exotic buprestid beetles; 100 sheets of dried plants, collected on Croajingolong expedition; water-colour drawings by Miss M. Scott, of "My Camp at Lake Albacutya," and "Sand-hills, Pijick, Lake Albacutya."

Mr. C. French, jun., South Yarra.—Case of rare eggs of Australian birds.

Mr. C. Frost, Kew.—Collection of sixty species of Victorian spiders, preserved in fluid; pair of live bronze-winged pigeons (*Phaps chalcoptera*).

Mr. J. H. Gatliff, Collingwood.—Two cabinet drawers of marine shells, family Volutidæ, genera Cymbium, Melo, Voluta, and Lyria, comprising fifty species and 130 specimens.

Mr. W. R. Guilfoyle, F.L.S., Botanical Gardens.—Collection of about forty species of Victorian ferns (in pots), comprising *Adiantum diaphanum*, *Cyathea Boylei*, *C. medullaris*, *Davallia pyxidata*, *Pteris tremula*, &c.

Mr. R. Hall, Williamstown.—Victorian birds and birds' eggs.

Master Hellicar, Hawthorn.—Mounted specimens of Porcupine Ant-eater, Nankeen Night Heron, Egret, Crested Grebe, and snipe; case of Australian birds' eggs; case of British sea-birds' eggs.

Mr. G. R. Hill, Windsor.—Nest of American trap-door spider.

Master H. F. Hill, Windsor.—Six cabinet drawers of Victorian lepidoptera.

Master G. F. Hill, Windsor.—Three cabinet drawers of Victorian coleoptera.

Mr. E. E. Johnson, Northcote.—A large collection of natural history objects of various kinds—300 specimens of Australian birds, including Cape York Sun-bird, Gilbert's wren, Cat-bird, Delicate Owl, Letter-winged Kite, Yellow-eared Cockatoo, White-tailed Kingfisher, &c.; case of swallow-dicœums (nest, young male, and adult pair); case of birds' eggs; collection of nests; Victorian snakes, lizards, &c.; corals, sea-urchins, &c.; fossils from Victoria, New South Wales, Tasmania, England and Japan;

diamonds, &c., from Kimberley, South Africa ; peat from Mornington, Victoria ; fungi, lichen, grasses, &c.

Mr. G. A. Keartland, North Carlton.—Case of Victorian birds (mounted) ; collection of Victorian birds' eggs ; live parrots, and opossum.

Mr. H. Kennon, Hawthorn.—Collection of minerals, &c , over 1,000 specimens ; twenty-five species of corals.

Mr. W. Kershaw, Windsor.—Four drawers Australian lepidoptera ; two drawers of foreign lepidoptera ; two drawers of foreign coleoptera ; case of New Guinea bird-skins.

Mr. S. Lambie, Kew.—Sandstone showing casts of fossils, from Heathcote ; sand-encrusted roots, from Anglesea River.

Mr. T. A. Forbes-Leith, Northcote.—Birds from Ceylon, &c. ; birds captured in Red Sea ; flying fish, from Indian Ocean ; collection of photographs of various races of mankind.

Mr. D. Le Souëf, Royal Park.—Case with pair of *Apteryx Mantelli* and egg from New Zealand, young platypus (in spirits), giant sponge, live carpet and diamond snakes, live clyodius lizards.

Master R. Long, Richmond.—A live opossum, skeletons of opossums ; seal, captured in Hobson's Bay (mounted).

Mr. A. H. S. Lucas, M.A., B.Sc., South Yarra.—Herbarium specimens of British wild flowers ; Victorian fish, shells, and starfish.

Mr. G. Lyell, jun, South Melbourne.—Two cases of Victorian butterflies (*Nymphalidæ*, *Lycænida*, *Hesperidæ*) ; case of moths.

Mrs. W. Martin, North Brighton.—Sixty species of Victorian mosses (including eight new to science).

Baron F. von Mueller, K.C.M.G., South Yarra.—Australian plants, collected by Robert Brown in 1802-5 ; new Australian plants (including *Dammara Palmerstonii*), from Upper Johnstone River, North Queensland ; prepared and mounted European fungi.

Mr. J. E. Prince, Windsor.—Album of sixty ferns and lycopods from New Zealand and fifty from Fiji ; photographs of Croajingolong scenery.

Miss Roberts, Richmond—Victorian sponges, coral, penguins (mounted).

Mr. J. Searle, Carlton.—Live specimens of King Lory and Port Lincoln parrots ; Cockatoo Parrakeet, Wonga Pigeon, &c.

Mr. J. Smith, South Melbourne.—Group of portraits of "scientific worthies."

Mr. G. Sweet, Brunswick.—Collection of fossil fish, &c., from old red sandstone rocks near Mansfield, Victoria, including *Gyracanthus obliquus* (M'Coy), *Glyptolepis*, *Cosmolipides Sweetii* (M'Coy), *Eupleurosmus Creswelli* (M'Coy), *Lepidodendron Mansfieldense*, &c.

Mr. H. T. Tisdall, F.L.S., Toorak.—Coloured drawing of fungus (*Ballaria Muelleri*), from Lake Albacutya; 120 coloured drawings of Victorian fungi.

Mr. C. A. Topp, M.A., Kew.—New South Wales wild flowers (dried).

Mr. A. Turnbull, Yarraville.—Two cabinet drawers of Victorian butterflies and moths, two cabinet drawers of British butterflies and moths.

About half-past ten the visitors began to disperse, having spent a very pleasant and instructive evening.

DESCRIPTIONS OF SOME NEW AUSTRALIAN PLANTS.

BY BARON VON MUELLER, K.C.M.G., M. & PH.D., F.R.S., &c.

OLDENLANDIA PSYCHOTRIOIDES.

Leaves rather large, from ovate to elongate lanceolar, somewhat acuminate, almost membranous, narrowed into a short stalk, beneath slightly paler and along the thin venules beset with hairlets, above glabrous; stipules deltoid, short-pointed, fugacious; cymes in a terminal divergently branched; panicles bearing densely short appressed brownish-grey hairlets; flowers quite small, pentamerous; bracts minute, narrow-semilanceolar; calyx-lobes roundish-deltoid, very short; tube of the corolla almost entirely enclosed, inside glabrous, turgid, lobes membranous, venulose, about as long as the tube; anthers almost sessile, ovate-ellipsoid, broadest towards the base, and there slightly bilobed, their apex minutely bidenticular, their dehiscence introrse; style never much elongated; stigmas very short; epigynous disk beset with minute hairlets; fruit small, only with its quadrivalvular summit emerging, ovate-globular, slightly compressed; placentaries inserted about the middle of the dissepiment; seeds numerous, very minute, shining brown, somewhat oblique-ovate, angular, reticular-foveolate. On the Russell River; W. Sayers.

Among species with leaves of similar size and form *O. acutangula*, *O. stylosa*, *O. viscida*, *O. pruinosa*, *O. Lessertiana*, *O. purpureascens*, and *O. cymosa* differ in almost complete absence of general vestiture and in a corolla with well emerging tube to some extent beset with hairlets inside, irrespective of some other characteristics not common to these seven species. *O. arborea* has an almost tubeless somewhat rigid corolla; *O. hirsutissima* fringed stipules, axillary inflorescence, and elongated filaments; *O. Leschenaultiana* leaves rounded at the base, and also conspicuously paler beneath, denser inflorescence, fewer and larger seeds. Our new plant, moreover, diverges from most of its congeners in the five-lobed calyx, and the correspondingly five-cleft corolla and

number of stamens. A dimorphism of the flowers occurs, the stamens of some being inserted between the corolla lobes, in others near the base of the tube, while the length of the style in some flowers is greater than in others.

MORINDA HYPOTEPHRA.

Climbing; leaves short-stalked, firmly chartaceous, mostly ovate-lanceolar, acuminate, above dark-green, beneath bearing a thin, somewhat velvet-like grey vestiture; stipules fugacious; peduncles short, few or two together or seldom solitary; headlets small, with only from two to five flowers perfecting their fruit; involucral pericarp inside beset with rigidulous pale shining hairlets, putamen of individual fruits almost ovate, smooth, comparatively thick, dark outside.

On Mount Bellenden-Ker, at a height of about 5,000 feet; W. Sayer.

Leaves and fruits, in size and shape, similar to those of *M. jasminoides*. Flowers as yet unknown. Putamen about $\frac{1}{8}$ inch long. This plant has been alluded to already in the April number of this periodical, 1887, but by name only.

EULOPHIA HOLTZEI.

Rhizome comparatively thin, somewhat basal, horizontally procurent; leaf long, broad-linear, gradually narrowed upwards, passing into a conspicuous stalk; empty bracts, several or many, semilanceolate-linear; flowers, twelve or fewer in each raceme, rather small, floral bracts reaching beyond the calyx-tube or even to the upper end of the calyx-lobes, membranous, very narrow, much pointed; stalklets short, as well as the tube of the calyx densely beset with minute hairlets; basal protrusion of the lower calyx-lobes blunt and very short; paired petals linear-lanceolar, as well as the lobes of the calyx pinkish, but somewhat yellow at the upper end; labellum nearly as long as the other petals, its lateral lobes oblique-semielliptical, somewhat shorter than the middle lobe, the latter slightly dilated and roundish at the summit, with an additional minute apex, at the upper side towards the middle and base beset with glandular papillules; gynostemium to near the summit very slender, bearing minute hairlets, about half as long as the calyx-lobes; young fruit hemispheroid.

Near Port Darwin (*M. Holtze*) the species approaches *E. ramentata*, but the leaf seems always an only one, and developed prior to the flowering stem, the bracts are longer and narrower, the flowers smaller, their basal protrusion is much shorter, and the gynostemium of less broadness. From the material before me, I have been unable to ascertain with exactitude the form of the pollinia and of their stipes. As an Australian plant this is very distinct.

REVIEW.

Geology of Tasmania, by R. M. Johnston, F.L.S.

THIS work contains, in addition to much new matter, the principal memoirs on the subject contributed by the author at various times to the Royal Society of Tasmania. Unfortunately, it is published in such an expensive form that, to the majority of scientific students, the price is prohibitive. The chapter on the methods of determining rocks could be dispensed with, being adapted rather for a text-book of mineralogy than for a treatise on the descriptive geology of a country. A great number of plates are given as an appendix at the end of the volume. They include landscapes, sections of strata, and drawings of the principal fossils mentioned in the text.

The long lists of fossils from the various sedimentary beds which are supplied are of special interest, as they include many forms of common occurrence with us, and thus demonstrate the close connection existing between the geological history of Tasmania and Victoria. In the table of tertiary mollusca a few shells are mentioned twice, though under different names, sufficient care not having been taken to exclude synonyms. The author's subdivision of the tertiaries does not correspond exactly with that adopted by Victorian geologists. It is probable, however, that the key to the tertiary geology of Australia must be sought on this side of Bass' Strait, where the deposits of the tertiary period are more extensive than in Tasmania.

The palæozoic and mesozoic strata, as well as the igneous rocks of the island, are treated of at length by Mr. Johnston. A full account is also given of the various metalliferous ores found in the colony.

The book is remarkable as being mainly the result of one man's labour, Mr. Johnston having personally examined almost every locality he refers to. Our thanks are due to him for the manner in which he has worked out, at the cost of much time and trouble, some of the intricate problems of Tasmanian geology. J. D.

MR. R. H. NANCARROW.—We regret to announce the death of one of the earliest members of our Club, Mr. R. H. Nancarrow, of Neilborough, which took place on 10th May. Mr. Nancarrow was an entirely self-taught man, and though he only contributed one short paper, on the nidification of *Acanthiza uropygialis*, to the Club's proceedings, still he was an active worker of the Bendigo Science Society, Sandhurst, for which he delivered several lectures on insect life, insectivorous birds, and kindred subjects, each of which were illustrated by excellent drawings and specimens of his own preparation. His place among the careful observers of the bird and insect life of the colony will not be easy to fill.

Field Naturalists' Club of Victoria.

~~~~~  
*President:*

A. H. S. LUCAS, M.A., B.Sc.  
~~~~~

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

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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. IV. (1887-88), 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 1886-87, with Rules, etc., can be obtained on application to the Hon. Sec.

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# The Victorian Naturalist.

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

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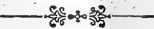
## CONTENTS.

|                                                                                         | PAGE |
|-----------------------------------------------------------------------------------------|------|
| A HUNT FOR LICHENS IN EAST GIPPSLAND. BY REV. F. R. M. WILSON...                        | 57   |
| AN ADDITIONAL LIST OF LICHENS NEW TO VICTORIA. BY REV. F. R. M. WILSON...               | 60   |
| A DESCRIPTION OF FORTY-ONE VICTORIAN LICHENS NEW TO SCIENCE. BY REV. F. R. M. WILSON... | 61   |
| THE BIRDS OF MELTON. BY G. A. KEARTLAND...                                              | 70   |

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# Victorian Naturalist.

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AUGUST, 1889.

No. 68.

## A HUNT FOR LICHENS IN EAST GIPPSLAND.

BY REV. F. R. M. WILSON.

(Read before the *Field Naturalists' Club*, 11th March, 1889.)

DURING the month of December it was arranged that the excursion to East Gippsland should be divided into two—one party to examine the neighbourhood of Orbost, and the other to proceed through Orbost to the boundary of New South Wales. When the time for the excursion arrived, the Orbost party had dwindled down to one. That one, however, did not lose courage; but, forming himself into a forlorn hope, began the assault on the appointed day, Monday, 24th December, and took train to Bairnsdale. At present there are two coaches to Orbost, one from Bairnsdale through Bruthen, and the other from Cunninghame at the Lakes' Entrance. Of the two the latter was found the more convenient. Taking the boat, therefore, at Bairnsdale, your excursionist arrived that evening at Cunninghame, and proceeded to Roadknight's Hotel. As the coach leaves that hotel for Orbost on Sundays and Wednesdays, there was an interval of a day to be spent at the Lakes' Entrance. Although the scrub about Roadknight's hotel has been nearly all fired, and lichens are consequently few, a number of the commoner sorts were noted, such as *Usnea barbata*, everywhere so abundant throughout the world; *Parmelia ulophylla*, *P. perforata*, *P. caperata*, all very common in the colony; *P. tiliacea*, *P. perlata*, *P. pertusa*, *P. Borreri*, *P. tenuirima*, *P. placorhodioides*, *Theloschistes chryosphthalmus*, *Physcia stellaris*, *Cladonia verticillata*, *C. furcata*, *C. pyxidata*, *C. aggregata*, *Ramalina calicaris*, *R. fraxinea*, *Peltigera polydactyla*, *Lecanora atra*, *L. parella*, &c. Collections were made of several *Graphidei*, *Lecanoræ*, &c., which have been found only in Gippsland, and the names of which are still undetermined. One prize was got—a new species of the genus *Coniocybe*, a genus hitherto unknown to the southern hemisphere. The species has been named *rhodocephala*, from the rosy colour of its capitulum. A full description is given elsewhere.

While collecting these lichens in the lilypilli scrub the note of the bell-bird attracted attention. At first this unusual and somewhat musical sound is rather pleasant; but, after a pro-

tracted examination of a gully for lichens, the continued repetition of the same note for several hours becomes monotonous, and the bell-bird becomes a bore. Very few other birds were seen; and, indeed, animal as well as vegetable life is rather scarce on the burnt ground in Gippsland.

The journey to Orbost by coach is not very interesting, especially after passing Lake Tyers.

The soil between Cunninghame and the valley of the Snowy River is poor, and the forest trees rather stunted. They are chiefly stringybark, with here and there an ironbark or occasionally a few white gums. A recent bush fire has passed through, and left them and the soil all black and barren-looking, and the whole country dismal. About Lake Tyers the view is more open, and as the bush fires have not been so recent, the country looks better. There is also a greater variety in the vegetation. But the lichenologist finds only a poor return for the exertions necessary in hunting for specimens.

After a dreary drive of six or seven hours through the charred forest, the coach was stopped about three miles from Orbost by a gentleman with a buggy. Having been previously written to by Mr. A. J. Campbell, a prominent member of the Club, he had come to meet the excursionists, and had been awaiting the belated coach for several hours. He gave to the sole surviving excursionist a hearty welcome, drove him to his home, entertained him most hospitably for a week, advised him as to the most likely spots for lichens, and, with a warmth of scientific interest and a self-denial rarely met, gave him personal guidance to all the places about Orbost where there is still unburned scrub. These are all in Numerella—*i.e.*, the west side of the Snowy River. They are not many, and not large, but they are rather widely separated. Putting them all together, they would be probably not more than thirty acres.

The best place was a belt of scrub along the north shore of Lake Wat Wat. Even here—and the remark applies to all East Gippsland—the luxuriant growth of clematis and smilax, which spread themselves among the upper branches of the scrub, produces a dense shade, in which lichens will not grow at all. Only in the more open spots in the scrub and on the outside of it are any lichens to be found. And as the fire had burned into the scrub as far as it could, there was left but a narrow field for examination. Two new lichens were found here—a *Stictina*, which has been named *pustulosa*, and a minute variety of a *Leptogium* common enough throughout Victoria:—*L. leucocarpum* (Taylor), var. *minus* (Wilson). Pretty large collections, however, were made of several species already found in smaller quantities in other parts of East Gippsland, especially of a *Chiodecton*, which has been named *encephalodes*.

Inquiries were made as to the probability of a better field in Croajingalong. But it was reported that the fires had extended all along the river up nearly to the Buchan, and down to Marlow, and to the east as far as the Broadrib, and even beyond it; and although there is still left to the south-east of Mount Raymond, about the Cabbage Tree Creek, some scrub untouched by fire—because, indeed, it cannot well be burned—a trip thither could not easily be made; it would need a tent and packhorses and guide. And the only man near Orbost who really knows that part had been engaged by the Croajingalong excursionists. The weather, too, was sultry—most unusually so—and threatened a change; and, after hearing a description of the country from a person who had gone through it more than once (a description which is borne out by the account given us last month by Professor Spencer), your excursionist came unwillingly to the conclusion that he must leave that not very promising field to the energies of younger men.

Returning by coach to Cunninghame, a day was spent up the Backwater, where there are several very interesting gullies, with unburned scrub containing Pittosporums, Lilypillis, and other trees which lichens love. Here, indeed, is a far more hopeful field for the lichenologist than the Orbost country. Nearly all the lichens found there are found here also, and several others besides. Some occur here which have not been found elsewhere. On the older ti-tree scrub in the swampy ground are found *Pannaria lurida*, *P. nigro-cincta*, *Leptogium phyllocarpum* (in fruit), *Sticta aurata*, *Ramalina fraxinea*, &c. On the Banksias, near the swamps, are *Synechoblastus nigrescens*, *S. glaucophthalmus*, *Pannaria fulvescens*, *Lecanora parella*, *L. atra*, one or two *Pertussarias*, and *graphidei* of various genera. In the lilypilli scrub are found *Hæmatomma Babbingtonii*, one or two *Chiodecta*, *Platygrapha albo-vestita*, *Trypethelium fumoso cinereum*, *Glyphis Kirtoniana*, &c.

While searching for these there were noticed many fungi and phanerogamous plants; also, insects and birds not readily met elsewhere. Students of natural history who desire a somewhat new and interesting field, are advised to try Cunninghame and Rosherville. These places are easily accessible, are within a day of Melbourne, board is comparatively cheap and very comfortable, and the unburned and unspoiled scrub can be reached with not much expenditure of strength. At Cunninghame a boat can be got at the Backwater, and half-an-hour's row will delight the lovers of scenery and will bring the student of natural history into spots where he can study wombats, wallabies, bell birds, rotten logs, leeches, ticks, and mosquitoes to his heart's content.

AN ADDITIONAL LIST OF LICHENS NEW TO  
VICTORIA.

BY REV. F. F. M. WILSON.

(*Exhibited before the Field Naturalists' Club, 11th March, 1889.*)

- Collema atrum. Wilson, sp. nov.  
 Collema congestum. Wilson, sp. nov.  
 Collema lencocarpum. Taylor ; var. minus, Wilson  
 Collema quadriloculare. Wilson, sp. nov.  
 Collema senecionis. Wilson, sp. nov.  
 Leptogium Victorianum. Wilson  
 Leptogium limbatum. Wilson, sp. nov.  
 Leptogium olivaceum. Wilson, sp. nov.  
 Leptogium olivaceum, var. isidiosum. Wilson  
 Obryzum myriopus. Wilson, sp. nov.  
 Myriangium dolichosporum. Wilson, sp. nov.  
 Sphinctrina microcephala. Nyl. ; var. tenella, Wilson  
 Calicium tricolor. Wilson, sp. nov.  
 Calicium gracillimum. Wilson, sp. nov.  
 Calicium nigrum. Schærer ; var. minutum, Knight  
 Calicium parietinum. Acharius  
 Calicium hyperellum. Ach. ; var. validius, Knight  
 Coniocybe rhodocephala. Wilson, sp. nov.  
 Trachylia emergens. Wilson, sp. nov.  
 Trachylia exigua. Wilson, sp. nov.  
 Trachylia lecanorina. Wilson, sp. nov.  
 Trachylia viridilocularis. Wilson, sp. nov.  
 Bœomyces fusco-carneus. Wilson, sp. nov.  
 Bœomyces heteromorphus. Nyl.  
 Cladonia cariosa. Flk. ; var. diffissa. Wilson  
 Cladonia hastata. Wilson, sp. nov.  
 Cladonia xanthoclada. J. Muller  
 Phyllis melacarpa. Wilson, gen. et sp. nov.  
 Pilophoron conglomeratum. Wilson, sp. nov.  
 Stereocaulon corticatulum. Nyl.  
 Stereocaulon leptaleum. Nyl.  
 Stereocaulon nanum. Nyl.  
 Ramalina brevis. Wilson, sp. nov.  
 Ramalina calicaris. Hffm. ; var. canaliculata, Taylor  
 Ramalina subgeniculata. Knight  
 Ramalina unilateralis. Wilson, sp. nov.  
 Solorina sorediifera. Nyl.  
 Stictina pustulosa. Wilson, sp. nov.  
 Sticta rubella. Hook. et Taylor  
 Parmelia caperata. L. ; var. sorediosa, Wilson  
 Parmelia ulophylla. Acharius  
 Parmelia saxatilis. L. ; var. furfuracea, Schærer

- Parmelia subcœrulea. Wilson, sp. nov.  
 Parmelia albata. Wilson, sp. nov.  
 Parmelia tiliacea. Acharius; var. concentrica, Leight  
 Parmelia Kamtschadalis. Eschw.  
 Pamelia colpodes. Acharius; var. sphæroidispora, Wilson  
 Theloschistes velifer. Wilson, sp. nov.  
 Physcia astroidea. Clemente  
 Physcia confluens. Fries.  
 Physcia nodosa. Wilson, sp. nov.  
 Psoroma biatorinum. Wilson, sp. nov.  
 Psoroma contortulum. Wilson, sp. nov.  
 Psoroma lineare. Wilson, sp. nov.  
 Pannaria molybdodes. Wilson, sp. nov.  
 Pannaria cheirolepis. Wilson, sp. nov.  
 Pannaria parmeliæ. Wilson, sp. nov.  
 Pannaria thraustolepis. Wilson, sp. nov.  
 Amphiloma lanuginosum. Acharius  
 Biatora botyrida. Nyl.  
 Lecideia myriocarpa  
 Platygrapha albo-vestita. Knight  
 Arthonia pardalis. Wilson, sp. nov.  
 Chiodecton encephalodes. Wilson, sp. nov.  
 Trypethelium subumblicatum. Knight.

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## A DESCRIPTION OF FORTY-ONE VICTORIAN LICHENS NEW TO SCIENCE.

By REV. F. R. M. WILSON.

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

### 1. *Collema congestum*. Wilson, spec. nov.

Thallus small (to 1 in. diam.), black, cartilaginous, difformilobate; lobes roundish, margin elevated, thickened, crenate. Apothecia somewhat large (to 2 mm. diam.), crowded together and covering the centre of the thallus, pallidly or obscurely rufous or black, plane with thickish thalline margin, at length convex and irregular and margin withdrawn. Spores cylindrical or ellipsoideo-cylindrical, sometimes rather curved, simple or uniseptate (·017 mm. long, ·0035 thick). Paraphyses thick, articulate. Gel. hym. blue with iodine, thecæ intensely so. Granula gonima in sacs, two or three or more in each, not moniliform. Habitat on mosses, &c., on maritime calcareous rocks.

### 2. *Collema quadriloculare*. Wilson, spec. nov.

Thallus fusco-olivaceous or black, membranaceous, adhering, complicato-lobate, lobes thicker at margin and crisped. Apothecia

moderate, black or rufous black, crowded, plane or somewhat concave, with thalline margin entire. Spores cylindrical, rounded at each end, sometimes rounded at each end, sometimes rather curved, four-celled (.02-.03 mm. long, .003-.005 thick). Paraphyses fine, inarticulate. Granula gonima moniliform, but some gathered into fours in gelatinous sacs. Habitat on mosses on sub-alpine rocks.

3. *Collema senecionis*. Wilson, spec. nov.

Thallus fuscous green or olivaceous, sometimes deep sea-green and bluish-green beneath, membranaceous, thin, sometimes shining and sometimes granulate rugulose (2 to 3 in. diam.), rotundo-lobate; lobes ascending at margin, imbricate, undulate, crispate. Apothecia rufous or testaceo-rufous, plane or somewhat convex, moderate (1 mm. diam.), often crowded, thalline margin thin entire. Spores elongato-fusiform, straight or curved or twisted, 3 to 9 septate (.03 to .05 mm. long, .005 thick). Gel. hym. blue with iodine. Gran. gon. oblong or reniform (2 mm. long), or sub-globose (1 mm. diam.) Habitat on boughs and stems of *Senecio Bedfordii*, very rarely on other trees, *prostanthera* and *pomaderis*. While young the thallus is bright dark-green, the centre stretched smooth, transparent, and shining, as though it were a thin film of green paint.

4. *Collema atrum*. Wilson, spec. nov.

Thallus black, small (to 1½ inch diam.) complicato-squamose, at the circumference lobate, thick, cartilaginous, granulato-corrugata. Apothecia black or obscurely rufous, or sometimes whitish (diameter 1 mm.), thalline margin whole. Spores ovate or fusiformi-ovate, acuminate at one or both ends, 3 to 4 loculate (.018-.026 mm. long, .005-.006 mm. thick). Paraphyses slender, crowded. Thecæ clavate, coloured intense blue with iodine. Habitat on maritime calcareous rocks.

5. *Collema leucocarpum*. Taylor; var. nov. *minus*, Wilson.

Much smaller and darker in both thallus and apothecia than the type. Habitat on trees by lake.

6. *Leptogium olivaceum*. Wilson, spec. nov.

Thallus olivaceous, paler beneath, membranaceous, rotundo-lobate, undulate, smooth. Apothecia rufous or fusco-rufous, plane with thin margin. Spores fusiform-ellipsoid (.013 mm. long, .004 thick), 3 to 5 septate with longitudinal divisions. Habitat among mosses on granitic rocks.

7. *Leptogium olivaceum*; var. *isidiosum*, Wilson.

Thallus plumbeo-cærulescent, tinged here and there with olive, covered more or less with cæsious isidia. Sterile. Habitat with type.

8. *Leptogium chloromelum*. Sw.; var. nov. *Victorianum*, Wilson. Thallus like the type described by Nylander, but firmer in



texture, passim rufo-fuscos, old lobes fusco-furfuraceous, as though denuded of cortex. Apothecia similar to type, but with margin thinly plicate, or tumid, or granulate, or briefly lacinate. Spores ovoideo-fusiform, often acuminate at apices (·013–·017 mm. long, ·005–·006 thick), usually 3, septate, with or without longitudinal division of central cells. Habitat on mossy trees and rocks.

9. *Leptogium limbatum*. Wilson, spec. nov.

Thallus plumbeous or cœruleo-plumbeous, passim rufo-fuscescent, membranaceo dilated, rotundo-lobate, undulate, circumference reflexed, sinuate, and for the most part adorned with a tumid, minutely squamose fringe, occasionally bullate, bullæ crowded with spermagones; concolorous beneath, albo-tomentose, but circumference broadly nude. Apothecia pallido-rufous, somewhat convex, large (4 mm. diam.), appressed, with squamose thalline margin. Habitat on back of trees in sub-alpine localities. Allied to *L. inflexum* (Nyl.), but thallus lobate and limbate, and the under surface concolorous and less tomentose.

10. *Obryzum myriopus*. Wilson, spec. nov.

Thallus cinerascens-plumbeous or cœruleo-plumbeous, small (1 in. diam.), rotundo-lobate, deeply incised, lobes imbricate, margin slightly incurved, upper surface minutely and confusedly rugulose, under surface densely covered with woolly, often fasciculate rhizinae, white or cœruleo-nigricant. Apothecia endocarpoid, showing externally depressed fuscous tubercles (·2 mm. diam.) scattered, here and there crowded. Spores, 8 in asco, ellipsoideo-fusiform (·013 mm. long, ·004 thick), amber-coloured with iodine. Paraphyses distinct. Granula gonima (·015 long, ·07 thick) binary, minutely granulated or mottled, moniliform or scattered one or two in a cell. Habitat among jungermannias, on bark of trees in shady forest. In Queensland, found by Mr. J. Shirley on rocks, but isidiose and sterile.

11. *Myriangium dolichosporum*. Wilson, spec. nov.

Thallus black, small (2-5 mm. broad, 2 mm. or more high), pulvinate, opaque or slightly shining, unequal. Apothecia often nearly covering the thallus and concolorous with it. Epithecium slightly rufescent. Disk plane or concave, attaining a breadth of 1 mm. Receptacle elevated or stipitate, stipe sometimes 1 mm. long, tapering downwards; thalline margin rounded. Thecae spheroidal, scattered through the cellular substance of the apothecium. Spores 8, colourless, cylindrical, curved, narrowing at each end, and marked with minute guttæ down the longitudinal axis, ·04 mm. long and ·006 mm. broad. Habitat on twigs of *Hymenanchera Banksii*.

12. *Sphinctrina microcephala*. Nyl.; var. nov. *tenella*, Wilson.

Thallus probably that of some pertussaria. Apothecia fuscous, shining, stipe long and slender (3 mm. high, ·05 mm. thick).

Capitulum turbinato-globose (1 mm. diameter). Exciple pyrenoid. Spores (·01 mm. long) simple, nigricant, fusiformi-globose or ellipsoid, like those figured by Nylander; epispore thick, with reddish tinge. Habitat on twigs of *Hymenanthera Banksii*.

13. *Calicium pusillum*. Ach.; var. nov. *niveum*, Wilson.

Thallus snowy white, thick, effuse. Apothecium minute (·5 mm. high), stipe hyaline, upper part black or all fuscous or black, very slender; sometimes furcate. Capitulum hemispherico-lenticular, black, about ·25 mm. broad, sometimes divided into several lobes, or even separate capitula on divided stipe. Spores pale nigrescent, fusiformi-ellipsoid, simple (·004–·006 mm. long, ·002–·0025 mm. broad), flat, so as to seem almost bacillar when viewed on the side. Paries thick. Gel. hym. with iodine vinous yellow. Habitat on decaying bark of growing eucalyptus.

14. *Calicium Victorix*. C. Knight, spec. nov.

Thallus white or whitish, or cinerascens, more or less distinct, effuse. Apothecia wholly black (·5–1 mm. high). Capitulum turbinato-lentiform or hemispherico-lentiform (up to ·25 mm. broad); stipe slender, about ·1 mm. thick, thicker at base. Spores fuscous, fusiformi-ellipsoid, simple (·005–·008 mm. long, ·002–·003 mm. broad). Paries somewhat thick, and showing a dark outline. Habitat on decaying decorticated eucalyptus.

15. *Calicium contortum*. Wilson, spec. nov.

Thallus whitish, very thin. Apothecia all black, smaller than *C. Victorix*; stipe contorted. Capitulum hemispherico-lenticular. Spores dilutely nigrescent (·004 mm. long, ·0014–·002 mm. broad). Habitat on decorticated decaying eucalyptus.

16. *Calicium parvulum*. Wilson, spec. nov.

Thallus white, rather determinate, having the appearance of a thin coat of whitewash. Apothecia all black (·4 mm. high). Capitulum lentiform (·16 mm. diameter); stipe slender (·05 mm. thick). Spores simple ellipsoid, dilutely nigrescent. Paries thin, very black. Habitat on decorticated decaying eucalyptus.

17. *Calicium flavidum*. Wilson, spec. nov.

Thallus yellow or sulphureous, smooth, nearly shining. Apothecia black, tinged with the thalline colour on the margin and sometimes downwards, robust, attaining 1 mm. in height and ·5 mm. in thickness; stipe rather short, thickened upwards. Capitulum globoso-turbinate. Sporal mass black, protruded. Spores fusco-nigrescent, ovoid or sub-fusiformi-ellipsoid, unisepate (·006–·01 mm. long, ·003–·004 mm. broad), the walls tinged red, the cells fuscous, containing each one or two nigrescent locules. Habitat on wood of dead eucalyptus.

18. *Calicium tricolor*. Wilson, spec. nov.

Thallus sulphureous leproso-granulose. Apothecia black, small,

to .75 mm. high; stipe .1 mm. thick. Capitulum turbinato-globose (.2-.5 mm. broad), margin white. Spores fusiformi-ellipsoid, somewhat pointed at each end (.008-.012 mm. long, .003-.005 mm. broad), uniseptate, somewhat constricted at septum, fuscous with a fusco-nigrescent locule in each cell. Habitat on decaying decorticated eucalyptus. The apothecium is like that of *C. curtum*, but the spores are different in shape and colour, and size, and the thallus is altogether unlike.

19. *Calicium deforme*. Wilson, spec. nov.

Thallus cinerascens, thin, granulose. Apothecia black, deformed with thalline and other granules, 1 mm. high, or rather more. Capitulum turbinato-lentiform attaining a diameter of .5 mm., stipe .2 mm. thick. Sporal mass black, protruded, sometimes extending considerably on one side. Spores fusiformi-ellipsoid, nigrescent, .006-.008 mm. long, .0025-.004 mm. broad, uniseptate, septum generally rather indistinct. Habitat on decaying eucalyptus.

20. *Calicium nigrum*. Schær.; var. nov. *minutum*, C. Knight.

Thallus obscurely cinereous or black, leprose. Apothecia short (.5 mm. high); stipes stout (.1-.12 mm. thick). Capitulum turbinato-lentiform, disk punnose, .3 mm. broad. Spores nigrescent (.0075 mm. long, .004 mm. broad), ellipsoid, uniseptate, constricted at middle, a locule in each cell. Habitat on old rails.

21. *Calicium subtile*. Pers.; var. nov. *biloculare*, Wilson.

Thallus whitish or cinerascens, thin. Apothecia all black (.8-1 mm. high). Capitulum lentiform or sub-turbinato lentiform (.3-.4 mm. broad), stipe .1 mm. thick. Spores fuscescent or fusco-nigrescent, ellipsoid or sub-fusiformi-ellipsoid, bilocular or obsoletely bilocular or simple, no visible septum (.005-.007 mm. long, .002-.003 mm. broad). Paries somewhat thick. Habitat on decaying eucalyptus.

22. *Calicium gracillimum*. Wilson, spec. nov.

Thallus a whitish spot. Apothecia all black (.8 mm. high). Stipe very slender, about .06 mm. thick. Capitulum minute (.1 mm. broad), turbinato-lentiform. Spores ellipsoid or fusiformi-ellipsoid, uniseptate (about .001-.002 mm. long, .0006-.001 mm. broad). Habitat on decaying decorticated musk-tree.

23. *Calicium roseo-albidum*. Wilson, spec. nov.

Thallus roseo-albescent, thick, minutely cancellate, chryso-gonimic. Apothecia minute, wholly black. Capitulum lenticular (.2 mm. broad). Stipe slender (.7 mm. high, .06 broad.) Spores nigrescent, oblong or oblongo-ellipsoid (.005 mm. or more in length, .002-.003 mm. broad), apices roundish, uniseptate. Habitat on decaying decorticated eucalyptus, a great portion of which it covers with a light rosy tint. When the thallus is bruised it

it becomes a deep yellow from exposure of the chrysogonimic layer.

24. *Coniocybe rhodocephala*. Wilson, spec. nov.

Thallus scanty, obscurely virescent, leprose, or none. Apothecia on stipe fuscous or black pruinose (to .2 mm. high, .2 mm. thick), sometimes forked, or two partly coalescent. Capitulum globose, pale rose or pale flesh, rarely whitish. Spores very numerous, massed together, colourless, ellipsoid or oblongo-ellipsoid, .003-.006 mm. long, .0015 mm. broad, bilocular or placodine or uniseptate. Paries thick. Paraphyses numerous, distinct. Habitat on dead bark of decaying trees in thick scrub. This species is remarkable for the form of its spores. All the species of this genus hitherto described have spherical spores without septa.

25. *Coniocybe citriocephala*. Wilson, spec. nov.

Thallus white, thin. Apothecia minute. Stipe black, slender, to .1 mm. high, .06 mm. thick. Capitulum greenish yellow, turbinate, at length globose, to 2 mm. diameter. When denuded of the sporal mass it is fuscous and turbinate. Spores colourless or dilutely yellow, briefly oblongo-ellipsoid or spheroidal (.02-.04 mm. long, .02-.03 mm. thick). Habitat on decaying tree and on dead bark of tree near permanent water.

26. *Trachylia lecanorina*. Wilson, spec. nov.

Thallus cinerascens, verruculose, passim verruco soresiate. Apothecia to .5 mm. wide, crowded, elevated in thalline verrucæ, sporal mass abundant, often much protruded, and conjoining with that from neighbouring apothecia. Spores fusco nigricant or nigrescent or nearly colourless; ellipsoid, uniseptate (.01-.02 mm. long, .006-.01 mm. broad). Gonidia numerous and of moderate size. Habitat on old eucalyptus rails and posts. This plant bears at first sight a great resemblance to *Lecanora atra*, for a rubbed specimen of which it was at first mistaken. It is more lecanoroid than the rest of the genus.

27. *Trachylia viridilocularis*. Wilson, spec. nov.

Thallus obscurely cinerascens. Apothecia wholly black, slightly elevated, .3 mm. high, .3 mm. broad. Sporal mass abundant. Spores nigricant or virescenti-nigricant, or when immature fuscous, irregularly illipsoid, uniseptate, one or occasionally two locules in each cell, locule often bottle-green. Gonidia round or ellipsoid, with or without paries (.002-.01 mm. diam.) Habitat on old sawn eucalyptus rails, associated with *Calicium nigrum*, var. *minutum*, the *Calicium* on the more decayed horizontal face of the squared rail and the *Trachylia* on the perpendicular face.

28. *Trachylia emergens*. Wilson, spec. nov.

Thallus white or whitish or cinerascens, thin, smooth, almost shining. Apothecia, when young, apparently emerging from

between the fibres of the timber, scarcely ever rising above the thallus, breadth up to .5 mm. Sporal mass black. Spores fusco-nigricant, conglutinated in glomerules, ellipsoid, about .005 mm. long, .003 mm. mm. broad, but very various in size, uniseptate, with locule in each cell. Gonidia .02 mm., oblongo-spherical. Habitat on decaying eucalyptus rails in sub-alpine localities. Found also on Mt. Lofty, S.A.

29. *Trachylia exigna*. Wilson, spec. nov.

Thallus cinerascens, effuse. Apothecia partly sunk in the thallus, small, very slightly elevated, disk plane or convex. Spores fusiformi-ellipsoid, nigrescent, uniseptate, about .008 mm. long, .003 mm. broad. Habitat on old eucalyptus rails.

30. *Trachylia Victoriana*. Wilson, spec. nov.

Thallus cinerascens, thin, effuse. Apothecia typically sessile, often briefly stipitate, black, disk often sulphureo-pruinose, breadth to .4 mm. Spores fuscous, oblongo-ellipsoid (.005-.006 mm.) or nigricant, ellipsoid, narrower at apices and rather smaller, uniseptate, with paler loculi in each cell. The fuscous colour is owing, as usual, to a coat, which comes off under rough usage, leaving the spore nigricant. I find it difficult to decide whether this is a *Trachylia* or a *Calicium* (to be called *percurtum*), or whether these are both constantly associated, with similar spores. Very common on old eucalyptus rails in many parts of Victoria.

31. *Bæomyces fusco-carnea*. Wilson, spec. nov.

Thallus 2 to 3 in. in diameter, pallid, granulose, granules sometimes depressed. Apothecia fusco-carneous, pruinose (1-2 mm. broad), convex, margined by the hypothecium; stipes white, nude; short or sessile, 1 mm. or less in height. Thallus and apothecia when touched with hydrate of potash shew yellow and then deep blood-red, which is permanent. Habitat on clay. This species is allied to *B. Rufus*.

32. *Cladonia cariosa*. Flk.; var. *diffissa*, Wilson

Thallus of squamæ light green, minute, crenate, curled up, displaying the white under surface. Podetia squamulose, split at the apex into several branches, which, with the rest of the podetia lose the cortex here and there and show the filamentous substance underneath costate and eroso-cancellato. Sometimes the whole podetium is split up into a sort of network. Apothecium of paler or darker rufous, on each branch of podetium. Habitat on earth or decaying tree stumps. Allied, perhaps, too closely to *C. cariosa*, of which it may possibly be a form. The chemical reaction is uncertain, generally K + C - .

33. *Cladonia hastata*. Wilson, spec. nov.

Squamæ at foot of podetia small, evanescent. Podetia brown, verruculose, smooth, somewhat shining, sparingly divided at base, rarely above, slender, fragile, erect, scarcely curved, rising to

3 in. in height and coming to a sharp point at the apex. Apothecia unknown. Found in company with *C. fragillima* (Krpflhb.), of which it may be a form, as that seems to be allied to *C. pungens*.

34. *Phyllis melacarpa*. Wilson, gen. et spec. nov.

Thallus minute (2–3 mm. long, .2 broad), cinereous, but green when fresh, white below, laciniato-squamose, convex on both surfaces, irregularly multfid, the apices of the lower laciniae crenate, divided, recurved, the ultimate lacinæ more or less terete. Apothecia cephaloid, black, somewhat smooth and shining, regular and hemispherical or tubercularly difformed (attaining a diameter of fully 1 mm.), terminal on the lower thalline laciniae, which then form short, finely fistulose podetia. Spores 8, in asco, colourless, simple, ovato-ellipsoid (.006–.008 mm. long, .004–.005 thick), containing often one to three globules. Paraphyses indistinct, fuscous, apices fuscous (.004–.005 mm. thick). Gel. hym. blue with iodine. (Spermatia bacillar, incassate at one apex)? Habitat on tree trunks and decaying logs in sub-alpine localities.

The squamæ of the thallus are generally very closely imbricated, showing scarcely more than the terete apices and the round, black apothecia, half-buried among them. The thallus is composed of laxly-interwoven filaments, both simple and ramose (.002–.005 mm. thick), with gonidia light green, spherical or oblong (.005–.017 mm. diam.), gathered into groups close to the upper surface of the thallus.

This plant is allied to the Cladonias by the texture and general appearance of the thallus, the cephaloid form of the apothecia, and the form and colour of the spores, but it is separated from that genus by the double convexity of the thallus, becoming at the apices almost cylindrical, together with the colour and situation of the apothecia and the character of the paraphyses; which compel the formation of a new genus, which I venture to call *Phyllis*, from the leafy nature of the plant, by which it stands alone among the Cladodei. The distinguishing marks of the new genus are: Thallus squamulose, apothecia black, subterminal, paraphyses indistinct. Its place is between *Cladina* and *Pycnothelia* in Nylander's arrangement.

35. *Pilophoron conglomeratum*. Wilson, spec. nov.

Thallus olivaceous—green when fresh—effuse isidioso-granulate; podetia sub-cylindrical, longitudinally costate or lacunose, verrucoso granulate, passim isidiose (.20 mm. high, 1.5 mm. thick), simple or divided into two or four branches at apex. Apothecia fuscous-black, conglomerate (.4 mm. diam.), spores ellipsoideo-fusifiform, colourless, simple (.01 mm. long, .003 thick). Hypothecium fuscous. Paraphyses distinct, conglutinated, fuscous, apices fuscous. Gel. hym. with iodine intensely blue. Habitat on mossy trunks of dead trees in sub-alpine localities.

36. *Ramalina brevis*. Wilson spec. nov.

Thallus pallido-glaucous, opaque, applanate, short (to 1 ½ in. long and 2 in. broad), lacerato divided, sometimes lacerato complicate. Apothecia flavo-pallid, large (to 10 mm. diam), receptacle podicellate, margin more or less incurved. Sometimes the thallus is wholly covered on one side with apothecia. The whole appearance of the typical plant readily distinguishes this species from all others of the genus.

37. *Ramalina unilateralis*. Wilson, spec. nov.

Thallus small (about 8 mm. long), irregularly multifid and entangled (base 2 mm. broad), apices finely divided, curled up and displaying the under surface white, chiefly eroded and sorediate, upper surface sulphureous, cartilaginous, undulate, smooth, nearly shining, K - C -. Apothecia not seen. Habitat on small twigs of *Bursaria spinosa* near sea.

38. *Parmeliã sub-cœrulea*. Wilson, spec. nov.

Thallus bluish-white margined with black line, lobato-laciniate, lobes rotundo-crenate, centre and nearly all upper surface covered with a dark isidium, under surface smooth black, but pale fuscous near margin. Med. K yellow, then very deep blood-red. Apothecia fusco-rufous, small, plane or irregularly concave, thalline margin thin. Habitat on rocks—granite, sandstone, or basalt.

39. *Parmelia albata*. Wilson, spec. nov.

Thallus white, with a slight cœrulean tinge, opaque, more or less broadly laciniato-lobate, highly undulate and imbricate, with patches of soredia here and there, especially on undulations. Under surface white, covered with concolorous or blue tomentose rhizine. Med. K yellow C -. Apothecia not seen. Habitat on mossy rocks.

40. *Parmelia colpodis*. Ach. ; var. *sphæroidispora*, Wilson.

Differs from the type as described in Nylander's Syn. Meth. only by the sphæroidal form of the spores, and by their size. Nylander gives "long circa '0025, cras. circa '001 mm." This variety is about '005 mm. long and '004 thick.

41. *Theloschistes velifer*. Wilson, spec. nov.

Thallus minute (half an inch or less), social, yellow or in the sun orange, narrowly everniæform, lacinie convex, beneath white, subcanaliculate, margined by concolorous cilia; apices lobate, sub-ascending, elongate, much broadened and inflated, the lower cortex and the medulla often absent, exposing the green or yellow gonidia. Apothecia orange-red, moderate, (diam. 1 to 2 mm.), at length sub-cephaloid, stipitate, rising 1 to 2 m.m. from the base of the apicular lobe. Spores uncoloured, ellipsoid ('008-'01 mm. long), placodine. Habitat on bark of trees and bushes near streams and in gardens. It prefers the furcations of the small twigs of *Hymenanthera Banksii*, and often covers the whole side of a bush. The fruit is rather rare.

## THE BIRDS OF MELTON.

By G. A. KEARTLAND.

(*Read before the Field Naturalists' Club of Victoria, 14th Jan., 1889.*)

I HAVE tried nearly every district around Melbourne which can be visited in one day for birds, and often return without noting any but the most commonplace kinds. It was therefore extremely gratifying to me, that, when I decided to devote my attention to Melton, I ascertained from the station-master that I would see nothing unless I went down the creek and along the Werribee River. He said everybody went that way. I mildly suggested that I would try a north-west course, when he told me to "Please yourself, but nobody ever goes that way." This was just what I wanted, and I pleased myself. On crossing the railway line I had scarcely entered the timber before three little Red-rumped Parrakeets came overhead, but were soon lost to view. The next object of interest was a White-eyed Crow's nest in a tall box tree. Passing behind the racecourse, a fine hunting ground is met with. Plenty of tall box trees, many of which are rung, sheoak, wattle, ti-tree, and scrub, with large quantities of dead wood on the ground. This patch swarms with insectivorous birds, and they all seemed extremely sociable except the Southern Stone Plover. Tree-creepers often travelled up the trunk of a tree close to my side. Here the funny antics of the Pomatostomus had scarcely engaged my attention when a White-shouldered Campephaga commenced a short dispute with a White-throated Thickhead.

A Black-cheeked Falcon next flashed through the scrub, and then the place seemed suddenly alive with birds, many of which I had not previously noted in the district. Whether they were afraid of the hawk, or expressing joy at seeing him fall a victim to my gun, I cannot say, but for some minutes it was quite perplexing which way to look. The Garrulous Honeyeater was, of course, loudest in his notes, while the little White-shafted Fantail was most energetic in fluttering around me, often within a yard of my face. Standing on a limb close by, with his eyes wide open, was an old Podargus staring at me as though I was an intruder in his domain. Then as I walked forward the pretty Spotted-sided Finch, with his showy tail, flew off in company with the Red-eyebrowed Finch. On the margin of the timber the Sordid Woodswallow flew about in company with his cousin the White-eyebrowed Woodswallow. I mention this, as I have never seen these two birds in company before, the first-named being a permanent resident with us, while the latter is only an occasional visitor. On emerging into the open country I saw a large female Goshawk perched on a tree, and, in endeavouring to approach it, I disturbed a fine pair of Chestnut-coloured Sheldrakes which were feeding near the fence. In the open country several flocks



of Black-breasted Plover were met with, a number of which had the misfortune to fall into my basket, and the skin of one is here this evening.

I soon found my way to the farm of Mr. Raleigh, a gentleman who devotes his attention to hay growing and dairying. After partaking of the hospitality of the homestead, I made a start across a dry creek, accompanied by Mr. Chas. Raleigh, who was most energetic in providing some good hare and rabbit shooting. We had just entered the timber when a Hooded Robin claimed attention. On firing at a rabbit, I disturbed a large flock of the White-winged Chough, whose mournful note was heard for some time. Following up the creek for a short distance several fine Bronzewing Pigeons were disturbed. As I had previously found the nest of these birds with a helpless, shapeless young one in it, they were not interfered with. In the scrub and forest small birds of many kinds were numerous. Of honeyeaters, the Spine-bill, Blackthroat, New Holland, Warty-face, Wattle Bird, White-plumed, &c., were noted.

On a ti-tree bush I found nests of the Spotted-sided Finch and the little Firetail within two feet of each other. There was no doubt about the matter, as I saw both birds enter their domiciles. I was surprised to find the latter birds breeding so late in the season, and as I found five more of their nests I examined their structure and contents. No. 1 was composed of grass and only half built, containing one egg. No. 2 was fully built, but not lined, and contained two eggs. No. 3 was built, partly lined, and contained three eggs. No. 4 was finished, well lined with feathers and rabbit fur, and contained five eggs nearly hatched. You will thus observe that these birds appear to start house-keeping on a kind of time-payment principle I have never noticed in any other locality. All the nests I have seen in the Heidelberg district, where these birds are very numerous, were lined before any eggs were laid.

After wandering about the paddocks for an hour or two we made a turn for home across a paddock where I made a fine collection of Painted, Brown, and Stubble Quail in June last, in the hope of finding these birds busy with family cares, but alas! the dryness of the season seems to have driven them all away and where the Land Rail might be seen in scores last spring you could not find a solitary bird now. During the day I only saw one pair of Laughing Jackasses, and killed two tiger snakes. This latter was a surprise to me, as the country crossed appeared to be a perfect paradise for reptiles. My friend was surprised that I found any at all. He says they very seldom see a snake of any kind whatever, but when they do they are generally large ones.

On recrossing the creek, I saw a large domestic cat apparently on very good terms with some rabbits, and when the latter were

scared at our approach the cat and one rabbit disappeared down the same burrow.

In the dead timber the great Southern Stone Plover were very numerous, and along the creek we found one paddock where phosphorized oats had been laid to poison the rabbits, but opossums and hares were more frequently found dead than the intended victims. Perched on some dead tree or soaring overhead, I noticed four Eaglehawks and two Whistling Eagles, while smaller hawks were very numerous. I was informed that whenever poison is laid for the rabbits these birds invariably put in an appearance, and whenever a sick rabbit makes himself visible he is speedily pounced upon by them, while his more robust brother is seen scampering off unmolested.

After again partaking of the hospitality of Mr. Raleigh, I retraced my steps towards the railway station, and in the scrub passed through on my way out, I noticed about a dozen nests previously passed by, but as they were almost all occupied by young birds I did not disturb them, but pushed on to the railway station, having travelled about twelve miles and noted sixty-three different kinds of birds. A complete list is appended, but not sufficiently interesting to occupy the time of the meeting in reading. I would strongly recommend this district to the attention of our ornithologists. Our entomologists will find much to interest them also, but botanists had better give it a wide berth, as rabbits and sheep between them seemed to have cleared out all the interesting little plants found in other localities.

The following is a list of the birds noticed by me in the Melton district:—Black Duck, Chestnut-coloured Sheldrake, Maned Goose: Pectoral Rail, Nankeen Night Heron, Black-breasted Plover, Great Stone Plover, Painted, "Pectoral," and Swamp Quail: Bronzewing Pigeons: Rosella, King Lory, Swift Lorikeet, Red-rumped Parrakeet, Blue Mountain Parrot, Musk Parrot: Fantail, Pallid, and Bronze Cuckoo: Pomatostomus, New Holland, Warty-faced, Spine Bill, Garrulous, White-plumed, Wattle Bird, Black-throated Honeyeaters: White-eyed Crow, White-winged Chough: Brown Tree Creeper, White-throated Tree Creeper: Spotted-sided and Red-eyebrowed Finches: Australian Pipit, Little Grass Bird, Chestnut-rumped Acanthiza, Little Brown Acanthiza, White-fronted Ephthianura, Superb Warbler, Hooded, Flame- and Yellow-breasted Robins, White-shafted Fantail, Black Fantail, Frontal Shrike-tit, Harmonious Shrike Thrush, White-throated Thickhead, Black-faced Grauculus, White-shouldered Campephaga: Pied Grallina, Sooty Crow-Shrike, White-backed Crow-Shrike, Grey Crow-Shrike: 2 Pardalotes, Sordid and White-eyebrowed Wood Swallows: Sacred Kingfisher, Great Brown Kingfisher: Welcome and Tree Swallows: Swifts: Podargus: Goshawk, Nankeen Kestrel, Brown Hawk, Black-cheeked Falcon, Whistling Eagle, Wedge-tailed Eagle.

# Field Naturalists' Club of Victoria.

*President:*

A. H. S. LUCAS, M.A., B.Sc.

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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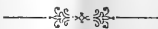
## CONTENTS.

|                                                                                                | PAGE |
|------------------------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA. ... ..                                                | 73   |
| AN ADDITIONAL LIST OF LICHENS NEW TO VICTORIA. BY<br>REV. F. R. M. WILSON ... ..               | 77   |
| A HOLIDAY EXCURSION TO NORTH MIRBOO. BY D. BEST ... ..                                         | 77   |
| NOTES ON THE BUTTERFLIES OF VICTORIA. BY F. G. A.<br>BARNARD ... ..                            | 83   |
| DESCRIPTION OF A NEW CHORILENA. BY BARON VON<br>MUELLER, K.C.M.G., M. AND PH.D., F.R.S. ... .. | 87   |

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THE

# Victorian Naturalist.

VOL. VI.—No. 5.      SEPTEMBER, 1889.

No. 69.

## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the club was held at the Royal Society's Hall on Monday evening, 8th July, 1889.

Mr. C. A. Topp, M.A., LL.B., F.L.S., a vice-president, occupied the chair, and about 60 members and visitors were present.

A letter was read from the Australasian Association for the Advancement of Science, announcing that the next meeting would commence in Melbourne on Tuesday, 7th January, 1890; also enclosing a list of the presidents, vice-presidents, and secretaries of the various sections.

The hon. librarian reported the receipt of the following donations to the library:—"Proceedings of the Royal Society of Victoria" (new series), vol. i., from the society; "Proceedings of the Royal Society of South Australia," vol. xi., 1887-88, from the society; "Proceedings of Royal Society of Queensland," vol. vi., parts 2 and 3, from the society; and "Journal of Pharmacy," June 1889.

The hon. secretary reported that a party of about six members had visited the National Museum on Saturday, 15th June, and spent an interesting afternoon there.

On a ballot being taken, Mrs. M. Follett, Messrs. E. Baines, L. R. Chamberlain, and T. A. Forbes-Leith were duly elected members of the club.

Nominations were received for office-bearers for the year 1889-90, the election to take place at the August meeting.

Mr. F. G. A. Barnard gave notice that he would move, at the annual meeting, that the word "August," in Rule 16, be altered to "July."

Mr. A. J. Campbell gave notice that he would move, at the annual meeting, that Professor M'Coy's name be added to the list of patrons of the club.

Mr. A. J. Campbell promised a paper, "Notes from Malden Island," for a future meeting.

### PAPERS READ.

1. By Mr. E. M. Cornwall, entitled "On Collecting near Home." In the absence of the author this was read by Mr. H.

Kendall, and proved very interesting. It was offered in order to refute the statement frequently made that the collecting grounds near Melbourne are worked out. The author briefly glanced at the various localities known to have been formerly very productive, and noted what might still be got there, confining his remarks, however, principally to birds.

The paper gave rise to a discussion which elicited some interesting information from the various speakers, who generally endorsed the writer's remarks.

2. By Mr. A. J. Campbell, entitled "A Basket of Fish." The author briefly noted the various species of fish, some 30 or 35 in number, usually met with at the sales at the Melbourne Fish Market, and exhibited about 24 species in illustration of his remarks, and offered some suggestions as to why fish are such scarce articles of food in Melbourne.

The paper evoked some remarks from several members, who mentioned several fish omitted by the author.

#### NATURAL HISTORY NOTES.

Mr. H. T. Tisdall, F.L.S., read a short note on a curious species of fungus, apparently related to the genus *Cordyceps*, found growing on an ant at Cheltenham, by Mr. C. French, F.L.S., and exhibited an enlarged drawing of the specimen, the original having been sent to England for identification.

Mr. D. Best read a note by Mr. C. French, F.L.S., on a rare longicorn beetle, *Cerægidion horrens*, taken for the first time in Victoria by himself during the recent expedition to East Gippsland.

The following were the principal exhibits of the evening. By Mr. F. G. A. Barnard—Hymenopterous insects, from Mossman River, North Queensland. By Mr. A. J. Campbell—24 species of marketable fish, in illustration of his paper. By Mr. C. French, F.L.S.—Longicorn beetle, *Cerægidion horrens*, from St. Patrick's River, East Gippsland (new for Victoria). Drawing, by Mr. H. T. Tisdall, F.L.S., of singular fungus; and drawings of destructive Victorian insects, by Mr. E. Anderson. By Mr. C. French, jun.—Eggs of Black-tailed Parrakeet, Chestnut-eared Finch, Hooded Robin, Graceful Honey-eater, and Rufous-headed Grass Warbler, Victoria; Pale-headed Parrakeet, New South Wales; and Long-tailed Superb Warbler, Tasmania. By Mr. R. Hall—Birds from Lake Boga, Swan Hill district. By Mr. G. A. Keartland—Collection of birds' eggs from King Island; eggs of Boa Constrictor and Black Python. By Baron F. von Mueller, K.C.M.G.—100 sections of different woods, including many Australian; advance proofs of new edition of "Census of Australian Plants." By Mr. W. Scott—Fossils from Bairnsdale. By Mr. J. Searle—Tiger Beetles (*Cicindela ypsilon*), from Lakes' Entrance; seeds of



Cabbage-tree Palm (*Livistona australis*), from Cabbage Tree Creek, East Gippsland.

After the usual *conversazione* the meeting terminated.

The ninth annual meeting of the club was held at the Royal Society's Hall on Monday evening, 12th August, 1889.

The president, Mr. A. H. S. Lucas, M.A., B.Sc., occupied the chair, and about 85 members and visitors were present.

A letter was read from Col. Legge, R.A., Hobart, desiring the club to urge the Victorian Government to include the Cape Barren Goose in the list of protected birds. The matter was referred to the committee for consideration and report.

An interesting account of the club excursion to Sandringham on Saturday, 13th July, was furnished by Mr. C. French, F.L.S., who reported that there had been a very good attendance, but as the season was yet early for flowering plants, the members' collections were not very extensive.

The hon. librarian acknowledged the receipt of the following donations to the library:— "Proceedings of Zoological and Acclimatisation Society of Victoria," vols. i. and ii., from Baron F. von Mueller, K.C.M.G.; "Quarterly Mining Reports," March 1889, from the Mining Department; "Report of Trustees of Australian Museum, Sydney," for 1888, from the Trustees; "Proceedings of Royal Society of Queensland," vol. vi., part 4, also "Report of Annual Meeting," 1889, from the society; "Handbook of Australian Association, Sydney," 1888, from Mr. F. G. A. Barnard; and "Journal of Pharmacy," July, 1889.

On a ballot being taken, Miss H. Paul, Mr. S. Kennon, and Mr. H. V. Smith were duly elected members of the club.

#### ANNUAL REPORT.

The hon. secretary read the ninth 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 1888-89 were received from 187 members, of whom 18 were ladies and 6 juniors. Twenty-three papers, dealing with various branches of natural history had been read. The exhibition of wild flowers and annual *conversazione* had been again successful and well attended. The excursions had been fairly successful, and an expedition to East Gippsland had been carried out. The finances of the club were in an improved condition, though the expenses of the club's journal were very heavy. The committee suggested that certain alterations should be made in the wild-flower exhibition and *conversazione*, so as to somewhat lessen their expense and the hard work they entail on a few of the members.

The report was adopted on the motion of Messrs. D. Le Souëf and C. Frost.

The balance-sheet showed that the receipts for the year had been £175 16s. 6d., and the expenditure £162 14s., thus adding £13 2s. 6d. to the credit balance of the club, which now amounts to £63 12s.

The balance-sheet was adopted, on the motion of Messrs. D. Le Souëf and J. H. Gatliff.

#### OFFICE-BEARERS, 1889-90.

The following office-bearers for 1889-90 were duly elected :— President, Mr. C. A. Topp, M.A., LL.B., F.L.S. ; vice-presidents, Professor W. Baldwin Spencer, B.A., and Mr. H. T. Tisdall, F.L.S. ; hon. treasurer, Mr. D. Best ; hon. librarian, Mr. R. Hall ; hon. secretary, Mr. F. G. A. Barnard ; hon. assistant secretary, Mr. G. Coghill.

The ballot for five members of committee resulted in Messrs. A. Dendy, M.Sc., C. French, F.L.S., C. Frost, A. H. S. Lucas, M.A., B.Sc., and F. Wisewould being elected.

Votes of thanks were unanimously accorded to the retiring office-bearers for their services during the past year, and to Mr. A. H. S. Lucas, M.A., for his services as editor of the *Naturalist*.

On the motion of Messrs. C. Frost and J. H. Gatliff, rule 16 was altered so that the annual meeting will in future take place in June instead of August.

Mr. A. J. Campbell's notice of motion, that Professor M'Coy's name be added to list of patrons, was adopted.

The Rev. F. R. M. Wilson brought forward a series of suggestions for the alteration of the name and constitution of the club, but the matter was postponed until next meeting on account of the lateness of the hour.

The following were the principal exhibits of the evening :—By Mr. A. Coles.—Orange-fronted Ephthianura and Tricolored Ephthianura, pair of Orange Cowries. By Mr. H. B. Coles.—Eggs of Lyre-bird and Australian Bustard. By Mr. C. French.—A live Copperhead Snake. By Mr. C. H. French, jun.—Eggs of Tasmanian Grauculus, Tasmania ; Black-headed Diamond Bird, New South Wales ; Black-faced Grauculus, Bee-eater, Allied Diamond Bird, and Short-billed Sericornis, Victoria. By Mr. G. French.—Spring flowers from Cheltenham. By Mrs. Flatow.—Polyzoa, &c., from Warrnambool. By Mr. R. Hall.—Red-capped Dottrel, Hooded Dottrel, Banded Stilt, Broad-billed Prion, Marsh Tringa, Bass' Strait Tern, and Marsh Tern. By Mr. E. H. Hennell.—Gold from Boxing Reef, Steiglitz ; tin ore from Koetong, Upper Murray, and oxide of tin from Corner Inlet and King Island. By Mr. G. A. Keartland.—Nine species of parrots. By Mr. T. A. Forbes-Leith.—Kingfishers from Ceylon, the Red and Magnificent.

Birds of Paradise from New Guinea ; ethnological photographs from India. By Mrs. W. Martin.—Drawings of 200 species of Victorian Fungi, including eleven new to science. By Mrs. R. Simson.—A Pencil-tailed Rat, two Snakes, also Worm Snake. By Rev. F. R. M. Wilson.—Twenty species and varieties of lichens new to Victoria.

After the usual *conversazione* the meeting terminated.

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## AN ADDITIONAL LIST OF LICHENS NEW TO VICTORIA.

BY REV. F. R. M. WILSON.

(*Exhibited at the Field Naturalists' Club, 12th August, 1889.*)

Collema plumbeum, sp. nov., Wilson  
 Myriangium Duriceï, Mnt. and Berk.  
 Calicium chrysocephalum, Ach. ; var. filare, Ach.  
 Calicium pusiolum, Ach. ; var. nov., niveum, Wilson  
 Calicium parvulum, sp. nov., Wilson  
 Calicium contortum, sp. nov., Wilson  
 Calicium piestosporum, sp. nov., Wilson  
 Calicium subtile, Pers. ; var. nov., biloculare, Wilson  
 Calicium subtile, Pers. ; var. nov., capillare, Wilson  
 Calicium piperatum, sp. nov., Wilson  
 Calicium deforme, sp. nov., Wilson  
 Calicium obovatum, sp. nov., Wilson  
 Calicium quercinum, Pers. ; var. nov., bulbosum, Wilson  
 Calicium chrysomitres, sp. nov., Wilson  
 Calicium roscidum, Flk. ; var. nov., eucalypti, Wilson  
 Calicium roseo-albidum, sp. nov., Wilson  
 Calicium flavidum, sp. nov., Wilson  
 Coniocybe atriocephala, sp. nov., Wilson  
 Coniocybe ochrocephala, sp. nov., Wilson  
 Trachylia Victoriana, sp. nov., Wilson.

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## A HOLIDAY EXCURSION TO NORTH MIRBOO.

BY D. BEST.

(*Read before the Field Naturalists' Club, 8th April, 1889.*)

WE have always been lovers of the scenery of Gippsland, and when the Club excursion to the most easterly portion of that district was finally resolved upon, we hoped we might be enabled to accompany it. To our great regret and disappointment, however, we were unable to do so, but determined to recompense ourselves for the loss by a visit to some of its beautiful fern gullies on the first occasion when we should have a few days at our

disposal. These few days came to us immediately after Christmas, and a short survey of the railway map soon decided us upon spending them at North Mirboo, firstly, because we had never been there before, and secondly, to ascertain if the district would justify future visits.

North Mirboo is situated some 20 miles south of Morwell, which itself is 89 miles from Melbourne, on the main Gippsland railway line. The morning of Friday, 28th December, saw us at the station in ample time to catch the 7.50 train, by which also some members of the Croajingolong party were travelling, so that we had the pleasure of their company for a little over 3 hours. Parting regretfully from them at Morwell, we stay here for 20 minutes, resuming our seats in a train composed of several trucks, and one carriage, in which, the carriage, not the trucks, all the passengers had to be accommodated, and although the "all" was not a great number, still it was sufficiently so to render the journey by no means so agreeable as it might have been, the warm weather rendering the inside atmosphere exceedingly close and unpleasant. However, a little over an hour's travelling brings us to our destination, and, upon alighting, the first question we ask ourselves is, Does the appearance of the country meet our approval and expectations? which we answer in the affirmative; and, our second, Which is the best of the three hotel the places supports for us to bestow our patronage upon? The station-master being appealed to, and, having fairly enough declined to express an opinion, as he might by so doing give offence to the proprietors of the two he did not recommend, the toss up of a penny decided us to give a trial to the nearest, the Commercial, and we had no reason to regret the result of our toss-up, as the accommodation we received, although not luxurious, possessed the merits of wholesomeness and cleanliness.

Having secured rooms, partaken of some needful refreshment, and indulged in that universal soother—a pipe—we entered into friendly converse with the landlord as to the road we should take for our afternoon's walk, and, having ascertained that there were several leading from the township, we selected the one locally known as the Coast-road. North Mirboo, we may here remark, consists, as do so many other railway townships, of one principal street facing the station, and owes its prosperity to its extensive timber trade. The good timber is, of course, being rapidly worked out, and then North Mirboo will have to look to other resources which will, no doubt, be found in produce and stock, for both of which the country is admirably adapted. Along this road, which rises gently for a considerable distance, we proceed about three miles, but were much disappointed and disgusted in noticing how great a quantity of the timber had been killed, thereby also destroying the many beautiful ferns and fern gullies

with which the whole district must previously have abounded. It is very regrettable that so few of the selectors in the colony have any romance or love of the picturesque in their natures, and although this is, perhaps, not to be much wondered at, considering the hard nature of the lives they mostly have to lead, still we think there should have been, and still ought to be, some restriction as to the amount of destruction they are at liberty to work on their holdings. Had some restriction been enforced, the selector would thereby have sustained no loss, and many perfect little gems of beauty would have been preserved to please and gratify this and future generations. As showing how utterly objectless and reckless are many of these destructions, we may mention one large paddock, which had evidently been several times burned to destroy the timber and scrub, with the result that only some two or three miserable-looking tree ferns were left to struggle for existence, whilst the rest of the land was given over to the growth of senecio, whose yellow flowers covered it as with a carpet, and which certainly did not afford a too liberal sustenance to the five or six horses we observed on it. The fact is, Gippsland land requires to be continually looked after and worked, as the natural vegetation is so vigorous that it soon kills off all interlopers and resumes its own undisputed sway. In the course of another year or two this would be the case with the paddock mentioned, and senecio would no more be known in it, but alas! it will not, we fear, have this chance of re-asserting itself.

Another circumstance struck us with painful effect, and this was the fact that the "Cockney" sportsman had evidently been lately about here, and been about, too, in pretty considerable numbers. Scarcely a bird of any kind was to be seen, and to those of our members and others who are fond of a country excursion we need scarcely say that their absence does away with fully one-half of the pleasure one looks for. It is on such occasions that we are tempted to wish we were an autocrat, so that we might inflict summary chastisement on all those ruffians—we decline to apply any milder term to them—who so ruthlessly destroy our feathered friends.

Insects having claimed priority of our attention, we being especially desirous of securing specimens of the Longicorn beetles, *Enneaphyllus aneipennis*, *Zystrocera virescens*—*Demonassa Macleayii*, *Pytheus pulcherrimus*, &c., the umbrella and net were got ready for use, and the former was soon employed in receiving the shakings from the Eucalyptus sapling and the white flower of the aster, of which latter plant there were two species, *A. argophyllus* and *A. glandulosus*. Our exertions, however, received very little reward, and as to the net it was not once alled into play, for, strange as it may seem, we scarcely saw a

butterfly or moth, and wasps and hornets were also conspicuous by their almost entire absence. Far better results awaited us in our search under the bark of the larger trees, where we secured numbers of various families of beetles, notably, two specimens—broken unfortunately—of *Enneaphyllus aneipennis*. We suppose all field naturalists have experienced the delightful sensation of suddenly and unexpectedly coming across a rare specimen, and such a sensation is ours as we perceive on a thistle—a plant for which we shall hereafter entertain a better regard—a fine pair of *Phasma*, which we lose no time in securing. Have any of our members present ever observed the strange position assumed by this insect when resting? Although possessing six legs, the two front ones are placed straight out alongside the head, giving the insect a much longer appearance than really belongs to it. We have set the female—which is very much larger than the male—in as nearly as possible the position we found it, with the exception of the wings, which we have extended, so that you may have an opportunity of better understanding what we have endeavoured to explain. For protection from capture they rely a good deal upon remaining absolutely without motion, and consequently our pair did not attempt to move or escape until we had them in our hands, when they quickly showed they possessed life, but, needless to say, their fate was soon sealed. The capture of this insect resulted in our receiving a shaking to the belief we have hitherto had in the value of local names for objects of natural history. In the course of the evening whilst yarning—as is our usual wont—with the landlord and those residents and visitors who may be about the house, the subject gradually worked round to insects, the company having by this time learned something of who and what we were, when the landlord having had the *Phasma* described to him, stated that he had shortly before taken one himself, and as neither he nor any of the residents knew what it was, they had by common consent called it a “Yahoon.” Now, much as local names may be considered useful, we could not realize to ourselves our esteemed and learned Baron von Mueller allowing himself to use so vulgar and senseless a name as Yahoon in connection with a plant, for, of course, the name would be just as applicable, or rather inapplicable, to a plant as to an insect. Close by the spot where we secured our *Phasma* we were also fortunate enough to obtain a fine specimen of the beautiful longicorn beetle *Pytheus pulcherrimus*, and, at the foot of a large tree near at hand, was a clean and perfect skeleton of a snake; but, having no appliances for carrying it, we were compelled to leave it behind us.

Next morning, Saturday, opened close and warm; but as the country air put new life into us we determined to make the attempt to reach South Mirboo, distant about ten miles. Owing,

however, to our collecting proclivities it was midday before we had gone half the distance, so we resolved, if we could obtain any water, to rest and enjoy the solid refreshment we had provided ourselves with. Of water, however, not a drop was obtainable, so on we tramped for another mile or so until we came to a small selection, from the proprietor of which we calculated upon obtaining a supply of that of which we were now in urgent need. Our knock at the door of the hut brought out a young woman, who very kindly promised us a drink ; but, after waiting from ten to fifteen minutes, she appeared with a bucket of milk, stating that the little water they had was so bad she did not like offering it to us. In fact, every one with whom we spoke during our visit to Mirboo stated they could not recollect so dry a season, and, certainly, in none of the fern gullies we visited, and in which water is usually plentiful enough, was any obtainable. To be unable to procure a drink of water in Gippsland, where drought has hitherto been almost unknown, was a new experience to us ; but this state of things was soon altered, for whilst taking our lunch on the shady side of the local school-house the rain came down in torrents, and soon there was abundance of the element so greatly needed. This necessitated our return, and now our umbrellas came in useful for another purpose besides collecting ; for, had it not been for them, we should have got thoroughly drenched. On our way out we had observed numerous holes on the track which we were loth to believe were crab holes, they being so much larger than any we had ever before seen, but with the rain our doubts were dispelled, for at almost every hole a crab had ventured out to enjoy the—to him—delightful change. Along this road we did not meet with as much success as on the previous day, for what reason we cannot say, there being as much large timber, and more shrubs in flower, but on neither one nor the other was there much of insect life—indeed, on the shrubs there was literally nothing obtainable, which was more than a surprise to us, for, generally, just before rain is the best collecting time.

The third day of our stay opened exceedingly close and oppressive, and by no means of a nature to induce long distance walking ; but, undeterred by this, we started on a western road, which we were informed would eventually bring us to the celebrated Mirboo coal mine. We, however, did not reach so far, so cannot give a description of the mine or its coal, beyond recounting the statement of one resident, whose opinion was that the coal was a really good one for domestic use ; for other purposes we presume he was unable to say. This was a much prettier road than the two previous ones, there not being such an abundance of dead trees—indeed, after about a mile there were none of these unsightly objects to be seen, and the shrubs were

much more plentiful, and in better flower; but, all the same, we were not very successful in our efforts to secure specimens, indeed the first had, so far, been the only day on which we had been at all fortunate. Although we had every desire to do a long walk, the weather was too much for us, and after going some three or four miles, we felt inclined for a rest, and were about to take our seats on a fallen tree, when we were apprised that we had a competitor in the shape of a tiger-snake, whose title we successfully disputed by quickly dispatching him. This was one of the only three snakes we saw in our walks, and they were all of the same species, and all small. Indeed, from the information we desired, it appears that most of the snakes seen or killed in the district are small, which information rather surprised us—firstly, as the abundant shelter should have enabled them to attain a larger size; and, secondly, country information regarding snakes is generally of a nature calculated to induce a belief in visitors that the district they may be in possesses larger and more dangerous snakes than any other, consequently we imbibe a profound belief in the exceeding modesty of the North Mirbooites. Being thoroughly tired, and discouraged with our small success, we returned to the township and spent the remainder of the afternoon in the verandah of our hotel, conversing with those who had time at their disposal.

On all the saplings around Mirboo there were hundreds of the beautiful caterpillar of the large Emperor moth, and these would, of course, in a few weeks after our visit develop into the perfect insect, of which numbers would be then obtainable. One of these moths was brought to us, carefully wrapped in several folds of paper, not so much to preserve the insect as to protect the possessor from its supposed bite. It is strange that, whereas most country people are comparatively indifferent to and careless of snakes, they appear to have a real fear of insects; and our company were quite surprised at the free way in which we handled the above specimen and placed it in a small bottle which one of them had brought for the purpose, he being desirous of taking it away with him to another portion of this colony where he resided, and where, so he said, no such caterpillars had been seen. At Leongatha, about twenty miles distant, we were informed there was a plague of caterpillars, so great a plague, indeed, that one settler had lost almost every blade of grass by them, and was, in consequence, obliged to dispose of most of his stock; but, like many another country story, this was probably considerably embellished. No doubt, however, there were plenty of the caterpillars, but what they were we could not learn, except that they were of a greyish colour and travelled very fast.

*(To be continued.)*



## NOTES ON THE BUTTERFLIES OF VICTORIA.

BY F. G. A. BARNARD.

(Read before the Field Naturalists' Club of Victoria,  
8th April, 1889.)

IN offering a paper on such a subject as "The Butterflies of Victoria," I feel I owe some explanation or apology to the Club for the presumption, on my part, of appearing to set myself up as an authority on Victorian lepidoptera. Three reasons, principally, have led me to place these notes before you. Firstly, to interest, and, if possible, instruct the lovers of entomology among our members; secondly, to endeavour to record, somewhat in their natural sequence, those species of butterflies which have up to the present been taken in Victoria; and, thirdly, to provoke criticism among our lepidopterists, several of whom, I feel sure, are better able to deal with the subject than I am.

My knowledge of Victorian lepidoptera is limited to those species commonly seen about Melbourne, and therefore, in order to do justice to the colony, I have made use of the collection at the National Museum as the basis for my notes, and have to acknowledge the courtesy of our fellow-member, Mr. W. Kershaw, in allowing me full access to the cabinet there. I have also to acknowledge the great assistance received from a little pamphlet just issued by the Natural History Association of New South Wales, on "Australian Butterflies," written by Mr. A. Sidney Olliff, F.L.S., Assistant Zoologist, Australian Museum, Sydney, a copy of which was acknowledged by the librarian to-night. Following the classification and arrangement adopted therein, which is the same as that adopted in Kirby's "Text Book of Entomology," butterflies (Rhopalocera) are divided into five families, all of which are represented in Australia, but only four of them in Victoria.

The first family is the Nymphalidæ, characterized by the fore legs of both sexes being undeveloped, the foot or tarsus being rudimentary. This family is divided into four sub-families, three of which are represented in Victoria. The first is the Danainæ of which there are three Australian genera, but the genus *Danais* is the only one of which specimens have been taken in Victoria. Two species have been captured here, but neither of them can, I think, be considered endemic. *Danais plexippus*, Linn.—syn. *D. archippus*—is the large orange-red butterfly with black markings which is becoming somewhat common around Melbourne, and is known as the American butterfly, as it is supposed to have gradually spread from that quarter of the globe. It is easily known by its slow flapping flight. I have not noticed any specimens of this species this season, but perhaps that is because I have not been able to devote much time to collecting. The other species of

this genus which has been found here is *D. petilia*, Stoll. It is smaller than *D. plexippus*, with less black and more white in its colouring. It is fairly common in New South Wales and Queensland. I have not taken this species yet, but I saw a specimen at Kew last season.

The next sub-family represented in Victoria is Nymphalinae. It is an almost universal sub-family, and in Australia is represented by about 25 species belonging to 15 genera. Our representatives are *Pyrameis Kershawi*, M'Coy, almost identical with *P. cardui*, Linn., the "Painted Lady" of England, which is found in many other parts of the world; *P. itea*, Fabr., the "Australian Admiral," a small but handsome butterfly, rich brown and black, with cream-coloured blotches. The caterpillars may generally be found on plants of the English nettle, but I have not yet succeeded in rearing them in captivity. *P. Lucasii*, Misk., has just been described in the transactions of the Linnean Society of New South Wales from specimens obtained at Fernshawe by our former member, Dr. T. P. Lucas, and named after him. *Iunonia vellida*, Fabr., is about the size of *P. Kershawi*, rather pale brown, with six prominent purple-black "eyes" on the wings.

We now come to the sub-family Satyrinae, whose headquarters in Australia may be put down as Victoria and Tasmania. Of the genus *Xenica* five species are represented in the museum collection. *X. achanta*, Don, is a prettily marked "brown"—as this sub-family is commonly called—with distinctly lined "eyes" on the wings, common near the Yarra, &c. *X. Klugii*, Fabr., a darker species, is also taken near Melbourne. *X. lathionella*, Fabr., *X. Hobartia*, Westw., and *X. Kershawi*, Misk., are recorded from Fernshaw and Gippsland. The former is a very pretty little insect, the under side of the hind wings being ornamented with silver markings. The mountain butterfly, *Epinephile abeona*, Don, formerly known under the generic name of *Hipparchia*, represents the next genus here. It is of a rich brownish black, with two prominent orange bands on the fore wings, and is a very handsome object when flying in its favourite haunts. The next genus, *Heteronympha*, contains one of the commonest of our Victorian butterflies, viz., *H. merope*, Fabr., the female of which I consider, though not brilliantly coloured, one of our handsomest butterflies. Seven other species of this genus are in the Museum collection, all from Fernshawe or Gippsland, of which *H. cordace*, Hubn., a very darkly marked insect, *H. philerope*, Bois, and *H. Banksii*, Leach, are the best known.

The next Australian family, Erycinidae, is represented by one species, recorded from Northern Queensland, where it is very rare.

We now come to the family Lycænidae, generally known as "blues" and "coppers" from their metallic colouring. They are

mostly of small size, and very numerous. In Australia about 80 species, belonging to 15 to 16 genera, have already been described, and there are, doubtless, others yet to be worked out. Many of the species are furnished with "tails" on the hind wings. The Museum collection contains about 25 species classified under the five genera *Lucia*, *Lycæna*, *Hypochrysops*, *Ialmenus*, and *Ogyris*. The species of the first-named genus are easily distinguishable by the bright copper-coloured patches on the fore wings. Two species are named—viz., *Lucia lucanus*, Fabr., and *L. aurifer*. Eight species are placed under the genus *Lycæna*, but I believe recent workers have divided the genus into several, so that probably more than one genus is here represented. These are the little "blues" so common in our gardens and paddocks. *L. bœtica*, (Linn.), *L. agricola*, *L. phœbe*, (Mur.), *L. erinus* (Fabr.), *L. alsulus*, and *L. biocellata*, are the named species. The next genus is *Hypochrysops*, which contains some of our rarest butterflies. Four species are in the Museum collection, but none with specific names. (They are characterized by metallic blue bases to the fore wings, shading off to purplish-black at the edges.) The largest specimen is about  $1\frac{1}{2}$  inches across the expanded wings, and was taken in Studley Park in 1882, and marked "very rare." Another is marked "S. Brighton—rare," and Fernshawe and Moe supplied the other specimens. Of the genus *Ialmenus*, five species have been taken in Victoria, of which *I. evagorus*, Don, regarding which I read some notes at a recent meeting, is the one most frequently met with. The other species are *I. myrsilus*, Dbl., a very handsome species from Warragul, Lal Lal, and Fernshawe. *I. ictinus*, Hew., from Brighton, and two unnamed species from Fernshawe and the Western District, complete the list. The last family of the *Lycænidae* is *Ogyris*, with four species, two of which are from the Western District—*O. ptanes*, Feld., nearly 2 inches across, and *O. oratus*, Hew. The latter is, perhaps, the most brilliant of our Victorian butterflies. It is about  $1\frac{1}{4}$  inches across, and of a splendid metallic blue, and rivalling *P. Ulysses*, Linn., of Queensland, in its lustre. *O. abrota*, Hew., and *O. zosine*, Hew., were taken near Melbourne.

The family *Papilionidae*, distinguished by both sexes having six perfect legs, contains the largest and handsomest butterflies known, and is divided into two sub-families, the *Pierinæ* and *Papilioninæ*. The distinguishing feature of the sub-family *Pierinæ* is the downward curve of the inner margin of the hind wings, forming a groove for the reception of the abdomen. In Australia there are over 50 species belonging to this group, comprised in 8 or 10 genera, several of which were formerly included under the genus *Pieris*. The first genus represented here is *Terias*, of which *Terias smilax*, Don, a pretty little sulphur-yellow butterfly with dusky tips to the fore wings, more common in the southern

suburbs than other parts of the metropolitan district. We now come to those butterflies known as "whites," among which the genus *Delias* includes two species, formerly known under the name of *Pieris*, well-known to Victorian collectors, viz., *Delias harpalyce*, Don., and *D. aganippe*, Don. These two butterflies are characterized by brilliant red and yellow markings on the under side of the wings. The sexes also show considerable difference in the colouring of the upper surfaces. The species *D. aganippe* may be distinguished from *D. harpalyce* by its more angular-shaped fore wings, the more distinct and prominent markings of the upper, and the whiter ground of the under surface of the wings. Four other species of "whites" have been taken near Melbourne, but it is somewhat doubtful if any of them are endemic species, as one of them at any rate is one of the "migratory butterflies," which at times pass over the country in such vast numbers. *Delias melania* (?) is white, with the exception of the wings being edged with black, which at the extremities of the fore wings expands so as to enclose several small white blotches; the under side is deep yellow. *Appias (Pieris) iga*, Bois, resembles the preceding, and is a common Queensland butterfly. *Belenois (Pieris) teutonia*, Fabr., is one of the "migratory whites." Its upper surface is black and white, and under black and yellow on white ground. Dr. Lucas remarks the presence of these species near Melbourne, in a note forwarded to the *Victorian Naturalist* (vol. iii., page 152), in February, 1887. *Callidryas pyranthe* (?) Linn., resembles *D. melania* mentioned before, but without the blotches spoken of. It was taken in Gippsland. The sub-family Papilioninæ contains some of the largest and handsomest butterflies known, and in Australia is represented by some 22 species, of which the brilliant Imperial Swallow-tail (*Papilio Ulysses*, Linn.), and the Bird's-wing Butterfly (*Ornithoptera Priamus*, Linn.), of Queensland, are familiar specimens in most collections. Unfortunately for the appearance of Victorian collections, they do not extend so far south as our colony. Our Papilios are *Papilio sthenelus*, Macly., and *P. Macleayanus*, Leach. The former should, I think, be considered an immigrant, as it is rather common in Queensland and parts of New South Wales, but has not often been taken in Victoria. The Museum collection contains specimens taken at Brighton and in the University Gardens (December, 1873), and Dr. Lucas also mentions having seen it at Moe (see *Victorian Naturalist*, vol. v., page 23). It greatly resembles the Swallow-tail Butterfly of England, but has no "tails." Its colour is pale cream and black, with two red spots near the inner margin of the hind wings. It measures about  $3\frac{1}{2}$  inches across. *P. Macleayanus*, Leach, belongs to the "tailed" section of the Papilios, and is found in the mountainous parts of the colony, such as Dandenong Ranges, Healesville, &c. It has, I believe,

been occasionally taken near Melbourne. It is a very pretty insect; the bases of the wings are deep emerald, shading off to nearly white, with a wide black margin, enclosing a row of white spots, with two green blotches near the upper edge. Its expanse of wing is about  $2\frac{3}{4}$  inches.

The last family of butterflies is the Hesperidæ, the insects belonging to which are popularly known as "skippers," from their irregular, jerky flight. They are mostly small, and of sombre colour. Some 70 species have been recorded for Australia, and probably more remain to be added to the list. The Museum collection contains about 24 species, belonging to the genera Pamphilla, Telesto, and Hesperilla (*Hesperia*). The largest specimen is about  $1\frac{1}{4}$  inches across. This family is also commoner near the ranges than in the immediate vicinity of Melbourne.

I have now briefly run through the Victorian butterflies as represented at the National Museum. They will be found to number about 80 species, but of these it may safely be said that nearly one-half are found only in the higher parts of the colony, while the butterflies common about Melbourne are under 20 in number.

#### DESCRIPTION OF A NEW CHORILÆNA.

BY BARON FERD. VON MUELLER, K.C.M.G., M. & PH.D.,  
F.R.S., &c.

#### CHORILÆNA HASSELLII.

Rather dwarf; leaves small, lanceolar- or linear-elliptical, somewhat cuneate at the nearly sessile base, almost flat, equally green on both sides, as well as the branchlets beset with scattered longish simple hairlets, finally more glabrous; flowers singly terminating the branchlets or also developed from the upper axils, on short stalks; bracteoles small, linear- or ovate-elliptical, distant from the calyx; sepals very much shorter than the petals, somewhat unequal, ovate- or lanceolar-elliptical, outside beset with colourless hairlets; petals large, membranous, narrowly elliptic-cuneate, glabrous except towards the summit, yellowish, with a dark median stripe, at first connivent towards the base and distinctly overlapping; stamens about as long as the corolla; filaments linear-capillary, provided above the base with minute hairlets-bearing adnate scalelets, otherwise glabrous; style elongated, capillary, glabrous; stigma minute; ovaries blunt, bearing upwards copious hairlets.

On the western side of the Stirling-Ranges; A. Hassell, Esq.

This plant resembles rather some species of *Billardiera* and *Marianthus* than any *Chorilæna* or *Eriostemon*. The specimens

obtained are only about a foot high. The leaves attain  $\frac{2}{3}$  inch in length; the petals are from  $\frac{1}{2}$  to 1 inch long; anthers and ovularies and ovules are normal; pollen grains ovate-ellipsoid, smooth; fruit was at the flowering time (early in spring) of the plant not available.

From what is seen on this remarkable plant, it becomes desirable to unite *Nematolepis* as a sub-genus with *Chorilæna*. Should, however, the generic separation be kept up, then our new species might as well be placed into *Nematolepis*, the differences within the genus *Correa*, as regards the corolla, being quite as great, whereas again diversity of the inflorescence would, for the extended genus *Nematolepis*, not be greater as for *Lasiopetalum*.

*Nematolepis phebauioides* has recently been found near Mt. Rugged by Miss S. Brooks.

*Chorilæna quercifolia* extends to the Shannon (F. v. M.), where it attains a height of 30 feet.

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THE TALL TREES OF VICTORIA.—In a paragraph in the *Naturalist* for February last (vol. v., page 152) reference is made to a giant tree said to exist in the Dandenong Ranges. Since the paragraph appeared considerable correspondence has taken place in the press on the subject, and careful measurements of several reputed giant trees have been taken. The one previously mentioned has thus been reduced to 220 feet high and 48 feet 6 inches in circumference at 6 feet from the ground. However, in the same locality, one was measured 271 feet high, but with smaller girth. Mr. G. S. Perrin, F.L.S., Conservator of Forests, published a tabulated statement of the tall trees of Victoria in the *Argus* of 11th June, 1889, from which it appears a height of 480 feet is claimed for a tree on the Black Spur (Mr. W. Ferguson); 470 feet for one at Mount Baw Baw (Mr. G. W. Robinson); 415 feet for one in Cape Otway forest (Mr. C. Walter); and 392 feet for one near Fernshaw (Mr. C. Walter), but these measurements require further verification.

ERRATA.—Page 53, line 31—Insert “with small blunt leaves” after *Dammara Palmerstonii*. Page 54, line 2—For *Ballaria* read *Baltaria*.

# Field Naturalists' Club of Victoria.

*President:*

A. H. S. LUCAS, M.A., B.Sc.

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

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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 in 'ex for binding.

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## CONTENTS.

|                                                                                                                                    | PAGE |
|------------------------------------------------------------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA ... ..                                                                                     | 89   |
| PRESENTATION TO MR. F. G. A. BARNARD ... ..                                                                                        | 90   |
| A HOLIDAY EXCURSION TO NORTH MIRBOO. BY D. BEST ...                                                                                | 91   |
| NOTES ON A COLLECTING TRIP TO SWAN HILL DISTRICT.<br>BY C. FRENCH, JUN. ... ..                                                     | 95   |
| COLLECTING NEAR HOME. BY E. M. CORNWALL ... ..                                                                                     | 98   |
| DESCRIPTION OF A NEW SPECIES OF CHLOANTHES FROM<br>WESTERN AUSTRALIA. BY BARON VON MUELLER,<br>K.C.M.G., M. AND PH.D., F.R.S. .... | 104  |

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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, 9th September, 1889.

The president, Mr. C. A. Topp, M.A., F.L.S., occupied the chair, and about 70 members and visitors were present.

A letter was read from Professor M'Coy, C.M.G., thanking the club for his election as a patron of the club.

The hon. librarian reported the receipt of the following donations to the library:—"Prodrromus of Zoology of Victoria," decade xviii., from the Government; "Journal of New York Microscopical Society, vol. v. No. 3," July, 1889, from the Society; and "Journal of Pharmacy," August, 1889.

On a ballot being taken Messrs. W. Errington, W. H. Fossey, F. Mastin, T. M'Cormick, and F. S. Williamson were duly elected members of the club.

Colonel Legge, R.A., Hobart, was elected an honorary member of the club.

Certain suggestions for altering the name and constitution of the club submitted at last meeting were then discussed, the general view being that it would be injudicious to make the alterations suggested and the following resolution proposed by Mr. G. D. Carter and seconded by Mr. H. Kennon, was carried, viz.—"That this meeting thanks the Rev. F. R. M. Wilson for his suggestions, but cannot approve of their adoption."

The president here made an interesting presentation to the hon. secretary as reported below.

### PAPER READ

By Mr. A. J. Campbell, entitled "Notes from Malden Island." The paper dealt principally with the bird life of the island, with some remarks as to the habits and peculiarities of the different species. The author exhibited a number of specimens in illustration of his paper.

The following were the principal exhibits:—By Mr. A. J. Campbell.—The blue tern (*Anous cœruleus*) with eggs and other birds from Malden Island (in illustration of paper). By Mr. A. Cole.—Blue-tongued and Stump-tailed Lizards. By Mr. C. French, F.L.S.—a Deaf-adder from South Australia. By Mr. C.

French jun.—Eggs of Long-legged and Bass Straits Terns from Victoria; Southern Tern, New Zealand; and Noddy and Sooty Terns, Malden Island. By Mr. T. A. Forbes-Leith.—Specimens of Crimson-breasted Crow, India; Cock of the Rock, Peru; Cardinal Lory, Solomon Island; Mina, New Ireland; Parrakeet, New Guinea; and the Barbadoes Parrakeet, Photographs of Last of Tasmanian Aborigines, etc. By Mr. J. Gabriel.—Over forty Specimens of Polyzoa collected during trawling expedition of steamer "Lady Loch" off Warrnambool, including *Hiantopora ferox*, *Chlidonia daedala*, *Schizoporella cecilii*, *Amathia inarmata*, *Tubulipora serpens*, *Amphiblestrum perminutum*, *Smittia landshovorii*. By Mr. R. Hall.—Mounted Specimen of Salmon Trout (*Salmo arripis*); also *Tringa incanus* from Malden Island. By Mr. E. E. Johnson—Birds and Birds' Eggs from Wimmera district. By Mr. G. A. Keartland—A Rugged Stump-tailed lizard. By Baron F. von Mueller, K.C.M.G.—Coloured drawings of Australian Fungi, by Miss Wehl of South Australia; *Chorilaena Hasselli*, F. v M., a new plant from West Australia, and three specimens of *Isoetes* from new localities. By Miss A. E. Roberts.—Orchids from Frankston, and dried New Zealand Ferns.

After the usual *conversazione* the meeting terminated.

---

#### PRESENTATION TO MR. F. G. A. BARNARD.

At the September meeting of the club an interesting presentation took place. The President, Mr. C. A. Topp, M.A., said that he had a very pleasant duty to perform. For some five years past Mr. Barnard had been fulfilling the duties attached to the post of secretary of the club. How admirably these duties had been carried out, and with what untiring zeal Mr. Barnard had devoted his time and energies to the service of the Field Naturalist's Club, might be gathered from the great success which had attended the club, the increase in its membership, and the great interest displayed in the meetings by the members. On behalf of the club, he asked Mr. Barnard to accept, on the occasion of his marriage, and as a token of the appreciation of his work by the members, a handsome marble clock, which was accompanied by a purse of forty sovereigns, and an address worded as follows:—

To F. G. A. BARNARD, Esq.,  
Hon. Sec. Field Naturalists' Club of Victoria.

DEAR SIR,—On behalf of the members of the Field Naturalists' Club of Victoria, we have great pleasure in offering you our hearty congratulation on your marriage, and in wishing you and Mrs. Barnard happiness and prosperity.

Availing ourselves of a good old custom on these occasions, we have to ask that you will do us the honour to accept the accompanying tokens of our

esteem and friendship, which we hope may remind you, in years to come, of the many pleasant meetings of the club which you have attended, and of the many friends which you have made among its members during the five years you have been its honorary secretary.

As one of the original members of the club, and for so many years its secretary, you must feel gratified at its great success and continued expansion, which have been largely due to the time and energies which you have ungrudgingly given in its service, for which we take this opportunity of recording our sincere appreciation.

On behalf of the office-bearers and members of the Field Naturalists' Club of Victoria,

CHARLES A. TOPP, President.

MELBOURNE, 9th September, 1889.

(Cheers).

In thanking the members of the club, Mr. Barnard said that for whatever time and trouble he had devoted to the service of the club he had been more than repaid by the many friendships, which, through its means, he had formed, and the stimulus which it had given to him as well as to many others in their natural history work.

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## A HOLIDAY EXCURSION TO NORTH MIRBOO.

BY D. BEST.

(Continued from Page 82.)

On Monday, the last day of our stay, there was every appearance of more rain; but being informed that the road we had intended taking, and which is known as the Mardan-road, was far and away the prettiest of all, we decided that, rain or no rain, we could not leave without seeing it; and must say we were glad we so decided, for the local opinion was more than justified. Pretty it certainly was, and our feeling, on returning, was one of great pleasure that we had not allowed ourselves to be dissuaded by the rainy prospect from venturing along it. Moreover, we were further rewarded by securing numerous specimens, some being especially good and rare, notably the beautiful, sparkling, golden-red Buprestis Beetle, *Strigoptera Frenchii*, named after one of our oldest and most respected members—Mr. C. French, who was the fortunate finder of the first specimen. This Mardan-road, if road it can be called, takes a southerly course from the township, and, from the nature of the soil, which is a good deal of a clayey nature, must be a very heavy one for vehicles of all descriptions, and in wet weather almost, if not absolutely impassable. About a mile out we came across a bogged bullock dray loaded with timber, and which, from its appearance, had been there since the previous day, the driver having evidently been unsuccessful in persuading his team of bullocks to put forth the requisite energy to extricate it. Still another mile further was a second

dray in a similar predicament ; but here the mishap had only just occurred as we arrived upon the scene, and the team of sixteen bullocks were doing their best to retrieve it. Being in a contemplative frame of mind, we sat ourselves down on a log in close proximity, to watch the process of extrication ; and if we did for a few minutes forget that the object for which we had come out was the collection of natural history specimens, our forgetfulness was, we think, amply rewarded by the additions we made to our etymological—which, after all, is a very similarly sounding word to entomological—collection. It is remarkable what powers of invention, in the way of powerful words, a good bullock driver possesses, and in the present instance he was an undoubted genius, his genius being rewarded by his team, after several ineffectual attempts, getting their load out of their very difficult position.

It was during the fifteen minutes or so spent in watching this interesting performance that our feelings were worked into a state which almost tempted us to try and rival our bullock-driving friend, the cause thereof being the arrival of a wretch—we were and are still too disgusted to call him a man—with two beautiful Lyre-birds' tails, which it was but too apparent had only been but very recently obtained, say within two or three days. We, as mildly as our feelings would allow us, expressed our disgust at his destroying these interesting birds, which should rather claim his and all other selectors' protection, further informing him that he was breaking the law by so doing, and that we would do our utmost to have him punished. We think we must have frightened him ; at all events, he did not venture into the township with the tails, as had evidently been his intention, for, upon returning thereto, we interviewed the local policeman, who promised to do what he could to ascertain who the man was, but up to the time of our leaving he had not succeeded. The representative of the law being very obliging, and evidently desirous of assisting our efforts, we conversed with him upon the wholesale destruction of Lyre birds that was being carried on in all their yearly decreasing habitats, when he stated that the great difficulty he had to contend with was in obtaining evidence of the actual destruction, the mere possession of the tails not being sufficient to procure a conviction. Thereupon, we pointed out that although this might be so, still if he instituted even an unsuccessful prosecution it would of itself be strong evidence of his energy in the matter, and would, doubtless, deter many from again further pursuing the destruction of this the representative bird of Victoria. Further, we held out as an inducement to him to try and procure a conviction, a promise that he would receive the thanks of that important body, "The Field Naturalists' Club of Victoria"—a promise we have no doubt the Club will gladly endorse and fulfill.

The greater portion of this road—that is, so far as we went,

which was about three or four miles—was along a siding, thus differing from the previous ones, which are simply straight up and down hills, and at the many different turnings were pretty fern gullies on the lower sides, whilst on the upper were lovely views of tree ferns. The foliage, too, of all the shrubs was altogether greener, and it really seemed as if we had got into a different portion of the country. It was, therefore, with feelings of regret that we retraced our steps, as we would have much liked to have been able to spend at least another two or three days in prospecting for specimens.

We had almost forgotten to mention that immediately at the rear of our hotel was, or, rather, had been, a fine fern gully, and it was little consolation to us to learn that it was now reserved, the reservation only coming after the wholesale destruction had been perpetrated. Huge recently-fallen trees were lying in all directions many of the large ferns had met a similar fate, whilst the whole gully, which should have been a "thing of beauty and a joy for ever," was simply a scene of unjustifiable destruction and desolation, and we gladly quitted so depressing a spectacle. No doubt, now that no further interference with it will be allowed, it will to some small extent recover itself during the coming winter, and will, therefore, probably better repay a visit next spring and summer.

Our wanderings were all confined to the southern side of the township, the appearance of the northern being not nearly so inviting, and it almost seemed as if the township, which runs east and west, was a dividing line between two totally different classes of country. The timber on the southern side runs large, whilst on the northern the land looks poor and barren, and the timber is, in consequence, stunted and altogether unattractive to anyone in search of the picturesque.

In the immediate neighbourhood of North Mirboo, the timber vegetation consists principally of *Eucalyptus obliqua*; a little further on there are splendid trees of *E. regnans*, *E. globulus*, and *E. goniocalyx*, the latter here called Bastard blue-gum, its seedlings indeed bear a very close resemblance to the true blue-gum; the smaller timber consists, as at Yarragon, of *Acacia melanoxylon*, *A. dealbata*, *Pittosporum undulatum*, *Hedycarya Cunninghamsi*, Sassafras, Musk trees, &c. The shrubby, herbaceous, and annual plants are also almost identical with those of Yarragon. We found in flower *Bauera rubioides*, *Viola hederacea*, *Leptospermum juniperinum*, *Lomatia ilicifolia*, *Amperea spartioides*, *Epilobium tetragonum*, *Geranium pilosum*, *Aster argophyllus*, *A. glandulosus*, *Cassinia aculeata*, *Helichrysum leucopsidium*, *Siegesberkia orientalis*, *Erechtites prenanthoides*, *Senecio lautus*, *S. vagus*, *S. Bedfordi*, and *Lobelia simplicicaulis*. When travelling in the train we noticed in the water-holes along the line plenty of *Ottelia*

*ovalifolia*, but at only one place did we observe it in flower, and that was near Yinnar station, between Morwell and Mirboo. In fruit we obtained *Billardiera scandens*, *Pultenaea Gunnii*, *Fieldia australis*, *Dianella longifolia*, *Thysanotus tuberosus*, and *Diplarrhena Moraea*. Although of such comparatively recent settlement, the common weeds from the neighbourhood of Melbourne were already very plentiful all around North Mirboo.—

“Time, however his wheels we may clog,  
Wends steadily still with onward jog.”

and time having brought our all too limited holiday to a close, we prepared to take our departure by the 4 p.m. train, but before quitting a place where we had so much enjoyed ourselves, we, of course, indulged in the usual parting glass with the landlord and several of our newly-formed acquaintances, over which we could not better express our feelings than in the words of Hood's New River fisherman—“We have been bravely entertained, and at our first holiday will come to it again.”

## SPECIMENS TAKEN.

Phasmidæ—

Longicornæ—*Enneaphyllus aneipennis*

*Phacodes obscurus*

*Callidiopsis scutellaris*

*Iotherium metallicum*

*Monohammus argentatus*

*Amphirhoe decora*

*Zygocera canosa*

*Pytheus pulcherrimus*

*Hebecerus marginicollis*

*Stenoderus concolor*

*Mecynopus semivitreus*

Buprestidæ—*Strigoptera Frenchii*

*Melobasis*, sp.

*Stigmodera amplipennis*

*Stigmodera Vicina*

*Stigmodera Bella*; and two other sp.

Elateridæ—Nine sp.

Rhipidophoridæ—*Pelecotomoides*, sp.

Cucujidæ—*Brontes militaris*; and three other sp.

Cleridæ—*Thavisimus*, sp.

*Eleale*, sp.

*Pylus fatuus*; and one other sp.

Trogositidæ—*Leperina*, sp.

Ædemeridæ—*Ananca dorsalis*

Curculionidæ—Five sp.

And a few specimens of other families.



## NOTES ON A COLLECTING TRIP TO SWAN HILL DISTRICT.

BY C. FRENCH, JUN.

*(Read before the Field Naturalists' Club, 13th May, 1889.)*

LEAVING Melbourne by the 6.50 a.m. train on 22nd October, '88, I reached Kerang at 4.30. The place did not present a very inviting appearance. Having to wait in the township for some time, I had a look round for plants close to the township, but nothing of interest was noticed. Leaving Kerang for Lake Charm by the coach, my companion, a Chinaman, soon inquired what I was after, and began to give me a lot of information regarding birds, &c. He spoke English fluently. The ride in the coach was very pleasant, the night being moonlight, and as we skirted along the various lakes they looked very beautiful. Lake Charm Hotel being reached I had tea, and turned in.

Next morning I made an early start for the Racecourse Lake, a fine sheet of water, with plenty of wild fowl, &c. Around the lake the following plants were collected:—*Mimulus prostratus*, *Atriplex halimoides*, *A. semibaccatum*, *Centipeda cunninghami*, *Stemodia morgana*, *Stellaria palustris*, &c.

Birds seem plentiful here. Several species of parrots were noticed; also many other sorts of which I did not know the name. Crows were everywhere, and their noise will not be easily forgotten. Several nests and eggs, also eggs of Black-fronted Dottrell, Garrulous Honeyeater, White-plumed Honeyeater, Pied Grallina, &c.

About a mile from Racecourse Lake there is some fine collecting ground, on which I collected *Hakea leucoptera*, *Kochia brachyptera*, *Atriplex halimoides*, *Aster pimeloides*, *Ptilotus spathulatus*, *Santalum acuminatum*, *Aristida behriana*, *Exocarpus aphylla*, *Pittosporum phyllræoides*, *Cassytha melantha*, *Mimulus prostratus*, *Lobelia concolor*, *Salicornia australis*, *Leptorrhynchus palustris*, *Calocephalus sonderi*, *Euphorbia drummondii*, *Melaleuca parviflora*, *Nitraria schoberi*, *Myoporum platycarpum*, &c.; and, in some small lakes were found the water plant *Limosella curdieana*. Retracing my steps to the hotel, several fine Whistling Eagles were noticed; also the Brown Tree Creeper, Black-backed Porphyrio, a species of Wood Swallow, &c. I reached the hotel very much pleased with the results of my first day's collecting.

During the next few days I visited Lake Charm and other lakes near the hotel, but mostly the same things collected at Racecourse Lake were found.

Mr. Geo. Morton, an energetic and observing naturalist, kindly sent over his buggy from Benjeroop—a distance of eleven miles—for me to come to stay at his place. The ride over was something

not to be forgotten. It being a beautiful moonlight night, as we passed by the Salt Lakes they presented a beautiful sight, being one mass of white. I am informed by Mr. Morton that the salt from these lakes is the cause of this singular feature. The salt, Mr. Morton says, is mostly sold to butchers and hide merchants, for salting hides; large quantities are also sent up to the Albury district, and given to sheep. Some is also sold for manure. It is worth £1 per ton at the lakes, and is sold from £3 to £4 in towns, according to the freight.

Next morning Mr. Morton and I went to have a look round, and a good deal of the pretty blue *Mimulus gracilis* was collected. After breakfast I went with Mr. Morton to his Benjeroop East school, situate about three miles from his house. We drove past polygonum scrub—called “lignum” by other residents—and many small birds were to be seen flying from it, such as Red-capped Robin, White-winged Superb Warbler, Chestnut-eared Finch, &c. Reached school, and Mr. Morton advised me where to spend the day, he being teaching in the school. I searched several small creeks for Wood Ducks’ nests, but was unable to find any, although there were plenty of the birds in the creeks. The pretty yellow, fringing flower, *Limnanthemum crenatum*, was abundant in the waterholes; and it seems a very good place here for birds, as many were noticed, such as Spoonbills, Cranes, and also several species of Hawks, Parrots, &c. Having collected a good many rare specimens, I returned to the school, and drove back with Mr. Morton to his house, which is situated on the banks of the river Murray.

Next morning I went with Mr. Morton to his Benjeroop school, distant about six miles, and close to the Salt Lakes. On the way many birds were noticed, such as Robins, Acanthizas, Honey-eaters, Fairy Martins, Wood Swallows, Hawks, Australian Cranes. Many nests of the Fairy Martins were noticed under the bridges. I collected all day close to the school, and many nice specimens of plants were obtained, such as *Eremophila longifolia*—with its pretty red flowers—which grows very plentifully. A fine ornamental grass, *Stipa elegantissima*, grows amongst the clumps of *Xanthorrhœa*. This grass, I think, would be splendid for bouquets. The following plants were collected near Salt Lake:—*Ptilotus spathulatus*, *P. exaltatus*, *Eremophila divaricata*, *Kochia ciliata*, *Brachycome melanocarpa*, *Dodonœa viscosa*, *Helipterum lucidum*, *Swainsonia phacoides*, *S. procumbens*, *Calotus hispidulus*, *Myoporum platycarpum*, *Aristida behriana*, *Cassia artemisoides*, *Mentha australis*, *Eucalyptus largiflorens*, *Hakea leucoptera*.

On the eucalyptus trees many crows’ nests were noticed, and underneath one of the crows’ nests was fastened the nest of the White-faced Xerophila. This seems remarkable—that a bird should actually build right under a crow’s nest, as the crows are

noted nest-robbers. I took a pair of fresh eggs from the Xerophila's nest, also one fresh egg from the crow's nest. Black Fantails were rather plentiful, and I took a nest with eggs. The Black Fantails are said to throw the eggs out of their nest when once they have been handled by any person. The Orange-fronted Ephthianura are very plentiful about the Salt Lakes, in the Atriplex and Salicornia bushes, which cover the dry portion of the lake's bed, but I was unable to discover their nests.

I returned to the school, and Mr. Morton drove me round to see the very pretty sights of Benjeroop; and the sight of the steamer puffing away up the river, with its large barges of merchandise for Echuca and other places on the Darling and Murrumbidgee, was to me quite a pleasing novelty.

I paid a visit several times to the Benjeroop school, and always seemed to find something that I had not previously collected. The Stump-tailed, also the Frilled and Lace Lizards, are pretty common here, and many a fright I have got when looking for plants, to see these lizards close at my feet. Mr. Morton showed me a very remarkable lizard, called Gecko. This lizard exudes a fluid which is commonly supposed to be poisonous. We collected several live specimens of the Gecko, but, unfortunately, when bringing them to Melbourne they escaped. Mr. Morton, however, will send specimens down, at some future time, for identification.

In the evenings Mr. Morton and I were engaged finishing a boat, the *Pride of the Murray*, intended for a collecting excursion to the swamps on the New South Wales side of the river. The day at last arrived, and we set sail down the Murray, all in our glory, for a real collecting expedition. The boat, I may mention, just held two comfortably, and sailed splendidly. We reached the entrance to the swamps, lifted the boat over a log, and sailed around them all day. These swamps are simply a paradise for birds, a great many kinds being noticed. It was rather early for eggs. Though we did not do so well as we expected, several nests with eggs were taken, such as Pied Grallina and White-breasted Wood Swallow. The nest of the White-breasted Wood Swallow, containing four eggs, was taken out of an old, deserted nest of the Pied Grallina. I may say that I received a good many duckings during the day; and, on one occasion, when I tried to get into the boat it moved off, and I was thrown head first into the water, much to the amusement of my friend. The following birds were noticed about these swamps:—Whistling Eagle, Square-tailed Kite, Wedge-tailed Eagle, Brown Hawk, Nankeen Kestrel, Wattled Plover, Black-breasted Plover, White-fronted Heron, Common Heron, Egret, Black Swan, Cormorant (several species), Wood Duck, Black Duck, Tribonyx, Ibis, Spoonbills, Corcorax, &c. We reached

home after a hard day's outing, but much pleased with the various objects of natural history noticed.

The last week was spent mostly near Mr. Morton's house, in the "lignum," and in this scrub was found several nests and eggs of Red-capped Robin, Chestnut-eared Finch, White-faced Xerophila, Superb Warbler, &c. Several White-winged Superb Warblers were noticed, but I was unable to find any nests.

Benjeroop is rather a bad place for snakes, one being killed by Mrs. Morton, close to the house, while I was there. When Mr. Morton and I were out we often saw several, they being nearly always the Copper-headed species.

There are a great many blackfellows' ovens about Benjeroop ; and I was informed by Mr. Morton that skeletons of aboriginals are often found when one digs for them.

A phenomenon that is very striking to a person who has never seen one before is the mirage, and on several occasions, when driving with Mr. Morton we noticed them, and, thinking we were coming to a lake, I was much surprised to see the mirage suddenly disappear.

In conclusion, I have to thank Mr. A. J. Campbell for my introduction to Mr. Morton ; and I take this opportunity of thanking the latter gentleman and his wife for their kindness and attention to me during my stay at Benjeroop ; and also Baron von Mueller for his kindness in naming the plants, and otherwise assisting me. I returned to Melbourne by the same route as that by which I came, and reached home after an absence of three weeks.

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## COLLECTING NEAR HOME.

BY E. M. CORNWALL.

(*Read before the Field Naturalists' Club of Victoria, 8th July, 1889.*)

OF the many difficulties which a young naturalist may have to contend with, more especially in or near a large city, the scarcity of collecting grounds is perhaps the most prominent. And yet in many cases this dearth of localities in which to search is more a matter of imagination than of fact, for it is simply wonderful what marvels can be brought to light by an enthusiast in a spot which a casual observer would pronounce to be utterly barren.

We very often hear members of this club complaining of the lack of good collecting grounds near home, and a short time ago a paper in which the following passage occurs was read before the club :—"Our collecting grounds are now restricted to the sadly diminishing moors of Cheltenham and Brighton, and to a narrow strip on the banks of the Yarra." Now, were this so we might well feel disheartened, but I am thankful to be able to

assert that such is not by any means the case; indeed I will venture to say that there is not another city in the world with the same population that can offer greater attractions to the naturalist within its suburban radius.

A few miles by rail in any direction around Melbourne will take us into fairly open country, where every branch of natural history may be studied to a greater or less extent. What one finds may not be always new, but the true naturalist does not seek ever for the new, for by so doing he would pass much that would be of infinite interest and of inestimable value. He sees beauty in all of Nature's works, and through it all recognizes the bountiful hand of the Great Creator. 'Tis only so that we may rise to higher grade than that of the mere collector of specimens.

As my own interest is more particularly centred in Ornithology, this short paper will naturally touch principally upon that subject, but at the same time I feel confident that it will apply to a very great extent to all branches of natural history.

As a general rule our native birds do not take at all kindly to civilization in its more advanced forms. Where houses thickly cluster we hear no more the peaceful warblings of the wren or the gay carolling of the magpie; in their place the lively chirruping of the sparrow and the loud whistle of the Indian minah, offer us slight, but, alas! very slight, compensation. But still there are many places within easy reach where numbers of our feathered friends are yet to be found.

Although the swamps which used to lie on each side of the Yarra, between the city and the sea, with their teeming myriads of wild fowl, from the gluttonous Pelican to the tiny Grebe, are now but a memory of the past, the lower Yarra, with its few remaining swamps and sedges, affords some attraction to the ornithologist.

The Pacific Gull may still be seen flying up and down the stream, and the pretty Silver Gull keeps him company in goodly numbers. The cormorants, who in days of yore perched, like sentinels, on stump and overhanging bough, now take possession of the many piles and beacons which mark the channel's course. A solitary Musk Duck is occasionally seen in the reaches of the river, but he does not feel "at home," and scuttles away affrighted from the many passing steamers; his days here are numbered, and soon he will be thought of as are the swans, and geese, and ducks of days gone by.

Although the larger hawks are not now to be found here, the pretty Nankeen Kestrel can often be noticed skimming on graceful wing over the flats, or flying high in air, screaming as it were in anger at some steamboat's whistle or other uncongenial sound.

The Little Grass Bird frequents those grassy flats which are

awash at high water, building its nest, in company with the Ephthianura, just out of reach of the encroaching tide.

During the later months of the year the plaintive note of the Reed Warbler is heard amongst the rushes and reeds which fringe the river's bank in places; his nest is tolerably secure here from marauding boys, and he is likely to be one of the last to be driven from his old haunts.

On the low sandy rises between Sandridge and the river, where the low scrub and tussocky grass is not all cleared away, the Rufous-headed Grass Warbler builds its fairy-like home, and the Pectoral Rail runs amongst the grasses, though in sadly diminished numbers.

The immense tract of marshy land known as the West Melbourne Swamp has proved an inexhaustible harvest field for the microscopist, and will continue so for many years to come. Those stagnant pools and slimy water weeds are swarming with objects of intense interest to the searcher after minute forms—Diatoms, Desmids, and scores of other objects, all too numerous to mention here, many of them so tiny that the naked eye cannot see them, and yet each has its allotted place in the mighty universe. Unsavoury as it undoubtedly is, much can be learned from a walk along the banks of the Lower Yarra.

The dense scrub along the coast between Mordialloc and Frankston, and even back to Brighton, affords favourite coverts for many of our birds, more especially the smaller species. When the Banksias are in bloom it would be hard to find a better collecting ground for many varieties of Honeyeaters. The peculiar discordant note of the Wattled Honeyeater rings out its warning cry from every tree-top, and its smaller congener, the Brush Wattle Bird, is also fairly plentiful.

This strip of coast country may be said to be the chosen habitat of the New Holland Honeyeater. These birds feed in scores amongst the flowers of the Banksia; or, when such flowers are not obtainable, may be seen preying upon insects, which they nimbly catch whilst on the wing.

In the darkest patches of scrub, the Mountain Thrush has her nest, returning year after year to the old home, rebuilding and renovating it to render it fit for habitation. This is a very shy bird, and being extremely silent in its habits, is not by any means the easiest specimen to secure. When pushing through the dense thicket the hunter makes his presence known long before he comes upon the nest, and then the bird is far away. Viewed from below, the nest appears to be merely an accumulation of rubbish, overgrown with moss and lichens; but a closer inspection reveals a compact, cup-shaped nest, warmly lined with fine grass, in which repose two or three delicate green eggs, blotched with dull pink.

The Bronzewing Pigeon was once very plentiful here, but pot-hunters are rather too much for him, and he is scarce now. Occasionally a whirr of wings tells us that these beautiful birds are not quite exterminated, and now and then one of their nests may be found, a primitive platform of sticks, through which the two white eggs are plainly visible from below. The marvel is how the eggs remain in their fragile resting-place when the bird scuttles off in her fright.

Here, too, the *Sericornis* builds its warm, dome-shaped, feather-lined nest, its favourite situation close to the ground, at the foot of a tree. The *Sericornis* is a very sensitive little bird. Simply touch the entrance of the nest with a finger and the home is deserted, though the young may be half grown.

The sweet, soft warble of the White-shafted Fantail is always to be heard, and in due season one may take its nest—a marvel of beauty, wondrously woven of fine grasses and cobwebs, and firmly fixed to a thin, horizontal branch.

The Brown Hawk often hunts about these scrubby patches and over the flats across the railway line, where quail and snipe are to be found in limited numbers. In the old days the Carrum Carrum Swamp was a famous hunting ground. The quail and snipe loved its grassy flats, and the swans and ducks nested in thousands amongst the reeds and rushes surrounding its many pools. Even now a pair of swans may sometimes be found rearing their brood amongst the sedges of their old home, as if loth to be driven away before the march of civilization.

The Boobook Owl sleeps the day away in the heart of the densest bush. Hollow trees are scarce now, so he finds a thick shelter of leaves in which to pass his hours of idleness.

Before leaving this district I must not omit to mention the fossil beds of Cheltenham, which are of considerable extent and remarkable interest, as many a member of our club can testify. Relics of the past are always to be obtained there, whilst valuable finds are occasionally brought to light.

Leaving the coast, and striking off in a north-easterly direction, much open country is found. The many paddocks and bits of waste land interspersed amongst the farms and market gardens offer admirable inducements to collectors. More especially does this refer to botanists. A close inspection of this apparently barren-looking country reveals a variety of plants which is simply marvellous. Orchids, including many rare and beautiful species, are remarkably plentiful, and it is not at all outside the bounds of possibility that some entirely new species may be discovered by close and diligent searching.

Although many of the paddocks where such good work could be done some few years ago are now laid out in streets and thriving villages and paper towns, the hunter has but to go a little

further to find spots equal to them in every respect. A walk across country from Cheltenham or Mentone to Oakleigh will reveal many localities that collectors rarely visit, and where objects of great interest are to be obtained.

Entomologists could hardly wish for a better field, more especially for the smaller forms, which abound in countless multitudes. Every step taken through these heathy grounds rouses scores from their hiding places, and each sweep of the net adds something to the day's takings.

Many varieties of birds can be taken around Oakleigh. The peculiarly plaintive note of the White-eared Honeyeater is heard here more frequently than in any other spot near Melbourne, and its graceful cup-shaped nest, containing two or three prettily-spotted flesh-coloured eggs, may be found in the heart of some low bush or stunted sapling.

The Spotted-sided Finch, a bird not by any means common near the metropolis, builds every year in this neighbourhood. Its favourite haunt is some four miles from the railway station, in a south-easterly direction, where it builds in the young gums a rough-looking dome-shaped nest of coarse grass.

The Field Calamanthus is another frequenter of these moors, and the diligent searcher will sometimes be rewarded by finding its beautiful feather-lined nest, snugly hidden away under the thick low-growing branches of a stunted bush.

A still greater prize would be the nest and eggs of the tiny Emu Wren. Last year I observed several, one being a half-fledged male, within a hundred yards of the railway line; so it is very evident they breed in the neighbourhood.

Many more birds could be named as obtainable here, either amongst the sedges which surround the numerous swamps and small lagoons, the ti-tree scrub by the creek, or amongst the branches of the gums.

A better general collecting ground than this district offers could hardly be found, and I would urge all collectors to hunt it, and to hunt it well, and will guarantee that their efforts will meet with ample reward.

Away in a north-easterly direction from Oakleigh are many excellent localities well within walking distance of the station. Along the Ferntree Gully and Waverley roads are numberless well-timbered paddocks and some thickly scrub-lined creeks, where the naturalist may wander all the day, and many days, always finding something to claim his attention or to evoke his admiration.

A walk along the high road to the crossing of the Dandenong Creek brings one into almost new ground, approaching the primeval in secluded spots, carpeted with wild flowers in spring-



time, resounding with bird-songs, and alive with insect life during the riper summer months.

But it is not necessary to go so far as the Dandenong Creek to find good hunting grounds. The whole of the country to the eastward of Burwood and Glen Iris is, comparatively speaking, sparsely settled. Along the Damper Creek are many secluded nooks, thickly timbered with the varieties of trees and shrubs which love those damp places. Between there and the foot-hills of the Dandenong Ranges, a distance of only seven or eight miles, are creeks and gullies innumerable, affording endless fields of work in all branches to students of "the manuscripts of God."

A specially favourite haunt of mine is a paddock, or rather several paddocks, on the Ferntree Gully road, some four miles from Oakleigh. There I have done much work, and learned many lessons; and would strongly advise others to go that way.

Then as to that narrow strip along the bank of the Yarra. Its interest is wide, whatever its breadth may be. Past Kew, away through Heidelberg and Eltham onwards, are miles upon miles of country where the naturalist may roam amongst, and revel in, those wonders for the study of which this club was formed.

I would also point out to members who do not know the country well that the new railway line about being opened through Hastings to Crib Point passes through many miles of heavily timbered forest land, which, for the whole distance, is teeming with objects of interest. Nor is this all; but time forbids their mention.

In conclusion, I trust that I have proved that we are yet well off for spots wherein to gather Nature's harvest; and though it may be presumptuous for a young member to express such an opinion, I may remark that it has sometimes struck me that our nearer collecting grounds are deemed exhausted before they really are, and that our searchers have been somewhat hasty. No hour's ramble anywhere can tell that place's story thoroughly, nor yet reveal, to even those who best know where to look, all Nature's secrets it may hold. I also have had doubts as to whether the "largest bag" will necessarily produce the best results and throw most light on what we fain would know—the true life-history of bird and beast, of insect, plant, and sod; and sometimes fancy that knowledge may be gathered up where specimens are not procurable—more valuable far.

In one of his charming essays John Burroughs has well said, "We cannot read Nature's book at the run;" and we, who desire to study the Victorian edition thereof, will not do ill to bear these words in mind. Then, the tale of species and variety complete, the oft-reaped fields near home will bear an aftermath, and interesting chapters will be penned on all the wondrous detail which makes up their life.

DESCRIPTION OF A NEW SPECIES OF CHLOANTHES  
FROM WESTERN AUSTRALIA ;

BY BARON VON MUELLER, K.C.M.G., M. &amp; PH.D., F.R.S. &amp;c.

## CHLOANTHES TECKIANA.

Vestiture consisting of jointed partly branched and also glandular hairlets, thus somewhat viscid ; branchlets cylindrical ; leaves all opposite, sessile, brittle, from lanceolar-ovate to narrow-elliptical flat, distantly and rather deeply and bluntly serrulated, equally green on both sides ; flowers, through decrease of size of the floral leaves, constituting foliate racemes ; peduncles slender one-flowered, axillary, solitary, finally somewhat longer than the calyx, bearing two lanceolar or rhomboid bracteoles near the summit ; calyx divided to near the base into lanceolar segments ; corolla rather large, its tubular portion upwards turgid, inside near the base bearing circularly very short dense white hairlets ; its two upper lobes almost semi-orbicular and usually shorter than the others ; lateral lobes semi-ovate ; lower lobe somewhat longer, nearly rounded and often with a small terminal notch ; stamens glabrous, the two longest only and slightly emerging ; anther-cells bearing at their base a minute turgid appendage ; style and disk glabrous ; stigmas short, narrow, pointed, unequal in length ; fruit nearly globular, beset densely with very short white hairlets, its base perforated ; primary dissepiment turgid towards the middle and separating into two laminas ; secondary dissepiments thin and slightly hollowed.

Near Lake Deborah ; the specimens communicated by the Hon. John Forrest, C.M.G.

Nearest allied to *Chloanthes Denisonii*, which however has most of its leaves ternately whorled and provided with sharper serratures, the flower-stalks shorter, the calyx cleft less deeply with more pointed lobes, the corolla considerably smaller and also proportionately less turgid, the anther-appendicles hardly visible, the fruit ellipsoid-obovate.

With this new elegant shrub, of evidently rare occurrence, has been dedicatively connected the name of the Duke of Teck, G.C.B., in appreciation of the powerful support, which His Highness, as President now of the Royal Horticultural Society of England, is affording to the very meritorious pursuits of that great union. The colour of the corolla, so far as can be judged from the dried specimens, turns from violet into lilac. If *Pityrodia* is to be maintained as distinct from *Chloanthes*, then this plant should be placed into that genus.

# 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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— OF —

The Field Naturalists' Club of Victoria.

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## CONTENTS.

|                                                                                                                                   | PAGE |
|-----------------------------------------------------------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA ... ..                                                                                    | 105  |
| EXHIBITION OF WILD FLOWERS ... ..                                                                                                 | 106  |
| FUNGI OF THE SEASON. BY H. T. TISDALL, F.I.S. ... ..                                                                              | 107  |
| A BASKET OF FISH. BY A. J. CAMPBELL ... ..                                                                                        | 111  |
| CONTRIBUTIONS TOWARDS A LOCAL LIST OF THE COLEOPTERA FOUND AT MULWALA, MURRAY RIVER, N.S.W. FIRST FRAGMENT. BY T. G. SLOANE... .. | 117  |
| DESCRIPTION OF A NEW LOGANIA. BY BARON VON MUELLER, K.C.M.G., M. AND PH.D., F.R.S. ... ..                                         | 118  |
| A CURIOUS FUNGUS. BY H. T. TISDALL, F.L.S. ... ..                                                                                 | 119  |
| NOTES ON A REMARKABLE LONGICORN BEETLE, NEW FOR VICTORIA. BY C. FRENCH, F.L.S. ....                                               | 120  |

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No. 71.

## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 14th October, 1889.

Mr. A. H. S. Lucas, M.A., was voted to the chair, and about 40 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library:—"Annual Report of Secretary for Mines," 1888, and "Quarterly Mining Reports," June, 1889, from the Mining Department, Victoria; "British Birds and Eggs" and "Land and Freshwater Shells," (Young Collector Series) from Mr. P. H. Anderson; "Proceedings of Linnean Society of New South Wales," 2nd series, vol. iv. part 2, from the Society; "Annual Report of Boy's Field Club, Adelaide," 1889, from Mr. A. F. Robin; "Journal of Pharmacy," September, 1889.

The hon. secretary reported that the club excursion to Croydon on Saturday, September 28th, had been fairly successful, a large number of species of wild flowers having been obtained, though not comprising any very great rarity.

Mr. G. A. Keartland (leader) furnished an interesting report of the excursion to Melton, on Saturday, 12th October, where a large variety of birds were noted, and several specimens obtained, also eggs taken. Among these may be mentioned a wild turkey black-breasted plovers, rufous-breasted thickheads, shining fly catchers and spotted-sided finches. A pair of the latter birds were observed building their nest alongside that of a hawk still occupied.

On a ballot being taken Mr. H. Matthews was elected a member of the club.

The chairman referred to the recent appointment of Mr. C. French, F.L.S. to the position of Entomologist to the Department of Agriculture.

The chairman also referred to the death of the Rev. J. E. Tenison-Woods, F.L.S., F.G.S., etc. of Sydney, an honorary member of the club, one of the best known naturalists in Australia.

Mr. H. Edwards, at present on a visit from the United States, and who was formerly an enthusiastic entomologist in Melbourne, was introduced to the meeting, and congratulated the members on the success of their society.

The hon. secretary gave a brief account of the working of the Boys' Field Club of Adelaide, S.A., describing an excursion of the club to Brighton, which he had the opportunity of attending when in Adelaide recently.

PAPER READ.

By Mr. H. T. Tisdall, F.L.S., entitled "Notes of a Visit to Toombon." This was principally descriptive of the scenery between Walhalla and Toombon, North Gippsland, with a few remarks as to the vegetation, &c. met with during the trip. The paper gave rise to several interesting queries and replies.

The principal exhibits of the evening were:—By Mr. T. A. Forbes-Leith.—Parrakeets, from Eastern Africa, New Guinea, Fiji, and Society Islands; also, ethnological photographs. By Mr. G. A. Keartland.—Horsfield's Bush Lark (mounted), and White-faced Xerophila, eggs of Allied Harrier, Friar-Bird, Black-faced Grauculus, Spotted Ground Thrush, Crested Oreoica, Crested Bronze-wing Pigeon, Fantail Cuckoo, Pallid Cuckoo, Warbling Parrakeet, Musky Parrakeet, and Black Cockatoo. By Mr. D. Le Souëf.—A Devil Lizard, *Moloch horridus*, from Gascoigne River, West Australia. By Mr. J. Shepherd.—The Tube-building Rotifer, *Melicerta ringens* (under microscope).

After the usual *conversazione* the meeting terminated.

---

EXHIBITION OF WILD FLOWERS.

THE fifth annual exhibition of wild flowers by members of the Field Naturalists' Club of Victoria, was held at the Royal Society's Hall, on Monday evening, 30th September, 1889.

The display was quite equal to that of former years, but did not present many very striking novelties to the visitors, who were very numerous. Again the members were unfortunate in the weather experienced on the two previous days, it being almost too boisterous for much out-door work.

The number of species exhibited was about the same as in previous years, the following being brief notes of the principal exhibits:—By Mr. D. Best.—About 40 species (collected at Phillip Island, by Mr. J. West), including fine examples of many of the orchids, *Tecoma australis*, &c. By Mr. F. G. A. Barnard.—About 40 species, from Croydon and Ringwood, including *Pterostylis barbata*, and many handsome leguminaceous flowers. By Mr. G. Coghill.—About 50 species, collected at Box Hill. By Mr. J. E. Dixon.—A well-grown spike of *Dendrobium speciosum*, plants of the Adder's Tongue Fern, *Ophioglossum vulgatum*; also, a fine plant of the fern *Asplenium marinum*, from King Island. By Mr. C. French, F.L.S.—About 30 species, from Berwick, also specimens of several garden-grown Australian



flowers, and sprays of *Eugenia smithii*, in fruit. By Mr. G. French.—About 30 species of Orchids, &c., from Brighton and Cheltenham, including fine specimens of *Lyperanthus nigricans*. By Mr. C. Frost.—About 100 species, chiefly from Kew, Ringwood, and Cheltenham. By Mrs. W. Martin.—A striking decorative arrangement of native flowers, mosses, &c. By Miss Roberts.—About 20 species of Orchids, &c., from Frankston. By Mr. H. T. Tisdall, F.L.S.—About 40 species, from Eltham, among which fine specimens of *Grevillia lavandulacea*, and *Viola betonicifolia* were much admired. By Mr. C. A. Topp, M.A.—About 50 species, from Kew, Cheltenham, &c., among them being a double flowering specimen of *Epacris impressa*, found by Rev. A. Cresswell, M.A., near Dandenong. By Messrs. A. and C. Yelland.—About 80 species, from Studley Park, Avoca, and Diamond Creek, &c., including *Eriostemon obovalis*, grevillias, orchids, &c.

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### FUNGI OF THE SEASON.

BY HENRY THOS. TISDALL, F.L.S.

(Read before the Field Naturalists' Club of Victoria,  
10th June, 1889.)

THE heading of my paper is likely to be misleading unless it be understood that I am speaking to a Melbourne audience, and would, therefore, only mean those fungi to be found in or near Melbourne. The season commenced very badly. I remark that the date of my first specimen is towards the end of April; whereas, in other years, fungi appear in very fair quantities in March, and a few may even be found in February. On the slopes of the Yarra, adjoining the old Survey Paddock I obtained several kinds of Agarics, some Polyporei, and a Peziza. The first I got was rather a surprise to me. Strolling along the Yarra, feeling rather disgusted with things in general and fungi in particular, I suddenly saw something white in some long grass. I expected to be disappointed for the fortieth time by seeing a piece of paper or a white pebble; but, to my surprise and pleasure, there stood a veritable fungus. It was a species of Agaricus. The lower portion of the stem was still enveloped in the volva or bag-like covering from which the whole plant had escaped; for some fungi, like chickens, are first confined in a kind of eggshell—or, rather, eggskin—from which they burst after a certain time. The whole plant was as white as snow; the stem, about two inches high, was surrounded by a cap or pileus, the under portion of which was covered by the gills, which are the closed fan-like structures peculiar to the Agaricini. These gills were membranaceous, firm, and acute, covered with white spores or seed-vessels.

Now, this description furnishes us with sufficient data to fix the order and genus of our fungus. The gill-like structure, as I said before, shows it to belong to the order Agaricini. The firm, acute edges of the gills determine its genus, *Agaricus*, and the white spores, with the presence of a universal volva, relegate it to the sub-genus *Amanita*. The other Agarics found were much smaller than the *Amanita*, and the differences in structure were so specific that they would not be worthy of notice in a general paper such as this. It might, however, be well to remark the colour of the spores. As I mentioned in a former paper, the colour of the spores is very important in determining the sub-genera in most fungi, particularly in the Agaricini. There are over two thousand species of the genus *Agaricus*. These are divided into five series by the colour of the spores—white, salmon-coloured, ferruginous, purple, brown, and black; consequently, if the colour be known, the fungus can be at once placed in its proper division.

An immense number of Agarics have appeared this season. Almost on every piece of scattered manure the little round-topped *A. semiglobatus* might be found, its white stem contrasting well with the dark gills. In the rich soil of the shady nooks of Albert Park and Sandringham, clusters of the delicate *A. disseminatus* and *A. funicola* were to be seen; in fact, numberless species of Agarics were found by me at Mentone, Cheltenham, Eltham, Heidelberg, and Sandringham, besides the parks in the immediate vicinity of Melbourne; some growing amongst the grass, others, such as *A. umbelliferus* on the bare ground, others on roots, stumps, old logs—in fact, any place where there was shade and moisture. *A. candescens* is worthy of remark, as it has been very plentiful this season. It is found in clumps at the base of half-rotted stumps. The cap, which is broad and leaf-like, is variously coloured from grey to purple. The stem grows from one side of the cap, giving the fungus a very singular appearance; but the most remarkable circumstance concerning it is its luminosity. In the daylight it presents no difference from the ordinary fungus, but in the dark it shows a distinct phosphorescent light. In one specimen obtained near the Survey Paddock the brilliancy was so great that I was enabled to read easily the words of the newspaper on which it was placed. The bank of the Yarra near Eltham was excellent ground for fungi this season. The hard, woody *Polyporus australis* and leathery *Polyporus spumeus* were found on many eucalypti. The jelly-like *Tremella albida* covered the tops of the rotten logs, while beneath the logs, or among the thick scrub, *Bolbitius fragilis* might be found in quantities. Its name is well deserved, for it is almost impossible to touch it without injuring or totally destroying it. On half-rotting pieces of bark white woolly-looking fungi were found. These were

*Schizophyllum commune*. On the hill-side, near the river, the tall *Agaricus clypeolarius* raised its graceful form over the surrounding grass. This is one of our handsomest fungi, but is rather uncommon. I had not seen it till this season since I found it near Toongabbie in 1885. I also found several puff-balls, such as *Lycoperdon gemmatum*.

On the 2nd April, last year, I discovered a very curious fungus in the sandy soil of the scrubby country just over the cliff at Cheltenham—it presented the appearance of a puff-ball; a small portion of the top only was visible above the ground; when cut, the centre appeared to be a mass of brown paste, surrounded by a transparent gelatinous substance, the whole completely enveloped in a leathery yellowish-brown skin. On submitting the paste to the test of a one-inch objective, it was shown to consist of the cut ends of a multitude of soft tubes—some circular, but the greater number pressed into various shapes; the gelatinous portion was very soft, and soon dried up; it was separated into various-shaped cells by transparent walls, which did not evaporate, but stood out very prominently as the softer portion disappeared. The interior of the tubes was covered by the hymenium, but I could not see it clearly enough to describe it. Except that it was one of the Gasteromycetes I could not make it out. However, this year, owing to the thoughtfulness of a lady living at Eltham, I was enabled to solve the problem. This lady, knowing I was interested in fungi, forwarded a specimen quite unknown to me. The plant was shortly afterwards followed by a letter telling me that another specimen had been found, and that if I could come I should be enabled to see it *in situ*. This I was able to do, as the next day was Saturday, and found it to be a species of *Asserœ-phallus*, and I subsequently discovered that the plant I had found at Cheltenham was an *Asserœ-phallus* in an undeveloped state. The appearance presented in this fungus was very beautiful among the green grass; a pure white semi-transparent column, like coral, fully five inches high and half-inch in diameter, rising from a volva. This volva was quite concealed beneath the ground, and had nearly the same appearance as the volva of the Geaster, only bursting more irregularly. The top of the column was surmounted by a head composed of five finger-like growths, each of which was bent round towards the others, so that the five apices nearly met at a point, enclosing a soft brown mass called a gleba; the ridges formed by the outside of the fingers were dark yellow, while the furrows between, where the gleba showed through, were a deep shining brown. The coral-like stem was quite hollow, with innumerable lace-like openings on the surface; it was pure white, and soon became discoloured. A yellowish tinge first appeared near the head and gradually

spread downwards to the base. This colouring became much more pronounced in time, until the whole stem was of a light orange colour. The hollow stem passed down through the volva, suddenly contracting in diameter till it ended in a fine point, which was fastened to the inside base of the volva. From this point five ridges passed in a ray-like manner along the broad base of the volva and up the sides. The volva was composed of a thick skin, quite smooth and white inside; the outside was a yellowish creamy white, in shape almost globular except where the stem had burst through. With one plant of this fungus, I found an unopened volva, which I took home and planted in the garden, intending to watch its growth; but I was doomed to disappointment. The plant came forth in due time (three days), but an unscrupulous magpie found it before me, and ate the greater portion of the beautiful white stem. However, I had sufficient material to work upon, and I have prepared several specimens, with full notes, which Baron von Mueller, with his customary courtesy, has promised to forward to an eminent botanist in Switzerland, who has made the order, Phalloidei, his special subject. In extra damp situations, sometimes on logs and sometimes on the ground, cup-shaped fungi were found, varying in size from two inches in diameter to less than the size of a pin's head, and their colours are as varied as their size. Occasionally small ones of a pure orange may be observed on manure—*Peziza stercoraria*; large brown fleshy ones, as *Peziza vesiculosa*, grow in very wet soil, while occasionally tiny cream-coloured ones may be seen twinkling on a moss-covered trunk. I remember, in 1882, I found some tiny green fungi on a green rotten log in one of the fern gullies near Walhalla, I thought when I gathered them that they were lichens, but after examination I went back to get some more, for it is an understood dogma among botanists that no chlorophyl or green colouring matter is ever found on fungi. My long walk was thrown away, for Professor Cook recognized these fungus at once as *Chlorosplenium aeruginosum*. The great French botanist De Barry writes:—"One thing remains to be noticed here which has never been explained—the colouring of *Peziza aeruginosa*." He goes on in a learned disquisition to prove that although this fungus only grows on wood covered with green rot it does not receive its colour from the wood, and he ends in an undecided manner by saying—"It ought not to be difficult to settle this question by artificial cultivation. Here there is a scientific problem which some of our members might attempt to elucidate, for the fungus, as I said before, can be obtained in almost any very damp gully so screened by trees that green-rotted wood may be easily found. I am indebted to my friend Dr. A. Morrison for some beautiful specimens of a kind of Diachœa which belong to the order

Myxogastres. These fungi were found by him this season on the bark of a gum tree in Studley Park, they were so closely pressed together that the upper portion presented nothing to the eye but an amorphous patch of brown. The stem was not unlike horsehair about three-quarters of an inch long, growing out of a membranous-looking mycelium and bearing a brown sausage-shaped spore-bag nearly half an inch long. On placing the bag in alcohol the peridium burst and thousands of spores were precipitated to the bottom of the spirit, when it was seen that they were either growing on or retained by a beautiful lace-like hollow structure with an isolated stem passing through its centre.

In conclusion I may mention that I was enabled this season to give twenty-seven specimens which were unknown to me to Baron von Mueller, who has kindly forwarded them to Professor Cook for classification.

### A BASKET OF FISH.

BY A. J. CAMPBELL.

(Read before the Field Naturalists' Club of Victoria, 8th July, 1889.)

HAVING lately visited the Fish Market with the chief inspector of fisheries, I lay before the club a few of my unofficial observations, which may not be deemed out of place, as much interest is being centred at present in our fisheries, consequent upon Government activity to improve our fish resources, and the late successful experimental trawling cruise off the Gippsland coast by the steamer *Lody Loch*.

On a winter's morning a few private sales, commencing at half-past 5 o'clock, are transacted. To attend these one must needs be up betimes. The auctioneers—six or seven in number—mount their respective stands punctually at a quarter to 6, and soon lusty voices resound through the market: "Now, you live mullet buyers," "Now, you flathead buyers," &c. There are about 200 buyers present. The common mullets have a brisk time of it. Youths love to dangle their legs over the various piers in the Bay endeavouring to hook them, but these are taken in seine nets, and 35-lb. baskets are knocked down for 11s. They are tasty-eating fish.

The flatheads (*Platycephalus*) were taken by set nets on sandbanks in the Bay, while rock flatheads (two species), sometimes taken by hook, were from Western Port. One large dark boomer weighs nearly 10 lbs., and is offered to me for 4s. 6d., but the light drab-coloured species is the more splendid eating. Prices range from 10s. to 15s. per basket.

Strangers (*Odax richardsoni*) appear to be the cheapest lots, really splendid baskets going for 7s. 6d. These sweet little fish were taken by seine net amongst the marine meadows of Western

Port Bay. They are so truly herbivorous that their bodies are greenish tinted within. When cooked they are delicious, notwithstanding the multitude of small bones to be discounted. I never ate fish possessing so many bones. We have heard rheumatic subjects say every bone in their body ached. If Strangers are ever liable to such an ailment, I feel sure, judging by the number of their bones, they must endure a very bad time of it.

The crowd has now swelled to about 400 persons. I survey it. The typical fish-hawker is a well-conditioned being, with heavy, clean-shaved jaws and short, round moustache. His stentorian voice is somewhat husky from ever shouting in the streets, "Fish alive, O!" whether they have been stone dead for a week or more. A few women are in the crowd; being the weaker vessel they cling to the picket partitions near the auctioneer's stand. In the throng I am jostled in the back by the shoulder of a horse drawing a waggon-load of fish. In this case the weaker vessel must "cave in," and I clear for the pickets too.

Having been crowded out of one stand I seek another, where two burly hawkers, with each a hand on a basket of fine golden perch (*Ctenolates ambiguus*), are quarrelling about the bid, whether it is 4½d. or 5d. per lb. While they are wrangling I have an opportunity by the bright gaslight to view the fish. Their dull gold colour is much enhanced by sprays of green fragrant eucalyptus leaves. I also detect a few catfish (*Copidoglanis tandanus*), likewise a freshwater fish, amongst the perch, but not so valuable, and easily distinguished by the hair-like appendages about the mouth. Both are taken by trammel or bag-nets set across the River Murray or its affluents. A few Murray cod-perch (*Oligorus macquariensis*) are knocked down at the same figure as the golden perch. An "old man" fish of this species has been known to weigh 100 lbs., but the most marketable is about 7 lbs. weight.

Then some eels (*Anguilla australis*), all writhing and wriggling, are weighed in scoop scales by a score of pounds at a time. One big specimen, probably from Lake Connewarre, decidedly objects to be knocked down for 3d. per lb., and clears out of the balance on to the market floor several times. In sheer desperation, a salesman brings the eel's head in violent contact with the edge of the counter, and before it can recover itself the scales are turned, and the contents shot into a sack.

For the reason I could not approach the next stand, I content myself with an outside position, where a hawker of small stature had climbed on to an empty fish-basket to get a glance at some small flounders (*Pseudorhombus*), which went for a shilling each. There are several species of flounders off our coast, and they are considered a great delicacy. In colour they are great mimics, varying in hue in accordance with the ground they inhabit. At

present they are taken by seine and set nets at Geelong, Western Port, and Port Albert, but practical fishermen suppose there exist in the neighbourhood of our coasts great banks infested with flounders and other excellent flat fish, which it is hoped trawling operations may discover.

Trevalla or trevalley (*Caranx georgianus*) fetch 10s. per half-dozen. They are a very choice and delicious fish, and about the dearest in the market. They afford good sport for a line fisher, and are taken by that method on the trevalla grounds off the Heads. Numbers are secured in winter also by the aid of set nets at Portland.

That energetic officer of the civic council, the fishmarket inspector, emerges from the crowd with a seized basket of sand mullet. He had espied one or two under the legal weight (6 ozs. for sand mullet, I think), and, according to law, confiscates the contents of the whole basket. I ask the inspector what becomes of seized fish. "Give them to the charities," he replied. Remembering that charity commences at home, I secure half a dozen excellent samples for breakfast.

Some fine bream (*Chrysophrys australis*) from the Gippsland lakes are sold at 13s. per basket. How their silver sides gleam in the soft packing of Melaleuca foliage! Bream form a very regular supply, and are a moderately good food fish. They frequent brackish water and sea estuaries, and go down to the ocean in winter season.

There are Gippsland perch (*Lates colonorum*), artistically and comfortably laid out in bracken ferns, looking as fresh as if just taken from the seine or set net. They average 14s. The sand mullet, or poddy (*Mugil grandis*), from the lakes, when full-grown attains about 7 lbs. weight, and is said to be unsurpassed by any other Australian fish in richness of flavour. It is a most beautiful and shapely fish, with large scales encasing its brilliant silvery sides, which distinguishes it from the common mullet with smaller scales, and technically termed *Agonostoma diemensis*. The lakes also supply the market with ludrick (native name), but scientifically known as *Girella simplex*. It is an oval, sombre-looking creature, and deemed by epicures to be one of our best eating fish. It abounds in the lakes and is herbivorous.

Pike (*Sphyræna novæ hollandiæ*) and whiting (*Sillago punctata*) bring rare prices—18s. and upwards to 30s. per basket. The whiting is preferred for its deliciously-flavoured flesh. Both are taken at Port Albert and Western Port by seine and set nets, and are in better condition in summer, when they return from the sea in great numbers. They are fond of rocky bottoms as well as grassy patches, where the young take refuge.

Amongst some of the mixed baskets are the dark-coloured butterfish (*Chilodactylus*) and the vermilion-tinted red mullet

(*Eupeneus*). Both are delicate and delicious eating, but the supply, especially of the red mullet, is very limited. I notice a few small "blennie" or Australian rock ling (*Genypterus australis*), with long mottled body and curious tadpole-like tail. The flesh is fairly good. These come from Geelong, but are more abundant off the coast in winter time, sometimes reaching 3 ft. in length, and are supposed to construct singular nests for the preservation of their eggs.

Chinamen, having cleaned their fish at the water-trough, are subdividing them in the limited floor space available, and drawing lots by means of small pieces of sticks. Of course the John who drew the shortest stick says, "No savee." Another Celestial remarks that 15s. for garfish is "too muchee." I agree with him. Garfish (*Hemirhamphus*) ought to be plentiful in Corio Bay and Western Port, as well as the Lakes, where their long, delicate, semi-transparent bodies are taken with the seine. There are two varieties of garfish, the sea (*H. intermedius*), and the river or lake (*H. melanohois*). The latter, for truly delicious flavour, is undoubtedly the better, especially if it be towards the end of summer, when they come in in immense shoals to deposit their spawn in the harbours.

Here are a few schnapper (*Pagrus unicolor*), caught by hook at Queenscliff. But the bulk come by rail from South Australia, chiefly from Kangaroo Island, where they are secured in deep water off rocks feeding on various mollusca. They are a regular supply, and, notwithstanding the long journey, a little ice in the basket causes their bright, pink flesh and scales to retain their freshness.

The kingfish (*Seriola lalandii*), like the schnapper, is carnivorous, and an exceedingly voracious creature. They have been observed out in the surf at the Lakes' Entrance waiting for shoals of unsuspecting mullet returning after spawning in May. These the kingfish pursue and destroy in vast numbers. The kingfish is very good food. I learn of a fisher who took at one haul of the seine 75, and realized for them 5s. to 15s. each.

A few salmon trout are noted among the consignments of mullet, which they somewhat resemble, but may be readily recognized by their beautiful chestnut-marked sides. The trout is abundant, especially during the summer months, when they appear in great shoals. When full-grown they are a goodly-sized fish, about 2 ft. in length, and erroneously believed by some persons to be the veritable salmon, instead of the salmon arripis (*Arripis salar truttaceus*). They are an active fish, and when in pursuit of their prey (small fry) take prodigious leaps out of the water. Their flesh is exceedingly palatable. However, I do not intentionally wish to scare members, but, according to Professor M'Coy, nearly all the fish-poisoning cases in Victoria are referable



to this species. The poisonous propensities are not yet clearly understood, because under certain conditions, if all here to-night were to enjoy a fish supper of salmon or salmon trout, which is quite fresh—in fact not an hour out of the water—yet half of us might be most seriously indisposed, while the other half would suffer no inconvenience whatever.

At a retail stand I purchase a small specimen of the familiar elongated blue-coated barracouta (*Thersites atun*), for one shilling. It weighs when cleaned an ounce or two over 2 lbs. It is from a large basket, containing about 70 lbs. weight or 27 of these fish, and fetches 13s. wholesale; therefore the retailer nets about 100 per cent. profit. Bass's Straits is the *habitat* of the fish, where it is easily secured by the hook, baited with a bit of red cloth. It is a most predaceous fish, demolishing even its own brethren.

Another cheap fish is the rock cod (*Pseudophysis barbatus*), with heavy head and very thin scales. They are caught in the Bay by hook and set nets. A limited number of the 35-lb. baskets realized 5s. and 7s. 6d. each.

A large parrot fish, or red gurnet, here and there, with brilliant variegated colours, brightens up a basket full of more sombre-coloured fishes. The gurnet is not unfrequently taken in the seine off Queenscliff.

I close my observations of thirty or more different fish with a glance at the sprightly and plentiful skipjack, the quaint-looking so-called "mountain trout" of fresher water, and last, but not least, some fine large samples of the "silver bream" of the fishermen.

After some 500 baskets of the various fish mentioned have been sold, game, both furred and feathered, follows, and by a quarter past 7 o'clock sales are concluded, and the 60 or 70 fish-mongers' carts and trucks that formed a great right angle about the market building have dispersed to the different suburbs.

A little profitable discussion might now ensue as to the reason why fish—the most wholesome and nutritious of all food—is so scarce and expensive in our market, although so plentiful during both summer and winter off our coast, where it can literally be had for the taking. In the first place, it is popularly supposed there is a "ring" which keeps prices of fish high to suit its own ends. Anyone who endeavours properly to discover this "ring" will find it a myth. The only semblance of a "ring" is perhaps one or two principal dealers, who, when limited consignments of good fish are offered, must purchase at any price to supply the *élite* customers at their backs. Small wholesale buyers cannot afford to do this. Hence, if the supply be limited, like any other commercial commodity, it commands high prices. Take, for instance, sugar at the present moment. With regard to the middle-men—auctioneers—they simply, after supplying proper

baskets for carriage, deduct 10 per cent. from what the sales realize, returning to the fishermen the balance, out of which he pays the freight to Melbourne. The fishermen, with very few exceptions, are quite contented with their results. Then, again, there is not the enormous destruction of fish as is supposed. Out of 121,169 basketfuls last year, only 3 per cent. were destroyed. Even this may be obviated by the better and more expeditious transit to the metropolis by means of the proposed refrigerating cars, and when ice-chambers are constructed in the new fish market now under consideration. It has also been mooted that the fishermen themselves might improve the mode of transit at a very trifling cost by erecting a small refrigerating plant near their fishing grounds—say, for instance, at Hastings, Paynesville, &c. A hundredweight of ice properly distributed would keep fresh eight or ten baskets for a lengthened period, as is illustrated by the conveyance of schnapper received by rail from Adelaide with remnants of ice still undissolved.

Well, then, to ensure cheap fish, there must be a greater supply and more regular consignments. Even on a good market morning, what are 700 baskets of fish to a population like that of Melbourne and suburbs, not to mention provincial towns? If there were a greater and more certain demand for fish created amongst all classes of consumers, no doubt there would be a corresponding expansion of our fisheries and a greater supply, and consequently cheaper food of the most beneficial kind.

The colony at large is indebted to the Hon. J. B. Patterson, as Minister of Trade and Customs, for the great energy and foresight he has displayed to improve our fish supply—not only by instituting trawling, but by following it up in recommending the Government to give £2,000 in bonuses to encourage deep-sea fishing in our waters. It may be here mentioned that the first trawling experiment was initiated by the Hon. George Coppin about 25 years ago, when the trawl was destroyed by a rocky bottom in the Straits, as was the case with the Lady Loch's first attempt.

To conclude. In addition to my personal observations, for valuable information regarding the localities, habits, &c., of the various fish herein mentioned, I have to thank Captain Anderson, Chief Inspector of Fisheries, and Mr. John Lewis, Inspector of the Fish Market, and *ex-officio* Assistant Inspector of Fisheries. My thanks are also due to Mr. P. N. Jenkins, Swanston-street, for his thoughtfulness in sending the specimens exhibited to-night, thus rendering my paper more attractive.

CONTRIBUTIONS TOWARDS A LOCAL LIST OF THE  
COLEOPTERA FOUND AT MULWALA, MURRAY  
RIVER, N.S.W.

## FIRST FRAGMENT.

I have long wished to make a list of the Coleoptera found at Mulwala, N.S.W., where I have collected for many years, but have found the task almost a hopeless one, owing to the fact that there is hardly a genus among the Australian Coleoptera in which anyone can identify any isolated species that may come before him. Nearly all our species have been described by European authors, often in publications that is extremely hard to get at, even in Melbourne or Sydney; and the names under which many species appear in Australian collections are of doubtful authority. Under these circumstances my attempt to catalogue the Coleoptera I have collected at Mulwala must necessarily be fragmentary. Therefore I shall notice only those genera in which I can identify *all the local species*, leaving *all genera* in which I cannot name every local species. I believe the names given to be reliable; where I have any doubt a note of interrogation is inserted. In the case of species described since the publication of the new edition of Master's "Catalogue," in 1887, the name of the publication in which the description may be found is given.

## CARABIDÆ.

*Calosoma shayeri*, Erich.

*Gigadema longipenne*, Germ.

This is the only member of the tribe Helliunini found at Mulwala.

*Pheropsophus verticalis*, Dej.

*Hyperion schrœtteri*, Schieb.

*Euryscaphus bipunctatus*, Macl.

*Euryscaphus arenarius*, Sloane.

Since describing this species in "Proceedings Linnæan Society, N.S.W., 1887," I have had the opportunity of examining specimens which appear to be identical, from Condobolin and Baradine, N.S.W., and now believe that *E. arenarius* will be found to be a synonym of *E. minor*, Macl.

*Philoscaphus tuberculatus*, Macl.

*Philoscaphus carinatus*, Macl.

*Laccopterum loculosum*, Newm.

*Laccopterum spencei*, Westw.

*Carenum (Calliscapterus) campestre*, Macl.

*Carenum scaritiodes*, Westw.

*Carenum arenarium*, Sloane. "Proceedings Linnæan Society, N.S.W." 2nd series, 1888, vol. iii., p. 1114

*Carenum murrumbigense*, Macl.

*Eutoma loddonense* (?), Casteln.

*Carenidium lacustre*, Macl.

*Neoscaphus simplex*, Sloane. "Proceedings Linnæan Society N.S.W.," 2nd series, 1888, vol. iii., p. 1120

*Geoscaptus cacus*, Mail.

*Geoscaptus lævissimus*, Chand.

*Epicosmus australasiæ*, Chand.

*Chlænius australis*, Dej.

*Chlænius marginalis*, Dej.

*Oodes riverinæ*? Macl.

*Oodes modestus*? Casteln.

*Catadromus australis*, Casteln.

*Catadromus lacordairei*, Boisd.

LUCANIDÆ.

*Lamprima rutilans*, Erichs.

*Ceratognathus niger*, Westw.

*Figulus lilliputanus*, Westw.

*Figulus regularis*, Westw.

SCARABÆIDÆ.

*Aphodius granarius*, Linne.

*Aphodius lividus*, Oliv.

*Bolboceras proboscidium*, Schreib.

*Bolboceras sloanei*, Blackl. "Proceedings Linnæan Society, N.S.W.," 2nd series; 1888, vol. iii., p. 1393

*Bolboceras chelyum*, Blackl., l. c., p. 1395

*Schizorrhina australasiæ*, Donov.

*Schizorrhina palmata*, Schaum.

*Schizorrhina frontalis*, Donov.

*Schizorrhina phillipsi*, Schreib.

THOMAS G. SLOANE.

MULWALA, N.S.W., 1st April, 1889.

DESCRIPTION OF A NEW LOGANIA.

By BARON VON MUELLER, K.C.M.G., M. & PH.D., F.R.S. &c.  
LOGANIA CHORETROIDES.

Comparatively dwarf glabrous; stems and branches quadrangular, their angles prominent, their sides impressed and greyish; leaves reduced to minute deltoid or orbicular dark scalelets; flowers singly axillar, extremely small, imperfectly bisexual; pedicles very short, minutely bracteolate at the base; lobes of the calyx deltoid-semiovate; corolla whitish, cleft to the base, hardly twice as long as the calyx, quite glabrous, its segments orbicular-deltoid, much reflexed, with broad base sessile; stamens of the fruit-ripening flowers rudimentary; disk conspicuous, lobeless; stigma roundish, nearly sessile, slightly bilobed; ovulary somewhat depressed; placentaries almost basal, each bearing two or three ovules.

At the eastern sources of Swan-River; Mrs. Heal.

Height of the plant to nearly one foot. Aspect much that of

a *Choretrum* or *Leptomeria* or *Amperea*. Perfect staminate flowers and fruits as yet unknown. No particular cause exists for assuming that this plant belongs to a genus distinct from *Logania*, notwithstanding the complete severance of the corolla-lobes (like in *Galium*) from each other.

A CURIOUS FUNGUS.—I wish to call your attention to some curious specimens of fungi discovered by Mr. C. French, F.L.S., at Cheltenham. He was examining a plant, *Drosera glanduligera*, when he saw what he at first took to be a curious fung with leg-like appendages, but upon closer examination he found that several fungi were growing from the body and leg joints of an ant. The ant has been identified by Professor M'Coy as belonging to the species *Formica corisobrina*. There were altogether nine separate fungus growing out of the unfortunate insect—six from the leg joints, one from the body, one from the sting, and the ninth from the mouth. The fungus were club-shaped, with a long thin neck, surmounted by a beautiful pink, egg-shaped head; the head was surrounded by short white hairs, except towards the apex. These curious parasites evidently belong to the sub-genus *Cordyceps* of the Order Sphæriacei. This genus seems to be widely distributed over the Australian colonies. The celebrated fungologist Berkeley mentions in his "Introduction to Cryptogamic Botany":—" *Cordyceps robertsii*, which grows upon the larvæ of *Hepialus virescens*, and is well known to everyone who has seen or received specimens of the productions of New Zealand. But this is far exceeded in size by a species which grows on an enormous larvæ on the banks of the Murrumbidgee, of which at present immature specimens only have been examined. Most of the larvæ which produce insects probably carried the seeds of the disease with them into their subterraneous retreat; and in one species at least, which affects wasps, the clubs with their curled stems are carried about till the unhappy insect sinks under the exhaustion produced by the waste of its fatty tissue." This short and pithy description of clubs with their curled stems exactly corresponds with the appearance of the fungi growing on the ant. There is a very fine specimen of *Cordyceps gunii* in the Botanic Museum. It was discovered by Mr. French growing out of a grub on the bank at the mouth of the Yarra. A smaller species *Cordyceps entomorrhiza* was found on another grub in the same place. *Cordyceps* belongs to that great division of fungoid growths which bear the spores or seeds in bags. These bags, termed asci, usually contain eight egg-shaped spores, and the asci are placed side by side, immersed in a matrix of a softer or harder nature, according to the structure of the plant. The asci in the plant discovered by Mr. French are embedded in the fleshy portion of the head.—H. T. TISDALL.

NOTES ON A REMARKABLE LONGICORN BEETLE  
NEW FOR VICTORIA.

THIS very rare and singular insect, *Cerægidion horrens*, is one of the oldest of the described longicorns of Australia, it having been found by the late R. Cunningham, brother of the well-known traveller and botanist, A. Cunningham, in New South Wales, and described by Boisduval in the "Voyage" of the French war-ship *Astrolabe* in 1827, which vessel, under the celebrated D'Urville, visited Australia in that year; the naturalist of the expedition, which was one of those sent in search of the unfortunate La Perouse, being M. Lesson, a name well known to ornithologists throughout the world. The specimen exhibited this evening was taken by myself during the late trip to Croajingolong, in East Gippsland. The party having camped on the St. Patrick river, the day being very wet, we remained, as already stated, in camp, and just before dark, I was carrying a large and very wet log for the fire, when I saw the insect crawling on the log. I caught the beetle, dropped the log, and after placing my specimen in spirits, went back for the log, and had a good search hoping to find the female, but in this I was disappointed. Another specimen of the same beetle was taken near Mount Ellery by one of our party, Mr. Searle, but was, I believe, lost. This longicorn is exceedingly rare in collections. The description of the insect will be new to most of us, and as the first discovery of it is somewhat historical I have copied it from the "Voyage of the *Astrolabe*," in which fine work it is also figured, there being neither an English or Latin description in our Public Library, and I have to thank my friend, Mr. Luehmann, for the English translation. Its position is between that of *Microtragus* and *Athemistus*, and in the sub-family *Lamidæ*.

## DESCRIPTION.

Body blackish, with small pale hairs; head having on its anterior parts some wrinkles and sunken points; antennæ velvety, blackish, with the last more grey; shield a little rugose, with four conical points underneath, separated by a smooth space and a middle line, having at its anterior extremity a small slightly-protruding tubercule; wing-cases having below some sunken points, and on the sides some small roundish tubercules, each having besides two strong spines, laterally broad and compressed, the first deeply bifid, situated near the base, the second near the middle bent backwards and very slightly bifid; legs blackish brown, partly furnished with a reddish brown down.

This is the first time this insect has been recorded from Victoria.

C. FRENCH.

BOTANICAL MUSEUM, 8th July, 1889.

# 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.

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## CONTENTS.

|                                                                                                                          | PAGE |
|--------------------------------------------------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA ... ..                                                                           | 121  |
| NOTES FROM MALDEN ISLAND. BY A. J. CAMPBELL ..                                                                           | 123  |
| DESCRIPTION OF AN ORCHID, NEW FOR VICTORIA. BY<br>BARON FERD. VON MUELLER, K.C.M.G., M. AND<br>PH.D., F.R.S., &C. ... .. | 126  |
| ZOOLOGICAL NOTES ON A TRIP TO WALHALLA. BY ARTHUR<br>DENDY, M.SC., F.L.S. ... ..                                         | 128  |

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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, 11th November, 1889.

The president, Mr. C. A. Topp, M.A., F.L.S., occupied the chair, and about 65 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library:—"Bulletin of United States National Museum," No. 85, being catalogue of bibliography of described transformations of North American Lepidoptera, by H. Edwards, from the author; "Mineral Statistics of Victoria for 1888," from the Mining Department; "Proceedings of Royal Society of Queensland," vol. vi., part 4, from the Society; "Proceedings of Geographical Society of Australasia (Victorian Branch)," vol. vii., part 1, from the Society; "Report of Royal Society of Tasmania," 1888, from Society; and "Journal of Pharmacy," October, 1889.

- The hon. secretary reported that the excursion to Tooradin on Saturday, 9th November, had been well attended, and was both interesting and successful. A fair number of plants were obtained in flower, principally belonging to the orders Liliaceæ and Orchideæ. Among the latter may be mentioned *Prasophyllum frenchii* (which was also collected for the first time by Mr. G. French, at Dandenong, on the same day), *Thelymitra aristata*, *T. ixioides*, *Calochilus campestris*, and *Pterostylis cucullata*. *Limnanthemum exaltatum*, *Utricularia dichotoma*, *Thysanotus tuberosus* and *Viola betonicifolia* were seen in large quantities. Among insects several species of Lepidoptera, such as *Junonia velliida*, *Pyrameis itea*, *Agorista lewini*, *Terias smilax*, *Belinois (Pieris) tuetonia*, and several small moths, were taken. Among the beetles taken were about ten species of Stigmodera, the longicorns *Amphirrhoe decora*, *Macrones exilis*, *Eroschema poweri*, *Hesthesis plorata*, and others. Hymenoptera, such as ichneumons and saw-flies, also many Diptera, were taken. A fine Copper-head Snake was captured alive.

On a ballot being taken, Messrs. H. P. C. Ashworth, J. Dennant, F.G.S., J. Gates, M.A., and E. Le Souëf, were duly elected members of the club.

## PAPERS READ.

1. By Dr. T. S. Ralph, M.R.C.S., entitled "Notes on the Presence of the Spores of the *Æcidium* of the Common Groundsel in the Seeds." The author, by means of illustrations and specimens, pointed out how he had traced the growth of this microfungus in the seeds of the plants, and expressed the opinion that similar results might be expected in other plants.

The paper created some little discussion, in which several members took part.

2. By Mr. A. Dendy, M.Sc., F.L.S., entitled "Zoological Notes of a Trip to Walhalla." The author gave an interesting account of several forms which he had obtained under stones, old logs, &c., during a week's stay at Walhalla. He had observed four or five species of Land Planarians, especially *Geoplana spenceri*, a terrestrial Nemertine worm, and several singular forms of insect larvæ, but not *Peripatus*. He proposed the term *Cryptozoic* to include that assemblage of animal forms which live in such situations, under logs or stones, in crannies of rocks, or under old bark of trees. He illustrated his remarks with sketches on the blackboard and specimens.

The hon. secretary mentioned that Mr. G. French, a member of the club, had obtained an orchid new to science at Dandenong on the previous Saturday, and that it had been named *Prasophyllum frenchii* by Baron von Mueller, K.C.M.G., Government Botanist, and that specimens of same orchid had been obtained by the club party at Tooradin on the same day.

The hon. secretary announced that Mr. Henry Edwards, a distinguished lepidopterist at present in Melbourne, was desirous of obtaining specimens of lepidopterous larvæ for description.

The following were the principal exhibits of the evening:—By Mr. F. G. A. Barnard.—Butterfly (*Danaïs petilia*) (Stoll) from St. Kilda; also the Hawk Moths, *Chærocampa celerio* from Melbourne, and *C. scrofa* from Orford, Western District. By Mr. A. Coles.—Regina, King, and twelve Wire Birds of Paradise, Magnificent Rifle Bird, and pair of Hornbills, from New Guinea; Spotless Gallinule from Deep Creek, Victoria. By Mr. A. Dendy, M.Sc.—Land Planarians (*Geoplana spenceri*), Terrestrial Nemerites, and Apodous Insect Larvæ, from Walhalla. By Mr. J. E. Dixon.—75 species of Coleoptera from Beaconsfield and Tooradin (November, 1889). By Mrs. Flatow.—A very remarkable crab from New Guinea. By Mr. C. French, jun.—Eggs of Australian and New Guinea Cassowaries. By Mr. G. French.—Orchid (*Prasophyllum frenchii*) from Dandenong, new to Victoria, found by exhibitor. By Mr. C. Frost.—Live specimens of Tiger Snake (*Hoplocephalus curtus*) and Copper-headed Snake *H. superbus*; the Spiny-ridged Lizard (*Egernia cunninghamii*), the

Bearded Lizard (*Grummatophora barbata*), and the White-streaked Earless Lizard (*Tympanocryptis lineatus*); also four Lizards (in spirits) from Mt. Stanley, North-Eastern Victoria. By Mr. G. A. Kearland.—Eggs of 17 species of Water Birds, including the Painted Snipe. By Mr. T. A. Forbes-Leith.—Case of Little Falcons from Java; ethnological photographs from India. By Mr. G. Lyell, jun.—Specimens of Larva, Pupa, and Imago of Butterfly (*Pyrameis itea*); specimens of *Danais petilia* and *Heteronympha merope*, showing locality differences. By Baron F. von Mueller, K.C.M.G.—Three plants new for Victoria, viz., *Caladenia cairnsiana*, *Aster picridifolius*, and *Calocephalus drummondii*. By Dr. Ralph.—Specimens under microscope in illustration of paper. By Mr. J. Searle.—Insects collected at Tooradin excursion.

After the usual *conversazione* the meeting terminated.

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## NOTES FROM MALDEN ISLAND.

BY A. J. CAMPBELL.

(Read before the Field Naturalists' Club of Victoria, 9th September, 1889.)

As Malden Island has a bearing with regard to the geographical distribution of many Australian sea-birds, and as several of our members have received skins and eggs from that remote quarter, the following notes may be of interest, if not of value. The notes are most kindly supplied especially for this club by Messrs. J. T. Julian and Fred. J. Fox.

Malden Island is an integral part of the British Dominions, situated in the mid Pacific in  $4^{\circ} 4'$  south latitude and  $154^{\circ} 58'$  west longitude, or about 4,000 miles from Melbourne. The island is of coral formation, only about six miles in diameter, and enclosing completely a small muddy tidal lagoon.

The rough coral pavements are covered with a rich deposit of phosphoric guano, the accumulations of bird ordure of untold ages. The deposits are of great commercial value, and have been worked successfully for years by Messrs. Grice, Sumner and Co. of this city.

The island is gradually rising. This has been particularly noticeable of late years by marked observations in the alteration of the flooring levels of the dwellings. South of Malden there exists a volcanic axis, which may account for this land movement. It has been estimated that since the island was first discovered in 1825 by Lord Byron, of H.M. frigate *Blonde*, and named in honour of his first lieutenant, it has risen about three or four feet. However, the island is generally low; the highest part does not

exceed 30 feet above sea level, and from a vessel's deck can only be seen about 8 miles distant.

Although so near the line the temperature in the house rarely exceeds a steady heat of 86°. The vegetation chiefly consists of sun-trees, with large smooth foliage, bearing yellow flowers, and a species of succulent pig-face weed.

Remains of ancient aboriginal graves are upon the island, and human bones and a native well were unearthed underneath very old and deep layers of guano.

The guano station is worked by eight Europeans and about 150 Polynesians, which constituted the entire population of the island. The Polynesians are recruited from Savage Island, named by Captain Cook on account of the ferocious tribes of cannibals encountered there. Under the efforts of the London Missionary Society, the whole island is now Christianized.

The natives, chiefly those from Aitutaki, are expert swimmers. They have been known to descend into 8 or 9 fathoms of water to release a fouled anchor, and at the guano station they placed three sheets of copper upon a ship's bottom by driving a couple of nails each dive. They frequently dive into spongy coral groves to place a running noose about a basking shark 8 or 10 feet long. Should the monster not be in a suitable position, the native administers a gentle nudge in the ribs, as much as to say, "Move over there, old fellow." After adjustment the line is drawn taut, and the shark is rapidly hauled up to the surface by a canoe's crew, where it is killed for food. Mr. Julian has been an eye-witness of this unique method of fishing. I think it is also mentioned in one of the missionaries' works, by the Rev. Wyatt Gill. The only shark the natives really fear is a species possessing yellow fins. Another illustration proves that these like the natives are almost semi-aquatic beings. During one of those terrible hurricanes so frequent among the Pacific Islands, a schooner was seen to founder in the boiling surf, with all hands lost, apparently, beyond any doubt. Hours afterwards a woman swam ashore, and when found on the strand was adjusting her toilet and shaking the gritty coral sand out of her raven locks as if nothing extraordinary had happened. And 24 hours after the wreck a man was observed swimming about, and only succumbed when he was dashed to pieces upon the merciless rocks.

The birds that frequent Malden Island are :—

Sandpiper or Plover (*Totanus incanus*), which always appears around the lagoon. Mr. Henry Seebohm, to whom I submitted the skin for identification, informs me that the bird "breeds in Alaska, but can only be a winter visitor to Malden. This you can prove by the date. It is in newly moulted breeding dress. If it is going to Alaska to breed the date ought to be March, April,

or May. If it is going to breed in the Southern Hemisphere, the date is probably about September."

Curlew (*Numenius* ) appears throughout the year. \*Sooty Tern (*Sterna fuliginosa*). These birds are called "Wide-awakes" from the peculiar cry they utter. They breed in a company of many hundreds, laying one egg upon the bare ground, generally in November, but sometimes in April and May. \*Panayan Tern (*Sterna anæsthesia*) is similar in appearance, and habit to the Sooty Tern, but smaller. \*Noddy Terns (*Anous stolidus*) resort in numbers to the small islands in the lagoon to breed. No nests are made, their single eggs being simply deposited a few yards apart. They commence to lay in November, but sometimes a few birds are earlier.

Blue Tern (*Anous cæruleus*), found on islands in the lagoon. At early morning they fly in companies of about 50 or 60 towards the outer beach, returning at evening. They are by no means timid birds. In October they also lay a single egg under some shelving piece of coral. Hitherto I think the egg has not been described. Its ground colour is of a soft, warmish white, moderately distributed with spots of pinkish red and light dull purple, the latter colour appearing as if beneath the surface of the shell. Dimensions, 3·7 x 2·8 cm. Another specimen has less and finer markings, but with the addition of one or two large bold blotches of dark brown. Dimensions, 3·85 x 2·8 cm.

Lanulated Tern (*Sterna lunata*) is an occasional visitor, possessing a very restricted range in that region of the Pacific. Small White Terns (*Cygis microrhynchus*) continually frequent the island.

\*Masked Gannet (*Sula cyanops*). One or two eggs are laid in November, but sometimes in March, upon the ground at the east side of the lagoon. Nests made of herbage. Young in down white. Both male and female assist at incubation, and fear to leave their tasks when Frigate Birds are hovering about. \*Brown Gannets (*Sula leucogastra*) deposit in company two or three eggs in herbage-constructed nests upon the small islands in the lagoon during the months of November and December.

\*Red-legged Gannet (*Sula piscator*) is the rarest of the "Boobies." It occasionally breeds upon the island. One egg is laid. Young have been noticed in December. \*Small Frigate Bird (*Atagen minor*) always inhabits Malden Island, but is found in greater numbers during the laying season—March and April—when they arrive in thousands and take up their quarters upon the lagoon islands. One egg is laid. The young in the down

\* Australian birds.

are dirty white. During breeding season the male is very conspicuous by his bright red gular pouch, which he distends upon the throat. Of course it is well-known that these birds live by plundering other birds, principally the Gannets, or "Boobies," of the fish they catch. But it has not been recorded of this Frigate Bird, or any other bird I am aware of, that when disturbed certain individuals will lift their egg in their claws and ascend into the air. On one occasion an incredulous visitor was scrutinizing from below a bird that had risen, when by fright or accident it released its hold of the egg, which fell and smashed upon the spectator, who was then and there convinced of this peculiar trait in the bird's character, and was only too thankful the egg was not addled. \*Frigate Bird (*Atagen aquila*). Years ago this larger species used to frequent the island, but has now disappeared.

\*Red-tailed Tropic Bird (*Phaeton rubricauda*) is an occasional visitor, and once a pair of eggs were taken from under the coral shelves.

I think we have exhausted our brief "Notes from Malden Island" if we mention a species of small duck, resembling Australian Teal in plumage, that periodically—November and December—touch there in small numbers. They arrive very bare and poor and evidently much exhausted after a long flight. After a short sojourn of four or six weeks, when they have regained a better condition, they decamp. Where they came from and whence they go are mysteries yet to be solved.

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## DESCRIPTION OF AN ORCHID, NEW FOR VICTORIA.

BY BARON FERD. VON MUELLER, K.C.M.G., M. & PH.D.,  
F.R.S. &c.

### PRASOPHYLLUM FRENCHII.

Tuber almost spherical; leaf from the upper part of the stem thinly cylindrical, attenuated upwards and slightly channelled, almost equalling in height the inflorescence or variously of less length, occasionally the new leaf already developed from the base of the stem at the time of flowering and then compressed; pedicels very short; bracts semi-ovate or deltoid-orbicular, thus about as broad as long, reaching but slightly beyond the base of the calyx; upper (through resupination lower) calyx-lobe rhomboid, or lanceolar-ovate, lower (through resupination upper) two disconnected, all dark-purplish, but at and towards the margin greenish; paired petals elliptic-lanceolar, somewhat or hardly

\* Australian birds.



shorter than the calyx-lobes, of the same colour; labellar petal rather longer than the two other, slightly raised on a broad interstice, its main portion cuneate-orbicular, much incurved, but at the upper end again bent outward, greenish and upwards purplish or whitish, provided at the commencement of the terminal portion with a conspicuous usually dark-green almost semicircular somewhat decurrent callosity, downward membranously margined; terminal part of labellar petal much shorter than the other, almost deltoid, membranous, simply spreading, only slightly crisped, purplish or pale; appendices as long as the gynostemium, connected with it only at the base, obliquely narrow-elliptical; anther minutely pointed, red, turning black; pollinia two, clavate, sulphur-yellow, their corpuscles in two rows; fruit obliquely clavate-ovate, nearly thrice longer than broad.

Between the Yarra and the Dandenong Ranges; G. French.

Attains a height of  $1\frac{1}{2}$  feet.

In stature and aspect this well-marked species is much like the larger state of *P. fuscum*, with which it also agrees in size of flowers; the approach to *P. elatum* is much less. The species is named after the youthful collector, who has filially inherited from one of the principal founders of the Field-Naturalists' Club his ardour for forming, by searches of his own, zoologic and phytologic collections, and instituting observations thereon.

The species might be mistaken for *P. brevilabre*; but an authentic specimen, received from Mr. F. Abbott, the Director of the Botanical Gardens of Hobart, with which Mr. W. Archer's drawing in the "Flora Tasmanica" well accords, proves that plant to differ in the unpaired calyx-lobe being narrower, the labellum less curved inward in its lower portion, nearly as long as the other (notwithstanding the specific name), more amply membranous and the elevation at the bend much less broad; moreover, the coloration of the flowers is different, although the upper calyx-lobes are also completely severed. In the "Flora Australiensis," VI., 338, Bentham has included more than one species under the name *P. brevilabre*. The writer has ventured, to reduce in the first "Systematic Census of Australian Plants," Fourth Supplement, page 4, and in the "Second Census," page 190, the genus *Corunastylis* to *Prasophyllum*, although he had no specimens, on which observations could be instituted of his own. If the structure, delineated by Mr. Fitzgerald ("Australian Orchids," II., part 3) with accustomed splendour and fidelity, is not of aberrant but of normal growth, the genus-characteristics would rest on the increased number of tubers, on the terminally much appendiculated anther with much incurved connective-membrane, on the resemblance of the paired petals to staminodes, the latter seemingly being absent, unless they replace undeveloped petals, and on the remarkable elongation of the style; this structure indeed

is very curious, and from this, not from statural resemblance, the specific name *apostasioides* was derived. I regard *Apostasiaceæ* as a distinct order, intermediate between *Orchideæ* and *Burmanniaceæ*.

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## ZOOLOGICAL NOTES ON A TRIP TO WALHALLA.

By ARTHUR DENDY, M.Sc., F.L.S.

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

It is hardly necessary to say that the present paper does not pretend to be in any way an exhaustive account of the fauna of Walhalla. All that I aim at is to record a few very simple observations upon some of the lower forms of life met with in that locality during a visit of little more than a week.

Walhalla, as most of my audience are doubtless aware, at any rate after listening to Mr. Tisdall's paper at the last meeting of the Club, is a small gold-mining township in North Gippsland, rather more than 100 miles from Melbourne, and situated on a small creek which flows into the Thomson River a few miles below the township. Hemmed in on all sides by lofty and precipitous hills, the township lies in a very narrow valley, and a few years ago, before the existing coach road was made, was very difficult of access. The surrounding mountains, composed of silurian shales and sandstones, in which lie the gold-bearing quartz reefs, are heavily timbered with gum-trees. Within a radius of a mile or two from the centre of the township the hillsides have been cleared of all the larger timber, and in its place a dense growth of scrub has appeared. The wood-cutting is carried on principally by Italians, and an almost incredible quantity is annually consumed at the Long Tunnel and other gold mines. Tramways have been cut for miles along the hillsides in almost every direction for bringing the wood in to the mines. These tramways, with their accompanying steep "shutes," down which the wood is literally poured into the township below, form a conspicuous feature in the landscape, and being almost the only level ground available, form the principal walks of the neighbourhood. One great advantage about the tram lines is the impossibility of losing one's way upon them, which a stranger would be pretty sure to do if he struck into the bush for any distance.

Along the tram lines, then, many of my rambles were taken, and many of my specimens captured. Wherever I went, whether along the tramways or through the scrub, I might have been followed by the track of overturned stones and logs, for my attention was principally directed to the inhabitants of the dark

and narrow crevices which intervene between every stone or log and the ground on which it rests.

My scientific equipment was very simple, consisting of a number of small bottles of methylated spirits, and perhaps one large one, a pair of steel forceps for the benefit of any beast which looked as if it might bite, and last, but not least, paper and pencil, for it is of the utmost importance to accurately note and, if possible, sketch the size, form, and colour of the living animals. When placed in spirit many animals, and especially the delicate Planarian Worms, in which I was particularly interested, contract greatly and lose their natural colouring, when it becomes almost if not quite impossible to make specific determinations.

The fauna of the dark and narrow crevices to which I have alluded is a very distinct thing, much more so than is, I think, generally realized. Just as we have a special fauna characteristic of freshwater, and another special fauna characteristic of the seashore between tide marks, so we have also a special fauna characteristic of the dark, moist crevices beneath stones and dead logs and under the rotten bark of trees. Probably many of those present are acquainted with the following passage from "The Autocrat of the Breakfast Table," by Oliver Wendell Holmes, which was recalled to my memory last night by Mr. Lucas:—  
"Did you never, in walking in the fields, come across a large flat stone which had lain, nobody knows how long, just where you found it, with the grass forming a little hedge, as it were, all round it close to its edges; and have you not, in obedience to a kind of feeling that told you it had been lying there long enough, insinuated your stick or your foot or your fingers under its edge and turned it over, as a housewife turns a cake when she says to herself—'It's done brown enough by this time.' What an odd revelation, and what an unforeseen and unpleasant surprise to a small community, the very existence of which you had not suspected until the sudden dismay and scattering among its members produced by your turning the old stone over! Blades of grass flattened down, colourless, matted together as if they had been bleached and ironed; hideous crawling creatures, some of them coleopterous or horny-shelled—turtle-bugs one wants to call them; some of them softer but cunningly spread out and compressed like Lepine watches (Nature never loses a crack or a crevice, mind you, or a joint in a tavern bedstead but she always has one of her flat-pattern live timekeepers to slide into it); black, glossy crickets, with their long filaments sticking out like the whips of four-horse stage coaches; motionless, slug-like creatures, larvæ perhaps, more horrible in their pulpy stillness than even in the infernal wriggle of maturity! But no sooner is the stone turned and the wholesome light of day let upon this compressed and blinded community of creeping things than all of them that

enjoy the luxury of legs, and some of them have a good many, rush round wildly, butting each other and everything in their way, and end in a general stampede for underground retreats from the region poisoned by sunshine."

It is this hidden fauna, whose members are characterized above all things by their hatred of the light, that I wish more particularly to dwell upon to-night. It is composed of animals from numerous and divers classes—worms, insects, centipedes, molluscs, and so forth, and it offers a rich harvest to any field naturalist who will take the trouble to reap it.

Some of these light-aborring, lowly forms of life are exceptionally interesting as representatives either of now almost extinct groups, or of groups which are not characteristically terrestrial at all, but marine. These refugees or exiles, if I may so term them, are driven by competition or by the necessities of their organization to seek for shelter in the most obscure and inaccessible places which they can find. Were they to venture into the open air in broad daylight they would never be able to hold their own in the struggle for existence against the more highly specialized or better adapted animals by which they would be surrounded, or, in the case of the representatives of marine groups, their soft and sometimes almost gelatinous bodies would be shrivelled up by the scorching heat of the sun. As an example of a representative of an ancient and now almost extinct group of animals which has been driven by competition to conceal itself, I need only mention the singular caterpillar-like *Peripatus*. This unfortunate creature, supposed to more or less closely represent the ancestor alike of worms and insects, has been driven literally to the uttermost ends of the earth, being now found hiding away under logs and stones at the Cape of Good Hope, in Australia, New Zealand, South America, and the West Indies, while absent from the rest of the earth's surface. I shall have occasion later on to speak more in detail of some samples of typically marine groups which I found hidden under logs and stones at Walhalla.

It must not be thought that the animals which live under logs and stones in the daytime necessarily spend the whole of their lives in such situations, for this is by no means the case. Some of them, such as *Peripatus* and the Land Planarians, come out at night and move about actively in search of food, which they have various strange and ingenious methods of obtaining, while in the daytime they lie coiled up and dormant in their hiding places. Nevertheless their typical dwelling-place is in such hidden crevices as I have described, and the fact that they come out at night to look for food no more proves the contrary than the fact of one's wife going round to the butcher's to buy a leg of mutton proves that she habitually lives in the open air.

Now to these light-abhorring animals, which live concealed under logs and stones and beneath the dead bark of trees, and venture forth from their hiding places, if at all, only at night or under exceptional circumstances, it will be convenient to give a distinct name indicative of their peculiar habitat, and though I have carefully studied the Greek dictionary I can find no more suitable term than "*Cryptozoic*," or living hidden, which, though by no means perfect, I think fairly expresses my meaning. By the *cryptozoic* fauna, then, I mean all that assemblage of animals which is found living habitually under logs and stones and under the rotten bark of trees. I had thought of including under the term also burrowing animals such as the mole and the earthworm, but decided finally that it was better not to do so. The line must be drawn somewhere, and if we draw it as I propose I think we shall circumscribe a fairly distinct and definite group of animals.

I must now say something about the *cryptozoic* fauna of Walhalla, and I will begin with the Land Planarians. The Planarians form a very well characterized and distinct group of lowly organized worms, of which the majority are inhabitants of salt or fresh waters. It is probable that the comparatively few genera which live on land are descendants of aquatic ancestors, and to this fact is probably to be attributed their hatred of light and air and their partiality to damp crevices under stones and dead wood. The terrestrial forms are elongated, very soft bodied worms, flattened on the lower surface, which is used for crawling on. When lying still they coil themselves up, and when they begin to crawl they stretch themselves out greatly, and the body becomes correspondingly narrower. The anterior extremity of the animal is narrow and horse-shoe shaped, and bears usually a large number of very minute eyes. When the animal is actively crawling this anterior end of the body is raised up off the ground as though the worm were trying to see its way, which is doubtless the case. The size of the animal varies with the species, but averages some three inches in length when crawling. The entire animal is covered with an intensely sticky coating of slime, which is left behind as a trail when the worm crawls. One of these worms, which I captured at Warburton, escaped from the bottle in which it was confined, and for some time I thought it had gone for ever, but at last I noticed a shiny track on the wall of the room, and following it up found that the worm had squeezed through the crack between the mantelshelf and the wall, and thence found its way on to the floor, where I speedily recaptured it.

In about the centre of the under surface of the body there is always a very small round hole. This leads into a spacious cavity within the body in which the animal keeps a large sucker neatly folded up and packed away when not in use. When it wishes to feed, however, it unpacks the sucker and puts it out through the

small round hole, just as we can put our tongue out of our mouth when we wish to. There is a difference, however, between our tongue and the tongue—if I may so call it—of a Planarian Worm, for while our tongue lies in the middle of our mouth, the mouth of a Planarian lies in the middle of its tongue; that is to say, the sucker is tubular and the cavity of the tube leads into the alimentary canal. This aperture in the middle of the sucker forms the only means of communication between the alimentary canal of the worm and the external world, so that all undigested food has to be passed out again through the same opening by which it was taken in.

One of our members, Mr. Brittlebank, has already described in the *Naturalist* the curious manner in which the Land Planarians feed. He observed one with the sucker inserted into the body of a wood-louse, from which it was contentedly sucking out all the nice juicy inside. I disturbed one at Walhalla which had evidently just been engaged in treating an unfortunate beetle in the same manner. The body of the worm was wrapped around the beetle, which was held fast by the intensely sticky slime.

Four or five different species of Land Planarians were found at Walhalla. By far the largest and handsomest, and at the same time the commonest, was *Geoplana spenceri*, a species whose anatomy I have already described in detail at the Royal Society, and which I have named after our vice-president, Professor Baldwin Spencer, who first discovered it at M'Mahon's Creek on the Upper Yarra. This handsome worm is of a very dark olive green or almost black colour on the upper surface and bright cobalt or Prussian blue on the lower, with a small pinkish tip at the front end. Some of the specimens found at Walhalla must have measured fully six inches in length when crawling. They were much larger than any Planarians I had seen before.

Another species was almost entirely of a sulphur-yellow colour; another (if indeed it be distinct), yellow with four dark-brownish stripes down the back; a fourth was dark olive green above and speckled brown below, while a fifth was very pale brownish yellow, with two red stripes down its back.

One day while hunting about on the hillside just above one of the tramways I came across a small slug-like animal lying quite still under a stone, with a quantity of slime around it. It was of a brownish orange colour, and looked as though it might possibly be some new kind of Planarian. Anyway, it looked as if it could not do anybody any harm, so I put it on the back of my hand, as I often do, to watch it crawl about. Suddenly, to my utmost consternation, the little beast, with lightning-like rapidity, shot out a great long slimy white thing from its front end larger than itself, and at the same time its body became much slenderer. The long white thing, which we may call the proboscis, lay upon my hand

for a short time, but was soon withdrawn right into the body of its owner again. It was then shot out three times in quick succession with great suddenness and rapidity, and each time (except the last) again completely withdrawn into the body. After shooting out its proboscis for the fourth time the animal seemed exhausted, and as the proboscis seemed inclined to remain out and stick to my hand, I thought it advisable to put it in spirits at once.

I shall never forget my astonishment and almost horror when the great white slimy-looking proboscis was shot out over the back of my hand without a moment's warning, and as quick as lightning. The animal which had thus startled me, however, proved to be a very lucky find, and after much careful searching on subsequent days I found two more. Like the Planarians they belong to a group of typically marine worms, the group to which they belong—the *Nemertinea*—being, indeed, nearly related to the Planarians. Terrestrial Nemertines are, however, very much rarer than terrestrial Planarians, and according to Jackson only four species are known. These are—*Tetrastemma agricola*, from the Bermudas; *Tetrastemma rodericanum*, from the Rodriguez Island; *Geonemestes palaensis*, from the Pelew Islands; and *Geonemestes chalicophora*, mentioned as doubtfully coming from Australia.

It is possible that the specimens found at Walhalla may belong to the last-named species, but as even the country of the latter is doubtful, it is probable that not very much is known about it, and pretty certain that it has never been studied in the living state. Unfortunately it was described by Graff in a publication—the *Morphologisches Jahrbuch*—which appears to be unobtainable in Melbourne.

The terrestrial Nemertines are distinguished from the terrestrial Planarians by the arrangement of the alimentary canal. Instead of having a medianly placed sucker perforated by an opening which serves alike for mouth and arms, they have, like the earthworm, a mouth at one end of the body and a distinct arm at the other. Their most characteristic feature, however, is the long protrusible proboscis. This, when not in use, is packed away in a long tubular sheath lying along the animal's back, and it can, as we have seen, be shot out with lightning-like rapidity from the anterior end of the body.

A distinguished naturalist, the late Dr. Van Willemoes Suhm, who accompanied the *Challenger* expedition, and unfortunately died on the voyage, discovered a terrestrial Nemertine (*Tetrastemma agricola*) living in damp earth on the Bermuda Islands. He states that the proboscis is shot out and its extremity then fixed to some object by means of a number of papillæ with which it is provided, and that the body of the animal is then drawn up

to this fixed point by the retraction of the proboscis. According to this statement the proboscis is used as an organ of locomotion. Now, in the case of the *Walhalla* species I do not think that this is the case. The proboscis was repeatedly shot out when the animal was irritated, as a gun is discharged when you pull the trigger, but I never saw it fixed to anything as described by Suhm. On the contrary, it was withdrawn into the body, which latter appeared to remain stationary. In my notes, written at the time, before I knew of Dr. Van Willemoes Suhm's observations, I have written:—"From the action of the proboscis it may be regarded as almost certain that it is used by the animal either as a weapon of offence or defence, or possibly both. It might certainly be of use in catching food, and it would assuredly frighten any bird who contemplated making a meal of its owner." Locomotion, on the other hand, is effected, as in the case of the Land Planarians, by crawling slowly, the proboscis being at the same time completely packed away in the body.

The following brief description of the last found of the three specimens is also taken from my notes, and may assist naturalists in recognizing this remarkable worm:—"Length when crawling, about two inches; colour dull orange, rather translucent. The animal crawls slowly on a somewhat flattened surface, elongating its body, and carrying the rounded end in front. It leaves behind a track of slime like that of a snail. At the anterior end is a small but distinctly swollen head, of a slightly paler colour than the rest of the body; but the extreme anterior face of the head is convex, and of a darker brown colour than the rest of the body. There is a ring of very small close-set spots\* just behind the anterior face. Hinder end of body pointed. There is an elongated patch of irregular light-coloured spots, closely packed, down each side of the body, apparently caused by some internal organs showing through. When lying still the animal is not so much elongated and more slug-like than when crawling. When laid hold of it emitted proboscis for a great length, and again retracted it. When put in spirit it emitted proboscis further than ever, and the body was at first greatly swollen, like a sausage, and then contracted again."

Of the three specimens one was found under a piece of bark lying on the ground, and the other two under stones, the individual localities being, I should say, considerably over a mile apart from one another, so that the animal does not seem to be by any means common.

The time at my disposal for the preparation of these notes, as well as the time at your disposal for listening to them, forbids me to describe all the queer cryptozoic animals which I found at

\* Doubtless eye-spots.



Walhalla. Conspicuous amongst these were several kinds of large cockroaches, one of which lays a very remarkable cocoon—sausage-shaped, and provided with a curious toothed crest, just like a saw, running along its length. Spiders and ants were also there in swarms; but all these, and more also, I must pass over, and hasten on to describe some other very remarkable forms which I think deserve special attention.

The first of these were found under stones, and one of them is represented in the first of the drawings which I have the pleasure of exhibiting this evening. Imagine a small oval creature, somewhere about a quarter of an inch in length; flat on the lower surface, and well rounded on the upper; white all over, except for a number of regularly-arranged brown warts on the back. The warts are arranged with great regularity as follows:—There is, first of all, one at each extremity of the body, just above the margin of the dorsal surface, and then between these two, and placed at about equal distances, come seven transverse rows, each composed of four warts—or I might with equal correctness say four longitudinal rows, each composed of seven warts. At one end of the body the two central warts of the transverse row of four are fused together in the middle line so as to form an elongated proboscis-like organ, which projects so as to hide the single terminal wart when the animal is viewed from above.

Round the margin of the body, at the junction of the dorsal and ventral surfaces, there is a very delicate narrow fringe. Microscopical examination shows that this fringe is composed of innumerable minute flattened branching hairs, placed so close together as to form a continuous band, and probably serving their owner as a means of slight attachment to the surface on which it lies, for the animal is excessively sluggish, and when touched only just shrinks a little. The entire body is invested by a horny or chitinous cuticle; this is more strongly developed on the dorsal than on the ventral surface, and is especially thick in the position of the warts, which seem, indeed, to be composed entirely of cuticular substance. On the ventral surface the cuticle forms innumerable short, pointed, microscopical hairs, and it also gives rise to the branching marginal hairs forming the fringe already described. On the dorsal surface, between the warts, the outermost layer of the chitinous cuticle exhibits under the microscope a very peculiar and beautiful sculpturing—consisting of a number of rounded knobs placed at some little distance from one another, with a great number of much smaller, more or less star-shaped, knobs filling up the gaps between them.

I was at first greatly puzzled with these little creatures, and what seemed the most possible suggestion as to their nature which occurred to me was that they might be some kind of slug (this was before I had made any microscopical examination). Subsequently,

however, I obtained from under dead wood, also at Walhalla, what was evidently a second species belonging to the same genus or to a very nearly related genus. This differed from the first in the arrangement of the brown warts on the back, which were very small, and formed a marginal row of twenty-six on each side, and two longitudinal rows of six—one on each side of the middle line—the two warts at one end of the series being again fused and elongated so as to form a proboscis-like organ. This species presented itself in various stages of development—not only were there individuals of various sizes, but also empty chitinous cases, presenting the exact form and markings of the body, but with an aperture at one end (remote from the proboscis-like organ), from which the animal itself had evidently escaped. So it was clear that the animal had cast its skin, and I at once came to the conclusion that it was probably some kind of insect.

On returning to Melbourne I showed my specimens to Professor M'Coy, and he tells me he thinks they are the larvæ of dipterous flies. I also showed them to Mr. French, the Government entomologist, and he tells me that he has never seen anything like them before. I hope that before long some of our members may come across some of these strange, apodous insect larvæ, and, by keeping them in captivity, find out definitely what they turn into. I obtained two specimens of what seems to be yet a third species at Walhalla, but these I have not yet had time to examine in detail.

I have now completed my remarks on the cryptozoic fauna of Walhalla, and I hope that these brief and imperfect observations may perhaps stimulate others amongst us to become active stone-turners, for I feel sure that they will be well repaid by a rich harvest.

While at Walhalla I paid little attention to any but cryptozoic animals. I brought away, however, one snake and two lizards, concerning which Professor M'Coy writes to me as follows:—"The snake is the White-lipped Snake (*Hoplocephalus coronoides*). The lizard I have not seen, and should be glad of one for the Museum. It most resembles the Amphibolura, or *Grammatophora angulifera*, but I cannot see any femoral pores, which form a distinct line in an example of that. I fancy I see in one two pores, as in *Diporophora*, but it is not any of the known species."

In conclusion, I have much pleasure in expressing my indebtedness to Mr. Henry Dendy, of Walhalla, whose hospitality I enjoyed during my visit, and who accompanied me on several occasions in the field, and greatly assisted me in finding specimens.

# 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.

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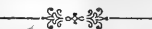
## CONTENTS.

|                                                                               | PAGE |
|-------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA ... ..                                | 137  |
| THE LATE MR. HENRY WATTS ... ..                                               | 138  |
| A WINTER JOURNEY IN THE MOUNTAINS. BY HENRY THOS. TISDALL ... ..              | 139  |
| ON THE BED OF A DRIED-UP CREEK NEAR COLERAINE. BY JOHN DENNANT, F.G.S. ... .. | 145  |
| NOTES ON THE HABITS AND SENSES OF SPIDERS—PART I. BY C. FRÖST ... ..          | 147  |
| CORRESPONDENCE ... ..                                                         | 152  |

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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, 9th December, 1889.

The president, Mr. C. A. Topp, M.A., F.L.S., occupied the chair, and about 50 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library:—"Prodrómus of Zoology of Victoria," decade xix., from the Government; "List of Named Insects in the South Australian Museum," 2nd series, from Mr. J. O. Tepper, F.L.S.; "President's Address to Royal Society of Tasmania," from the Society; "Proceedings of the Australasian Association for the Advancement of Science," vol. i., Sydney, 1888, from the Association; and "Journal of Pharmacy," November, 1889.

The hon. secretary read a brief report of the excursion to Ringwood on Saturday, 30th November, which was only moderately attended, owing to the heat. Insects were not so numerous as anticipated. The principal captures were two species of skippers (*Telesto*), *Lycæna mærens* and *Lucia* (sp.) also several larvæ. Insects of other orders were scarce. Of flowering plants, the following species were noted as somewhat uncommon:—*Gompholobium huegellii*, *Aster myrsinoides*, and the orchid *Cryptostylis longifolia*, which latter was rather plentiful. The direction taken was northerly from Ringwood towards Anderson's Creek.

On a ballot being taken, the Rev. G. D. Hutton, Messrs. C. Merton and J. West were duly elected members of the Club.

Baron F. von Mueller, K.C.M.G., Government Botanist, forwarded for inspection an advance copy of the new edition of the "Census of Australian Plants;" also a copy of his essay on Sir William M'Gregor's "Highland Plants of New Guinea," containing descriptions of eighty species of plants.

### PAPERS READ.

1. By Mr. C. Frost, entitled "On the Habits and Senses of Spiders—Part I." The author, in course of his remarks, stated that the value of spiders as destroyers of insect pests was hardly appreciated, and urged that they should be preserved rather than destroyed at every opportunity. He stated that from the result of his experiments very few spiders were capable of inflicting any injury to human beings.

The paper was well illustrated with specimens, and gave rise to some little discussion.

2. By Mr. J. Dennant, F.G.S., entitled "On a Dried-up Creek at Coleraine." The author described a visit to a valley near Coleraine, which in times past had evidently been a tributary of the Wannan. The visit was made in order to find some fossils reported to have been met with there, and which, on examination, proved to be casts of a species of *Unio*.

The following were the principal exhibits of the evening:—By Mr. C. French, jun.—Eggs of Hazel-eyed Crow, Cuvier's Podargus, Australian Coot, and Tasmanian Swamp Quail from Tasmania; and Square-tailed Kite and Australian Goshawk from Queensland. By Mr. T. A. Forbes-Leith.—A Painted Snipe, Tern, Blue Jay, and Oriole from Egypt; also ethnological photographs from Egypt, Arabia, Pacific Islands, &c. By Mr. W. B. Jennings.—Fossil shark's tooth and earbones from Wauran Ponds; shark's teeth and vertebræ from Hamilton; palates from Cheltenham and Portland; whale earbones and shark's teeth from Cheltenham; seal's tooth from Portland; and porpoise and dolphin's earbones from Cheltenham. By Mr. G. Lyell, jun.—November Lepidoptera, including *Lycæna mærens*. By Baron F. von Mueller, K.C.M.G.—*Cryptandra spathulata*, F. v. M., a new Victorian plant, found by Mr. St. Eloy D'Alton, Nhill. By Mr. J. D. Pinnock.—Spine of Stinging Ray from Mallacoota Inlet. By Mr. J. Searle.—Coleoptera, Neuroptera, and Lepidoptera collected since last meeting. By Mr. A. Yelland.—Thirty varieties of native flowers from Western Australia, collected by Miss Mailey.

After the usual *conversazione* the meeting terminated.

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#### THE LATE MR. HENRY WATTS.

WE regret to have to record the death of Mr. Henry Watts, on the 16th of December last, at the age of 61 years. Mr. Watts was well known to all the earlier members of the Club, having been one of its promoters, and an active worker on its behalf so long as his strength lasted. He was elected its first librarian, which office he filled for two years, and was then elected a vice-president, and next a member of committee, each for one year. He contributed several papers and notes to its proceedings, among the former being a series of three, during its first year, on "The Seaweeds of Victoria," a subject he was well fitted to handle, having made them his special study during a residence of some seven years at Warnambool, many of his specimens being determined by Dr. Harvey, and mentioned in his work on the Australian marine algæ. Subsequently he contributed papers on "The Polyzoa of Mt. Martha," "The Weeds of Albert Park Lake," "Freshwater Algæ," "Australian Foraminifera," &c. He



contributed his last paper in February, 1888, in which he added seventeen species to the list of Victorian freshwater algæ, increasing the total number to 58. During his later years he devoted himself more to microscopic work in zoology, botany, and geology, and accumulated a large quantity of materials, which unfortunately became lost, or dispersed, during his increasing physical weakness. His name has been connected with one of our hydroids, *Plumularia wattsi*, discovered by him at Queenscliff, and will thus be handed down to future workers in that department of natural history.

### A WINTER JOURNEY IN THE MOUNTAINS.

BY HENRY THOS. TISDALL.

(Read before the Field Naturalists' Club of Victoria, 14th October, 1889.)

THE rising generation of Victorians, being native Australians, can hardly understand the feelings which thrilled the bosoms of us older colonists as we stood on deck and gazed for the last time at our native land.

Melbourne was then but a name to us; it appeared to be the furthest place on the habitable globe. Twice since have I felt nearly the same emotions—once, nineteen years ago, when I left Melbourne for Port Albert, situated in the then almost unknown province of Gippsland, and again two years later when I left the Port to proceed to Walhalla, or Stringer's, as it was then called. My old Port friends, after trying their best to dissuade me from this apparently insane journey, bade me farewell in such tones of sadness that I almost repented me of my purpose.

That there could be any place more out of the way seemed impossible, but in a new and thriving colony almost everything is possible, for Walhalla is now considered a centre of civilization by the inhabitants of Toombon, and I have little doubt that some years hence people will leave that place to visit some even more inaccessible region. Situated in the very heart of the mountains east of Baw Baw lies the small but thriving township of Toombon. It is built on the side of a steep hill rising up from the River Aberfeldy, and owes its existence to a reef of quartz which has been worked off and on for many years, and which has at length proved payable. For the last two years the yield has been gradually increasing, and in October it produced 1,000 ozs. out of 700 tons crushed.

The banks have not yet made a settlement therein, but the managers make monthly visits from Walhalla. As I was anxious to see the place I took advantage of one of these escorts a few months since, and accompanied my friend R., who was then manager of the local branch in Walhalla. The bridle track

from Walhalla to Toombon is over some of the wildest scenery in Victoria. The ascending path from Stringer's Creek winds along the side of the hills, now passing round the bleak and open spur and anon diving into the intervening gullies, but everywhere bordered with lovely shrubs which have sprung up to cover the ravages made by the ruthless woodcutter. Acacias grow in great profusion, and of many species, on these sidelings. They belong to the same order of plants as the pea and bean; though the blossom is not the same shape as that known as the pea-flower, still the fruit is just alike—a long, green pod with seeds inside. These acacias differ greatly in appearance—one species, *A. linearis*, has long, thin leaves just like grass, only stiffer and more brittle. Its peculiar mode of growth makes it quite a feature in the landscape, for the long phyllodes, as the leaves are termed, grow in massive tufts all over the shrub, and in spring when the round, yellow flowers are in bloom its perfume and appearance are alike agreeable to the senses. The common silver wattle, blackwood, and golden wattle are familiar examples of acacias. The phyllodes borne by most wattles are very different from the leaves of other shrubs. Take one and hold it up between your eyes and the light, and you may perceive that the veins run parallel to each other, the long way of the leaf. Now examine one from another bush. The veins form a network, branching out from a central midrib. The fact is that the green appendages of the golden wattle and blackwood are not true leaves, but merely flattened out stems, which perform the same functions. Very often true leaves may be seen growing from the end of the phyllodes of the young blackwood. A fine view may be obtained from portions of the sidelings we are traversing, the whole basin of Stringer's Creek lying directly below the eye, with the township nestling in the bottom of the valley. Most of the houses are built on sites excavated out of the side of the hill. The abruptness of the rise may be exemplified by what is known as the "Walhalla cow story," which is literally true. It happened many years since. A well-known Melbourne solicitor lived in Walhalla at the time. He resided in one of the small, wooden buildings common in our township. This cottage was built under a very steep part of the hill. While quietly engaged with a client in a front room they were suddenly startled nearly out of their senses by a tremendous crash of woodwork at the back of the premises. Rushing out of the front door and around the house to ascertain the cause, they could at first see nothing unusual. The lawyer gazed about in astonishment, and, taking off his hat, he scratched his head, exclaiming—"Begorra, I thought I heard something." "Thought you heard something," sarcastically returned his companion; "look here." He accordingly looked through the window of a servant's bedroom and beheld, lying amongst a confused heap of shingles,

rafters, and bed-clothes, a cow! The unfortunate animal had missed her footing, was precipitated down the hill, and thence through the roof of the house on to the servant's bed. The cow, although stunned, was not killed, as one might have supposed, and the trouble was how to get her out, for the door was much too small. Finally, they had to take down a part of the side wall in order to release her.

On the crown of the hill the path follows the main divide between the two branches of Stringer's Creek until it arrives at a small shanty about four miles from Walhalla.

The glorious morning in the meantime had vanished, and a fine, chilly, penetrating mist had begun to fall, and as there is no other house for ten miles, my companion and myself gladly availed ourselves of a refresher to keep out the cold.

Beyond this we have passed the utmost bounds of the Walhalla district, and on the rich soil of the plateau the primeval forest lies undisturbed. In every direction we are surrounded by innumerable species of plants, forming a thick jungle. Out of this vegetable chaos rise here and there huge trunks of the White Gum (*Eucalyptus goniocalyx*), the branches almost touching hundreds of feet overhead. A few miles more sees us on a sideling cutting, which leads down to the Aberfeldy River. The country becomes poorer as we descend, and in places it is covered with stones, consequently the vegetation varies considerably. The trees become pigmies compared to the giants which grow on the rich saddles; bracken, ferns, heath, and wire-grass take the place of the rich undergrowth. This apparent loss is a great gain to the tourist, for, instead of being hemmed in with a dense mass of vegetation, he can now look around in freedom. Above him he sees the wooded hills rise tier over tier in beautiful rounded curves, while the steep descent below is soon lost, shrouded by the tops of the gums and fern trees growing out of the hillside. Since our journey a fatal accident happened on this very sideling, which will serve to show the nature of the descent. A poor tired traveller sat down with his back supported by a bushy sapling which grew on the outside edge of the track. He fell asleep, but his weight proved too much for the frail support. The roots of the bush gave way, and he was precipitated into the depths below. The next passing traveller saw his bundle lying by the broken bush, guessed what had happened, and carefully climbed down to the spot where he lay, but life was extinct. At the foot of the sideling a good wooden bridge spans the Aberfeldy. It is a shallow, rocky stream, abounding with small blackfish. The lover of the "gentle sport" will never get anything over half a pound, and seldom much over a quarter, in this river, but five to twelve dozen is the average night's reward. The opposite side of the river has a southern aspect, and as the hills are quite as steep, it

seldom gets the direct rays of the sun, consequently the vegetation is much more luxuriant. The finest orchids I have were gathered here. Curious sundews, mosses, rare ferns, and other plants are to be found in abundance. I often wished the members of the Field Naturalists' Club could visit this spot in the proper season. After innumerable winds up the zig-zag path we at length reached the top, and found ourselves on a very broad spur. A little further on we arrived at a clearing of a hundred acres or so of very rich land, belonging to an energetic man with a large family, who evidently works hard, to judge from the various improvements. Mr. Beardmore keeps an accommodation house, which is much required, as it is the only house on the 25 miles of track from Walhalla to Toombon. For many miles the path follows the broad spur, and then makes a sudden dive down into another long sideling, which finally led us again into the Aberfeldy. We forded the river, and ascending the other side a few hundred feet found ourselves on a fine broad road which joins Donnelly's Creek and Toombon. This is certainly the best piece of road in the mountains. It is almost level, and is cut out of the side of the hill about 300 feet above the stream. A sharp canter soon brought us in sight of the township, which has a very peculiar appearance; most of the houses being built in a gully running down the side of the hill below the road. We were most hospitably entertained by the manager, Mr. Staff. After dinner we accompanied him down to the battery; first along the main road and then down a very steep, narrow path, which is indeed an apology for a street. The night was exceedingly dark, and each of us carried a bush lantern. This primitive article is manufactured from a brandy bottle, with the bottom broken off, turned upside down, and a piece of lighted candle cleverly dropped in so as to catch in the neck. I cannot properly describe the wierd effect occasioned by the rocky steepness of the path, the apparently illimitable depths at one side of us, the bright glimmer of an iron roof or two just level with our feet faintly shown by our lantern, and the dark gleams occasionally thrown back from the shining leaf of some mountain bush. We travelled in this way for nearly a mile, the path getting worse and worse as we advanced. At length we reached the battery, and superintended the smelting of the precious metal. Though a common sight up here, I do not remember ever seeing a description of the process. When the golden quartz has been crushed into such fine powder that the water can easily carry it away, the muddy stream is allowed to pass over sheets of copper covered with a quantity of quicksilver; the tiny particles of gold unite with the quicksilver and form an amalgam, which is caught, partly by the sheets of copper and partly by a complicated arrangement of sluice boxes and blankets. As it is necessary to separate the constituents of the amalgam, it is placed in a semi-spherical iron pot,

a similar one being placed on top and securely fastened. The whole forms an apparently solid globe, with a long iron tube proceeding from the top. This crucible is then placed on a furnace, with the other end of the iron tube in a tub of water; the great heat vaporizes the quicksilver, and it escapes through the tube, but liquefies again as soon as it touches the water, and is subsequently found at the bottom of the tub fit for further use. The pot is then removed from the furnace, and being unfastened, the gold is found in a solid lump. This mass of gold, which weighed some 400 ozs., was then broken up; plates of iron having been placed crossways in the crucible before smelting, these plates separating it into quarters made it handier for carriage. The next morning I started for a ramble along the river, and after a stiff climb down had a splendid scramble along the banks. The hills start up abruptly on each side, leaving generally a very narrow, rocky margin, but every crevice was teeming with vegetation. Maidenhair ferns, Lomarias, mosses, lichens, and shrubs of all kinds were scattered in profusion. Ti-tree of various species grew by the water's edge. I found some shrubs of a very rare species of *Grevillea* (*G. miquelliana*). This plant grows sometimes to 15 feet in height, and has soft-looking oval leaves and very large scarlet blossoms. I think it is the prettiest native shrub we have. I have known it to bloom for nine months in the year. When I arrived at the junction of the mine creek, I climbed up to the battery and saw that it was worked by means of a large water wheel turned by a fine sluice-head of water.

I followed the race back for a couple of miles through some exceedingly picturesque scenery, sometimes bold and rocky, and again with hills rising in swelling curves, their wooded heights peering over one another as they receded in the dim distance. The race had been cut for some time, so its banks were covered with ferns and other plants; in one place it passes under a magnificent canopy of tree ferns. *Victoria* possesses but two common tree ferns—the *Dicksonias*, which grow in shady valleys, and the *Alsophilas*, which grow on the hillside. On examining their leaves or fronds, brown spots may be observed on the under surface; these are masses of spore-vessels, called sori. In the valley species the sori are placed near the margin, and the edges of the leaves turn back and cover them, but in the hillside species they are dotted along each side of the midrib.

I was so enchanted with the scenery that hitherto I had pushed on in spite of the cold rain, but now it became so heavy that very reluctantly I had to return. When I got back to the manager's I was thankful to dry my clothes and get a good warm at the huge wood fire which blazed cheerfully in the open fireplace.

We now prepared to return to Walhalla. The gold had been broken up and divided; I had about 200 ozs., fastened in small

canvas bags. Half these bags were placed in one end of a good flour bag, and the other half in the other end. The flour bag was then carefully sewn up and strapped in front of my saddle, the two ends balancing each other at either side of the horse. We looked carefully at our Colt's revolvers before buckling them on, and as the misty rain had turned to snow, wrapped ourselves in our dreads and started off at a brisk trot.

Of course the manager acted as captain of the escort, and he divided the party so that there was an interval of 100 yards between each horseman; this would give us a better chance of escape in case of an attack. The arrangement was undoubtedly safer, but we found it very slow, and united whenever possible. During our ascent from the Aberfeldy it snowed steadily; at first lightly sprinkling the grass and shrubs but getting thicker every moment until the shape of the cutting only could be perceived. My enforced solitude allowed me to watch the various ways in which the different kinds of vegetation were affected by the snow; wattles and many like shrubs just retained sufficient to cover the upper side, so that their slender green branches appeared crowned with the long lines of sparkling crystals. On the tree ferns the weight of the snow was just sufficient to bend the ends of the branches downwards, so that the black corrugated stem, the lovely green under side of the fronds, and the dazzling white of the snow above and around were brought into striking contrast. The larger leaved shrubs, such as musk and blanket-tree, were unable to withstand the weight, and bent downwards like an umbrella, but even amongst them occasional glimpses of green could be observed.

On the ground here and there tall bracken forced its way through the fleecy covering; sometimes it stood erect and angular or again bent gracefully under the burden of its soft but powerful adversary, while overhead mighty eucalypts towered in majesty. In some places where fires had raged the previous year the blackened stems presented the appearance of a vegetable two-faced Janus, for on one side the snow had adhered from top to base, giving one the idea of peace, whilst on the other the charred bark showed black as Erebus—fit emblem for war in all its horrors.

It is useless to continue. I feel that I cannot adequately describe the strange beauty and grandeur of a scene where the lovely greens of summer vied with the dazzling snow of winter to enhance the charm of hill and dale.

We pushed on with our best speed, when we arrived on the main divide, for evening was fast approaching, and soon arrived at Beardmore's, but did not dismount. On arriving at the descent to the river we had to jump off and lead our horses down, for the snow was clogging their hoofs, so that they were stumbling very

badly. By the time we got to the bridge a thaw had set in. This helped us to get along much quicker. It was quite dark before we arrived at Walhalla, and I must confess that I was very thankful when we saw the lights glimmering in the distance.

After delivering up our treasures at the bank, we made the best of our way home, cold and tired, but cheerful, after our adventures.

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### ON THE BED OF A DRIED-UP CREEK NEAR COLERAINE.

BY JOHN DENNANT, F.G.S., CORR. MEMB. ROYAL SOC. S.A.

(*Read before the Field Naturalists' Club of Victoria, 9th December, 1889.*)

WHILE examining the marine tertiaries of Muddy Creek and the Glenelg River during the last few years, I heard frequent rumours of fossil shells having been found in the area lying between these two localities—viz., in the Wannon Valley, not far from Coleraine. My own researches had led me to conclude that this region had not been submerged in tertiary times, and as my informants were unable either to describe the shells or to indicate the precise spot where they occurred, I for a long time doubted the correctness of their statements.

A few months ago, however, Mr. Cummings, a reporter on the *Hamilton Spectator*, assured me that some shells, lately gathered near Coleraine, had been shown to him, and that the finder would most willingly conduct me to the place where he obtained them. On my next visit to Coleraine I made inquiries for the shells, and was at last gratified by seeing specimens of them at the hotel where I stayed. They proved to be casts in ironstone of *Unios*, and, therefore, totally distinct from the marine tertiaries of Muddy Creek and the Glenelg. I was told that they were found on the top of one of the hills overlooking the Wannon river, a locality in which one would hardly expect to find *Unios*.

Coleraine is situated at the bottom of a valley through which the Koroit Creek runs. On the north low, rounded hills approach close to the banks of the stream; but on the south there is a moderate space of level ground, on which the town is built, the land then rising somewhat rapidly to a height of 375 feet above the valley. An excellent road winds along the sides of the hills, and from the top one gazes upon as lovely a landscape as can be found in any part of Victoria. Rolling downs of rich pasture ground extend as far as the eye can reach, while at the bottom of a deep valley runs the beautiful River Wannon, traceable for miles by the fringe of trees lining its banks. Amongst the downs there are in places flat table-lands, some of small and others of tolerably large area. It is noticeable that these all lie

at about the same level, suggesting, what is no doubt the true explanation, that they are the remains of a former plain, which has been broken into hills and hollows by the action of water. A few trees grow on the table-lands, but on the hillsides scarcely a tree or bush of any kind is to be seen, the ground being clothed instead with the most luxuriant herbage, the source of untold wealth to the sheep-farmers who own the land.

Geologically, the district consists of mesozoic strata, overlain on the table-lands and on the upper slopes of the hills by a thin coating of ironstone gravel, of probably pliocene age. The gravel must at one time have extended over a much wider area, it having formed, no doubt, the original surface of the pliocene plain, when the present isolated table-lands were continuous, and before the existing valleys were marked out. As the ironstone has evidently been precipitated from water holding iron salts in solution, I think it likely that, in pliocene times, a great part of the country was covered by swamps and marshes. The same kind of ironstone is, in fact, still in process of formation in the swampy ground to the west and north-west of the Glenelg River.

The mesozoic strata comprise silicious shales and limestones of a somewhat friable nature, which when laid bare become rapidly disintegrated. Any creek or stream, therefore, that manages to cut through the overlying ironstone, and thus reaches the lower beds, soon carves out for itself a deep channel, which, in such soft strata, gradually becomes a wider and wider depression in the surface of the country. The denudation of these rocks, caused by running streams and by the action of the atmosphere, is, even now, very great; and if we admit, as there are good grounds for doing, that the rainfall of Victoria was, during the pleistocene period, much heavier than at present, there is no difficulty in accounting for the rounded hills and sloping valleys which are such marked features of the Wannon region.

The nature of the formations being thus given, I will relate how the shells occur.

At the time of my visit to Coleraine, I was so busy that I could only spare a few hours in the early morning, and Mr. W. Trainor, the proprietor of the hotel, kindly undertook to drive me to the fossil beds before breakfast. A start was accordingly made at 6 a.m. the next morning, Mr. Skinner, the original finder of the shells, accompanying us as guide. After going about two miles and a half, a halt was called, the horses were unharnessed, and we walked across a paddock, through thick, tall grass, which, being covered with dew, soon made our feet soaking wet.

Our road had brought us across the elevated table-land to the south of Coleraine, and we had only begun the descent on the other side when we stopped. Mr. Skinner now led the way to a small hill, or rather mound, and commenced removing the surface



soil with his pick. Just below lay a bed of ironstone pebbles and small boulders, amongst which the casts of *Unios* were soon noticed. Frequently these were imbedded in the stones, but sometimes were found loose. A number of them were collected, and we proceeded down the hillside, still finding shells below the surface, though less abundantly.

About three miles to the south, and from 400 to 500 feet lower than the hill, the Wannon River could be seen, and I observed that a long and very winding valley led right down to it. We did not descend far into the valley, as, after a short distance, we could find no more shells; but, when standing on the hill-top and looking down the valley, I could easily believe that it had been first marked out by a creek which has since dried up. That a stream formerly ran in the line of the ironstone gravel containing *Unios*, is evident, and this long winding valley may possibly have been the channel by which it reached the Wannon. The river must then have flowed at a higher level than at present, the descent from the high ground having become gradually greater as it cut its way down deeper and deeper into the mesozoic strata.

I have not found the same species of *Unio* living in the Wannon, but Professor Tate, to whom I submitted specimens of the ironstone casts, considers that they agree very well with *Unio depressus* (Lamarck), an existing species, the type of which is from the Nepean River, New South Wales.

The creek, therefore, in which these *Unios* lived was probably first formed in either pliocene or pleistocene times, and may have been still flowing in the early part of the recent period.

No other organic remains were noticed amongst the ironstone gravel, though, if time had admitted, I should have liked to search for some. This was, however, necessarily deferred till a future occasion; and, having again harnessed up the horses, we drove back to the hotel, where we arrived just in time for breakfast, for which the morning's work had given us an uncommonly good appetite.

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## NOTES ON THE HABITS AND SENSES OF SPIDERS. —PART I.

By C. FROST.

(Read before Field Naturalists' Club of Victoria, 9th December, 1889.)

It is with much diffidence that I appear with a paper on this subject; indeed, the little I know about spiders only serves to show me how slight that knowledge is. But a sense of the disregard in which these small animals are held by members of this society has led me to come forward on their behalf, in the hope that others may be induced to take up this subject, and help to secure for spiders the attention they deserve. To me they appear

the most useful and the most interesting of all the lower forms of animal life.

Their account as insect destroyers stands all on the credit side ; the usual debit of so much harm—which in the case of many of our insectivorous birds is very large—being *nil*. Compared with birds, in this respect, spiders exhibit many points of advantage ; and it is a misfortune to the fruit-grower that he does not recognize their value, and at least refrain from killing nearly every one he sees.

In the first place, those birds which feed on insects in the larvæ state only do a great deal of harm by picking off buds, making holes in the fruit and bark of trees, and by pulling up young plants, whilst in search of the grub.

And, again, those which prey upon the winged insect are mostly diurnal, whilst the moths and beetles are mostly nocturnal ; and, therefore, so far as the birds are concerned, have the field to themselves.

On the other hand, spiders do no harm to vegetation. They have their traps set night and day ; and, by killing the winged insect, destroy the would-be author of perhaps hundreds of larvæ. Moreover, spiders destroy a great number of insects which they do not eat. If, when a spider is enjoying a repast, another insect comes into the web, he runs off and secures the victim and then returns to resume his meal. So each one that comes into the web is secured. I have counted as many as fifteen at a time in one web—enough to enable a spider to fare sumptuously for a week ; but, as often happens when camping out, many things occur which are not in the programme. A storm of wind or rain comes, and away go tent and provisions together.

I have examined trees at night, and found numbers of flies and butterflies settled on the leaves and branches. This is the hunting-ground of the predatory spiders, which are to be seen running over the trees and capturing any insects that lie in their paths.

Spiders are useful, not only to the horticulturist, but to every one, even the field naturalist. The smallest spider I have ever seen I discovered one day in the angle of a box-lid, whilst examining some specimens of lepidoptera. It was so small that I had to use a lens in order to be certain whether it was a spider or an insect. Whilst I was looking at it, a very small beetle—the name of which I do not know, although it is well known to all collectors as a destroyer of their specimens—came running along, and was about to pass about half an inch away from the spider, when, to my intense surprise, the little thing darted out from its hiding-place, and ran four times round the beetle, keeping touch with the inner hind leg, in which it carried a very fine thread of web. So sudden was the attack that the beetle

seemed paralyzed, and made no attempt to escape. The spider immediately began a repast, which I left it to enjoy.

It is needless to say spiders do not enjoy a rich popularity, especially amongst the fair sex, by whom they are feared and disliked, and who lose no opportunity to destroy them. No small animal has more enemies, or fewer friends, than the Voconia, or so-called "Tarantula"—or, perhaps, more commonly "Triantelope"—though, why it received the name Tarantula I am at a loss to understand, unless it was from its supposed poisonous bite. *Lycosa tarantula*, the once-supposed poisonous spider of Italy, not only belongs to a different family, but is of a totally different form. No small animal, I say, has more enemies or fewer friends. No sooner is one discovered in or near a dwelling than he is immediately set upon. One keeps watch to see that he does not escape, whilst another goes for the tongs, or some other deadly weapon, and in a short time he is sent to join the majority of Voconias. Amongst my own family, where I have succeeded in creating a certain measure of sympathy for spiders in general, exception is still taken to this particular genus, and when one makes his appearance inside the house I have no peace until it is transferred to the outer walls of the building. Yet these spiders are quite harmless, and, in consequence of their large size and voracious appetites, are, I think, the most useful of all spiders. One evening last summer I watched a female of this genus outside one of my windows, which, in consequence of the attraction of the light inside, proved a good hunting ground. In less than half an hour she killed no less than seven moths, and, like all the predatory spiders, she devoured them at once, eating every bit, even the wings and legs (except in the case of two large moths, where she rejected the two largest wings), using the palpi like hands to double them up and stuff them into her mouth. The juices appear to be very rapidly distributed throughout the system, for, though it may appear strange to you, as it did to me, it is a fact that, after devouring seven moths, which in the aggregate seemed at least twice the size of the spider, I could observe scarcely any difference in her size.

There is evidence that the dread of, and dislike to, spiders is not confined to the fair sex alone, from the fact that one of the most successful of the many practical jokes perpetrated at the cattle sale-yards at Flemington is performed by the aid of an imitation spider. My informant was himself a victim, but has since had the satisfaction of seeing many others treated in a similar way. The joke is carried out in this way:—The "joker," if I may use the term, provides himself with a mock spider, the body of which is made of cork, and the legs of elastic drawn from the elastic side of an old boot. The legs usually number only six, but that does not interfere with the success of the joke, for the victim seldom waits

to count them. To this he attaches a thread of fine silk, the other end of which is fastened to the end of his walking-stick or umbrella. All being ready, he looks around for a stranger who is watching the auctioneer, fully intent upon the business of the day, and, walking quietly up behind him, lowers the spider just in front of the brim of his hat. The result is everything he could wish. The victim gives a sudden start and makes a blow, which, however, does not strike the spider, but sends his hat flying amongst the crowd, much to the amusement of all concerned in the joke.

Now, as this almost universal dislike to spiders cannot apply to field naturalists, who see something to admire and like in all Nature's works, I am driven to attribute the neglect which they have received from members of this club to the difficulties met with in setting up a collection. These difficulties, however, may be overcome, and at our next meeting I hope to exhibit about a hundred species mounted on slips of glass in spirit. We all know that collecting alone is not the main object of the naturalist, but as a means of identification, and the working out of the life-history of species, it is of the greatest value. The work of collecting around Melbourne has been so well worked out that little remains to be discovered in that direction; therefore I think that we—the non-scientific members of the club—should direct our attention more thoroughly to the study of the habits and life-history of the lower forms of animal life, and, by making our discoveries known, endeavour to assist specialists who have made natural science a special study—and of whom, I am happy to say, we have a good number in our club—in carrying out the higher scientific work.

Many popular errors exist in regard to snakes, spiders, and insects supposed to be dangerous to mankind, which can be corrected only by a careful study of their habits, &c. No branch of natural history possesses so many attractions as an observation of the lower forms of animal life, and the more such observations are multiplied the more fascinating the work becomes.

The study of spiders offers many advantages to the observer. He does not require to make long journeys into the country, in order to study their habits. Nature has been profuse in supplying us with an abundance of materials for observation close to our doors. Each tree, and each little plant, has several spiders secreted amongst its branches and leaves. Go into a cellar or an old shed, turn over an old log or a stone, strip the bark from a tree, or look among the weeds and grass, you will find spiders everywhere, each genus living a different mode of life, but all carrying on the same good work, that of keeping down insect pests. If you buy a load of wood, you will get many things for which you do not pay—sometimes it is a snake, or a scorpion, but always spiders.

Spiders which live and construct their webs amongst the bushes and trees exhibit a remarkable instinct of mimicry in protecting themselves and their eggs from their numerous enemies. They seldom remain on their webs during the daytime, but conceal themselves amongst the leaves and branches, where, with their long anterior legs folded back and resting on their backs, or stretched out in a single line in front, they imitate young buds, knots, loose bark, &c., in such a way that one who is accustomed to their ways is often deceived.

On a leafless young fruit tree I observed, last autumn, the web of an *Epeira*, which I thought to be unusually well formed. I immediately began a search for the architect. Failing to discover it amongst the branches, I sought out the single thread which usually leads from the web to the spider's retreat. I followed this line about half-way down the trunk, when it ended abruptly at a depression caused by the cutting off of a small branch. But, still I failed to discover the spider. At the bottom of the depression lay what appeared to me a bit of loose bark, and it occurred to me that the spider may have crept under it. To my surprise, when I attempted to lift the bark it proved to be the object of my search.

This instinct is not perfect in every species. Last summer I watched a mason-wasp fill her cell with spiders, and so soon as she flew off each time I removed the spider and examined it. In less than an hour she brought eight spiders, all of which were of the same species—a species of *Epeira*. As it appeared to me rather strange that she should show such a preference for this particular species, I set myself to discover the reason. With this object in view I visited a paddock in which were growing a number of short bushes. I was not long in finding a good number of webs of different species; and amongst them several of this particular one. The spiders were resting among the leaves close to the web; but, as they made no attempt at mimicry, they are soon discovered, and, doubtless, fell easy victims to the keen-eyed wasp. I conclude, therefore, that the reason why so many of this species were brought was because they are more easily discovered.

In weaving sacs for the protection of their eggs still more skill is exhibited in imitating the surrounding objects. In this way they mimic moss, seeds, seed-pods, dried leaves, buds, flowers, knots, galls, &c. The egg-sacs of spiders which live in dark places during the day, or which construct dwellings amongst the trees, bushes and grass, are concealed, and, consequently, are in nearly all cases white. The number of eggs varies from 10 to 500 at a laying, according to the species. When the young spiders are ready to emerge from the egg-sac the parent weaves a network of very fine threads around it, and then makes a small

opening to allow them to escape. It is not generally known that young spiders undergo several changes after they are hatched before they leave the egg-sac. When first hatched they appear in the form of a pupa, the legs being folded under a thin transparent skin. In two or three days this skin bursts open and comes off, when the legs are set free. They are, however, of little use at this stage, being swollen and shapeless. About two days later another skin is shed, and the young spider is now able to run about and spin a web, which until now he had no power to do. After shedding the third skin the body is covered with bristles, which were formed under the old skin. The legs, also, have become longer, and the joints more plainly visible. When the third skin is shed the body is not covered with hair, the bristles only appearing, the body still having a white, transparent appearance. The hair, however, begins to grow at once, and in about two or three days the body is thickly covered—giving to it a much darker colour. They are now ready to leave the egg-sac and spin webs for themselves, although they will live and grow for many weeks without food.

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#### CORRESPONDENCE.

Ethel Cottage, Longmore-street, West Beach,  
St. Kilda, 22nd October, 1889.

DEAR BARON,—Although having had the honour of your acquaintance at least 25 years, you may not know that I am an old sportsman, so far as rod and gun are concerned, and an amateur naturalist in a very small degree. As such, however, I beg leave to say as follows:—I was very glad to learn some time back that your society had obtained protection for several interesting birds. I venture to suggest that protection during the present season should be extended to the two species of Lapwing commonly named Plover, the Brown Rail, the so-called Native Hen, or Red-legged Bald Coot, and the Common Heron, because he preys much on big water insects which devour the spawn and the fry of fishes in their youngest stage. There may be several other birds deserving of protection, but their names do not occur to me at this moment.

Several years back I had been fishing in the Yarra at Coranderrk, and set a strong line with two middle-sized hooks on it, baited with two big worms each, in hopes of catching a big eel, but instead found a Platypus on one of them. He had taken the bait as a duck would, and was hooked inside of the bill. He wound the line several times round his neck and round a dead branch under water, and was drowned.

I hope these scraps may be of some little interest to you, and remain, with best wishes, yours sincerely,

H. H. NEWENHAM.

BARON VON MUELLER.

# 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.

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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.

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## CONTENTS.

|                                                                                                                                | PAGE |
|--------------------------------------------------------------------------------------------------------------------------------|------|
| THE FIELD NATURALISTS' CLUB OF VICTORIA ... ..                                                                                 | 153  |
| NOTES OF A SHORT TRIP TO THE ISLANDS OF WESTERN<br>BASS STRAITS. BY E. D. ATKINSON, C.E. ... ..                                | 156  |
| THE APPLE OR CODLIN MOTH. BY F. C. CHRISTY, M.I.C.E.                                                                           | 164  |
| RECORD OF TWO NEW VICTORIAN HIGHLAND COMPOSITES.<br>BY BARON FERD. VON MUELLER, K.C.M.G., M. AND<br>PH. D., F.R.S., &c. ... .. | 166  |
| NOTE ... ..                                                                                                                    | 168  |
| CORRESPONDENCE ... ..                                                                                                          | 168  |

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THE

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary meeting of the Club for January was postponed, owing to a communication having been received from the Council of the Australasian Association for the Advancement of Science inviting the members of the Club to be present, and exhibit specimens, at the conversazione of the Association held in the University Buildings on Monday evening, 13th January, 1890.

The following exhibits were shown on that occasion:—By Mr. F. G. A. Barnard.—Two cases of Victorian insects. By Mr. A. Coles.—A large collection of mammals, birds, &c., from Victoria and other parts of Australia. By Miss Cochrane.—Paintings of 25 species of Victorian orchids. By Mr. T. A. Forbes-Leith.—Victorian parrakeets; photographs of Victorian aborigines, and their weapons; photographs of the last of the Tasmanian aborigines; photographs of Eastern races—Pacific Islanders, New Zealanders, &c.; photographs of Fijian weapons; cloth brought from Pacific Islands by Captain Cook in 1770; parrakeets from East and West Indies, Africa, New Guinea, &c. By Mrs. Flatow.—Hydrozoa, Polyzoa, &c., from Point Lonsdale curious unnamed crab from Nui, Pacific Islands. By Mr. C. French, jun.—Case of rare Australian birds' eggs. By Mr. C. Frost.—143 species of Victorian spiders, in spirits. By Mr. R. Hall.—Case of fresh water and marine shells, Victoria. By Mr. L. Hart.—Photographs of Field Naturalists' Club's expedition to King Island. By Mr. W. Jennings.—Fossils from Portland, Hamilton, Lethbridge, Waurin Ponds, Cheltenham, and Schnapper Point, Victoria. By Mr. W. Kershaw.—Four cases of Australian Lepidoptera. By Mr. G. A. Keartland.—100 species of Victorian birds; 98 species of Victorian birds' eggs; several rare snakes and lizards. By Mr. G. Lyell, jun.—Fine specimens of butterfly, *Papilio macleanus* from Dandenong Ranges; case of Victorian butterflies, containing 12 species of *Lycænidae* and 14 species of *Hesperidæ*. By Mr. D. Le Souëf.—Case of aboriginal weapons; Kiwi's eggs; young *Platypus*; large Pearl shells from Western Australia, and pair of Giant Clams (*Tridacna*

*gigantea*), weighing  $3\frac{1}{2}$  cwt. By Mr. J. E. Prince.—Photographs of "The Field Naturalists at Work," and of scenery in vicinity of Mt. Hotham. By Mr. J. Searle.—Three cases of Victorian insects, collected on Croajingalong expedition, &c. By Mr. G. Sweet.—Fossils from the old red sandstone rocks of Mansfield, including fossil fish, lepidodendron plants, &c.; from the cretaceous rocks of North Central Queensland, fossil remains of a large unnamed Saurian; from Hughenden, Saurian vertebrae, also Chelonian plates, and several Ammonites; from Maranoa River, a new gigantic Crioceras, resembling an Ammonite, the outer whorl of which was 28 inches in diameter, together with other fossils, all discovered by the exhibitor during the past year. By Mr. H. T. Tisdall, F.L.S.—Paintings of Victorian flowers and fungi.

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The monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th February, 1890.

In the absence of the president and vice-presidents, Mr. C. Frost was voted to the chair, and about forty members and visitors were present.

A circular was read from Dr. J. C. Cox, F.L.S., of Sydney, inviting contributions towards a memorial to the late Rev. J. E. Tenison-Woods, F.G.S., &c.

Mr. T. A. Forbes-Leith wrote wishing good-bye to the members owing to approaching departure for England.

The hon. librarian reported the receipt of the following donations to the library:—"Reports of Mining Registrars," September, 1889, from the Mining Department; "Report on Insect and Fungus Pests, Queensland," part 1, from Department of Agriculture, Queensland; "Report on the Government Scientific Expedition to the Bellenden-Ker Range, Queensland," from the Colonial Botanist, Queensland; "Lichen Flora of Queensland," by Jno. Shirly, B.Sc., from the author; "Smithsonian Report, 1886," part 1, from the Smithsonian Institute, Washington, U.S.A.; "Proceedings of Royal Society of New South Wales," vol. xxiii., part 1, from the Society; "Catalogue of Books in Library of Royal Society of New South Wales," part 1, from the Society; "Proceedings of Royal Society of South Australia," vol. xiii., 1888-9, from the Society; "Proceedings of the Linnean Society of New South Wales," vol. iv., 2nd series, part 3, from the Society, "Journal of New York Microscopical Society," vol. v., part 4, October, 1889, from the Society; "Journal of Pharmacy," January, 1890, from the Society; and "Cryptogamic Botany" by Bennett and Murray, purchased.

The hon. secretary reported that the excursions to Heidelberg and Whittlesea had been comparative failures, owing to the extremely hot weather prevailing.

On a ballot being taken, Mr. W. T. Shanasy was duly elected a member of the club.

## PAPERS READ.

1. By Mr. F. C. Christy, M.I.C.E., entitled "Notes on the Apple Moth." The author gave a brief *résumé* of his observations on the Codlin Moth, which he stated lays its eggs in the calyx of the blossom, and the grub as soon as fully developed eats a vital part of the apple, causing it to fall, when it emerges from the fruit and forms a chrysalis under the rough bark of the tree, or some other sheltered, dry situation, and there remains till the following spring. He exhibited specimens of the moth, the identity of which with the English Codlin Moth was questioned by several members, it being considered to be an indigenous species, but with habits quite as destructive, if not more so, than those of the English type. The paper gave rise to considerable discussion.

2. By Mr. E. D. Atkinson, C.E., of Tasmania (hon. member), entitled "Notes of a Short Trip to the Islands of Western Bass Straits." This was a most interesting account of a collecting trip to the islands off the north-west coast of Tasmania, which, with the exception of one, are uninhabited. The author remarked on the scarcity of mammals. Of birds (sea birds naturally predominating), some 50 species were noted, and some of their peculiarities mentioned; a few snakes were seen, and several rare plants were obtained.

NATURAL HISTORY NOTES.—Mr. C. French, F.L.S., contributed a note on the so-called "fly pest" in the Rutherglen vineyards, and exhibited specimens, and also enlarged coloured drawings, by Mr. C. C. Brittlebank, of the insect, which belongs to the order Hemiptera, sub-order Heteroptera, and is at present unnamed. Mr. French also contributed a few notes on a case of poisoning from the bite of the red and black spider known as the Victorian Katipo.

The following were the principal exhibits of the evening:—By Mr. C. French, F.L.S.—*Euryscaphus titan* (Sloane), a new carabid beetle, from Central Australia; specimens and drawings of a destructive insect from Rutherglen. By Mr. C. French, jun.—Eggs of following Victorian birds, viz., Gilbert's Thickhead, Chestnut-backed Ground Thrush, Spiny-cheeked Honeyeater, Spotted Bower Bird, Black-tailed Tribonyx, Leadbeater's Cockatoo, and Barnard's Parrakeet. By Master G. Hill.—A case of Victorian and other Coleoptera, including *Schizorrhinus bakewelli*, recently taken at Sandringham. By G. A. Keartland.—

Specimens of *Mylitta australis* ("Native Bread"), from King River. By Mr. G. Lyell, jun.—Lepidoptera taken during January, including *Papilio macleayanus*, Leach; *Delias (Pieris) harpalyce*, Don; and *Xenica kershawi*, Misk; also the Silver-streaked Hawk Moth, *Cherocampa celerio*, reared. By Mr. W. M'Gillivray.—Australian birds' eggs. By Baron F. von Mueller, K.C.M.G.—Two new Victorian plants, *Aster frostii*, F. v M., found by Mr. C. French, jun., and *Helichrysum stirlingi*, F. v M., found by Mr. C. Frost, obtained on Mt. Hotham during the excursion of the Australasian Association for the Advancement of Science to the Victorian Alps. By Mr. J. Searle.—Breeding cage with larvæ, chrysalides, and imago of the large "tailed-blue" butterfly, *Ialmenus evagorus*, Don.

After the usual *conversazione* the meeting terminated.

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## NOTES OF A SHORT TRIP TO THE ISLANDS OF WESTERN BASS STRAITS.

BY E. D. ATKINSON, C.E.

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

As the islands composing the above group are but comparatively little known, an account of a short trip to them may not be uninteresting. Having a little time at my disposal during the month of November, I decided to spend it among these islands, with a view to examining them and gaining all the information I could respecting the character and distribution of their fauna. Having chartered a boat for this purpose, we left Circular Head on the morning of the 13th of November of this year, and with a fair and freshening wind ran past the peninsula, and through the passage separating Robbins's Island from the mainland, and entered Mosquito Sound, between Robbins's and Walker's islands, in time to secure the boat and fix the tent before darkness set in. My nephew and I took the tent, and the others slept in the half-decked boat, so that we had plenty of room, which is always an advantage in camp life, whether in a tent or otherwise. The following day we walked round Walker's Island. Leaving camp we followed the channel or sound, which is circular in shape, and about half-way along came to a shell bank upon which were many birds of various kinds, and amongst them were five pelican with their heads under their wings, to all appearances fast asleep. I tried to approach them under cover of the bank, but a warning note from *Larus pacificus*, always a nuisance under these circumstances, roused them

from their fishy dreams, and they were instantly on the wing and away. I was much pleased to secure for the first time a pair of eggs of the Little Tern, *Sternula nereis*; they were taken from a simple hollow in the loose shelly sand. There were also nests with eggs of the Pacific Gull, *Larus pacificus*, Sooty Oyster Catcher, *Hæmatopus fuliginosus*, White-breasted Oyster Catcher, *Hæmatopus longirostris*, Hooded Dottrel, *Ægialites monacha*, and Red-capped Dottrel, *Ægialophilus ruficapillus*, but as these kinds are common to most collections we let them alone, excepting a few fresh gulls' eggs, which the skipper took to make fritters with.

Leaving the Sound we walked on the east side of Walker's Island, along a fine sandy beach, towards the rocks at the north point, where two years ago I took for the first time the eggs of the Sea Eagle, *Poliioaëtus leucogaster*. The proper time would have been about the 27th September, but hearing the eggs had been destroyed this year I thought it just possible the birds might lay again. We (my nephew and I) scaled the cliffs where a nest was built on a pinnacle of the rocks, but we found it quite deserted and partly blown down. A little further off, however, we saw another nest, more compact and recent looking, and to this we made our way, and after a little climbing found that it was quite new, with the usual lining of green gum leaves and twigs—but there were no eggs. This nest, too, was on a high point of rocks, and was an immense structure of sticks, many of which were two inches in diameter. The birds were soaring overhead like two huge moths, and I could not but wonder at their persistency in keeping to this locality so long; they have been known to breed here for about fifteen years, and probably they have done so for a much longer period, during which time the eggs have been destroyed, as the tenants of the island aver that the birds kill lambs. On this point I had always been sceptical; in any case it seems a pity that this fine species, which year by year is becoming more rare throughout Australia, should not receive a little more consideration; but few sheep-farmers are naturalists.

Leaving the nest we started away to join the others, who had gone to examine a "Mutton Bird rookery"—some burrows of the Short-tailed Petrel, *Nectris brevicaudis*, on new ground. Fresh "rookeries" are found year after year, which are probably the first breeding places of the younger birds, as I think this species, like all the smaller petrels, is very local in its nesting habits, returning to the same island every season, and probably to the same burrow.

On the way to these nests I had a narrow escape from walking on a large snake, *Hoplocephalus superbus*, which sprang up from the heathy plain close under my feet, and disputed the way, as this species generally will do when at close quarters. We found the "rookery," but were too early by a few days for the birds and eggs; so we returned to camp after our walk of twelve miles.

The east wind had freshened to a hard gale, and we had to remain at our anchorage, no further advance being possible.

The following day, the gale being, if anything, stronger than ever, I decided to cross over the Sound and examine the large bay or inlet opposite on Robbins's Island, but after half a day's walking I found it to be only a wilderness of sand-flats of perhaps 2,000 acres in extent, and devoid of all interest; for, excepting a few Black Swan, there was no life whatever to be seen. Returning, we walked to the western extremity of the Sound, and at its rocky point flushed a few birds which I could not identify; they were extremely wild and not to be approached within range. Possibly they were Curlew Sandpipers, *Ancylochinus subarquatus*, but their behaviour led me to regard them as visitors only. In the afternoon we visited the shell bank again, and found the Little Terns had quite disappeared; but not so the other birds mentioned, which were as numerous as ever. The wind was still blowing a fierce gale, and there was nothing for it but to wait for a change. We camped early, and I was long kept awake by the plaintive cries of the shore-birds, and the hoarse thundering of the sea on the outside beach.

On Sunday, the 17th, the wind had lulled. Rain had fallen all through the night, and as the sea was running too high to sail for Three Hummock Island, we started for the Woolnorth shore. We decided on this course as a westerly wind was expected and we should be a long way to windward at this part of the mainland for our start to the larger islands.

I went off in the dingy to Harbour Island, where the White-faced Storm Petrel, *Pelagodroma fregata*, breeds, but was too early by a few days for the eggs. Penguins, *Eudyptula minor*, were plentiful, and had taken possession of some Mutton Bird holes, which were numerous. Like the Pelican, these Penguins are somewhat irregular in laying their eggs, as in some of the holes we found young birds, in others fresh eggs, and in some instances the birds had not begun to lay. The Black Oyster Catcher's eggs were fresh on this island. I have noticed this species invariably select the smaller islands near the coast for breeding on, though they are to be found occasionally on rocky points of the mainland where no islands are near; whilst the black and white species always keep the main shore or the larger islands—preferring sandy beaches, upon which they nest just above high water mark. Both nest and eggs of this latter species are easily found by the initiated, as the birds always *walk* from the nest, so one has only to look out for the tracks in the sand and follow them up to the nest, from which they radiate in all directions.

In regard to the black species, *Hæmatopus fuliginosus*, the birds will keep to the same island, and even the exact site of former nests, for years. On one island down our west coast I have taken



the eggs of a pair of these birds, which are very peculiar in shape, being much elongated and small in diameter. They measure  $2\frac{3}{4}$  inches by  $1\frac{1}{2}$ , and are uniformly covered with dark brown spots, and never vary noticeably during the seasons I have seen them. On another island I have taken the eggs in a similar manner, and they are quite as characteristic, being always large and heavily marked with dark brown blotches, some as large as a sixpence. And at another island, nearer home, and where only one pair of these birds breed, I have for years made the same observations, and have found the nest in the same position season after season, and the eggs always alike, more pointed than elsewhere, of a much darker ground colour, and freckled all over with small markings. From this I conclude that whilst the eggs of these birds, generally, differ very widely in size and appearance, the eggs of individual birds—as above described—have very little variation, and no doubt the birds are permanently mated.

After returning on shore and drying our wet clothes, &c., I walked along the Woolnorth shore, where an interesting raised beach occurs of round waterworn basalt pebbles. It extends for about a mile in length, and perhaps may average one hundred feet in width; its depth is uncertain, but supposing it to be only six feet average for the whole beach, it represents a considerable mass of this rock, and the question naturally arises, Whence did it come? The surrounding formation, both on shore and on the small islands, is of quartzite and limestone, but I could not see any basalt *in situ*. It may be that the submerged reefs are of this formation, and that by the aid of the powerful currents which here exist this beautifully regular beach may have been formed.

On Monday, the 18th, we started with a fair wind and sailed up the barren coast line of the West Hunter Island, which is about thirteen miles long with an average breadth of about two and a half miles, and contains, roughly, 21,000 acres. The formation met with is much similar to that of the mainland opposite, being chiefly of quartzite and limestone; good marble is said to exist, though I did not see any and had not time to explore the place thoroughly.

In the afternoon we made "Shepperd's Bay," which is certainly a very picturesque spot—a small oasis in a barren wilderness—with its background of rounded sand dunes dotted all over with honeysuckle, boobyalla, and other pretty shrubs. We walked across to Cuvier Bay, on the west side, and from this standpoint I got a comparatively near view of Albatross Island—seven miles distant from the extreme north point of the West Hunter, and about twenty from the mainland. It is exposed to the full swell of the Southern Ocean, and is difficult to approach; it was a great disappointment to me that we were not sufficiently equipped to attempt a landing on its rocky shores, for it is by far the finest-

looking island of the group. Bold and rugged, it stands alone ; at each end its separate cliffs, at least one hundred and fifty feet high, were sharply defined against the clear windy sky. To an ornithologist it is especially interesting, as some of the smaller Albatross (all of which are called Mollymauks by the seamen) breed there, and most of their eggs yet remain undescribed by the naturalist. However, I trust at some future date to be in a position to land there. Far to the west is Pyramid Island, which here loses its typical or pyramidal shape as seen from the mainland.

We camped the night on the West Hunter, which is not of much interest ; it is sometimes called "Barren Island" on the charts, and a more fitting name could not well be found for it.

On the 19th we sailed over to the East Hunter, or Three Hummock Island, which is a characteristic name for it, being derived from the three peaks so well seen from steamers when making the journey from Circular Head to Melbourne. It is the largest island of the group, containing about twenty-three thousand acres, being some two thousand acres larger than Barren Island, from which it differs in every material respect ; we sailed into "Chimney" Corner, where Captain John Burgess lives, who rents the island from the Tasmanian Government. Mr. Burgess took us round his "farm," which consists of patches of ground recently cleared, and cultivated with crops of potatoes, turnips, oats and peas, &c., all of which look very healthy, and, considering that he has only been at work for six months, the improvements made in so short a time are very creditable.

This island is of granitic formation, excepting a few spots where limestone of good quality occurs. The granite along the coast line is of very coarse texture, the quartz in many instances varying in size from three to six-inch cubes. Perhaps the most peculiar feature of this island is the entire absence of mammals with the exception of the Rat Kangaroo. But, contrary to common report, snakes *do* occur, though I should judge they are rare.

Chimney Corner, where we made our headquarters, has a nice little sheltered bay for small boats and for larger craft in easterly winds, and in bad weather from the opposite quarter vessels can run round to East Telegraph Bay, where they can find good shelter and anchorage. I walked along the beach to the southern end of the island, from whence Circular Head and Rocky Cape were plainly visible.

The next day, Wednesday, the 20th, I made an attempt to ascend Hummocky Hill, the highest of the three peaks from which the island gets its name. But, owing to the dense scrub prevailing everywhere, I was unsuccessful. So I spent the re-

mainder of the day in examining the land, a great part of which, so far as I could ascertain, is of good quality, and would grow fair crops and good grasses. The beautifully rounded sand-hills along the coast line are covered with a variety of native grasses, and imported kinds, with clover and trefoil, thrive well. From observations upon the spot, I should think the island in its present state capable of carrying five hundred head of cattle, and that it could be vastly improved there is little doubt. The scrub, though thick, is low, and there are probably four or five thousand acres which, if cleared, would make a valuable and remunerative grazing farm. The cattle and sheep, although taken from the mainland in poor condition, were looking very well at the time of my visit. Of course both the larger islands are isolated, even to loneliness, and it requires a man of a contented disposition to live on either of them all by himself and feel happy. But Mr. Burgess, whom we found like Robinson Crusoe of old, was all at home, and quite contented with his surroundings. Although fond of seeing out-of-the-way places myself, I cannot say that I should choose to spend an indefinite time alone on "The Hummocks" with no other companions than my own flocks and an old bull of morose disposition, sole survivor of a herd left thirty-four years ago, who roams about the northern part of the island.

As I was so much disappointed at not reaching the top of the peak, Mr. Burgess kindly promised, on my return to camp, that he would try the ascent with me on the following day, but he was by no means sanguine of success. However, at five o'clock on the 21st we started. For the first three miles we followed along the coast, among rounded sand-hills, covered with luxuriant grasses, and at intervals with shrubs of various kinds, exhibiting all shades of green, which added much to the charm of the landscape. Passing by a long dark lagoon, where *Anas superciliosa* was quite at home, we left the open country, and by seven o'clock, at an elevation of about one hundred feet, began climbing the hill itself, and after walking, cutting, and crawling through one of the densest scrubs I ever experienced, we gained the summit at one o'clock. The elevation is seven hundred and ninety feet by the chart, though my aneroid gave the altitude a little less.

Even the topmost pinnacle was scrubby, beneath which was found a thick carpet of moss, swarming with millions of small black ants. Here I observed some plants new to me, specimens of which I sent to Baron von Mueller, who has kindly given me the names, as follows:—*Styphelia lanceolata*, Smith; *Pimelia ligustrina*, Labill.; *Phyllanthus gunnii*, Hooker; and a trifoliolate variety of *Boronia polygalifolia*—all rather rare.

After cutting away some scrub we then found the view from this culminating point of the group one of exceeding beauty. At our feet lay stretched a miniature continent, with its mountains, plains, forests, lakes, and bays. I have often seen greater distances from higher altitudes, but never a prettier or more comprehensive view than this. We may see a high mountain or large plain or lake without any sense of completeness, but here, though the scale was small, everything was present to make a perfect whole.

Could this have been the country of Gulliver's Lilliputians? For was he not driven by a violent storm to the "north-west of Van Diemen's Land" when he fell in with these immortal pigmies? To them this island would have seemed a continent of vast extent. Owing to a slight mist to seaward King Island was not seen, but all the Western Straits islands were distinctly visible. Due west lay Barren Island, and beyond it Albatross, with its grim cliffs, storm-swept, with no land to seaward nearer than Kerguelen. Now and then, at rare intervals, some adventurous seaman, in quest of feathers or guano, has, at no small risk from breakers and strong currents, landed on its rocky shore, and then it lapses again into its usual loneliness. More to the south lay the Pyramid, upon which the *Empress of China* was lately wrecked. But, though the weather was fine, the crew could not effect a landing. Apparently near the Pyramid are the North and South Black Rocks. Further landwards are Steep Head, Trefoil, the Doughboys, the Tomaton Shoal, the Petrels, Walker's, and Robbins's islands, and the Woolnorth estate, with Mount Cameron in the background. To the eastward was Circular Head, Rocky and Table Capes, and the mainland beyond. Far away from the north came faint sounds of the waves as they broke on shore, and further still were a few white specks of Albatross—everywhere else the wide sea! I do not believe anyone had been there before us; there was no sign or mark, or anything which might lead us to suppose so. We stayed an hour and had a little damper, cheese, and a pipe, and then retraced our steps to the tent, which we reached by six o'clock, after an absence of thirteen hours.

The next morning we sailed to Penguin Rocks, where we found the Mutton Birds had commenced work in earnest. This small island, of granitic formation, was literally honeycombed with their burrows; every hole contained a bird and an egg. The birds made no attempt to fly away when pulled out of their holes, but ran about our feet and vanished into the first burrow they could find, or began to scratch for themselves in a new place. Both birds and eggs are too well known to need description. Thousands of eggs are taken yearly, and hundreds of thousands of birds, for the various markets, and yet there seems to be no

perceptible decrease in their numbers, as every year all the "bird" islands are undermined with fresh burrows, every one of which is tenanted. At the east end of the island I found the Pelican "rookery," the birds having left their old quarters at the western extremity. The nests contained various numbers of eggs, in some only one, in others two and three, some of which were fresh, others incubated, and in two cases there were young birds—odd things they looked in their featherless condition! The wind changing to the west, fresh and strong, we set sail, and steering through the Petrel Islands, made a straight course to Circular Head, arriving at six o'clock p.m., after a splendid run of forty miles.

A word on the distribution of the fauna, and I must bring this paper to a close. On Robbins's and Walker's islands, which are nearest to the mainland, there are Kangaroo, Wallaby, Rat Kangaroo, and Bush Rats, with plenty of snakes, similar in kind to those found on the mainland. On Barren Island there are Wallaby, very numerous, and the Rat Kangaroo, and, so far as I know, no other mammals, though snakes are found, as before mentioned. But the only mammal ever found on Three Hummock Island is the Rat Kangaroo, and I much regret being unable to obtain a specimen. Snakes occur, but they are comparatively rare. None of the carnivora common on the mainland occur on any island of the group.

I append a list of the birds I met with amongst the various islands, but no doubt they comprise a much larger number. In addition to those mentioned, I saw on Three Hummock Island a parrot new to me; it was much like *Platycercus flaviventris* (our common green species), but the green was of a much lighter shade, and was uniform, the bird having no other colour as far as I could observe, and I was close to it for some time; its note, too, was unlike that of our parrot, being much sharper, with a metallic ring which I had never heard before. It was a solitary specimen, and I observed it as we were ascending the peak, and regret being unable to procure it for identification.

The marine shells are common to the mainland, the four volutes own, and I picked up a very fine example of *Cyprorulum umbilicata*, and other species less rare are to be found on all the sheltered parts of the beaches. I found a flat valve of *Myadora ovata*, a rare shell, which, so far as I know, only occurs in one other locality, on South Bruni Island, south-east of this colony, and as far distant as is possible from Three Hummock Island.

I cannot offer an opinion on the strange distribution of the mammals amongst this group of islands, especially in regard to the solitary example on Three Hummock Island; but the problem is an interesting one, deserving of further study.

## LIST OF BIRDS MET WITH.

|                             |                                           |
|-----------------------------|-------------------------------------------|
| Aquila audax                | Synoicus australis                        |
| Poliioaëtus leucogaster     | Hæmatopus longirostris                    |
| Falco melanogenys           | Hæmatopus fuliginosus                     |
| Circus assimilis            | Ægialites monacha                         |
| Podargus cuvieri            | Ægialophilus ruficapillus                 |
| Hirundo frontalis           | Ochthodromus bicinctus                    |
| Pardalotus affinis          | Numenius cyanopus                         |
| Strepera fuliginosa         | Demiegretta jugularis (blue<br>and white) |
| Graucalus parvirostris      | Rallus, sp.                               |
| Pachycephala glaucura       | Chenopsis atrata                          |
| Pachycephala olivacea       | Anas superciliosa                         |
| Colluricincla selbii        | Anas punctata                             |
| Rhipidura albiscapa         | Larus pacificus                           |
| Amauradryas vittata         | Bruchigavia jamesonii                     |
| Malurus longicaudus         | Sylochelidon caspia                       |
| Stipiturus malachurus       | Sternula nereis                           |
| Anthus australis            | Diomedea, sp.                             |
| Zonæginthus bellus          | Phœbetria fuliginosa                      |
| Corvus australis            | Nectris brevicaudis                       |
| Meliornis nova-hollandiæ    | Pelagodroma fregata                       |
| Lichmera australasiana      | Pelicanus conspicillatus                  |
| Glyciphila fulvifrons       | Phalacrocorax nova-hollandiæ              |
| Ptilotis flavigula          | Phalacrocorax leucogaster                 |
| Cacomantis pallidus         | Sula australis                            |
| Cacomantis flabelliformis   | Eudyptula minor.                          |
| Calyptorhynchus xanthonotus |                                           |
| Pezoporus formosus          |                                           |

## THE APPLE OR CODLIN MOTH.

BY F. C. CHRISTY, M.I.C.E.

(*Read before the Field Naturalists' Club of Victoria, 10th February, 1890.*)

SOME inquiries relative to the habit of the Codlin Moth having appeared lately in the press, it has been thought by the author that true and authentic information from absolute observation in this colony might be acceptable to the Club for dissemination amongst the pomologists; accordingly, the following short description of the habits of this little insect has been written, under the impression that full knowledge of the enemy is half the battle.

The following description is from Westwood's "British Moths":—

"FAMILY—TORTRICIDÆ.

"*Carpocapsa pomonella*.

"*Carpocapsa pomonella* measures from eight to ten lines in expanse; fore wings ashy brown, the base darker, and with numerous dusky strigæ; the costa marked with dark lineolæ, and the anal angle with a large golden red subocellated patch, clouded with darker coppery shades; hind wings dark brown, the base rather paler. The caterpillar feeds within the fruit of the apple, causing it to fall prematurely, and by this means occasioning much damage to apple districts. See my article on this species in Loudon's 'Gardener's Magazine,' vol. xiv., p. 234. The perfect insect appears in June and July, and is found in gardens and orchards, but not very abundantly."

Having bred the Codlin Moth here (at Malvern) in the infected apple, it is apparently the same as the coloured plate, and as described by Westwood, but about half or five-eighths of of an inch across the expanded wings. The caterpillar resembles a yellowish-white maggot, excepting that it possesses a small brown head and six small brown legs, with the additional small segmental feet. The observations here are that the moth appears when the apple-trees are in blossom, the egg is laid in the calyx of the blossom, and hatches in two or three weeks, when the apple is formed. The caterpillar, being as small as a needle-point, eats its way through the eye or crown of the apple, and remains in the apple until nearly ripe. Soon after entering the apple it makes a tunnel hole with a declination from the centre of the apple to the outside through which it passes its excreta. If the crown of the apple through which it entered should hang down, this same hole is used to pass the excreta. The caterpillars or larvæ were (15th January) spinning their cocoons, consequently had left the apple. The apple falls prematurely from the caterpillar attacking the pips, the vital part of the fruit. The caterpillar *never* leaves the apple until it falls; then at once crawls out and climbs the bark on trunk of the tree, into a crevice of which it enters and gnaws a smooth surface for its cocoon, which is small, about half an inch long, of white silk. *There is only one brood in the year*, the pupa, or chrysalis, remaining in its silken cocoon, under the bark, all the autumn and winter, until the apples bloom in the spring. Remedy recommended:—Gather all apples infected from the tree as soon as the first falls. The small pellets of excreta are always observable around the small hole in the apple. Put all the apples gathered into a cask which has no crevice through which the larvæ can escape, tie closely and tightly over the open top of the cask a piece of canvas. The larvæ, or grubs, will crawl

out of the apples within a few days and remain on the canvas or sides of the cask. The apples may be removed and the cask fumigated with sulphur, tobacco, or lighted shavings, &c. In the winter, remove from the trunks of all fruit trees—apples, pears, plums, &c.—near the apples or pears, the rough, loose bark, and burn it. This may be effected by scraping the trees with a piece of iron hoop, not sharp; dissolve  $\frac{1}{2}$  lb. of soft soap in a bucket of hot water, add half-pint kerosene and  $\frac{1}{2}$  lb. kitchen grease; with a long-handled tar brush brush this mixture well into the crevices of the bark on the trunk of the trees. Corrosive sublimate in solution is the most deadly to all insect life, but this is a dangerous poison and if used too strong may prove injurious to the trees. An erroneous idea has obtained that these little grubs may be trapped in other ways, by hanging paper on the boughs, or by putting bagging round the stems of the trees; but the instinct and habit of insects cannot be altered, and these little grubs never make their cocoons in the dead leaves or any material that would absorb wet in winter; they always choose the bark or paling or dry wood. Burning weeds under and around the apple trees whilst they are in blossom, continuing some little time after, is said to be efficacious in driving the moth away to other gardens. Some magpies and the little indigenous yellow wrens hunt for the grubs in the bark crevices. The tomtits of Europe are most useful in this way. The grubs never remain in the apple more than a day or two after the apple falls, so it is useless to gather up windfalls and destroy them; in fact, it is stated upon good authority that the grub leaves the apple *the same night that it falls*.

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## RECORD OF TWO NEW VICTORIAN HIGHLAND COMPOSITES

BY BARON VON MUELLER, K.C.M.G., M. & PH.D., F.R.S. &C.

### HELICHRYSUM STIRLINGI.

Tall, shrubby, somewhat viscid; leaves chartaceous, short-stalked, narrow- or elongate-lanceolar, gradually long-pointed, flat, entire, above dark green and nearly glabrous, beneath as well as the branchlets and peduncles beset with closely interwoven greenish- or greyish- white short hairlets; carinular venule prominent, besides two longitudinal thinner upwards evanescent venules nearer the margin of the leaves; panicle of headlets somewhat corymbose, terminating branchlets; headlets rather small, nearly hemispherical; involucre much depressed, its outer constituting bracts pale-brownish, from orbicular to ovate, bearing soft partly lanuginous hairlets; inner involucre bracts terminating each in an elliptic-cuneate white conspicuous lamina; receptacle almost



flat, glabrous; flowers numerous, some few of the outer estaminate; achenes somewhat papillular-rough; bristlets of pappus thickened and slightly denticulated at and near the upper end.

On shrubby declivities between the Ovens-River and Mount Hotham, at elevations between 3,000 and 4,000 feet.

A slender shrub, attaining a height of ten feet, of strong rather pleasant odor. Leaves to four inches long, to one inch broad. Inflorescens attaining a width of five inches. Headlets about half an inch broad. Expanding lamina nearly or fully as long as the other portion of the inner involucre bracts. Pappus-bristlets slightly exceeding the corolla. Achenes, when well matured, somewhat furrowed.

Irrespective of my noticing this plant on a line, new to me, during a recent excursion of members of the Australian Association for the Advancement of Science to the Australian Alps, sprigs of this new shrub were then also gathered independently by Mr. Ch. Frost and by Mr. Gustafsen. The species has been dedicated to Mr. James Stirling, the Government Geologist, who not only has been identified with scientific highlands-explorations in Victoria for a series of years, but who also as the leader of the alpine party of the association, by his energy, circumspectness and geniality won the highest praise of all who shared in this particular pleasurable exploit, so that this opportunity is gladly seized on to commemorate permanently his honoured name also in the vegetation of our highland-regions.

Systematically this species is to be placed near *H. ferrugineum*, from which this new congener differs however widely in extensive viscid exudation, in larger leaves still paler beneath, in much larger and accordingly few headlets with more numerous flowers, in involucre broader than long, in pappus-bristlets more conspicuously thickened at and near the summit. As regards general aspect, our new plant resembles far more some species of *Anaphalis*, particularly the Indian *A. cinnamomea* and the New Zealandian *A. trinervis*, but the headlets of flowers are monomorphous on all the specimens examined, nor have the two last-mentioned plants clavellate pappus-bristlets, leaving other diversities out of consideration.

#### ASTER FROSTII.

Somewhat woody, rather dwarf, closely beset with intricate stellular hairlets; leaves from ovate- to cuneate-elliptic, almost sessile, entire or imperfectly denticulated, somewhat recurved at the margin, paler on the lower side than on the surface; headlets of flowers relatively large, singly terminal or occasionally two or few together, conspicuously stalked; involucre bracts in about two rows, of nearly equal length, from linear- to narrow-lanceolar, bearing a dense vestiture; receptacle alveolar; flowers in each headlet very numerous, the marginal flowers with conspicuous

blue or white corollar expansions; achenes glabrous; pappus-bristlets ciliolar-serrulated, the outer extremely short.

On Mount Hotham, at an elevation of about 6,000 feet.

This small shrub was known to me for some time, but was laid aside for further studies in comparison to *Aster stellulatus*, it having precisely the leaves of one of the small forms of that species; but the headlets are larger than those pertaining to any of the varieties of the latter, while the involucre is in structure very similar to that of *A. exul*; nevertheless, the plant may only constitute a very marked variety of *A. stellulatus*.

---

#### NOTE.

MR. A. J. CAMPBELL has returned after a three months' trip to Western Australia. He has been very successful in his observations and collections. He obtained about 80 different species of eggs, 13 of which it will be necessary to describe as new. The number of eggs obtained altogether was about 400. Something like 100 skins of birds were collected, though Mr. Campbell did not make this a specialty. With regard to geographical range of the birds he was particularly successful in his observations. No less than 17 species will be recorded as new for Western Australia. Possibly one or two may be deemed new varieties, while others will be restored, having been omitted from a lately issued tabular list. Baron von Mueller has examined the plants, and finds that two ferns, *Asplenium marinum* and *A. trichomanes* (both British species, by the way) are recorded for the first time from the western colony. Out of 30 lichens collected, the Rev. F. R. M. Wilson has identified 20 as new for the same colony. Specimens of characteristic lizards and frogs (*e.g.*, *Heleioporus albo-punctatus*) were secured. About three dozen photographs turned out fairly well, those of the remarkable flights of sea birds being of very great interest. Mr. Campbell considers that he brought nearly 1,000 natural history specimens in all back to Melbourne.

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#### CORRESPONDENCE.

*To the Editor of the Victorian Naturalist.*

SIR,—Being on a collecting excursion to Oakleigh district a month ago, I was surprised to find in a nest of Yellow-rumped Geobasilus (*Geobasilus chrysorrhæa*) two eggs of the Bronze Cuckoo (*Lamprolaima placogus*). This seems a strange fact, that two eggs of the Bronze Cuckoo should be in the same nest. Does the Bronze Cuckoo lay more than one egg a season?—I am, yours, &c.,

C. FRENCH, JUN.

South Yarra, 22nd December, 1889.

# 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.

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CONTENTS.

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	169
NOTES ON THE RUTHERGLEN FLYING-BUG PEST. BY C. FRENCH, F.L.S.	170
PRELIMINARY ACCOUNT OF NEW AUSTRALIAN PERIPATUS. BY ARTHUR DENDY, M.Sc., F.L.S.	173
NOTES ON THE DISTRIBUTION OF AQUATIC PLANTS IN NEW SOUTH WALES. BY REV. W. WOOLLS, Ph.D., F.L.S., HON. MEMBER	176
LICHENS FROM THE VICTORIAN ALPS. BY REV. F. R. M. WILSON	178
LICHENS FROM WESTERN AUSTRALIA. BY REV. F. R. M. WILSON	180

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APRIL, 1890.

No. 76.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 10th March, 1890.

Professor W. Baldwin Spencer, M.A., a vice-president, occupied the chair, and about 60 members and visitors were present.

The hon. librarian reported the receipt of the following donations to the library:—"Anatomy of an Australian Land Planarian," by Arthur Dendy, M.Sc., F.L.S., from the author; "Proceedings of the Field Naturalists' Section of the Royal Society of South Australia, 1888-89," from the Section; "Records of the Australian Museum, Sydney," vol. i., part 1, from the Trustees; "Journal of the New York Microscopical Society," vol. vi., part i., January, 1890, from the Society; "Transactions of the Geological Society of Australasia," vol. i., part 4, from the Society; and "Journal of Pharmacy," February, 1890.

On a ballot being taken, Messrs. R. J. Larking, E. Lidgley, and R. Scott were duly elected members of the Club.

The Committee brought up a recommendation with regard to the reading of Natural History Notes at each meeting, and a number of members promised to furnish notes at the next meeting.

The Committee reported that they had decided to omit the usual *conversazione* this year, with the view of holding it for two days in 1891. The usual Presidential address to be delivered at the May meeting of the Club, when members will be desired to confine their exhibits entirely to birds' eggs and insects, and thus make a good display in those departments of Natural History, other departments to be treated in a similar way on future occasions.

Mr. J. B. Gregory, LL.M., drew attention to the reported intention of the Minister of Lands to make a reservation at Wilson's Promontory, in accordance with the desires of the Club, laid before him some time ago. The hon. secretary was directed to make inquiries as to the boundaries of the proposed reservation, and report to the original sub-committee on the subject, who were empowered to take any action necessary to secure the whole of the peninsula as a reserve for a national park.

PAPERS READ.

1. By Mr. D. Le Souëf, entitled "A Few Remarks about Snakes." The author related some curious experiences met with in keeping snakes in confinement, which led to some little

discussion as to the venomous powers of the different Victorian snakes.

2. By Rev. W. Woolls, Ph.D., F.L.S. (hon. member), entitled "The Distribution of Aquatic Plants in New South Wales." The paper was read by the hon. secretary, and in it the author alluded to many interesting points in the economy of these plants, which, as a rule, receive but little attention from collectors.

3. By Rev. F. R. M. Wilson, entitled "Lichens from the Victorian Alps." The author gave a few notes on several of the species of lichens collected by him at Mt. Hotham, &c., during the recent excursion of the Australasian Association for the Advancement of Science. These numbered nearly forty varieties, eight of which were new to Victoria, and one, *Siphula muelleri*, Wilson, named after the president of the association, was new to science.

4. By the Rev. F. R. M. Wilson, entitled "Lichens from Western Australia," being a list of 20 lichens new to Western Australia, recently collected there by Mr. A. J. Campbell, F.L.S., all but four being found, however, in Victoria.

The following were the principal exhibits of the evening:—By H. P. C. Ashworth.—Young Native Bear from pouch; a Blue Wren (*Malurus cyaneus*), in changing plumage; Horsfield's Bush Lark (*Mirafra horsfieldii*), from Oakleigh. By Mr. A. Coles.—Eggs of Cassowary, from New Britain. By Mr. C. French, F.L.S.—Lepidoptera, genus *Morpho*, from Central and South America. By Mr. C. French, jun.—Egg of White-headed Osprey, Victoria. By Mr. G. Lyell.—Lepidoptera, Hesperidæ, *Telesto ornata*, and *T. eclipsus*, from Dandenong Ranges; also *Papilio eretheus* (new to Victoria), taken in Dandenong Ranges. By Baron F. von Mueller, K.C.M.G.—A new Victorian plant, *Quinetia urvillei*, Cassini, found by Mr. St. Eloy D'Alton, at Lake Lonsdale, Wimmera District. By Mr. J. Searle.—Tin ore from Tasmania, Barrier Ranges, N.S.W. and India; Lignite from Studley Park.

After the usual *conversazione* the meeting terminated.

NOTES ON THE RUTHERGLEN FLYING-BUG PEST.

By C. FRENCH, F.L.S., Government Entomologist, Melbourne.
(Read before Field Naturalists' Club of Victoria, 10th Feb., 1890.)

IT is my intention to offer a few remarks on the subject of the so-called "Rutherglen fly-pest." I intend being brief, as it may be said with truth that the present notes are more suitable for meetings of the Horticultural Societies, Vinegrowers' Associations, or Farmers' Clubs than for a meeting of the Field Naturalists' Club. I think, however, that some short account of the insect in question and its doings cannot fail to be of some interest to the members of this club.

Shortly after my appointment as Entomologist to the Agricultural Department I received, amongst a host of letters, one from a gentleman living near Warburton, on the Upper Yarra, Victoria, stating that a small "fly," of which he forwarded specimens, was doing great damage to his potatoes and other green crops. I advised him, as there was no fruit to treat, to use the London purple, by means of a spray; and this was, I believe, successful.

The next place I heard of them was from South Gippsland, where they had been destroying green maize, strawberries, &c., &c. The same remedy was used, with a like result. After such an "epidemic" of bugs, I was somewhat unprepared for almost simultaneous reports from Rutherglen, Chiltern, Barnawartha, Mooroopna, Wahgunyah, Corowa, Bacchus Marsh, Sydney, Adelaide, and Brisbane, to the effect that the "same" insects were there, and doing a vast amount of mischief. I had hoped that the pest would have been local, so that they could be the easier dealt with, if not stamped out altogether.

In the early part of January of the present year—a month not likely to be forgotten, on account of the great and continued heat—I was requested to visit the Rutherglen and Goulburn Valley districts, and to endeavour to ascertain something of the life-history of the insects; also, if possible, to discern a remedy for their extirpation.

I left Melbourne on the same morning as did the members of the Alpine expedition emanating from the Australasian Association for the Advancement of Science, and had the pleasure of their company so far as Wangaratta, where I had, very reluctantly on my part, to take leave of them, as our journeys lay in different directions.

Arriving at Rutherglen, I was met by Mr. J. Knight, J.P., Inspector of Vineyards for these districts; and, after luncheon, we started for the vineyard of Mr. Levin, situated some miles from the township. In the buggy we had a triple-nozzle spray pump, benzole, methylated spirit, London purple, Paris green, soft soap, kerosene emulsion, and insecticides, all of which I had sent up to Mr. Knight on the previous week.

Upon arrival at the vineyard, I was perfectly astounded at the numbers of the insects, and the damage done by them. Here were splendid bunches of ripe and ripening grapes, a large number of which were shrivelled up and useless, the juices having been "sucked" out by these destructive little creatures. I had already determined the insect to belong to a group of the Heteroptera or plant bugs, and after a little time, I, with the aid of my friend, Mr. Oliff, of Sydney, made it out as belonging to the group *Lygæidæ*, and Mr. Oliff thinks it may be one of the genus *Rhyparochiomus*, but of this we are not yet certain, the Australian collections of the Heteroptera being practically without names, or at any rate the names are not procurable in the colonies.

The weather at Rutherglen was fearfully hot (105° in the shade), and I noticed that the bugs were sheltering themselves on the under side of the leaves of the vines, also under the clods of earth around the stems ; but owing to the great heat, which caused the insects to be very active, we could do but little towards finding out when their eggs would likely be deposited. As it was of course impossible for me to remain and watch their movements, I have suggested a series of experiments, which Mr. Knight, with the co-operation of many of the growers themselves, will carry into effect, and will report to me as soon as possible. The next thing to be done, and the most important of all, was to discover some remedy that would kill the insects without injury to the plants or fruit. I have already stated that material had been previously sent up by me, and, with the exception of the benzole, had been tried by Mr. Knight, who found that they were not to be depended upon, at least when the fruit was on the trees, and as a last resource, I thought of my 25 years' experience in the use of benzole as an insect destroyer, and resolved to give it a trial. One trial alone proved its efficacy, as when forced through the Crawford triple-nozzle spray, scarcely a single insect survived, and after three days' exposure to a roasting sun, the grapes, although nearly ripe, were found to be perfectly uninjured, and these, also a number of the dead insects, were brought in to a meeting of the local Horticultural Society, and at which Mr. Knight and myself were present by invitation.

Having proved the success of the benzole treatment wherever tried, I returned to Melbourne after an absence of six days, the following being the result of my observations :—

1. That the insect may be held in check, providing the remedies are applied at the proper time and in a proper manner.
2. Concerted and prompt action on the part of those interested is an absolute necessity.
3. That each one who has had an interest to defend, do something, however small, towards the destruction of these little pests, as a slight expenditure, if applied judiciously, may be the means of saving a subsequently heavy outlay, to say nothing of losses.
4. As any information bearing upon the habits of our insect friends and enemies is always valuable, it would be of great importance could we secure the co-operation of farmers, vignerons, orchardists, &c., and that any information concerning the life-history of any of the insects be forwarded to the department.
5. To bear in mind the words of a great American writer, who, in speaking on this subject, said that if a man wished to become a practical grower and tiller of the soil eternal vigilance against insect pests must be the price of his success.

In concluding these few notes I may say that, in my opinion, this wretched little bug is the worst pest which I have yet met

with, and as it will eat and destroy green maize, potatoes, tomatoes, strawberries, raspberries, peaches, plums, cherries, apricots, grapes, capsicums (in fruit), and remained unhurt by an application of pure fusel oil forced on to it by means of a spray pump, its omnivorous propensities are by no means to be despised or treated lightly. It has been stated to me that the same insect made its appearance about two years since, and, so I am informed, did great damage to grapes, &c., the juices being sucked out, and the fruit then withered, and remained for some time on the trees. The remarkable part of the matter seems to me to be the question asked, from whence have they come and in such millions? I have been collecting insects for upwards of twenty-five years, and do not recollect having seen more than perhaps a dozen specimens during the whole of that time.

The remarks that have been made by some persons concerning this bug have, no doubt, caused much mirth, as only a short time since someone made the extraordinary discovery that this insect was the "true" anthracnose of the vine, while another declared it to be of spontaneous generation caused by the excessively moist season. It is, however, a fact that the insect at present has a range of nearly 1,000 miles—viz., from South Gippsland to Brisbane. The drawings which I show here this evening have been made by my friend, Mr. C. C. Brittlebank, of this club, and to whom I have also entrusted the drawing of the plates by which the "Handbook of the Destructive Insects of Victoria," now in course of preparation, will be illustrated.

PRELIMINARY ACCOUNT OF A NEW AUSTRALIAN *PERIPATUS*.

BY ARTHUR DENDY, M.Sc., F.L.S.

A FEW months ago I had the pleasure of reading before the Field Naturalists' Club, a short account of a trip to Walhalla,* in which I described some of the Land Planarians met with. As a result of this paper one of our members, Mr. H. R. Hogg, began to collect Planarians for me at Macedon. I requested him to look out also for *Peripatus*, and, with a view to so doing, he carefully examined some of my specimens of *P. leuckartii*. Mr. Hogg has not been long in meeting with success in his researches into the cryptozoic fauna of Macedon, and a short time ago he kindly brought me a number of beautiful Planarians, all alive, and five specimens of *Peripatus*, two alive and three in spirits.

The Planarians I hope to describe at a future date: the *Peripatus* I propose to deal with in the present communication. Although all small, the specimens proved of the greatest interest,

* "Zoological Notes on a Trip to Walhalla," Victorian Naturalist, December, 1889.

for they undoubtedly belong to a new species. The only Australian species of *Peripatus* hitherto described is *P. leuckartii*, Sænger, which ranges through Queensland, New South Wales, and Victoria, and for details as to which I must refer the reader to my paper in the "Proceedings of the Royal Society of Victoria."* The only other Australasian species hitherto known is *P. novæ-zealandiæ*, Hutton, from New Zealand. Mr. Hogg's specimens differ in important particulars from both these species. The most important difference is in the number of pairs of legs, *P. leuckartii* and *P. novæ-zealandiæ* having each constantly 15 pairs, while the new species has only 14. The new species differs from *P. leuckartii*—to which it might be expected to be most nearly related—also in the structure of the jaws and in the pattern of the skin. The distinctness of the new species may be expressed by the statement that it differs more from either of the two previously known Australasian species than these do from one another.

On the present occasion I shall describe only the external characters, but I hope in due course to be able to give a complete anatomical account of both the Australian species, and for this purpose I would earnestly request the members of the club to search for specimens under logs and stones whenever opportunity offers; all specimens will be most gratefully received and acknowledged.

PERIPATUS INSIGNIS,† species nova.

Colour and Markings.—(a) *Dorsal Surface.*—The general appearance to the naked eye is dark, sometimes almost black, speckled with pale orange or yellow. Microscopical examination by reflected light shows that the skin is, as usual in the genus, divided into a very great number of narrow transverse ridges by very fine grooves of a pale yellow colour. Down the mid-dorsal line runs a narrow dark stripe with a very fine white, or almost white line running down the middle of it as in *P. leuckartii*.

The general ground colour is dark indigo blue, often almost black, and this is chequered by more or less regularly arranged patches of pale dull orange or yellow. The typical arrangement of these patches appears to be as follows:—There is a squarish patch just over the base of each leg, more distinct than any of the others. Between the legs of each pair, in the mid-dorsal line, is a similar patch, interrupted by the median longitudinal stripe already mentioned, and separated from the patch over the leg on either side by a space of about the same width as itself. Thus there is a transverse row of three patches between the legs of each pair, and with these rows alternate other rows of only two patches each, in such a manner that a kind of chessboard pattern

* "Observations on the Australian Species of *Peripatus*, part I," Proceedings Royal Society, Victoria, July, 1889.

† *Insignis*, distinguished by a mark.

is produced. Besides these patches, there are on each side of the mid-dorsal line several longitudinal rows (the typical number appears to be four on each side) of more or less regularly arranged dull orange or yellow papillæ. Sometimes the chessboard pattern is almost obliterated, leaving the longitudinal rows of papillæ scattered over a nearly uniform dark background. The dorsal surface of the legs is dark indigo blue, with two or three orange or yellow papillæ.

(b.) *Ventral Surface*.—The ground colour is pale yellowish. Over this are scattered a number of papillæ, mostly of an indigo blue colour, but some dull orange; the papillæ are arranged in transverse rows, one row on each ridge of skin. The blue papillæ are most numerous along an imaginary line joining the bases of the legs of each side. In the mid-ventral line, between the legs of each pair except the last, is an unusually pale area of skin, devoid of papillæ, and sometimes presenting clear indications of a longitudinal slit-like aperture in its centre. I have described similar pale areas in *P. leuckartii*, and cannot help thinking that they must have some important morphological significance. I hope to find out later on, when working out the anatomy, what this significance may be.

(c) *The Antennæ*.—These are of a dark indigo blue colour.

I have above attempted to describe the characteristic pattern of the skin as deduced from five specimens, but it must be remembered that considerable individual variations are sure to occur, though probably, as in *P. leuckartii*, all the variations will be found to be readily derivable from a typical pattern. This typical pattern is quite different in the two Australian species, as will be seen on comparing my descriptions of *P. leuckartii* (*loc. cit.*)

Size.—The five specimens at present to hand are all very small, the largest being only about eleven millimetres in length (excluding the antennæ), and one millimetre in greatest breadth, after preservation in spirits.

Legs.—These are fourteen in number on each side of the body. They have three spinous pads on the ventral surface, as described by Sedgwick* for the other Australasian species. The feet closely agree with those of *P. novæ-zealandiæ*, as figured by Sedgwick (*loc. cit.*), being provided with a dorso-median papilla above the claws and a lateral one on each side.

Jaws.—The outer blade of the jaw is simple as in *P. novæ-zealandiæ*, and not provided with an accessory tooth as in *P. leuckartii*.

Genital Aperture.—The genital aperture is situated between the legs of the last pair. In some specimens it is a very prominent white papilla; these are probably females. The other specimens,

* "Monograph of the Species and Distribution of the Genus *Peripatus*" (Guilding), Quarterly Journal of Microscopical Science, April, 1888.

in which it is less prominent, may be young females or males, but I have found no white papilla on the base of the last leg, such as exists in the males of *P. leuckartii*.

Habitat.—Macedon, Victoria. In and upon rotten wood.

NOTES ON THE DISTRIBUTION OF AQUATIC PLANTS IN NEW SOUTH WALES.

BY REV. W. WOOLLS, PH.D., F.L.S., HON. MEMBER.

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

As some remarks on the distribution of certain aquatic plants in New South Wales may interest Victorian naturalists and induce them to ascertain how far the species extend to both colonies, I take the liberty of referring to such plants of the kind as have come under my own observation. The order which first claims attention is that of Lemnaceæ, because the species are but imperfectly known, and present, as Mr. Bentham observed, some curious organisms for special study. *Wolffia arrhiza* (Wimm.) which in certain seasons is common on the lagoons of the Hawkesbury, appears like a green globule on the surface of the water, and generally in company with some species of *Lemna*. It has not any roots, and the new fronds arise from the side of the older plant. The fructification is yet unknown, and Baron Mueller, in his review of the Lemnaceæ (*Fragmenta*, vol. viii., p. 188), is of opinion that the species cannot safely be separated from *W. micheli*. R. Brown seems to have collected (probably in the Botany swamps) two species of *Lemna*—*L. trisulca* and *L. minor*—the former of which occurs less frequently than the latter and is minutely toothed at one end of the frond. *L. minor* is still abundant at Botany, especially in stagnant and impure water, and is regarded as a means of purifying the air in marshy places by exhaling oxygen during the night. This plant increases very rapidly by gemmulæ, or little buds, and in a short time forms dense masses, so as to conceal the water on which it floats. The fructification of this species is very minute, but, with an ordinary pocket lens, the beautifully reticulated sheath containing the flowers may be clearly seen. I have collected *L. minor* in the neighbourhood of Sydney, and also in ponds at Richmond, and, as far as I can judge, it does not differ from the European species. *L. oligorrhiza* (Kurz), as well as *L. minor*, occurs in Parramatta, and is distinguished by having more roots, whilst *L. polyrrhiza* (Linn.) which is frequent in the lagoons of the Hawkesbury, has a still greater number. It appears to me that the distribution of these little plants is as much influenced by the quality of the water as that of terrestrial plants by the nature of the soil, and it would be interesting to ascertain whether they may not be regarded as affording a test of impurity held in solution. Amongst

aquatic plants, *Vallisneria spiralis* (Linn.) and *Marsilea quadrifolia* (Linn.) differ very much from their types according to the circumstances in which they are placed; for, when growing in marshy places, or where the water is shallow, they are diminutive in size and have short stems. This is the case not only in the Botany swamps, but also in the lagoons of the Hawkesbury. In deep water, however, *V. spiralis* sends up its coiled peduncle for several feet, and the leaf stalks of *M. quadrifolia* become lengthened in like manner, whilst the leaves floating on the water are proportionally larger. Near the coast these leaves are perfectly smooth, but beyond the Dividing Range they become hirsute. Hence some botanists have considered the plants as distinct; but Baron Mueller, from long observation and comparison of specimens, has included all the Australian forms of *Marsilea* in *M. quadrifolia*. The mode of fecundation in *Vallisneria* and the reproductive organs of *Marsilea* are worthy of careful investigation; for whilst the former is indicative of the wonderful ways in which Nature works out her designs, the latter suggests an analogy between the involucre of that genus and the carpellary leaf of flowering plants (Lindley). *Azolla pinnata* (R. Br.) and *A. rubra* (R. Br.) are abundant at certain seasons in our ponds and lagoons, and according to the views of an eminent botanist they contain evidences of the sexual system. Still lower in the vegetable kingdom, but occurring less frequently, I have noticed *Riccia natans* (Linn.) floating in ponds, but soon disappearing; and also *R. fluitans* (Linn.), occasionally, in brackish water. These little plants, like *Lemnæ* and *Azollas*, have their part to fulfil in the economy of nature, and under the microscope they present many interesting features. Amongst the *Naideæ*, two species of *Triglochin*, three of *Potamogeton*, and one of *Nais* (*N. tenuifolia*) are common in our lagoons and rivers, but those which require a more careful examination are *Halophila*, *Zostera*, and *Posidonia*. *H. ovalis* (Hook.), or Brown's *Caulinia ovalis*, seems a rare plant, for I never found it but once, and that was in the river or estuary near Parramatta. The leaves of my specimen were smaller than those described in the "Flora Australiensis," but the general character is the same. This plant grows at a considerable depth below the surface of the water and therefore escapes observation. In the *Flora*, no species of *Zostera* is given for New South Wales, and in the Baron's "Census," only *Z. nana* (F. K. Mertens); but in the Parramatta River, and elsewhere in New South Wales, there is an abundance of a larger *Zostera*, which has leaves three feet long, three lines broad, three nerved, with smaller nerves between them, and rounded and minutely denticulate at the end. I fancy that this must be *Z. marina* (Linn.), and like that plant it was used extensively in the early days of the colony for bedding, packing, &c. Lower down the river, and on the shores of Port Jackson, *Caulinia*

australis (Hook.) occurs. This is also a submerged plant, rather thicker and wider in the leaves than *Zostera*, and is frequently washed on the shore after storms. The aquatic plants to which I have referred are not so attractive as many flowering plants, and therefore on that account they do not appear to have been so carefully examined, nor their distribution in these colonies so correctly recorded, as more showy species. For this reason I have taken the liberty of calling attention to them.

LICHENS FROM THE VICTORIAN ALPS.

WITH DESCRIPTION OF NEW LICHEN, AND LIST OF LICHENS NEW TO VICTORIA.

BY REV. F. R. M. WILSON.

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

As one of the Alpine excursionists of the Australasian Association for the Advancement of Science, I report on the lichens found during the excursion, 15th to 18th January, 1890.

At Bright I collected 4 *Calicia*, 1 *Cladina*, 1 *Usnea*, 3 *Parmelia*, 1 *Theloschistes*, 1 *Lecanora*, 1 *Pertussaria*, 1 *Heterothecium*, 1 *Lecideea*, 1 *Buellia*, and 1 *Verrucaria*, all of them more or less frequent in the colony. In the Ovens valley, where we halted for a few minutes on our way to Harrietville, I found 1 *Usnea*, 1 *Nephromium*, several *Parmelia*, and several *Lecideea*, all common species.

When we arrived at Mount Bernard we had an hour or two of daylight, which I spent in examining the few lichens around Boustead's. And in the morning, rising early, I walked over to the Diamantina Springs, and half-way back to Boustead's. These were the only opportunities for collecting; and, as the mountains are sandstone and very dry, and have been frequently fired, there are comparatively few lichens to collect. Here and there, however, chiefly on the south and south-west side of the rocks at Mount Blowhard, were found specimens, but neither so numerous nor so vigorous as I had expected to find at 6,000 feet above sea level.

Professor Hutton, of Christchurch, New Zealand, kindly assisted me by collecting such lichens as he found. One of them was a fruited specimen of *Umblicaria polyphylla*, f. *anthracina*, which I was not fortunate enough to find in fruit myself. Mr. C. French, jun., also, by kind instruction of Baron von Mueller, collected for me; and among other plants he gave me a *Lecanora* which I did not find myself, and which is new to me. Possibly it may be new to science.

By subsequent examination I have made out the appended list of lichens collected on Mount Hotham. The alpine or sub-alpine species are marked with an asterisk.

The *Peltigera polydactyla* was found in the crevices of rocks with a southern aspect. Its crispate thallus with recurved

margins is not unusual in the colony; but I have not previously noticed the apothecia so completely veiled by their recurved fringed margin, that there seemed, to a cursory examination, to be no fruit at all. From this peculiarity I have called the form "*pudens*." The *Stereocaulon proximum* is distinguishable from specimens met with in the streams at Fernshaw and at Lorne only by the smaller conglomerate and scarcely fertile apothecia. The two other *Stereocaula* and the *Neuropogon* I have previously collected from Mount Macedon.

Ten lichens are noted for the first time in Victoria. The *Siphula* is the only species that I can say is new to science; and I have taken the liberty of naming it after the President of the Association, who accompanied the excursion, and who by his urbanity did much to make the trip pleasant and profitable to all. The following is a description of the new lichen, which is interesting chiefly from the fact that it is the first of the genus whose spermagones and spermatia have been seen. The apothecia of the whole genus is as yet unknown. Only the small capitula of this new *Siphula* are visible among the moss where it grows; and, crowded together as they usually are, they may be at first sight mistaken, as they were by myself, for a minute *Jungermannia*.

DESCRIPTION OF LICHEN NEW TO SCIENCE.

Siphula Muelleri, Wilson, sp. nov.

Thallus parvus stipitatus stipite albido vel sordido (alt. 7 mm., crass. 2 mm.), ad basin radicularis defixo longis (ad. 9 mm.) ramosis, capitulo olivaceo nitido turgido (2 x 3 mm.) difformi-lobato. Quoad anatomem thalli stratum corticale est tenax, cellulosum, medulla e filamentis cavis (crass. .003 mm.) formata, gonidia virentia (diam. circa .015 mm.) Spermagonia endocarpoidea patentia sæpius valde depressa. Spermatia recta, circa .004 x .001 mm. Habitat inter muiscos ad rupes subalpinas (alt. 6,000 ped.), Mount Hotham, Victoria.

LICHENS COLLECTED ON ALPINE HEIGHTS, MT. HOTHAM, &c.,
17TH JANUARY, 1890.

Cladonia gracilis, Hffm.	* Stereocaulon, species undetermined
Cladonia pyxidata, Fr.	* Siphula Muelleri, Wilson, sp. nov.
Cladonia degenerans, Flk.	
Cladonia crispata, Ach.	Usnea barbata, L.
Cladonia xanthoclada, J. M.	*Neuropogon melaxanthus, Ach.
Cladonia cornucopioides, Fr.	Pettigera polydactyla, Hffm.;
Cladina aggregata, Sw.	f. pudens, Wilson
Stereocaulon proximum, Nyl.	Sticta damæcornis, Sw.
* Stereocaulon, species undetermined	Parmelia Mougeotii, Schær.

* Alpine or sub-alpine species.

Parmelia conspersa, Ehrh. ; f. laxa, J. M.	Psoroma hypnorum, Vahl, typical
Parmelia physodes, L. ; f. encausta, Sw.	Psoroma hypnorum ; f. paleaceum, Fr.
* Parmelia alpicola, Th. Fr.	Lecanora, species undetermined
Theloschistes velifer, Wilson. ; f. alpinus	Placodium elegans
* Umblicaria cylindrica, L.	Urceolaria, species undetermined
* Umblicaria polyphylla, L.	Buellia myriocarpa, D. C.
* Umblicaria polyphylla, L. ; f. anthracina, Ach.	Buellia geographica, L.
	Buellia, species undetermined

LICHENS NEW TO VICTORIA.

Cladina xanthoclada, J. M.	Umblicaria polyphylla, L.
Siphula Muelleri, Wilson	Umblicaria polyphylla, f. anthracina, Ach.
Parmelia alpicola, Th. Fr.	Psoroma hypnorum, Vahl.
Parmelia Mougeottii, Schær.	Psoroma hypnorum, f. paleaceum, Fr.
Theloschistes velifer, Wilson ; f. alpinus	
† Umblicaria cylindrica, L.	

LICHENS FROM WESTERN AUSTRALIA.

BY REV. F. R. M. WILSON.

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

I HAVE received from Mr. A. J. Campbell, F.L.S., a number of lichens, representing 35 species, collected by him in Western Australia. All of them, with four exceptions, occur with some frequency in Victoria. The total number previously recorded for Western Australia is 41, to which are now added the following 20 :—

LIST OF LICHENS NEW FOR WESTERN AUSTRALIA (20).

Collema atrum, Wilson	Physcia picta, Swartz
Calicium quercinum, Pers. ; var. fulvescens, Wilson	Physcia speciosa, Wulf
Cladonia pyxidata, Fries.	Callopisma balaustina, Wilson
Ramalina fraxinea, Lin.	Callopisma lenticula, Wilson
Parmelia caperata, Lin.	Callopisma verruculosa, Wilson
Parmelia olivacea, Lin.	Lecanora parella, Lin.
Parmelia pertusa, Schrank.	Pertussaria leioplacella, Nyl.
Parmelia pubescens, Wilson	Biatora varians, Wilson
Parmelia tiliacea, Ach.	Buellia myriocarpa, De Candolle
Parmelia ulophylla, Ach.	Buellia cretacea, Wilson.

* Alpine or sub-alpine species.

† Since writing the above Baron von Mueller has told me that he collected this lichen in 1854 on the Cobboras Mts., and had it named by Dr. Hampe, but omitted to mention it the "Fragmenta Phytographiæ."

Field Naturalists' Club of Victoria.

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*President:*

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