







THE VICTORIAN NATURALIST.

VOL. XXXV., 1918-19.

THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

VOL. XXXV.

MAY, 1918, TO APRIL, 1919.

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

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

Melbourne:

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE-STREET
1919.

XV
I 32

35-36

1918-20

THE VICTORIAN NATURALIST.

VOL. XXXV.

MAY, 1918, to APRIL, 1919.

CONTENTS.

FIELD NATURALISTS' CLUB OF VICTORIA :—		PAGE
Annual Report	- - - - -	34
Exhibition of Wild-flowers	- - - 103, 124, 157	
Proceedings	1, 17, 33, 57, 73, 85, 101, 121, 133, 145, 157, 165	
Reports of Excursions	1, 4, 5, 17, 18, 22, 33, 57, 73, 74, 85, 86, 87, 101, 121, 122, 133, 135, 145, 157, 165	
ORIGINAL PAPERS.		
AUDAS, J. W., F.L.S., F.R.M.S.—Nature in the Serra Range, Grampians	- - - - -	171
AUDAS, J. W., F.L.S., F.R.M.S.—Notes on the Character- istic Vegetation of the Yarram District	- - - - -	62
CHAPMAN, F., A.L.S., F.R.M.S.—A Sketch of the Geo- logical History of Australian Plants: The Mesozoic Flora	- - - - -	148
DODD, F. P.—A Naturalist in New Guinea	- - - - -	127, 137
GABRIEL, JOSEPH—On the Destruction of Mutton-birds and Penguins at Phillip Island	- - - - -	178
HARDY, A. D., F.L.S.—The Tall Trees of Australia	- - - - -	46
KERSHAW, J. A., F.E.S.—Two Snakes New to Victoria	- - - - -	30
SHEPHARD, J., SEARLE, J., and STICKLAND, J.—One Year's Collecting Micro-Fauna, Botanic Gardens Lake, Melbourne (with graph)	- - - - -	79
SPENCER, SIR BALDWIN, K.C.M.G., F.R.S., D.Sc.—What is Nardoo?	- - - - -	8
SPENCER, SIR BALDWIN, K.C.M.G., F.R.S., D.Sc.— Kitchen Middens and Native Ovens (with two plates)	- - - - -	113
STEEL, T., F.L.S.—Tracks of the Garden Snail	- - - - -	91
WILSON, F. E.—An Ornithological Trip to the Nhill District	- - - - -	93, 111

INDEX.

	PAGE		PAGE
Agriculture, Department		Clayton, Excursion to	86
of, Visit to	73	Crustacea of Lake Colac,	
Alphington, Excursion to	101	&c. - - -	26
Altona Bay, Excursion to	17	<i>Denisonia nigrostriata</i> , Kreffl	31
Antarctica, Science in	123	Destruction of Mutton-	
Armistice, Signing of	121	birds - - -	167, 178
Audas, J. W., F.L.S.—		Dodd, F. P.—A Naturalist	
Characteristic Vegeta-		in New Guinea	124, 137
tion at Yarram	62	Elephant, A New	45
Audas, J. W., F.L.S.—		<i>Eucalyptus platyphylla</i>	77
Nature in the Serra		Evelyn, Excursion to	34
Range - - -	171	Ferns, Mutilation of Tree	134
Australian Birds, Re-		Field Naturalists' Club of	
naming - - -	84	Victoria—	
Australian Forest League	4	Annual Report - - -	34
Australian Tall Trees	46	Excursions—	
Balwyn and Bulleen, Ex-		Alphington - - -	101
cursion to - - -	165	Altona Bay - - -	17
Barnard, F. G. A.—Notes		Balwyn and Bulleen	165
of Visit to Western		Bayswater - - -	85
Australia - - -	168	Bendigo - - -	107
Barnard, Mr. F. G. A.,		Berwick Quarry - - -	4
Presentation to - - -	42	Black Rock - - -	87
Bayswater, Excursion to	85	Botanic Gardens	57, 166
Bendigo, Excursion to	107	Burnley Quarries	18, 78
Berwick Quarry, Excur-		Clayton - - -	86
sion to - - -	4	Corangamite, Lake	22
Bird Life at Macquarie I.	59	Department of Agri-	
Birds of Nhill District	111	culture - - -	73
Black Rock, Excursion to	87	Evelyn - - -	34
Botanical Gardens, Visit to	57	Heyington - - -	57
Botanic Gardens Lake,		Korkuperrimul Creek	
Micro-Fauna of - - -	79	(Bacchus Marsh) - - -	5
Botany at Lake Coranga-		Labertouche - - -	122
mite - - -	29	Marysville - - -	157
Brittlebank, The late		National Museum - - -	33
Private C. C. - - -	21	Oakleigh Golf Links	101
Buchan Caves, The - - -	132	Portarlington - - -	165
Burnley Quarries, Excur-		Richmond Quarries	167
sion to - - -	18, 78	Ringwood - - -	135
Butterflies, Prevalence of	144	Riversdale - - -	17
<i>Caladenia angustata</i> , Lindl.	123	South Morang - - -	121
<i>Calochilus cupreus</i> , Rogers	123	Warrandyte - - -	74
Caves, The Buchan - - -	132	Zoological Gardens	133
Chapman, F., A.L.S.—		Exhibition of Wild-flowers	
Sketch of Geological		103, 124, 157	
History of Australian		Financial Statement	38
Plants: The Mesozoic		Honour Roll - - -	40
Flora - - -	148	Office-bearers - - -	39

	PAGE		PAGE
Presentation - - -	42	National Museum, Visit to	33
Proceedings, I, 17, 33, 57,		Nature in Serra Range -	171
73, 85, 101, 121, 133, 145,		New Guinea, A Naturalist	
157, 165		in - - -	124, 137
Fish, Shower of - - -	3	Nhill District, Ornith-	
Fossils at Bald Hill - -	7	ology of - - -	93, 111
Fungus, <i>Cytharia Gunnii</i> -	160	Oakleigh Golf Links, Ex-	
Gabriel, J.—On the De-		cursion to - - -	101
struction of Mutton-		Orchids in the North-East	177
birds and Penguins at		Orchids, Reproduction of	
Phillip Island - - -	178	Terrestrial - - -	56
Geological History of Aus-		Ornithology of Nhill Dis-	
tralian Plants - - -	148	trict - - -	93, 111
Grampians, Nature in -	171	Ovens, Native, and Kit-	
Hardy, A. D., F.L.S.—The		chen Middens - - -	113
Tall Trees of Australia	46	Park, The Tasmanian	
Hatch, J.—Bird-Life of		National - - -	120
Macquarie Island - -	59	Penguin Oil Industry	60, 88
<i>Heteronympha merope</i> , Fab.	144	Phillip Island, Destruction	
Heyington, Excursion to -	57	of Mutton-birds at	167, 178
Honour Roll, Unveiling of	40	Physiography of Mel-	
Household Pests - - -	7	bourne District - - -	180
Kangaroo Island - - -	122	Place Names, Victorian -	119
Kershaw, J. E., F.E.S.—		Plants, Rare Victorian	169, 170
Two Snakes New to		Plants, Useful Vic-	
Victoria - - -	30	torian - - -	112, 147
King Parrots - - -	43	<i>Plesiastrea urvillei</i> - -	166
Kitchen Middens and		Pitcher, The late Driver	
Native Ovens - - -	113	E. A. - - -	100
Kitson, Mr. A. E., C.B.E.	32	Plants, Geological History	
Korkuperrimul Creek, Ex-		of Australian - - -	148
cursion to - - -	5	<i>Rhynchelaps australis</i> ,	
Labertouche, Excursion to	122	Kreffft - - -	30
Lake Corangamite Dis-		Richmond Quarries, Ex-	
trict, Excursion to -	22	cursion to - - -	167
Lizard, The Blue-tongued	15	Ringwood, Excursion to -	135
Lyre-Birds - - -	164	Riversdale, Excursion to -	17
Macquarie Island, Bird		Scenery Preservation -	180
Life of - - -	59	Searle, J.—Micro-Fauna of	
Maps, Commonwealth Mili-		Botanic Gardens Lake	79
tary - - -	119	Seeds of Native Plants, &c.	136
Marysville, Excursion to -	157	Serra Range, Nature in -	171
Melbourne District, Physi-		Shephard, J., Searle, J.,	
ography of - - -	180	and Stickland, J.—	
Micro-Fauna of Botanic		One Year's Collecting	
Gardens Lake - - -	79	Micro-Fauna, Botanic	
Moth, <i>Porina fusco-macu-</i>		Gardens Lake - - -	79
<i>lata</i> - - -	106	Shower of Fish - - -	3
Mutton-birds, Destruction		Snail, Tracks of Garden -	91
of - - -	168, 178	Snakes New to Victoria,	
Nardoo, What is ? - - -	8	Two - - -	30

	PAGE		PAGE
Somers, The Late Private		"The Australian Environ-	
G. E. - - -	119	ment " - - -	170
South Morang, Excursion		"The Gum Tree " - - -	144
to - - -	121	Trees of Australia, Tall -	46
Spencer, Sir Baldwin,		Vegetation at Yarram -	62
F.R.S.—Kitchen Mid-		Victoria, Snakes New to -	30
dens and Native		Victorian Place Names -	119
Ovens - - -	113	Victorian Plants, Rare	169, 170
Spencer, Sir Baldwin,		Victorian Plants, Use-	
F.R.S. — What is		ful - - -	112, 147
Nardoo ? - - -	8	Victorian Snakes, List of	31
Springtails, Raining -	15	War Casualties 21, 100,	119
Steel, T., F.L.S.—Tracks		Warrandyte, Excursion to	74
of Garden Snail -	91	Water-beetles, Migration of	90
Stickland, J. — Micro-		Western Australia, Notes	
Fauna of Botanic		of Visit to - - -	168
Gardens Lake - - -	79	Wild-flowers, Exhibition	
Sugar Gum, Rapid Growth		of - - -	103, 124, 157
of - - -	106	Wilson, F. E.—Ornith-	
Swallows, White - - -	120	ological Trip to Nhill	
Swans, Colour of Young -	134	District - - -	93, 111
Tall Trees - - -	78	Wilson's Promontory, Min-	
Tasmanian National Park	120	ing at - - -	75, 88, 104
Taylor, Dr. Griffith—		Wood-lice, Migration of -	76
Science in Antarc-		Yarram, Vegetation at -	62
tica - - -	123	Zoological Gardens, Ex-	
		cursion to - - -	133

ILLUSTRATIONS.

	PAGE
Colac District, Map of - - - - -	22
Kitchen Middens, Wilson's Promontory - - - - -	112
Micro-Fauna, Botanic Gardens Lake, Prevalence of	
(graph) - - - - -	79
Native Ovens, Koondrook - - - - -	113

ERRATA.

Page 11, in note—For "entomological" read "ethnological."
 Page 20, line 21—For "Rose-breasted Cockatoos" read "King
 Parrots."

VOL. XXXV.—No. 1.

MAY, 1918.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 9th May, 1918.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	1
EXCURSION TO BERWICK QUARRY	4
EXCURSION TO KORKUPERRIMUL CREEK (Bacchus Marsh) ..	5
WHAT IS NARDOO. BY SIR BALDWIN SPENCER, K.C.M.G., F.R.S., D.Sc.	8
THE BLUE-TONGUED LIZARD	15
RAINING SPRINGTAILS	15

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 13th MAY, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—

PROPOSER.

SECONDER.

Mr. Percy H. Bond,
Scotch College,
Hawthorn.

Mr. F. Chapman, A.L.S.

Mr. W. J. Stephen.

AS COUNTRY MEMBERS—

Mr. Walter Mann,
"Rockmount,"
Narracan, Gippsland.

Mr. J. A. Ker-haw, F.E.S.

Mr. F. G. A. Barnard,

Mr. Thos. Smith Savige,
Narracan East.

do.

do.

4. General Business.

Election of two Auditors.

Nominations (in writing) of Office-bearers for 1918-19.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

1. By Prof. Sir Baldwin Spencer, K.C.M.G.—"Notes on certain Kitchen Middens on Wilson's Promontory."

2. By Mr. Thos. Steel—"Tracks of Garden Snail."

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

FINANCIAL YEAR.

The Club year closed on 30th April. Any unpaid subscriptions should be forwarded to the Hon. Treasurer **at once**. Subscriptions for 1918-19 become due on 1st May, and must be paid on or before 10th June in order to qualify for voting at the Annual Meeting on that date.

The Victorian Naturalist.

VOL. XXXV.—No. 1. MAY 9, 1918.

No. 413.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday evening, 8th April, 1918.

The president, Mr. F. Pitcher, occupied the chair, and about fifty members and visitors were present.

CORRESPONDENCE.

From Mr. F. P. Dodd, Sydney, intimating that he would shortly have on view in Melbourne an extensive collection of Queensland and New Guinea insects, principally butterflies, together with some large photographs of scenery.

REPORTS.

A report of the excursion to Korkuperrimul Creek (Bacchus Marsh) on Saturday, 23rd March, was given by the leader, Mr. R. E. Luher, B.A., who reported a fair attendance of members. The excursion was devoted to geology and physiography, and the members had been successful in securing some of the characteristic fossils of the district, and, notwithstanding the somewhat warm day, had been greatly interested in the extensive views obtained from several points on the walk.

A report of the excursion to Lake Corangamite and the Colac district at Easter was given by the leaders, Messrs. J. Shephard and J. Searle. The former gave a general account of the outing, which he said had been very successful, and referred to the rotifers obtained, while Mr. Searle gave some account of the micro-crustaceans collected. Further notes were given by Mr. A. D. Hardy, F.L.S., on the algæ met with, and Mr. F. G. A. Barnard on the salt industry connected with Lake Beac.

ELECTION OF MEMBER.

On a ballot being taken, Miss E. Perry, High School, Geelong, was duly elected a country member of the Club.

REMARKS ON EXHIBITS.

Mr. J. Shephard made some remarks on a probable new species of *Pedalion* from Lake Corangamite, where it existed in large numbers.

Mr. F. Chapman, A.L.S., referred to some specimens of a Springtail (*Collembola*) which appeared recently in countless numbers after a storm. The insects, however, appeared to differ in some respects from the recognized species.

Mr. F. G. A. Barnard called attention to his exhibit of a globular, water-worn granite pebble extracted from the glacial till during the Korkuperrimul Creek excursion, which, he understood, was somewhat unusual in shape, and expressed his intention of presenting the specimen to the National Museum.

PAPER READ.

By Mr. J. W. Audas, F.L.S., entitled "The Characteristic Vegetation of the Yarram District."

The author dealt with the results of a botanical collecting trip in the Yarram (South Gippsland) district last October, when he was successful in finding a number of interesting plants in bloom, including *Kennedya rubicunda*, *Prostanthera rotundifolia*, *Fieldia australis*, &c. He added some notes about the early history of the district, which included the one-time busy port, Port Albert.

The chairman said that the author was to be congratulated on the results of his trip, which indicated a good wild-flower district.

Mr. C. Daley, B.A., said that the reason of the original Port Albert being abandoned was that, it being on Crown lands, the occupiers were called upon to pay a yearly license fee, and rather than do this they abandoned the site and bought freehold land at the site of the present Port Albert.

NATURAL HISTORY NOTE.

Mr. J. L. Robertson, M.A., said that he had been given the description of a strange fish, measuring over eleven feet long, which had recently been washed up on the Elwood beach. He hoped to have further details to place before the next meeting.

Mr. J. A. Kershaw, F.E.S., said that from the description given he was unable to connect it with any known species.

EXHIBITS.

By Mr. F. G. A. Barnard.—Round water-worn pebble of granite, weighing $1\frac{1}{4}$ lbs., extracted from the glacial till at Korkuperrimul Creek, Bacchus Marsh; fossiliferous rocks from same locality, obtained at recent excursion; also specimens of rocks, volcanic ash, cinders, &c., from Colac district; alga, *Entomorpha intestinalis*, and shells, *Cociella striatula*, as thrown up on shore of Lake Corangamite; foliage and fruit of *Eucalyptus Behriana*, F. v. M., Bull Mallee, from Anthony's Cutting, near Bacchus Marsh.

By Mr. F. Chapman, A.L.S.—Victorian Springtails, *Lipura*, (?) sp., collected at Balwyn in garden drain after a storm, in illustration of note.

By Mr. A. D. Hardy, F.L.S.—*Cladophora flavescens*, a fresh-

water alga from Lake Colac ; *Entomorpha intestinalis*, an alga from Lake Corangamite.

By Mr. R. E. Luher, B.A.—Fossil leaf impressions of *Laurus werribeensis*, M'Coy, and *Cinnamomum polymorphoides*, M'Coy, in Cainozoic ironstone, Korkuperrimul Creek, Bacchus Marsh ; fossil frond impressions of *Gangamopteris spatulata*, M'Coy, and *Tæniopteris*, sp., from Permo-Carboniferous beds of Bald Hill, Bacchus Marsh ; also glaciated stones, all collected at excursion on 23rd March, 1918.

By Mr. F. Pitcher.—Flowering branches of *Acacia discolor*, Willd., Sunshine Wattle, from Melbourne Botanic Gardens.

By Mr. P. R. H. St. John, on behalf of Director of Melbourne Botanic Gardens.—Flowering branches of *Hoheria populnea*, A. Cunn., "Hohera," N.O. Malvaceæ, native of New Zealand, grown at Melbourne Botanic Gardens.

By Mr. J. Searle.—Micro-crustacea under microscope, collected during Corangamite excursion, Easter, 1918 ; also salt from Lake Beac.

By Mr. J. Shephard.—Plankton gatherings from Lakes Colac and Corangamite ; rotifer, *Pedalion*, sp. (under microscope), from Lake Corangamite ; map of parts visited, compiled by Mr. A. D. Hardy, F.L.S., and photographs in illustration of excursion report.

By Miss A. H. Skinner.—Flowers of *Banksia serrata*.

By Mr. H. B. Williamson.—Robust specimen of *Hymen-anthera Banksii*, F. v. M., Tree Violet, with photograph of bush, illustrating the tendency of plants to arm themselves as a defence against grazing animals.

After the usual conversazione the meeting terminated.

SHOWER OF FISH.—In the *Argus* "Nature Notes" of 26th ult., Mr. J. V. Mack, of Berrybank, Lismore, confirms a statement made in a previous issue as to a shower of fish during a rain storm near Cressy. Mr. Mack says :—"In 1879 one of my men was collecting odd fence-posts in that district, and came home with his pockets filled with the ordinary creek minnows, about three inches in length. He told me he had tilted the dray during an awful storm, and afterwards found the fish. I rode out in the afternoon, and saw that the storm area was only about 100 yards wide and half a mile long. The crab-holes were then half-full of water, while the rest of the plain was quite dry. There were thousands of minnows in the pools, and no other surface water of any kind within three miles." This statement seems to be a clear confirmation of the belief that frogs, fish, &c., can be transported from place to place by the action of wind and rain in the form of a so-called waterspout ; in this case minnows were plentiful in streams, at no great distance, running into Lake Corangamite,

EXCURSION TO BERWICK QUARRY.

THE wet forenoon of Saturday, 23rd February, doubtless prevented several members from taking this trip. Early in the afternoon, however, the clouds disappeared, and a delightful afternoon was the result. The party proceeded straight to the quarry, where it was found that the exposure worked by the members of the Club on their visit in April, 1916 (*Vict. Nat.*, xxxiii., p. 4), was covered with *débris*, which had to be cleared away before any specimens could be obtained. The exposure consists of a small vertical face of fluviatile clays underlying the Older Basalt. The actual bed of the old stream was not visible, owing to the amount of water in the well which has been sunk through the clays. We were greatly indebted to Messrs. A. H. Blake and J. L. Robertson for their exertions in removing the *débris* and so enabling us to split many fine specimens out of the material, including a legume—the first evidence of the Leguminosæ in these beds. The species collected include *Tristanites angustifolia*, Deane, *T. Muelleri*, Deane, *Lomatia perspicua*, D., *L. Bosistooides*, D., *Eucalyptus Kitsoni*, D., *L. Hermani*, D., *L. Houtmanni*, D., *L. Mitchellii*, Ettinghausen, *Atherosperma Berwickense*, D., *Fagus*, *cf. Luehmanni*, D., *Aristotelia*, sp., *Mollinedia*, sp., *Pittosporum*, sp., and a legume, (?) *Acacia*, sp. The species of *Pittosporum* is not the same as that obtained from the leaf-beds at Mornington. Eight of these species were obtained during the Club visit in 1916. Later in the afternoon the party proceeded to the summit of One-Tree Hill, and studied the physiography of the wide area observable from that vantage point. I desire to place on record the Club's indebtedness to Mr. Wilson for his courtesy in permitting the members to visit the quarry and open up the leaf-beds.—R. A. KEBLE.

THE AUSTRALIAN FOREST LEAGUE.—The fourth annual meeting of the Victorian Branch was held at the Melbourne Town Hall on the 29th ult., when an encouraging report of the progress made during 1917 was given. On the conclusion of the formal business, the retiring president, Prof. A. J. Ewart, D.Sc., Government Botanist, gave an address, the keynote of which was the approaching timber famine in Victoria as well as in other Australian States, which he considered not more than thirty years off. He urged that no further settlement be allowed on land bearing timber of any value. The Hon. F. Clarke, M.L.C., Minister of Lands, who occupied the chair, said that he recognized the truth of Prof. Ewart's remarks, but it must be shown that timber-growing was a payable proposition. An interesting discussion followed on the points raised. Mr. W. Russell Grimwade was elected president for the ensuing year.

EXCURSION TO KORKUPERRIMUL CREEK (BACCHUS MARSH).

QUITE a large party, including several ladies, met at Spencer-street station on Saturday, 23rd March, in order to take the 7.40 a.m. train to Bacchus Marsh. During the train journey the immense level plains of Newer Basalt over which we passed, and the almost circular hollow in which the town of Bacchus Marsh has been built, were duly noted and commented upon. The weather was ideal, and as the party walked through Maddingley Park towards the township, and afterwards along the Ballan road, the sunshine, tempered by a slight breeze, enhanced the outlook and rendered the outing decidedly pleasant. The early part of the excursion was along the route of an excursion taken some two years ago by University students under Professor Skeats. At a suitable point a halt was called, and the geological history of the district, with the resulting physiography, studied. The dark, densely-wooded hills in the distant north-west were pointed out as the bedrock of the district, being composed of shales and mudstones of Ordovician age, and of the Castlemaine horizon. In striking contrast were the nearer treeless slopes of Bald Hill, the material of which was deposited in Permo-Carboniferous times. The bedrock, during the great Devonian earth movements, had probably been folded, faulted, and pierced by igneous dykes, followed afterwards by a long period of erosion. Next, in the Permo-Carboniferous period, an immense ice-sheet moved northwards over the area from a hypothetical point in the Antarctic, and deposited the argillaceous sediment of Bald Hill. Turning more to the west were the sloping yet steeper hills of Older Basalt. In Mesozoic and Cainozoic times the district had probably remained a land area, and the great volcanic activity which followed was shown by the immense thickness of the floor as indicated by the hillsides. This outpouring disturbed the drainage system of the area, and a huge fresh-water lake was created, on the banks of which grew trees similar to the cinnamons and laurels now growing in Queensland and New South Wales. After this lacustrine period the Newer Basalt flows connected with renewed volcanic activity of Pliocene age once more overwhelmed the area, filling up the old streams. Thus, where we stood in the road-cutting we could see the old river sands and gravels exposed, whilst as far as the eye could see—east, south, and west—were the Newer Basalt plains, with their steep edges towards the Bacchus Marsh basin. Then further changes took place. A big fault-scarp occurred in the Ordovician series, which was visible along the eastern slopes of Bald Hill, and extended a considerable distance either way.

The formation of this scarp diverted the Werribee and Lerderg Rivers, and in the process of cutting through this impediment to its course the Werribee River formed the famous gorge, the entrance to which was just visible to the south-west. The union of the two rivers gradually formed an alluvial flat, now very many acres in extent, and known throughout Victoria for its wonderful fertility, the soil in many places being upwards of twenty feet in depth. The party then proceeded towards the Korkuperrimul Creek, which, flowing from the north to the Werribee River, crosses the Ballan road just beyond the junction of the road to Bald Hill. Here, on the side of the road before reaching the bridge, an ironstone outcrop occurs, in which may be found leaf impressions of two trees which at one time grew in the neighbourhood. On splitting some of the pieces of stone, fairly good specimens of *Cinnamomum polymorphoides*, M'Coy, and *Laurus werribeensis*, M'Coy, were obtained. We then proceeded northwards, and on the slope of Bald Hill inspected the upper beds of Permo-Carboniferous origin which are there exposed in a ravine. Although fossils were obtained here on the previous excursion, time prevented the party seeking for them on this occasion. Further north, in a somewhat damp depression, a number of fine mushrooms were gathered, some of which measured six and eight inches across. A little further north an intrusive dyke was pointed out, from which some large orthoclase felspar crystals were obtained. It was now time for lunch, so, obtaining water from a neighbouring farm-house, we selected a shady spot near a big red gum, and boiled the billy. The pools marking the course of the creek teemed with animal life and algæ, but unfortunately the microscopists of the party had not brought their collecting apparatus. Feasting and resting over, we resumed our walk up the stream, such as it was, and at a bend inspected a cave-like hole hollowed out of the glacial till. One of the party took a fancy to a rounded pebble partly exposed in the face, and succeeded in extracting it without much damage. It proved to be a water-worn granite stone deposited in its recent position many thousands of years ago; now it is to rest in the National Museum collection as a somewhat unique specimen, the included stones in the glacial till being generally angular. The fault line between the Permo-Carboniferous beds and the Older Basalt was seen at several points along the creek. The hills composed of Older Basalt were also more closely inspected, when the different terraces marking succeeding layers or flows of lava were seen to stand out prominently at places, making an imposing sight, and seemed to indicate that the Older Basalt had here a thickness of nearly 1,000 feet. Further along the course of the creek some monchiquite dykes were pointed

out. We then climbed the slopes of Bald Hill, on the way obtaining a fine view of the meanders of the stream, and in one of its tributaries noting some large boulders, which had been deposited by glacial action, exposed in the cut-down bank. The Bald Hill freestone quarries were then visited, and some of the rejected blocks of stone split open in search of impressions of the ferns *Gangamopteris spatulata*, M'Coy, and *G. angustifolia*, M'Coy, nice specimens of which were found. This freestone was glacially deposited, and has a binding of argillaceous cement. It was used in the construction of the Chief Secretary's office, Melbourne, but has not stood the city atmosphere well; however, in sheltered positions it wears better. Some of the party then walked to the summit of the hill, where a temporary trigonometrical station has recently been erected, probably in connection with the military survey of the State. From this flat, dome-shaped height a fine panoramic view was obtained, mellowed by the waning daylight. To the south the You Yangs and the nearer Brisbane Range were visible; in the west, over the Pentland Hills, were Mounts Egerton and Steiglitz; to the north-west the wooded summit of Mount Blackwood stood out prominently in front of the hills of the Dividing Range, while nearer at hand were the Lerderderg Ranges; to the north, between Mounts Bullengarook and Gisborne, could be seen Macedon and the Camel's Hump; to the east, in the foreground, was the Bacchus Marsh basin, with the basaltic plains beyond, on which stood numerous points of eruption, Mount Kororoit or Misery being the most prominent. Returning to the quarry, a pause was made to watch the Adelaide express laboriously climb the incline from Rowsley towards Ingliston—part of the big fault-scarp already referred to—and then the return walk to the township was commenced. It was almost dark by the time the town was reached, when all were ready for tea, which was partaken of in the park by moonlight. Leaving by train about 9 p.m., Melbourne was reached in due course, all agreeing that a most enjoyable and instructive day had been spent.—R. E. LUHER.

HOUSEHOLD PESTS.—In the *Journal of Agriculture, Victoria*, for April, Mr. C. French, jun., Government Entomologist, gives some account of the depredations which may be caused to the timbers of houses, furniture, &c., by the Furniture Beetle and the Pin-hole Borer, two insects which have unfortunately become very common in recent years. Bamboo furniture is especially subject to their attacks, and should be watched. He gives some hints as to the precautions to be taken to secure immunity from attacks, and means to be adopted when the trouble is present.

WHAT IS NARDOO.

BY SIR BALDWIN SPENCER, K.C.M.G., F.R.S., D.Sc.

(*Read before the Field Naturalists' Club of Victoria, 11th Feb., 1918.*)

IN the *Victorian Naturalist* of January, 1915 (vol. xxxi., p. 133), there appeared a short but interesting article by Mr. E. H. Lees under the above title. In this communication Mr. Lees very briefly discussed the subject of "Nardoo" from two different points of view—(1) what actually is nardoo; is it a name applied to one single plant or product of the same, or is it a name applied to the products of several plants that are, or were, used as foods by the aboriginals; and (2) is the nardoo, so often referred to in connection with the Burke and Wills Expedition as forming the staple food of the explorers during their last days on Cooper's Creek, the sporocarp of a species of *Marsilea*, or did they give the name to and subsist not only on this but on seeds of grasses and leguminous plants to which they applied the same name.*

The matter is one of considerable interest both from a natural history, an ethnological, and, as connected with the Burke and Wills Expedition, an historical point of view. As one who has seen and gathered nardoo where it grows in profusion, has had long and intimate intercourse with the natives, watching them grinding and pounding the various "seeds" that they use as food, and, above all, in regard to this special question, has frequently discussed with the late Dr. Howitt this and other matters connected with the Burke and Wills Expedition, it has seemed to me to be of some interest and importance to arrive at a definite decision as to what is nardoo. In the endeavour to do this I have made as complete an examination as possible of all the available evidence, including the accounts of the expedition as published in book form, and in the daily Melbourne papers for 1861, 1862, and 1863, the Report of the Parliamentary Commission in 1861-2, the records of the term nardoo as dealt with in scientific journals, ethnological and botanical works, and more especially the manuscript journals and papers referring to the expedition, which for many years have been preserved in the Melbourne Public Library. It would occupy far too much space to record the mass of evidence derived from these original sources, but I have selected what appears to me to be of primary and sufficient importance to decide the question, which I propose to deal with under the two heads already indicated.

* Mr. Lees, in his article, mentions the fact that there have been many specific names applied to various forms of *Marsilea* in Australia. It is now recognized that, though there may be local varieties, there is only one species, which retains the name of *Marsilea quadrifolia*.

(I) *What is Nardoo.*

In the *Australasian* of 12th February, 1910, Mr. E. J. Welch, under the title of "The Explorer—Dietary Experiences," referred to nardoo. Mr. Welch was a member of the Howitt contingent relief party, and, on being communicated with, he distinctly asserted, in the *Victorian Naturalist*, the identity of nardoo with the plant *Marsilea*.^{*} In reply to this Mr. Lees says †:—"According to Mr. Welch, and, in fact, to every writer on the subject, it is identified with *Marsilea*, or with some other specific plant. I maintain that this is not so. Nardoo is not a plant at all; it is a food obtained from several plants."

Experience in Central and Northern Australia, whilst living amongst various tribes, has enabled me to gain some insight into native matters. In the first place, one has to be very careful in regard to words such as "nardoo." A white man living for a time in one locality hears a native name applied to some special object. When he travels on to another place he carries this name with him, and, as likely as not, applies it to some other thing to which, either in general appearance or in regard to its use, it is apparently similar, and the native, wishing to please the white man, adopts the new name, with the result that confusion arises in consequence of the same name being applied to two different objects. Or, again, a name that is applied originally in one special tribe to one special object may become widely used for the latter, because it is carried on from tribe to tribe by white men, or even by natives working for them, as the country is opened up or settlement extends.

The name nardoo, nardu, gnardu, or ardo is a case in point. The word belongs to the language of the Yantruwanta tribe, in the Lake Eyre district; but, thanks to white men, it has been widely spread over Central Australia, and for many years past has been used by native tribes to whom it was quite unknown before the advent of the former. So, again, the same is true of the word "munyeru," used in connection with the seeds of species of *Claytonia* and of cakes made from them by natives in many parts of Central Australia. At Alice Springs, for example, the real native name is "ingwitchika," but the name "munyeru" has been adopted from the white men, and is, or was, almost universally used.

It may be noted also that mistakes are liable to arise because, if a native be asked by a white man a question, such as "Is this nardoo?" and he thinks that the answer "Yes" will please the former, he will as likely as not return what is the wrong answer, just because of his anxiety to please.

* *Vict. Nat.*, May, 1910, vol. xxvii., p. 16.

† *Vict. Nat.*, January, 1915, vol. xxxi., p. 135.

Many scores of times I have watched the natives of various tribes, from the Urabunna, in the south, on the west side of Lake Eyre, right across the continent to the Kakadu, on the Alligator River, in the Northern Territory, grinding and pounding the various seeds that they use for food. In addition to grass seeds, they use those of various species of *Acacia*, "shelling" them when they are fresh and green, just as we "shell" peas, and eating them in large quantities, either raw or after warming them in hot ashes. When dry and hard they are pounded and made into cakes, to which the name nardoo is certainly not applied in the Urabunna or the Arunta tribes—the latter inhabiting the country from the Macumba River to the south of Charlotte Waters and away to the north of the Macdonnell Ranges in the centre. In regard to these two tribes I am speaking after having made careful investigations, and, as I know from Dr. Howitt, the same is, or was when he knew them well, equally true of the Dieri and Yantruwanta tribes of the Lake Eyre district. On the other hand, it is important to note that, as indicated later, the natives have a special name for each form of plant food. In the far north, for example, cakes are made from the seeds of the water-lily, but the name nardoo is never applied to them; they are called either "worki" or "porijilili" by the Kakadu natives.

Mr. Lees writes, in regard to his experiences, that on one occasion when returning from "a western exploration trip in the neighbourhood of Giles's 'ever-flowing Ferdinand' . . . we faced the return journey of six days with barely sufficient stores to last two days. On the second day we struck water, and, notwithstanding the commissariat shortage, we had to spell the camels for a day. During this time our camp black (a Macumba River native) collected a supply of leguminous seed, from which we made nardoo." Again, in regard to his experiences near Charlotte Waters, Mr. Lees writes:—"On one such expedition I was accompanied by Mr. Gillen, and we have partaken of leguminous nardoo in aboriginal restaurants, where at that time English was unspoken and the white man little known." One cannot help thinking that the term nardoo was mistakenly applied by the white man in all good faith to the leguminous cakes, or, if by the natives, simply because they knew that nardoo was a name well known to the former.

I have spent very many months with my late friend and colleague, Mr. Gillen, working amongst the aboriginals. Over many a camp-fire between Lake Eyre, in the south, and Borroloola, on the Gulf of Carpentaria, we have discussed most things connected with the natives, but he never suggested and we never found any evidence to show that the word nardoo

was used in connection with anything except Marsilea, its fruit, and the cakes made from this.

The above are the only two references that I can find in numerous accounts of nardoo written by those who have had actual experience amongst the natives, in which it is suggested that the name is given to the product of any plant except Marsilea, and even here the evidence can only be described as very vague and most unconvincing. When Mr. Lees says "We made nardoo" and "We have partaken of leguminous nardoo," one naturally wants to know what exactly is his authority for calling it by this name. The Arunta tribe, in whose country Mr. Lees was travelling when he was accompanied by Mr. Gillen, does not (except possibly in its most southern part, where it is in contact with the Urabunna) use the sporocarps of Marsilea as a food, and the word "nardoo," except as a borrowed word, does not exist in its language.

So far as my experience goes, every plant, the leaves, stems, roots, or seeds of which are used for food, has its own special name. Nardoo, munyeru, parakilia, tjainda, itata, erlipinna, ingwitchika, tiritipaua, kurangula, kudnagertikati, katnungara, are a few of those known to me by personal experience, but each of these names is applied to one and only one plant and its product.

So far as I can find out, also, every investigator who has made a special study of the natives and has had first-hand experience in the field is in complete agreement on this point. Dr. Roth,* for example, gives *pappa* as the "generic" name for all seed-foods in the language of the Pitta-pitta tribe in Queensland, but, in addition, he records the native names of many individual food plants, and, without any exception, each such name applies to one plant only. Amongst many different forms he mentions "the hard-shelled seed of the 'nardoo' (Marsilea), easily and speedily collected from the plant when growing in marshy swamps."

So, again, Gason,† in his account of the "Manners and Customs of the Dieri Tribe," gives the names of various seeds, &c., describing nardoo as "ardoo." He writes:—"In a dry season they subsist mainly on ardo, but in a good season, with plenty of rain, they have an ample supply of seeds, which they grind or pound, make into small cakes, and bake in the ashes." He thus very clearly distinguishes between ardo and other vegetable foods.

In Brough Smyth's "Aborigines of Victoria," when speaking

* Roth, "Entomological Studies Amongst the Natives of N.W. Central Queensland," 1897, p. 92.

† "The Native Tribes of South Australia," Adelaide, 1897, pp. 259, 288.

of the Cooper Creek tribe, Dr. Howitt says * :—" Nardoo is well known. It may be called their stand-by when food is scarce. In many places miles of the clay flats are thickly sprinkled with the dry seeds. Seeds are generally called 'Bowar,' of which *Portulac*, the Manyoura 'bowar,' is the most prized."

At a much later date, in "Folk Lore," Miss Mary E. B. Howitt † published "Some Native Legends from Central Australia." These were selected from a large number collected by the Rev. Otto Siebert. In a note on one of these, Miss Howitt says :—" Nardoo forms a staple article of food with these tribes, and has been well known to the natives since the unfortunate explorers Burke and Wills tried unsuccessfully to live on it, when Wills wrote in his diary that it was 'not unpleasant starvation.' Some of the seed actually collected by them, and afterwards found by Mr. A. W. Howitt's rescue party, is before me now. The so-called seeds are spore-cases of a species of *Marsilea*, a genus common to many parts of Australia."

It is important to note that Dr. Howitt states that "bowar" is a term applied to seeds in general. The Rev. Otto Siebert, in charge of the Aboriginal Mission Station at Kopperamana, on the Barcoo, says that "Paua is food made from the seeds of various plants. It is collected, cleansed, and stored away in pits, which are closed by a cover made of rushes and smeared on each side with clay to hold them together. . . Nardoo is not ground, but pounded to a fine powder and made into a kind of cake."

Dr. Howitt's name "bowar" is clearly the equivalent of "paua," and both of these are general terms applied to plant food, of which nardoo is clearly only one kind.

(2) *What was the Nardoo of the Burke and Wills Expedition.*

There can, fortunately, be no doubt in regard to this. It is made absolutely certain by reference to the original sources of information previously indicated.

The earliest reference to nardoo, though under a name spelt somewhat differently, occurs in the diary of Dr. Herman Beckler.‡ After Burke had broken up his party at Menindie, and was proceeding northwards to Cooper's Creek, despatches arrived for him from Melbourne. Two men—Lyons and Macpherson—attempted, without success, owing to the dry season, to follow him up. Beckler succeeded in rescuing them on their

* "Aborigines of Victoria," Appendix, vol. ii., p. 302.

† "Folk Lore," vol. xiii., 1902.

‡ Diary of Herman Beckler's journey to relieve Lyons and Macpherson, from 21st December, 1860, to 5th January, 1861.—MS.

return journey to Menindie. Writing on 27th December, 1860, he says:—"At about 6½ o'clock a.m. we met with numerous tracks of the natives. . . All at once Peter called out, 'Hye! hye!' and sure enough there was Macpherson at a short distance from us, apparently searching for something on the ground. . . Lyons was at the camp engaged in baking cakes when we came up to him. The seeds of which they prepared a warn (?) meal, and out of that either cakes or porridge, is not properly a seed, but the sporangium and the spores of a small plant, the leaves of which are very like clover. It is, I believe, a *Marsileana*, and everywhere to be met with where water stagnates for a time. . . The plant which saved Macpherson and Lyons's lives is called by the natives *Gnadunnea*." It is important to note that this is clearly distinguished from other seeds, &c., used for food, because Dr. Beckler adds:—"Here I may as well say that the *Portulac* * abounds . . . and just now . . . it begins to blossom. They (the natives) call it 'dungerow,' and they use the seeds in the same way as the sporangiums of the *Marsileaceous* plant to make flour."

In Wills's journal we read (I am quoting from his manuscript) —"Camp No. 9, Thursday, 7th May, 1861.—On our arrival at the camp they (the natives) led us to a spot to camp on, and soon afterwards brought a lot of fish and bread, which they call nardoo." Later on, whilst still at the same camp, he says:—"Mr. Burke and King employed in jerking the camel's flesh, whilst I went out to look for the nardoo seed for making bread. In this I was unsuccessful, not being able to find a single tree of it in the neighbourhood of the camp. I, however, tried boiling the large kind of bean which the blacks call padla." This may be taken as evidence that leguminous seeds were not called nardoo by the natives.

Whilst still at the same camp, Wills writes:—"On approaching the foot of the first sand-hill King caught sight in the flat of some nardoo seeds, and we soon found that the flat was covered with them." Lastly, at a later date, Thursday, 20th June, 1861, he writes:—"I cannot understand this nardoo at all—it certainly will not agree with me in any form. We are now reduced to it alone, and we manage to consume from four to five pounds per day between us. It appears to be quite indigestible, and cannot possibly be sufficiently nutritious to sustain life by itself."

In John King's narrative † he says:—"We had not gone far before we came on a flat, where I saw a plant growing that

* *Claytonia balonnensis* and other species.

† Report of the Commission (Appendix L.) presented to Parliament, Victoria, 1861-2.

I took to be clover, and, on looking closer, saw the seed, and called out that I had found 'the nardoo'; they were very glad when I found it."

It may be noted also that the explorers, in addition to the bean called padla, already referred to, were well acquainted with at all events one other vegetable food quite distinct from nardoo, as will be seen by the following questions put to and answered by the survivor King when giving evidence before the Parliamentary Commission:—

"No. 899. And about that time the provisions began to get short?—Very short.

"No. 900. And the allowance was on a very small scale to match?—On a very small scale; our principal ration was the portulac.

"No. 901. Which is a kind of vegetable?—Yes, a kind of vegetable.

"No. 902. A leafy vegetable?—Very leafy.

"No. 921. How did you cook the vegetable?—Boiled it."

Dr. Howitt is perfectly clear on the matter. In his journal,* on 2nd September, Camp 20, he writes:—"On some of the flats I observed quantities of the plant growing from the seeds of which the natives make their bread. It appears to choose a loose, blistered, clayey soil, subject to be flooded, such as is generally found in polygonum ground. The leaves resemble clover, but with a silvery down, which is also found on the seeds when fresh; these grow on short stems springing from the roots, and are flat and rather oval. In places where the plant has died down, these seeds quite cover the ground; they are gathered by the native women, and, after being cleaned from the sand, are pounded between two stones and baked as cakes."

The above evidence at first hand from Dr. Beckler, Wills, King, and Dr. Howitt is surely conclusive, and, moreover, as I write this I have in front of me, amongst the records of the expedition, two little packets, described as nardoo, and both containing a few sporocarps of *Marsilea quadrifolia*. One contains nardoo actually brought down by King from Cooper's Creek; the other † is accompanied by a copy of a note made by Dr. Howitt, as follows:—"Nardoo collected by Burke and Wills and King at Cooper's Creek, found by A. W. Howitt at their camp."

* "Diary of Burke and Wills, Howitt's Journal and Despatches, King's Narrative, &c.," Melbourne, published at the *Age* office, 1861.

† I am indebted to Miss Mary E. B. Howitt for this. Miss Howitt writes:—"I have a small quantity of the actual seeds found in a little heap, as gathered by one of the fated party, somewhere near the remains of one of them."

To sum up the evidence in regard generally to nardoo, it may be said that—

(1) Nardoo or gnardu is the native name in the Yantruwanta tribe for the plant *Marsilea quadrifolia* and the food product derived from it.

(2) The name nardoo is applied to this plant and its product only. There is no real evidence of its ever having been applied by the natives to any other plant or its product.

(3) The nardoo referred to in connection with the Burke and Wills Expedition is the plant *Marsilea quadrifolia*, its sporocarps, and the product derived from these, on which the survivor King lived until he was rescued by Dr. Howitt at Cooper's Creek in 1861.

THE BLUE-TONGUED LIZARD.—A friend, Mr. G. A. Heumann, of Sydney, who has kept Blue-tongued Lizards in captivity for years, was fortunate not long ago in seeing some young born. He says within an hour and a half the female dropped seventeen young. Supporting the front part of the body on the ground, she raised her back legs and body above the ground, and dropped the young at short intervals. These were encased in an oval-shaped skin bag, the tail being bent along the body towards the head. After a few moments the young lizard pushed its head out of the bag, halted, evidently to take its first breath and a view of the world, and then wriggled right out. The skin bag being attached to the abdomen, the young made short work of getting rid of it by eating it; this was their first feed. Still many of them were not satisfied, and at once ate three or four mealworms in addition. Then they walked straight away under cover, and took not the slightest notice of the mother, or she of them. On several occasions young Blue-tongued Lizards have been born in the Melbourne Zoo, but fewer in number at a time. Mr. Heumann's interesting account agrees with what I have seen here.—D. LE SOUËF, Parkville.

RAINING SPRINGTAILS.—On the morning after the storm of Saturday, 2nd March, 1918, my attention was arrested by a black deposit in the tile gutters at the side of the garden path at my house at Balwyn. At first sight it looked like menacanite or iron-sand; but, probing it with the finger, it yielded, and not only yielded, but began to jump in all directions. An examination with a lens showed it to be composed of myriads of tiny insects, measuring about .7 mm. in length, since found to be related to the order Collembola, Lubbock, of which *Lipura* is a well-known genus. Mr. F. Spry informs me that

this particular species is unknown to him, and is probably new. There being no lack of specimens, I collected a tubeful, some of which are in the National Museum collection. To gain an idea of their excessive abundance, the cubic contents of one patch (out of three or four within a length of ten yards of gutter) worked out at one million and twenty-five thousand individuals. The morning was dull, but after the sun came out for a few hours there was a marked stampede of the little insects, probably to the bases of the grass tufts, from whence they seem to have been washed, the expanse of grass being only a few inches above the level of the gutter. This particular form is shaped like an elongated wood-louse, with three pairs of thoracic legs, six body segments, a pair of short, unequally-segmented antennæ, and two short, stout appendages near the hinder extremity, used for jumping. No sucking disc was visible on the under side of the body. The feet are terminated by a sharp, curved claw. The last abdominal segment carries either a pair of elongate, triangular cerci surrounded by long, curved bristles, or a pair of sharp, backward-curving claws. Scattered bristles are seen covering the general surface of the body and appendages, and these seem to serve in an efficient way to entrap air so that in flood waters the insects float calmly on the surface buoyed up by a silvery film. To a palæontologist this little creature is of especial interest, as it shows many features of an archaic type, which, so to speak, have been borrowed from more than one extinct group of arthropods. Such are the terminal joints of the antennæ, which end in pad-like structures suggestive of the swimming paddles of the sixth pair of feet in the extinct water-scorpions, *Eurypterus*, and probably used for the same purpose. The specimens somewhat resemble *Lipura ambulans*, Linn., but differ in having a tapering rather than broadly-rounded extremity to the abdomen. Lubbock, however, states that in the family Lipuridæ there is no saltatory appendage and the body is cylindrical, so that it is probable that the present form represents an entirely new group of family rank. Mr. F. G. A. Barnard has drawn my attention to the determination of one of our Collembolas by Lubbock (now Lord Avebury) from specimens sent to him by the late Mr. H. Watts (*Vict. Nat.*, vol. iii., 1887, p. 135) as a *Degeeria*, but the present form is not of that genus, which has a cylindrical body, club-shaped hairs, long saltatory appendages, and fairly long antennæ. — F. CHAPMAN, Balwyn.

ERRATUM.—In vol. xxxiv., page 123, line 14, for *Thrasymene* read *Trachymene*.

Field Naturalists' Club of Victoria.

✧ OFFICE-BEARERS, 1917-1918. ✧

President: MR. F. PITCHER.

Vice-Presidents:

MR. A. D. HARDY, F.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, 54 Mason Street, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, 448 Collins Street (Telephone Central 355).

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., C. DALBY, F.L.S., J. A. KERSHAW, F.E.S.
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

SATURDAY, 25TH MAY.—National Museum. Object—**Palæontology.** Under leadership of Mr. F. Chapman, A.L.S. Meet at Russell Street entrance at 2 p.m. Special attention will be directed to common Australian Fossils and where to find them.

MONDAY, 3RD JUNE (KING'S BIRTHDAY).—Evelyn to Montrose. Objects—**Heaths and General.** Leader—Mr. G. Coghill, who will join party at Evelyn. It is proposed to walk *via* Lilydale water race across Linda Creek to Reservoir and then catch coach at Montrose. Distance for walking about 6 miles. Lunch should be taken. Tea, sugar, and milk will be provided by leader. Book second return excursion fare to Evelyn. Meet at Flinders Street Station (opposite Mutual Store) for 8.7 a.m. train.

ANNUAL MEETING, June 10th, 1918.

EXHIBITION OF NATURAL HISTORY SPECIMENS.

The following members have been appointed to take charge of the Exhibits in the various sections:—

Botany.—Dr. C. S. Sutton and Mr. P. R. H. St. John.

Entomology.—Mr. F. G. A. Barnard.

Geology.—Mr. F. Chapman A.L.S. and Mr. C. Daley, F.L.S.

Conchology.—Mr. J. Gabriel.

General Zoology.—Mr. J. A. Kershaw, F.E.S.

Forestry.—Mr. A. D. Hardy.

Ornithology.—Mr. J. A. Kershaw, F.E.S. and Mr. G. A. Kearland.

Physiography.—Mr. C. Daley, F.L.S. and Mr. F. Chapman, A.L.S.

Microscopy.—Mr. J. Searle.

Ethnology.—Mr. E. S. Anthony.

Exhibitors are urgently requested to notify above leaders at the **May Monthly Meeting** as to their Exhibits, otherwise sufficient space may not be allotted to show them to advantage. Invitation tickets for friends and visitors obtainable upon application to members of the Committee.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6 -
INSECT STORE BOXES, of Corked Pine	10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-
INSECT COLLECTING BOXES, of deal, corked and papered	1 -, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered	14 x 10, 8 -; 16 x 12, 11 -
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 6th June, 1918.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	17
EXCURSION TO LAKE CORANGAMITE AND DISTRICT	22
TWO SNAKES NEW TO VICTORIA. BY J. A. KERSHAW, F.E.S. ..	30
NOTES	21, 32

✱ PRICE SIXPENCE. ✱

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 10th JUNE, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—	PROPOSER.	SECONDER.
Mr. C. E. Cole, Tooronga Road, Caulfield.	Mr. F. E. Wilson.	Mr. F. Spry.
Mr. Hugh Hughes, off Glenhuntly Road, Elsternwick.	Mr. C. Daley, F.L.S.	Mr. F. Chapman, A.L.S.
Mr. Frank P. Morris, 54 Millswyn Street, South Yarra.	Mr. J. W. Audas.	Mr. P. R. H. St. John.
AS COUNTRY MEMBERS—		
Mr. James Firth, Beech Forest.	Mr. A. D. Hardy, F.L.S.	Mr. E. S. Anthony.
Mr. A. W. Grainger, West Warburton.	do.	do.
AS ASSOCIATE MEMBERS—		
Mr. Malcolm Howlett, 34 Chapuan Street, North Melbourne.	Mr. D. Le Souëf, C.M.Z.S.	Mr. A. D. Hardy, F.L.S.
Mr. David Oldmeadow, 171 Park Street, Parkville.	do.	do.

4. Annual Report and Balance Sheet.

5. Election of Office-bearers for 1918-19.

6. General Business.

Unveiling of Honour Roll by His Excellency Sir Ronald Munro Ferguson, K.C.M.G. (Governor-General of the Commonwealth).

The Business Meeting will be held in the upper room of the Hall from 8 to 9 p.m. The Exhibition will be open from 7 to 8 p.m., and from 9 to 10 p.m. in the lower rooms of the Hall.

FINANCIAL YEAR.

The Club year closed on 30th April. Any unpaid subscriptions should be forwarded to the Hon. Treasurer **at once**. Subscriptions for 1918-19 become due on 1st May, and must be paid on or before 10th June in order to qualify for voting at the Annual Meeting on that date.

The Victorian Naturalist.

VOL. XXXV.—No. 2. JUNE 6, 1918.

No. 414.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th May, 1918.

The president, Mr. F. Pitcher, occupied the chair, and about sixty members and visitors were present.

The president introduced to the meeting Miss D. Philpott, a member who had volunteered to take shorthand notes of the proceedings by means of the stenotype machine.

A report of the excursion to Altona Bay on Saturday, 13th April, was given by the leader, Mr. E. S. Anthony, who stated that there had been a good attendance of members. A visit was first made to the aboriginal shell-mounds, usually known as kitchen middens, situated near the shore-line to the east of the station. An examination of these revealed quantities of broken shells of mollusca of kinds still common in the locality. Several of the mounds showed signs of fire having been used in preparing the feasts, and some fragments of the bones of birds were also noted. Some pieces of ochre used by the aborigines for decorative purposes were also obtained. Returning to the western side of the jetty and traversing the hollows between the sand-dunes, search was made for further signs of the former inhabitants of the place. Here members were rewarded by finding numbers of quartzite flakes of various shapes and sizes, also some of the cores from which the flakes had been struck. These flakes were the primitive instruments which the aborigines used for cutting, preparing animal skins, &c. The botany of the district is not remarkable, but a number of introduced plants seem to thrive there, about which Mr. H. B. Williamson would say a few words. Mr. Williamson remarked that the most interesting of the endemic plants were the useful sand-binding grasses, *Spinifex hirsutus*, Hairy Spinifex, and *Cynodon dactylon*, Couch-Grass. The Rosy Stork's-bill, *Pelargonium Rodneyanum*, was blooming in many places. The principal introduced plants were *Solanum Sodomæum*, Apple of Sodom, *Glaucium luteum*, Horned Poppy, *Atriplex patula*, Common Arache, and *Silene cucubatus*, Bladder Campion; the latter, though a troublesome weed in some places, was showing a mass of thick roots, holding the sandy soil together and preventing erosion.

A report of the excursion to Wattle Park, Riversdale, on Saturday, 27th April, was given by the leader, Mr. F. G. A. Barnard, who said that the excursion had been well attended. The afternoon proved very enjoyable, though the park is not

a prolific hunting-ground. A visit was first paid to the wattle plantation formed last June, where it was gratifying to see that nearly every tree was doing well. Some had made fine growth, while *Acacia retinodes* and *A. discolor* could each boast of a few flowers. Rambling through the wooded portion of the park towards the eastern boundary, few plants were seen in bloom, *Styphelia (Astroloma) humifusa* being perhaps the most uncommon. Diligent search was made for the little orchid *Eriochilus autumnalis*, so abundant on the previous visit in March of last year, but not one could be seen. A few birds of the commoner kinds were seen or heard, and, in addition, some quail were disturbed by our presence, and quickly made for cover. Members who devoted themselves to microscopic life were successful in finding a fair variety of aquatic objects in a small creek in the south-eastern corner of the park. Another object collected was the larva of the syrphid fly, *Microdon daveyi*, which, although not an uncommon insect, is interesting from the fact that it selects the nests of ants under the bark of trees as the place in which to live and pupate. Little is known of the reasons for this way of living, or whether its presence is of any benefit to the ants, or the ants to it. Among some fungi collected a polyporus was found to be infested with some minute insects, apparently of the springtail group (Collembola).

A report of the excursion to the Burnley Quarries on Saturday, 11th May, was given by the leader of the pond-life section, Mr. J. Stickland, who said that most of the excursionists had followed Dr. Pritchard, and devoted themselves to geology. The recent rain had somewhat interfered with the pools in the quarries; still, a number of interesting forms were met with, among which were some fine colonies of the infusorian, *Zoothamnium (?) dichotomum*. In the absence of Dr. Pritchard, Mr. A. L. Scott said that the geologists, after the general character of the basalt flow in which the quarries are situated had been explained, crossed the river by the Heyington bridge, where the principal features of Silurian formation were pointed out. The time, however, proved to be too short, and Dr. Pritchard offered to repeat the excursion on a date to be arranged.

[An extra excursion to Heyington, under Dr. Pritchard, has been arranged for Saturday, 15th June.]

ELECTION OF MEMBERS.

On a ballot being taken, Mr. Percy H. Bond, Scotch College, Hawthorn, was duly elected an ordinary member; and Messrs. Walter Mann, Rockmount, Narracan, and Thos. Smith Savage, Narracan East, as country members of the Club.

GENERAL BUSINESS.

Nominations were made for office-bearers for 1918-19, and Messrs. F. Keep and F. Wisewould were elected to audit the accounts for the current year.

REMARKS ON EXHIBITS.

Dr. Sutton called attention to his exhibit of the fruits of *Eucalyptus pyriformis*, one of the largest fruits of the genus, collected by Mr. H. Deane, M.I.C.E., near the track of the East-West railway in South Australia.

Mr. F. Pitcher called attention to his exhibit of flowering branches of *Alyxia ruscifolia*, R. Br., Ruscus-leaved Brushland Box, a native of New South Wales and Queensland, a useful garden shrub, having pleasing foliage and bright berries; also to *Plectranthus parviflorus*, Willd., Small Cockspur Flower, a Victorian plant, useful as a trailer for hanging baskets, &c.

PAPER READ.

By Professor Sir Baldwin Spencer, K.C.M.G., F.R.S., D.Sc., entitled "Notes on Certain Kitchen Middens on Wilson's Promontory."

The author said that great interest is attached to the kitchen middens, or shell-heaps of the aborigines, the investigation of which helps to throw light on the life and customs of the former inhabitants of our State. During a recent visit to the National Park he had taken the opportunity to make a thorough examination of a number of shell-mounds which had been laid bare by some heavy gales, and exhibited a large collection of marine shells, flint and bone implements, &c., as the result. Portions of a human skeleton had also been collected, but he did not consider it any proof of the existence of cannibalism among the natives at any time, as it was the custom in some parts to bury the dead in old shell-mounds or "ovens," as they are termed in the northern districts. A number of stone implements were also exhibited, which must have been brought from considerable distances, as no stones of similar kinds are to be found within many miles of the Promontory.

In the discussion which followed, the president, Messrs. Keep, Daley, Keble, Anthony, Kearthland, and Chapman took part.

Mr. G. A. Kearthland said that the natives carry articles of use to them for vast distances. He had found a large marine shell at a native well in North-West Australia, four hundred miles from the sea. At one place he knew of there were several drayloads of fresh-water mussel shells, showing that the natives had used the place for many years.

Professor Spencer said that, with regard to the question of cannibalism, the Australian aborigines could not be accused of cannibalism as usually understood. They did sometimes eat human flesh, but it was purely in a ceremonial way.

Owing to the lateness of the hour, the paper by Mr. T. Steel, F.L.S., "Tracks of the Garden Snail," was postponed until next meeting.

NATURAL HISTORY NOTES.

Mr. J. Searle said that he had kept several of the larvæ of the flies referred to in the Wattle Park report, along with ants, until they turned into the perfect insect, but he had been unable to determine anything as to their food. Mr. F. Spry said that similar flies are found in different parts of the world, but their life-histories are as yet unknown. He had tried on several occasions to discover what the larvæ live on, but without success.

Mr. F. Keep read an extract from the *Scientific Australian*, stating that a kangaroo had kept up a pace of forty miles per hour for at least two miles against a motor-car.

Mr. G. A. Keartland said that recently large numbers of Rose-breasted Cockatoos had visited the Preston district, where they had not been seen for years.

Mr. F. G. A. Barnard said that he had seen a few days before a female "Imperial White" butterfly, *Delias harpalyce*, Don., flying at Kew. This, he thought, was an unusual occurrence for May, but Mr. F. Spry said it had also been recorded as having been seen in June.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—Thirty species of flowering plants collected at Yarram, South Gippsland, October, 1917, including *Boronia anemonifolia*, *Cyathodes acerosa*, *Pultenæa paleacea*, *P. juniperina*, *Choretrum laterifolium*, *Helichrysum bracteatum*, *H. rosmarinifolium*, *Acacia Howittii*, *Leptocarpos Brownii*, *L. tenax*, *Caustis pentandra*, *Epacris lanuginosa*, *Scaevola hispida*, and *Gompholobium latifolium*. These should have been recorded for the April meeting, having been exhibited then in illustration of paper on plants of Yarram district.

By Mr. F. G. A. Barnard. — Growing fern, *Asplenium flaccidum*, collected at Wilson's Promontory, December, 1914.

By Mr. C. Daley, F.L.S.—Stibnite, antimony ore from Costerfield, Victoria, and Numeaite, nickel ore, from New Caledonia.

By Miss A. Fuller.—Papuan butterflies.

By Mr. J. A. Kershaw, F.E.S.—Large specimen of marine shell, *Voluta mammilla*, found on beach, National Park, Wilson's Promontory, by Mr. W. J. Cripps.

By Mr. F. Pitcher.—Flowering specimens of *Acacia discolor*, Willd., Sunshine Wattle, Victoria, New South Wales, and Tasmania; *Alyxia ruscifolia*, R. Br., Ruscus-leaved Brushland Box, New South Wales and Queensland; *Hakea cristata*, R. Br., Crested Hakea, Western Australia; *H. verrucosa*, F. v. M., Warty-fruited Hakea, Western Australia; and *Plectranthus parviflorus*, Willd., Small Cockspur Flower, Victoria, New South Wales, and Queensland, from Melbourne Botanic Gardens.

By Miss Rollo.—Mineralogical specimens from Trans-Continental Railway, including manganese, barytes, oxide of copper, carbonate of copper, and crude salt; also bean of African tree, *Azelia africana*.

By Mr. A. L. Scott.—Granite under microscope—(a) in ordinary light, (b) between crossed nicols.

By Sir Baldwin Spencer, K.C.M.G.—Portions of aboriginal skeleton, two bone awls, and collection of marine shells, flint, and other stone implements, from aboriginal kitchen middens, Wilson's Promontory; photographs of middens, and of the middens or "native ovens," near Koondrook, Murray River.

By Mr. J. Searle.—*Salpa*, a pelagic tunicate, showing alternation of generations.

By Mr. P. R. H. St. John.—Herbarium specimens, in bloom, of *Patersonia glabrata*, R. Br. (Iridaceæ), Victoria, New South Wales, and Queensland; *Mitrasacme montana*, J. Hooker (Loganiaceæ), Victoria and Tasmania, collected by exhibitor at foot of Mount Riddell, Healesville, 5th May, 1918; also specimen of *Panax sambucifolius* with variegated foliage, collected by exhibitor at Warburton, 20th April, 1918; sample of crude oil of *Eucalyptus Sieberiana*, Silver-top Gum, Victoria and New South Wales, prepared at the Botanic Gardens laboratory by exhibitor from tree cultivated in the Gardens.

By Mr. H. Whitmore.—Ladybirds, *Orcus australasiæ*, hibernating under bark of wattle tree; specimen of Thorn Apple, *Datura stramonium*, an introduced noxious plant, common at East Malvern.

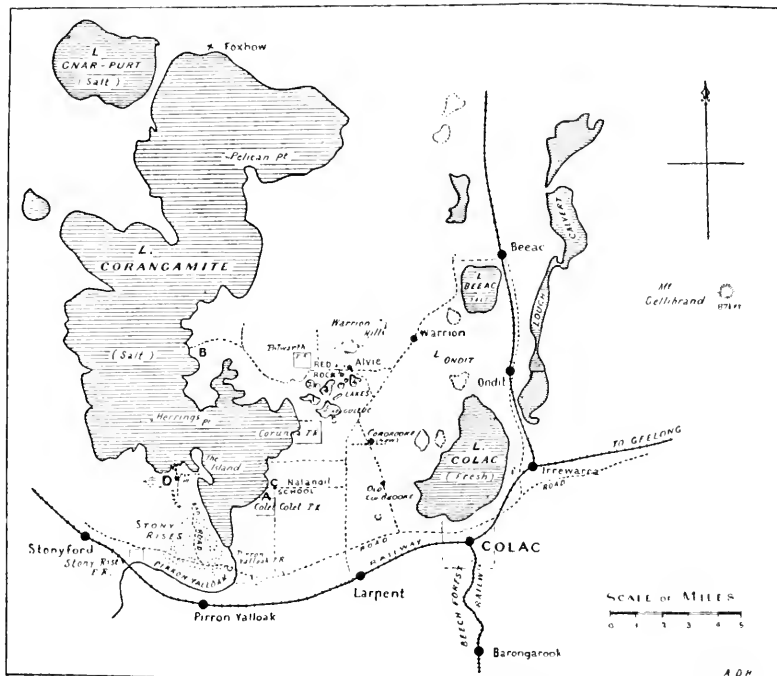
By Mr. H. B. Williamson.—Dried specimens of the introduced plants, *Glaucium luteum*, Scop., Horned Poppy, and *Atropa patula*, Common Arache, from Altona Bay.

After the usual conversazione the meeting terminated.

THE GREAT WAR.—Another of our members, Mr. C. C. Brittlebank, Vegetable Pathologist, Department of Agriculture, Victoria, has suffered bereavement by the death of his only son, Private Cyril C. Brittlebank. He had seen over three years' service in the Field Ambulance Brigade, and his death in hospital in France has just been reported.

EXCURSION TO LAKE CORANGAMITE AND DISTRICT.

THIS excursion took place at Easter, and covered from 28th March to 2nd April. Accommodation being unobtainable nearer, quarters were taken up at Colac, about ten miles from the lake. The party consisted of Messrs. Searle, Shephard, Barnard, Eaton, and Hardy, four arriving on Thursday night and the remaining one on Friday. Next morning collecting was commenced at Lake Colac. The water in this lake is fresh, and covers an area of $10\frac{1}{2}$ square miles. Boats are readily procurable, and the party engaged in securing plankton



LAKES NEAR RED ROCK.—1, L. Gnalinegurk; 2, Twin Lakes;
3, L. Werowra; 4, L. Coragulac; 5, L. Purdigulac.

by means of a tow-net. The weather was very fine, and the surface perfectly smooth. Micro-fauna was abundant, and a floating alga, recognized by Mr. Hardy as a species of *Botryococcus*, was also present in great quantity. This separated out very well when formalin was applied to the gathering, as the animals sank to the bottom while this representative of the flora rose to the surface. It was noticeable that furthest from the shore Entomostraca (chiefly Copepoda) predominated,

while closer in more species of Rotifera occurred. Among the Rotifera was the well-known species *Triarthra longiseta*; an *Anuræa* frequently observed from other localities but probably unnamed; a *Brachionus* (unidentifiable) was also in plenty. It will be difficult to say whether this latter form is new, as this genus comprises many species, which in some cases are very variable. This form, however, was quite unknown to any of the party. A very interesting and pleasant morning was spent here. In the afternoon a journey was made to the well-known Stony Rises, of which much has been said in the past that need not be repeated now.* One of the aims was to find out the means of access to Lake Corangamite at some point where a boat was available. In the Rises it was disappointing to find all the hollows dry; evidently the summer had been drier in this district than about Melbourne. A chance meeting with a resident gave information of a good road to Corangamite, and, pursuing it, a point was reached on the southern shore (A on map). This lake is given in the "Victorian Year-Book" as covering an area of 90 square miles, and is of very indented outline, about 18 miles long by 6 miles wide. At this position the shore is a basaltic floor sloping very gradually into the water. The soil covering the basalt is washed away, but deposits of rather fine sand occur in the hollows. The univalve shell *Cociella striatula* occurs, and there are considerable accumulations here and there. As only stick-nets could be used, wading was resorted to in order to get out as far as possible. Examination on the spot of the gathering revealed the presence of a very interesting rotifer, a species of *Pedalion*, occurring in great numbers. Returning to Colac, the party was added to by the arrival of Mr. Searle, and a very interesting evening was spent examining the material obtained by means of the microscopes the party was provided with. On Saturday, as no information had come to hand regarding a boat on Lake Corangamite, it was determined to visit Coragulac Hill and the adjacent hill known as the "Red Rock." This has been made a picnic resort, and the shire council has provided facilities for visitors in the shape of roads, paths, water supply, and on the summit of Coragulac, 768 feet above sea-level, a cast-iron dial giving the direction and distances of the land-marks all round the horizon. The view here is scenically very fine and of great interest, as affording a view of the distribution of the lake system. Corangamite extends to the very limit of the horizon, while close below is Coragulac, covering 90 acres. There are also surrounding the eminence Lakes Werowra, Purdigulac, Gnalinegurk, two known as the "Twin Lakes,"

* Searle and Shephard, "Visit to the Lakes near Camperdown and Colac," *Vict. Nat.*, October, 1915 (vol. xxxii., p. 87).

the "Blue Lake," and several smaller unnamed. The name "Red Rock," which is applied locally to the whole district, evidently arises from the pile of weathered volcanic rock capping one end of the ridge of which Coragulac Hill is a part. This ridge partly encircles the small lake known as the "Blue Lake." The appearance of several of these small lakes is suggestive of volcanic craters filled with water. Four of these crater-lakes were visited and worked with stick-nets. This involved some hard climbing on the part of at least one member of the party, as the depressions are of considerable depth, and ridges occur between each of the lakes. Coragulac was found to contain a Copepod, and, in great numbers, a rotifer of the genus *Brachionus*, which was, for a members of this genus, of large dimensions, and may also prove new. The small "Blue Lake" was practically monopolized by two species of rotifers—one occurring in immense numbers, a *Brachionus* closely resembling *B. mulleri*, a form often found in brackish water; the other, not so plentiful, being a *Pedalion*, differing from the *Pedalion* of Corangamite. After spending some hours at the spot a move was made beyond Alvie, and, keeping on an excellent road, the shore of Corangamite was reached at a point (B on map) about five miles north from the place visited the day before. Plying stick-nets, it was soon found that here also *Pedalion* was the predominant form. On returning another interesting evening was spent in looking over the day's results. The following morning a visit was paid to the hills on the south of Colac, just reaching the fringe of the forest country stretching down to the Otway district. Here the botanist of the party put in some tree-climbing in order to reach the flowers of the eucalypts. Later in the day a start was made for Lake Beecac, which lies about twelve miles to the north. This is a salt-water lake, and it was with interest that preparations were made to examine the water in search of its inhabitants. The apparently prosperous town of Beecac is hard by the shore, and a good road nearly encircles the lake. The first point approached showed a very smooth and flat expanse of whitish mud, with apparently water in the distance. Leaving the shore the mud became rather soft, but, undeterred, one member of the party removed his boots and attempted to reach the water, but the foothold became too treacherous, and he had to return without reducing the apparent distance of the water. Looking towards the north end, the lake appeared to have a higher bank, with the water in contact. Over to the west a number of white mounds were visible, which also seemed near the water. On reaching these shores the mud flats were found to extend just as far as at the first position, and it was with reluctance concluded that water was entirely absent from

the surface, and that mirage was accountable for the illusory appearance which for a time duped even the experienced members of the party. This lake—or, rather, lake-bed—covers $2\frac{1}{2}$ square miles, and is nearly circular in outline. The white mounds proved to be heaps of salt, apparently scraped off the surface of the mud flat as it became firm enough to bear man and horse. Disappointed in the search for aquatic life here, a line was taken to return through Cororooke, passing the hamlet of Warrion on the way. Here the outlook westward is very picturesque, the Warrion Hills, Little Warrion, and Coragulac Hill rising boldly from the plain. So as not to return without some collecting, a call was made on the way home at another point (C on map) on the shore of Corangamite, and the same forms as before were obtained at a position between those already worked. During the evening communication was fortunately established with Mr. H. V. Vaughan, of "Te Aro," Larpent, who owns a boat on the west shore of Corangamite, and this gentleman kindly agreed to the party using it. On Monday morning Mr. Barnard was obliged to return to town, to the regret of the remainder, who proceeded by the Camperdown road, calling on the way at Mr. Vaughan's for instructions as to the exact locality of the boat. In the "Rises" a turn was made to the right along a very rugged track for about four miles, reaching a farm, to the owner of which we carried a letter of introduction. The position is on the west shore of Corangamite (D on map), near a peninsula which connects a hill, jutting out into the lake and known as "The Island," with the mainland. Some searching was necessary to locate the boat in a sandy bay near "Swan Point," at the mouth of a good stream of fresh water flowing into the lake. This position was very interesting. The springs feeding the stream come out underneath piles of basalt, and in a few hundred yards combine to give quite a considerable flow. Low ridges of weathered basalt run down to the lake, and lines of detached points mark the continuation of the ridges into the water. A flock of Black Swans added to the interest of the scene. These masses of low, rough, basaltic hillocks and ridges extend to a considerable distance on each side of Corangamite, and occur in detached areas throughout the whole district traversed. The shore here shelves very gradually, and the boat had to be pushed out about a hundred yards before it floated. The four occupants were soon fully employed in rowing, baling, and plying the tow-nets. The value of the tow-net for collecting plankton was well exemplified, as, besides the rotifer *Pedalion*, great quantities of *Copepoda* were found at the first cast. Indeed, had the party returned with only the product of netting from the shore there would have been liability of a very wrong

conclusion in regard to the relative prevalence of the different forms. About an hour's work sufficed to fill the receptacles provided, and the party returned to the shore. Before leaving the botanist collected on the marshy land near the springs, securing a number of aquatic plants. On Tuesday morning another visit was made to Lake Colac. The weather was unfavourable, the water being rough, but material was secured in the hope of bringing it while still living to Melbourne, but this was not a success, as all the more delicate animals had disappeared when examined on arrival. The return to town was made in the afternoon, and the members separated with the feeling of having spent a profitable time. The accompanying map of the locality, kindly drawn by Mr. Hardy, shows the tracks taken during the excursion. The appended reports do not represent the full results of the collecting, as further work is necessary to deal with the material gathered, and it is very probable that several new species will be established.

CRUSTACEA.—BY J. SEARLE.

Between Red Rock, Coragulac Hill, and Lake Corangamite there is a group of small lakes of a very interesting character. Some are strongly mineralized, while others adjoining them are fresh. They are formed at the bottom of steep declivities, and their investigation proved extremely strenuous, as one had to be continually climbing the steep hills, varying from fifty to two hundred feet in height, and then clambering down the other side to another lakelet. The micro-fauna of the lakes was as various as the lakes themselves. At the foot of Coragulac Hill are three lakes, known locally as "The Basins." The lake on the eastern side of the hill is Lake Coragulac, and its water is fresh enough for domestic purposes. On the western side is Lake Werowra, or the Red Lake, as it is known locally; its water is brick-red in colour, thick, and "soupy." This is caused by an alga of the *Anabaena* or *Nostoc* group, consisting of short, beaded filaments. Animal life appeared to be totally absent from this lake, though in a small pool formed by a fresh-water spring a few feet from the lake a few water-beetles were captured, and, floating on the surface of the water, the pupal skins of a species of *Chironomus* were noted. In Lake Werowra, a few feet from the eastern shore, is a pile of scoriaceous rocks forming an islet. On these rocks were growing lichens of the most brilliant colours. The third lakelet has no official name, but is known as the Blue Lake. It is perfectly circular, and the local name of "The Basin" fits it exactly. Hand-netting proved that it was densely crowded with rotifers of two or three species and a few small worms, not yet identified, that wriggled along the surface skin of the water; no other

organisms were found in it. In the depression over the ridge to the south of the Basin the water had dried up. Samples of the mud from its bed were secured for "hatching" purposes at home. Further south is the largest of this group of small lakes—Lake Purdiguluc. It appears to be very shallow, and the effect of the dry spell was marked by the shrinking of its surface, leaving stretches of mud-flats along its shores. The fauna of this lake consisted of a Copepod, *Bocckella symmetrica*, and a few rotifers, the muddy shores making collecting very difficult. To the west of Purdiguluc is Lake Gnalinegurk, and, though the distance separating the two is not great, it is of considerable height and steepness, and, after the climbing already undertaken, I did not feel physically fit to negotiate it when I remembered I was a mile and a half in direct line from the lunch camp, and between it and me were a number of ridges to be crossed, with a final climb of two hundred feet over Coragulac Hill; so reluctantly I retraced my steps. The general impression formed of these lakes was that, though their waters contained great numbers of specimens, the number of species was small. A visit to the lakes in early spring might furnish a greater number of species.

The most interesting of the lakes was the one to which the excursion owed its origin—Lake Corangamite—for in its waters was taken a Copepod which will be the type of a new genus, of which there are probably two species. The specimens captured near the shore were slightly smaller, and on the fourth thoracic segment, on the dorsal side, the females have a short projection. Those taken with the tow-net half a mile or so from the shore were deeper in colour, slightly larger in size, and the females did not possess the dorsal spine already alluded to. It is proposed, provisionally, to call this genus *Heterotemora*, and a full description, with figures, will be furnished in due course. Another interesting "find" in this lake was an Isopod, certainly undescribed for Victoria, and probably new to science. Its capture was the result of inductive reasoning. Along the lake shore and in the shallow water Dottrel were observed. As the netting operations captured nothing larger than Copepoda, and the algæ on the rocks sheltered Ostracoda and the little univalve mollusc *Cociella striatula*, curiosity was aroused as to what the Dottrel found to eat. Selecting a rock on the shore where one could kneel without getting unduly wet, the muddy bottom of the lake was scrutinized for any appearance of living creatures. Finally our patience was rewarded by observing a movement just under the surface of the fine silt, and the quick insertion of the fingers resulted in the capture of an Isopod. Twenty minutes' close search was rewarded by the capture of eight or

ten specimens. When next there is an opportunity of visiting this lake apparatus will be taken for the special investigation of this class of animal life, and perhaps further new species may be secured.

On a previous visit to this lake the Brine Shrimp, *Parartemia zietziana*, was found in great numbers on the rocky shore on the eastern side of the lake. Not a vestige of these was observed on this occasion, though it was only a few weeks earlier in the year than the occasion on which they were found.

The Entomostraca of Lake Colac did not differ from that described on a former visit, though they were not nearly so numerous as on that occasion. On this visit, *Hymenosoma lacustris*, the Fresh-water Crab, was taken.

The following is a list of species as far as observed :—

Cladocera—

Moina australiensis

Pseudomoina lemnae

Copepoda—

Boeckella symmetrica

„ *oblonga*

„ *asymmetrica*

Heterotemora, gen. et sp. nov.

Cyclops albidus

„ *serrulatus*

Harpacticoida, sp.

Ostrocooda—

Three species, not yet determined.

Isopoda—

Probably new.

Brachyura—

Hymenosoma lacustris

Mollusca—

Cocciella striatula

At some distance from the shore of Lake Corangamite shells of a species of *Limnaea* were found embedded in the soil.

Insecta—

A few water beetles, not yet identified.

BOTANY.—BY A. D. HARDY, F.L.S.

I.—EX ROUTE.—The indigenous flora, especially the trees of the volcanic plains between Melbourne and Colac, having for the greater part vanished, the botanist may reach the lake area almost with as little diversion as the microscopist in search of microzoa. Suffice it to say that, beyond a few Yellow Gums, *Eucalyptus leucoxylon*, near Lara, and Red Gums, *E. rostrata*, and Swamp Gums, *E. ovata*, between Geelong and Colac, the only plant of arboreous habit is the Drooping Sheoke, *Casuarina stricta*, a remnant of much that grew on rising ground and rocky hillocks. The sheokes have been cut out for firewood and for fodder in drought time for stock; the gums, too, have been heavily “pruned” for stock feeding, and cut out for fencing and firewood. (Here I may mention that I have seen well-fed cows in a good grass paddock rush up to and greedily devour the leaves and twigs of a large branch of *E. ovata* that had suddenly crashed to the ground.) In the Stony Rises—a weird area of tumbled basalt—the exclusive gum-tree is the Manna Gum, *E. viminalis*, and this is supported by small Blackwoods, *Acacia melanoxylon*, and Native Cherry or Ballart, *Exocarpos cupressiformis*, with a ground cover of common bracken and “Prickly Moses,” *Acacia verticillata*, &c.

2.—THE LAKES.—Aquatic botany is better studied earlier in the year than Easter, but only folk of a leisured class can fit their excursions always to appropriate seasons. In respect of material to be gathered, the zoologists were more fortunate than the botanists in the excursion from a seasonal point of view. The lake flora was collected from several places, and has not been exhaustively examined, yet enough has been gathered and specifically determined to give a good idea of the algological condition of the two lakes at the date of our visit, so that the outstanding features of the lakes Colac and Corangamite may be stated as follows:—

Lake Colac.—Fresh or slightly brackish water, containing a floral plankton and a few attached species. No visible water-weeds, excepting a solitary plant of the introduced dock, *Rumex*, sp.

(a) Plankton consisting almost exclusively of *Botryococcus Braunii*, but with an occasional *Closterium cynthea*, and with a few species of diatoms present.

(b) Attached Algæ. —The only conspicuous growth was *Cladophora flavescentis*, which was attached to jetties, posts, unused boats, &c., and to the aforesaid dock. The *Cladophora* bore sparingly sterile filaments of a species of *Ædogonium*, and less of *Bulbochæta*, and also *Hydrium heteromorphum* and *Chamæosiphon incrustans*, the latter being seen occasionally also on Copepoda. *Oscillatoria*, sp., was associated with the *Cladophora*, but only isolated filaments were found. The smooth mud bottom of the lake was barren.

Lake Corangamite.—This is a salt lake with a marine atmosphere—the large expanse of salt water, the rock-bound coast with shelly beaches, and littoral ulvaceous fringe of characteristically smelling “seaweed” contrasting well with the smaller, less exposed, and fresh-water Colac; more so when, as at irregular periods, such weeds as *Heleocharis sphacelata*, *Triglochin procera*, &c., make their appearance in the latter.

(a) Plankton plants absent.

(b) The littoral alga flora consisted almost exclusively of *Enteromorpha Ralfsii*, Harv., and this almost encircled the lake with a high level mark of dry and white bleached felt, which covered the basaltic rocks and rendered walking on them with bare feet a matter of comfort. At the water's edge, and for a considerable distance “seawards” along the gently sloping bottom, this weed formed flocculent masses, sometimes waving upwards from the rock base, or floating in large gas-borne masses that made wading difficult. The only associated alga was *Oscillatoria (littoralis?)*, in isolated filaments.

(c) Shore Macrophytes and Algæ.—On the western side of

the lake, where fresh water from the springs makes marshy ground and enters the lake by soakage and shallow surface film almost without current, holes made by hooves of cattle, &c., contained water covered with *Azolla filiculoides* and *Lemna minor*. Other plants of the vicinity were *Isoetes fluviatilis*, *Nasturtium officinale*, *Cotula* (*coronopifolia* ?), *Cyperus*, sp. ?, the introduced flat-weed, *Hypochaeris radicata*, and *Triglochin striata*. Among or attached to some of these were sterile filaments of *Spirogyra*, *Zygnema*, *Mougeotia*, *Edogonium*, *Volvox globator*, *Closterium Ehrenbergii*, *Closterium cynthea*, several species of *Navicula*, and *Arcella vulgaris*, &c. On the eastern side of Corangamite the shelly beaches overlying basalt extend inland, interspersed with *Salicornia australis*, &c., which lead on to the dry-land grasses. Among the rocks, and within reach of salt spray, *Senecio lautus* and thistles grew sparingly with *Chenopodium album*, and the flat-weed was plentiful beyond high-water mark.

The results of the excursion are on the whole very satisfactory, and it is hoped that further investigations will be carried out before long at a different season of the year. Intending visitors to the Red Rock district can obtain at the Tourist Bureau a large scale map of the locality, which will be more serviceable than the small sketch map herewith.—J. SHEPHARD.

TWO SNAKES NEW TO VICTORIA,

WITH A LIST OF THE VICTORIAN SPECIES.

BY J. A. KERSHAW, F.E.S., Curator of the National Museum, Melbourne.

(Read before the Field Naturalists' Club of Victoria, 14th Jan., 1918.)

Two species of snakes not previously recorded from Victoria have been recently added to the National Museum collection, both of which were captured in the Mallee, in the north-western portion of the State.

These I have been able to identify as *Rhynchelaps australis*, Krefft, and *Denisonia nigrostriata*, Krefft. The former was described from specimens obtained in the neighbourhood of Port Curtis, Queensland, and on the Clarence River, northern New South Wales, and the latter has been recorded from Rockhampton, Queensland.

RHYNCHELAPS AUSTRALIS, Krefft.

This is a small species measuring 11 inches long, of a bright red colour, with a series of narrow cross-bands of whitish, black-edged scales, extending half round the body. These bands, of which there are 55 altogether, each occupy one row

of scales, except on the neck, where they are broader and cover four rows of scales, and towards the tail, where they occasionally embrace two rows. On the head is a broad dark brown band extending from the anterior edge of the frontal to the posterior edge of the parietals, and spreading on either side to the upper edge of the labials, enclosing the eyes. On the hind neck is a similar, though broader, band, the scales on the posterior half of which are white-centred.

The single example was taken at Speed, west of Lake Tyrrell, and forwarded to the Museum by Mr. Donald Macdonald.

DENISONIA NIGROSTRIATA, Krefft.

This is of a yellowish-white colour, the scales of the sides narrowly edged with grey, and a similarly coloured vertebral line extends from the neck to the tip of the tail. The head is grey above, the upper lip and lower parts white.

A single specimen, measuring $13\frac{1}{4}$ inches, was taken at Ouyen, North-Western Victoria, by Mr. A. S. Kenyon, and a second specimen, from South Australia, is in the Museum collection.

The total number of snakes recorded from Victoria, including the Typhlopidae (Blind Snakes) and excluding two doubtful Victorian species—viz., *Dendrophis punctatus* and *Denisonia signata* (recorded by Mr. D. Le Souëf in vol. i., 1884, p. 86, of this journal)—is now twenty-six. Of these, *Denisonia nigrescens*, Krefft, recorded for the first time in Victoria in the *Vict. Nat.*, vol. xxv. (1908), p. 91, has since been taken at Cunninghame and Bruthen, in Eastern Gippsland, and at least four specimens of the Yellow-bellied Sea-Snake, *Hydrus platurus*, Linn., are known to have been taken in Victorian waters.

In view of the additions and changes in nomenclature of our Victorian snakes which have been made since the list published in the first volume of the *Naturalist* was compiled, I take the opportunity of adding a complete list of the Victorian species:—

FAMILY TYPHLOPIDÆ.

Typhlops proximus, Waite.

T. polygrammicus, Schleg.

T. unguirostris, Peters.

T. ligatus, Peters.

T. pinguis, Waite.

T. broomi, Blgr.

T. wiedii, Peters.

T. bituberculatus, Peters.

T. australis, Gray.

FAMILY BOIDÆ.

Python spilotes, Lacep., Carpet Snake.

FAMILY COLUBRIDÆ.

Sub-family HYDROPHIINÆ.

Hydrus platurus, Linn., Yellow-bellied Sea-Snake.

Sub-family ELAPINÆ.

Diemenia textilis, Dum. and Bibr., Brown Snake.

syn. *D. superciliosa*, Fischer.

Furina bicucullata, M'Coy.

D. nuchalis, Gthr., Shield-fronted Brown Snake.

syn. *D. aspidorhyncha*, M'Coy.

Pseudechis porphyriacus, Shaw, Black Snake.

P. cupreus, Blgr.

syn. *P. australis*, Krefft.

P. microlepidotus, M'Coy, Small-scaled Brown Snake.

Denisonia superba, Gthr., Copper-headed Snake.

D. nigrescens, Gthr., Black-headed Snake.

D. gouldii, Gray, Gould's Snake.

D. coronoides, Gthr., White-lipped Snake.

D. flagellum, M'Coy, Little Whip Snake.

D. nigrostriata, Krefft.

Notechis scutatus, Blgr., Tiger Snake.

syn. *Hoplocephalus curtus*, Schl.

Acanthophis antarcticus, Shaw, Death Adder.

Furina occipitalis, Dum. and Bibr., Black and White Ringed Snake.

Rhynchelaps australis, Krefft.

[While the foregoing paper was in the printer's hands I received from Mr. E. R. Waite, Director of the South Australian Museum, Adelaide, a copy of his article, "A Review of the Australian Blind Snakes," which constitutes the first part of the *Records of the South Australian Museum*, vol. i., No. 1, 1918 (issued 24th May, 1918). During the preparation of this contribution Mr. Waite examined all the specimens of Australian Typhlopidae in the National Museum collection, and I am therefore enabled to include a complete list of the Victorian species.—J. A. K.]

DISTINCTION FOR A MEMBER.—Members will be pleased to learn that one of their number, Mr. Albert Ernest Kitson, C.B.E., F.G.S., F.R.G.S., director of the Geological Survey Department, Gold Coast (West Africa), has recently had conferred upon him the distinction of Commander of the British Empire (C.B.E.) Beginning as a clerk in the Victorian Mines Department, Mr. Kitson qualified himself for scientific investigations, ultimately becoming the senior field geologist on the Geological Survey of Victoria. In 1906, on the recommendation of Prof. J. W. Gregory, F.R.S., D.Sc., a former director of the Survey, Mr. Kitson was appointed to the mineral survey of Southern Nigeria.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1917-1918. *

President: MR. F. PITCHER.

Vice-Presidents:

MR. A. D. HARDY, F.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, 54 Mason Street, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, 443 Collins Street (Telephone Central 355).

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., C. DALEY, F.L.S., J. A. KERSHAW, F.E.S.
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

SATURDAY, 15TH JUNE. — **EXTRA EXCURSION—Heyington.** Object—**Geology.** Dr. Pritchard has kindly consented to lead an excursion as above. Members will meet at Burnley Railway Station at 2.15 p.m.

SATURDAY, 22ND JUNE. — **Economic Museum, Botanic Gardens.** Leaders—Messrs. F. Pitcher and Mr. P. R. H. St. John. Meet at office gates at 2.30 p.m.

SATURDAY, 13TH JULY.—**Entomological Museum.** Objects—**Entomology and Vegetable Pathology.** Under the leadership of Messrs. C. French, Jr. and C. Brittlebank. Those taking part are asked to meet at the entrance to Museum, Flinders Street Extension (just past Spencer St.) at 2.30 p.m.

NOTE:—Members are asked to notice the interchange of dates in these two excursions.

ANNUAL MEETING, June 10th, 1918.

EXHIBITION OF NATURAL HISTORY SPECIMENS.

The following members have been appointed to take charge of the Exhibits in the various sections:—

Botany.—Dr. C. S. Sutton and Mr. P. R. H. St. John.

Entomology.—Mr. F. G. A. Barnard.

Geology.—Mr. F. Chapman A.L.S. and Mr. C. Daley, F.L.S.

Conchology.—Mr. J. Gabriel.

General Zoology.—Mr. J. A. Kershaw, F.E.S.

Forestry.—Mr. A. D. Hardy.

Ornithology.—Mr. J. A. Kershaw, F.E.S. and Mr. G. A. Kearnland.

Physiography.—Mr. C. Daley, F.L.S. and Mr. F. Chapman, A.L.S.

Microscopy.—Mr. J. Searle.

Ethnology.—Mr. E. S. Anthony.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ½ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 4th July, 1918.

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

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

CONTENTS :

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	33
THE TALL TREES OF AUSTRALIA	46
NOTES	45, 55
CORRESPONDENCE	56

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST $\frac{1}{2}$ D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 8th JULY, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—

Miss R. S. Chisholm,
64 Henry Street,
Windsor.

Mr. T. Dunbabin,
Elwood.

Mr. W. T. C. Kelly, LL.B.,
432 Collins Street,
Melbourne.

Mr. Philip Morrison,
1 Bowen Street,
Hawthorn.

PROPOSER.

Mr. C. Daley, F.L.S.

Mr. F. Pitcher.

Mr. C. French, Jr.

Mr. J. Stickland.

SECONDER.

Mr. E. S. Anthony.

Mr. E. E. Pescott, F.L.S.

Mr. P. R. H. St. John.

Mr. J. Wilcox.

AS ASSOCIATE MEMBER—

Master Alex. H. Dennett,
288 City Road,
South Melbourne.

Mr. R. E. Luher, B.A.

Mr. F. Chapman, A.L.S.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

(a) "Tracks of Garden Snail." By Thos. Steele. (Postponed from May Meeting).

(b) "Bird Life on Macquarie Island." By Joseph Hatch. (Illustrated by Lantern Slides).

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

The Victorian Naturalist.

VOL. XXXV.—No. 3. JULY 4, 1918.

No. 415.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE thirty-eighth annual meeting was held at the Royal Society's Hall on Monday evening, 10th June, 1918.

The president, Mr. F. Pitcher, occupied the chair, and about one hundred members and visitors were present.

The chairman, in welcoming the members and visitors, said that, in view of it being the annual meeting, and as he was on the eve of retiring from the presidency, he would take the opportunity of saying a few words about the aims and objects of the Club, which, he considered, was accomplishing valuable work in many branches of natural science. The importance of the society might be gathered from the fact that it included within its membership His Excellency the Governor-General, University professors, heads of Government scientific departments, the curators of the National Museum, Botanic Gardens, and Zoological Gardens, as well as heads of educational establishments, &c. The value of the monthly meetings, the wild-flower exhibitions, the excursions, and its monthly journal were strongly emphasized as means for nature students to acquire special knowledge of the various branches of natural history, and he therefore appealed to any present of similar tastes to become members of the society. He had the pleasure also of announcing that His Excellency the Governor-General, Sir Ronald Munro Ferguson, G.C.M.G., would be present later in the evening to unveil the Club's honour roll.

CORRESPONDENCE.

From Mr. A. J. B. Haldane, secretary of the Medicinal Plants Board of Victoria, asking the Club's assistance in procuring supplies of indigenous plants reputed to be of medicinal value, for investigation. It was proposed to deal first with *Clematis microphylla* and *Daviesia latifolia*.

The hon. secretary stated that the best method of helping in the matter is under consideration by the committee, who would be glad to have offers of assistance from members knowing of considerable quantities of the plants named.

REPORTS.

A report of the visit to the National Museum on Saturday, 25th May, was given by the leader, Mr. F. Chapman, A.L.S., who said that a good party of members had attended, and a couple of hours or so were spent in examining the palæontological department, where a number of interesting Australian fossils

had been pointed out, and some time given to discussing their occurrence in the various geological formations.

A report of the excursion from Evelyn to Montrose, on the King's Birthday, Monday, 3rd June, was given by the leader, Mr. G. Coghill, who reported a good attendance. The day turned out very fine, and an enjoyable ramble resulted. The Native Heath, *Epacris impressa*, in white and various shades of red, was found to be blooming freely, and many bunches were gathered for home decoration. Not many other plants were in bloom, while no plants of the Broad-leaved Bitter Pea, *Daviesia latifolia*, were met with. It had been intended to procure, if possible, a large quantity of this plant as material for chemical experiments to be made regarding its medicinal value.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. C. E. Cole, Tooronga-road, Caulfield; Mr. Hugh Hughes, off Glenhuntly-road, Elsternwick; and Mr. F. P. Morris, 54 Millswyn-street, South Yarra, were duly elected ordinary members; Mr. James Firth, Beech Forest, and Mr. A. W. Grainger, West Warburton, as country members; and Mr. Malcolm Howlett, 34 Chapman-street, North Melbourne, and Mr. David Oldmeadow, 171 Park-street, Parkville, as associate members of the Club.

ANNUAL REPORT.

The hon. secretary, Mr. E. S. Anthony, read the thirty-eighth annual report for the year 1917-18, which was as follows:—

“ TO THE MEMBERS OF THE FIELD NATURALISTS' CLUB OF VICTORIA.

“ Ladies and Gentlemen,—Your committee have pleasure in presenting for your consideration 'the thirty-eighth annual report, giving a general survey of the Club's activities for the year ended 30th April.

“ It is gratifying to find that, notwithstanding the distracting influences of the Great War, the Club has, throughout another twelve months, maintained its operations and work: its ability to carry on being due to the continued enthusiasm and support of its members and officers.

“ Commencing the year with a membership of 224, the additions by election of new members just exceed the resignations and losses by death, so that the total membership at the end of the year was 229, composed of 2 life, 155 ordinary, 65 country, and 7 associate members. One honorary member was elected, His Excellency the Governor-General, Sir Ronald Munro Ferguson, G.C.M.G., having expressed his willingness to become a member; while the list of honorary members was

reduced by the death of Colonel W. V. Legge, R.A., who was elected in 1889.

"Your committee desires to place on record the great loss to the Club by the death of Mr. O. W. Rosenhain, who died at sea while on a voyage to Japan. The late Mr. Rosenhain was a regular attendant at the Club's monthly meetings and excursions, and had held office as a member of committee, always taking an active interest in all that concerned the Club. His efforts in connection with the protection of our native birds are especially worthy of notice, and the sympathy of the Club is extended to his widow and family.

"To four members of the Club, Messrs. F. G. A. Barnard, C. C. Brittlebank, J. H. Gatliff, and C. Vincent, each of whom has lost a son on active service abroad, your committee desires to convey the deep sympathy of fellow-members in their sad bereavement. Much concern is also felt at the continued illness of Mr. J. R. Tovey, for a time hon. secretary of the Club, and sincere hopes are expressed that a permanent and speedy recovery may be granted to him.

"The financial statement to be submitted by the hon. treasurer shows that the ordinary receipts and expenditure for the year were £159 17s. 6d. and £151 8s. 2d. respectively, the year thus closing with a credit balance increased to £61 8s. 8d., with no outstanding accounts.

"The regular monthly meetings have been well sustained by an average attendance of about 60. The papers read at the meetings numbered twelve, and were in most cases of great interest. The authors and titles were as follow:—Mr. D. J. Paton, 'The Buffalo Plateau in January'; Mr. G. F. Hill, F.E.S., 'A Naturalist in the Northern Territory'; Mr. F. Chapman, A.L.S., 'A Sketch of the Geological History of Australian Plants: the Palæozoic Flora'; Mr. E. E. Pescott, F.L.S., 'Notes on the Reproduction of Australian Orchids' (illustrated); Mr. C. Daley, F.L.S., 'A Visit to the Grampians' (illustrated); Messrs. J. Shephard, J. Searle, and J. Stickland, 'The Result of Twelve Months' Collecting of the Micro-Fauna of the Botanic Gardens Lake'; Mr. J. A. Kershaw, F.E.S., 'Two Snakes New to Victoria'; Mr. A. N. Burns, 'Notes on the Butterflies of the Wandin District'; Prof. Sir Baldwin Spencer, K.C.M.G., 'What is Nardoo?' and 'Notes on Some Aboriginal Kitchen Middens at Wilson's Promontory'; Mr. A. D. Hardy, F.L.S., 'The Tall Trees of Australia'; and Mr. J. W. Audas, F.L.S., 'The Characteristic Vegetation of the Yarram District.' The papers were in most cases accompanied by specimens, illustrations, maps, &c., explanatory of the statements made.

"Considerable interest is attached to the exhibits shown by the members at the monthly meetings, and of these there has

been a fine display throughout the year. The explanatory notes which are frequently given by the exhibitors have added considerably to the interest in the exhibits.

"Numerous half-day excursions to localities of interest and of easy access to the metropolis have been made during the year, the attendance of members and friends in almost every case being excellent. In addition, several whole-day trips, visiting places further afield, have been made, and these also have attracted a goodly number, His Excellency the Governor-General on one occasion honouring the Club by taking part in the outing. One week-end excursion was made to Toolangi in January last, while a five-days' visit was made to the Colac district at Easter. These were productive of much material for investigation, and proved delightful naturalists' outings. Several Club members took advantage of the Government Tourists' Bureau excursion to the Grampians in September, and greatly appreciated the wealth of floral beauty for which the district is deservedly famous.

"Perhaps the most important event of the year was the exhibition of Australian wild-flowers, held in the Melbourne Town Hall on the 2nd October last. Such a collection of native floral beauty, representing every State in the Commonwealth, had never been brought together before, and it is gratifying to know that the effort was appreciated, as is evidenced by the net cash result—£212 5s. 1d.—which the committee was enabled to hand over to the Y.M.C.A. National Fund for the benefit of the soldiers on active service. Great credit is due to the members who ungrudgingly gave of their best in time, labour, or material to the effort, but much of the success is attributable also to the many kind friends of the Club, scattered throughout the metropolis, State, and Commonwealth, who readily assisted in ways too numerous to mention. We accord them our thanks. Apart from the worthy object of augmenting the fund before referred to, the wild-flower exhibition of 1917 resulted in the creation of a greater general interest in the study of our native flora. The numerous similar exhibitions organized by various societies and bodies in the suburbs and elsewhere in the State give at least some witness of this interest.

"While the study of botany is always a popular subject with many of our members, valuable research work has been conducted by members interested in microscopy, especially as regards the micro-fauna of our lakes and streams, of which more will probably be heard later. Other branches of natural history have not been overlooked, and in conjunction with the Fisheries and Game Department the Club has rendered valuable support in such important matters as the protection

of the Mutton-bird, the preventing of the extension of the Quail season, and similar matters coming under the jurisdiction of that Department.

"The National Park at Wilson's Promontory, in which the Club takes a kind of maternal pride, is more and more continuing to prove its worth as a sanctuary for our native fauna and flora.

"The Plant Names Committee has met regularly, and is proceeding quietly with its arduous task, and is now reconsidering the provisional published list of vernacular names.

"The Club's library continues to increase, mainly by donations from kindred societies and Government Departments. Your hon. librarian is deserving of hearty thanks for the attention he has given to his duties during the year, and it is gratifying to learn that its constant use by members is some criterion that it is more than a mere appendage of the Club.

"The Club's journal, the *Victorian Naturalist*, so eagerly looked for by members and others, is also no mean asset of the Club. The numbers comprising the thirty-fourth volume have been regularly issued to members, and for its continued success the Club is again indebted to the kindly offices of the hon. editor, Mr. F. G. A. Barnard, who this year completes a quarter of a century in that capacity.

"With the view of obtaining a correct and concise report of the remarks made by members at the monthly meetings, which are often of great importance, your committee invited the assistance of some member in recording these by shorthand. We are pleased to state that Miss D. Philpott has voluntarily undertaken this duty, and we trust that in future the reports of the monthly meetings will contain a complete record of the statements made.

"Occasion will be taken at the annual meeting to do honour to those from our ranks and from the homes of our members who have enlisted in the Empire's service. The honour roll to be unveiled is the least we can do to enshrine their sacrifice and heroism. It is pleasing to record that quite recently the distinction of C.B.E. (Commander of the British Empire) has been conferred upon one of our members, Mr. A. E. Kitson, F.G.S., F.R.G.S., who is now engaged on geological work in West Africa. Mr. Kitson, it may be mentioned, served for a period on the committee.

"The thanks of the Club are due to those who, by leading excursions, contributing papers, &c., have helped in the success of the Club, and your committee is deeply indebted to Messrs. Coghill and Haughton for kindly placing their conveniently-situated offices at its disposal for committee meetings.

"The continuance of the Club's growth and operations

depend largely on the interest evinced by all the members, and we trust that in the coming year no effort will be spared to further in every possible way so invaluable and instructive a study as that of natural history.

"On behalf of the Committee,

"F. PITCHER, *President*.

"E. S. ANTHONY, *Hon. Secretary*.

"29th May, 1918."

On the motion of Mr. E. Cox, seconded by Mr. J. Wilcox, the report was received and adopted.

FINANCIAL STATEMENT.

The hon. treasurer, Mr. G. Coghill, read the financial statement for 1917-18, which was as follows:—

RECEIPTS.			
To Balance, 30th April, 1917	...	...	£52 19 4
„ Subscriptions—			
Ordinary Members	...	£113 6 9	
Country Members	...	23 16 0	
Associates	...	2 0 0	
		—	£139 2 9*
„ <i>Victorian Naturalist</i> —			
Subscriptions and Sales	...	10 8 9	
Advertisements	...	3 15 0	
Reprints	...	2 19 3	
		—	17 3 0
„ Sales of Badges, Photographs, &c.	...	2 2 0	
„ Interest, Savings Bank and War Loan	...	1 9 9	
		—	159 17 6
„ Wild-flower Exhibition—			
Admissions	...	164 0 0	
Sales of Flowers	...	79 12 2	
Refreshments	...	10 17 0	
		—	254 9 2
			£467 6 0

*Subscriptions :—Arrears, £21 17s. 6d. ; 1917-18, £114 12s. 9d. ; 1918-19, £2 12s. 6d.—total £139 2s. 9d.

EXPENDITURE.			
By <i>Victorian Naturalist</i> —			
Printing	...	£92 12 0	
Illustration	...	0 16 0	
Free Reprints	...	5 17 9	
Reprints charged	...	0 15 0	
		—	£100 0 9
„ <i>Victorian Naturalist</i> —			
Wrapping and Posting	...	14 9 7	
„ Rooms—Rent and Attendance	...	13 10 0	
„ Library—Periodicals	...	5 0 0	
Insurance	...	0 7 0	
		—	5 7 0
Carried forward	...	...	£133 7 4

Brought forward	...	...	...	£133	7	4	
By Hire of Lantern	...	...	...	1	10	0	
„ Badges	...	...	...	2	2	0	
„ Printing and Stationery	...	...	...	7	0	0	
„ Postages, &c.	...	...	...	7	8	10	
							151 8 2
„ Wild-flower Exhibition—							
Rent of Hall, &c.	...	...	...	22	11	0	
Expenses	...	...	...	19	13	2	
Cheque to Y.M.C.A. Fund	...	...	...	212	5	1	
							254 9 2
„ Balance in Savings Bank	...	...	...	16	12	8	
„ „ London Bank	...	...	...	44	16	0	
							61 8 8
							<u>£467 6 0</u>

G. COGHILL, *Hon. Treasurer*,
14th May, 1918.

Audited and found correct.

22nd May, 1918.

F. KEEP,
F. WISEWOULD, } *Auditors*.

The following statement of assets and liabilities was also read:—

ASSETS.

Balance—Savings Bank and London Bank	...	...	£61	8	8
War Loan Bond	...	...	20	0	0
Arrears of Subscriptions (£60), say...	...	...	40	0	0
Library and Furniture (Insurance Value)	...	...	150	0	0
			<u>£271</u>	<u>8</u>	<u>8</u>

LIABILITIES.

Subscriptions paid in advance	<u>£2</u>	<u>19</u>	<u>0</u>
-------------------------------	-----	-----	-----	-----------	-----------	----------

On the motion of Mr. G. Coghill, seconded by Mr. J. Stickland, the statement was received and adopted.

A vote of thanks to the officers for the past year was proposed by Mr. C. C. Plante and seconded by Mr. F. Wisewould, and on being put to the meeting was carried unanimously.

ELECTION OF OFFICE-BEARERS, 1918-19.

The following office-bearers, being the only nominations received, were declared duly elected:—President, Mr. A. D. Hardy, F.L.S.; hon. treasurer, Mr. G. Coghill; hon. librarian, Mr. P. R. H. St. John; hon. editor, Mr. F. G. A. Barnard; hon. secretary, Mr. E. S. Anthony; hon. assistant secretary and librarian, Mr. W. Glance.

On a ballot being taken for two vice-presidents, Messrs. F. Chapman, A.L.S., and J. Gabriel were duly elected.

On a ballot being taken for five members of committee, Messrs. C. Daley, F.L.S., J. A. Kershaw, F.E.S., F. Pitcher, J. Searle, and Dr. C. S. Sutton were duly elected.

The chair was then taken by the newly-elected president, Mr. A. D. Hardy, F.L.S.

UNVEILING OF HONOUR ROLL.

At this stage His Excellency, Sir Ronald Munro Ferguson, G.C.M.G., attended by Major Kerr-Pearse, arrived, and was introduced to the meeting by the chairman, Mr. A. D. Hardy, F.L.S., who said that the Governor-General's presence was a great honour, for, although Sir Ronald was already an honorary member of the Club, his time was so occupied that he could not be expected to attend many meetings. His reputation as a forester was sufficient to give him a welcome among field naturalists, and without further words he would ask His Excellency to proceed with the function of the evening—the unveiling of the honour board, bearing the names of those members who had felt the call of duty, and had gone across the sea to take their places by the side of the defenders of justice and freedom in the Great War. The Club was indebted to Mr. J. Gabriel, one of the vice-presidents, for the construction of the honour board, which was made of Victorian blackwood and Queensland maple, and to Mr. P. R. H. St. John, the hon. librarian, for the lettering.

The following are the names on the honour board:—S. B. Abbott, A. O. Archer, E. O. Armytage, C. L. Barrett, L. G. Chandler, F. Cudmore, S. Herriot, D. J. Mahony, W. Macgillivray, W. J. Searle, Harvey Sutton, (Rev.) T. Webb, H. Wilson, and L. P. Winchcombe.

The names of the sons and daughters of members who are serving in various capacities were also read.

Sir Ronald Munro Ferguson, on rising, was greeted with applause. He said:—"Before proceeding to perform the ceremony which I have been invited to do this evening, I should like to express the great pleasure with which I find myself in the Royal Society's Hall in Melbourne, and to find also the Field Naturalists' Society in temporary occupation of it and making use of other space in the same building. I remember attending, some little time ago, a conference in the Town Hall, when I advocated closer union between societies like the Royal Society, the Field Naturalists', the Wattle Society, and the different forest and horticultural societies, in view of my favourite pursuit of growing timber. It is, I am sure, a great matter to have these different societies, all interested in common objects, closely affiliated, and possibly making use of one another's property, to their mutual advantage. I had often wished to be in this hall, but I have never been able to get in before. It is worth coming here to see the bookcases—not only because of the books, but because it would be difficult to find

a better example of good Australian cabinet work, making good use of our splendid Australian timber. The Royal Society at home was presided over for many years by Sir Joseph Banks, whose name is so well known to all field naturalists. He did more than any other man to make Australia known in England. He himself was well known in England, and commanded so much respect as a scientist and a man, as well as a botanist and field naturalist, that what he said of Australia carried more weight than anything said by anybody else. He was a great friend of my great-grandfather. He introduced a Black Swan from Australia, which sailed about one of the ponds at home until about the year 1830, when it was killed as a natural pastime by some of the youths of the neighbourhood. At that time a Black Swan was a most remarkable thing in England. No man was more closely associated with the Royal Society than was Sir Joseph Banks, and it is an infinite pleasure to me to find myself in this hall, which shelters a long-established society, and I trust that the Field Naturalists will remain closely affiliated with that and other societies pursuing similar interests. Your field excursions here are very delightful. In all British towns, in all parts of the world, the tendency is for the town population to segregate in masses, and those of us who are country bred have always felt that the town people would be better off than they are if they knew more about the country. A society like this, with its excursions, its many interests, its power of making Nature known to all who are members, and the greatly awakened interest in life which follows from that knowledge, can do much good, which cannot be over-estimated, especially when, as in modern society, the town is crowded, and its people know so little of the country. Townspeople look down upon us country folk, but we know that certainly a man who is at home in the country has two strings to his bow, and is the better fitted to serve his king and country in time of war. The ceremony that I have to perform to-night is the unveiling of this memorial of the members of the society who have gone to the front. They have done their duty; they have done what was best worth doing, and which those of us even who have not been able to get to the front can estimate at its true value. Those of us who have not been at the front will never feel on the same level with those who have been there. Those who have gone have suffered many hardships; they have suffered pain; many of them have suffered death; but, on the other hand, for all the time they have been there they have never been worried by any of those small cares that afflict most of us in our daily life. They have, at a time of great crisis, when everything that is worth having—our country, and the future of our race—is at

stake, been able to play their part like men, and to take their share in warding off the evils that menace our country. The news received this evening reminds us all again that there is only one way of doing one's duty, and that is by following the example of the men whose names appear before us to-night. It is a responsibility, no doubt, to assert public duty, but it is a duty that is plain—it is a duty that members of a society like this, and, indeed, members of any society, can assist in the doing of; and until this war is over, and until Australia and the rest of the Empire is made safe, and our Allies in the cause of freedom and the world, there is only one thing that counts, and that is, doing everything we can—by giving our lives, our money, our work—to secure victory and freedom. All honour to these men! It is a great privilege to come here to-night in order to unveil this handsome board, which, I hope, may have additional names added to it yet, which will go down to posterity as the most honourable record of a very honourable society."

On the Union Jack being drawn aside by His Excellency, the National Anthem was sung.

A cordial vote of thanks to His Excellency for honouring the Club with his presence was proposed by Mr. C. Daley, F.L.S., seconded by Mr. F. G. A. Barnard, and carried by acclamation.

PRESENTATION.

The chairman announced that, Mr. F. G. A. Barnard having now completed a quarter of a century as hon. editor of the Club's journal, it had been decided by a number of the members to present him with a small token of the Club's esteem and good wishes. He would ask the past president, Mr. F. Pitcher, to make the presentation.

Mr. Pitcher briefly referred to the various offices Mr. Barnard (who was an original member of the Club) had occupied since its inception, and said that he was of opinion that the regular appearance of the *Naturalist*, greatly due to the editor's efforts, was one of the principal means of maintaining the Club as a live society. He then handed to Mr. Barnard a pocket aneroid bearing the following inscription:—"F. G. A. Barnard, Esq., from the F.N.C. of Victoria, in recognition of 25 years' valuable services as hon. editor. June, 1918."

Mr. Barnard, in replying, said that he had been quite taken by surprise by the presentation, and, though the instrument would not be so useful to him now as it might have been when he was some years younger, still, he greatly appreciated the kindness of his fellow-members in making him the recipient of such a gift. He had at times felt inclined to resign his position, owing to lack of time to give the work the attention it

needed, more especially after the severe loss he had sustained a few months before, but on further consideration he had resolved to try and carry on a little longer.

NATURAL HISTORY NOTE.

Mr. G. A. Keartland said that the note in the June *Naturalist* (page 20) with reference to Rose-breasted Cockatoos visiting the Preston district recently should read "King Parrots."

EXHIBITS.

The exhibits had been tastefully displayed in the lower hall, and on conclusion of the business of the evening Sir Ronald Ferguson spent some time in examining them and hearing their stories from the exhibitors.

The following is a brief list of the principal exhibits:—

By Mr. E. S. Anthony.—Collection of aboriginal stone knives, from Tasmania; stone knives with handles and bark sheaths, carved wooden and stone churingas, death-bones, &c., from Northern Territory; mill stones, from New South Wales, &c.

By Mr. F. G. A. Barnard.—Pair of Flying Mice, *Acrobates pygmaeus* (mounted).

By Mr. D. Best.—Case of rare or striking Victorian beetles.

By Mr. C. C. Brittlebank, on behalf of Vegetable Pathologist's branch of Department of Agriculture.—Fungi affecting the potato, vine, peach, plum, and apricot; collection of phalloides.

By Mr. F. Chapman, A.L.S.—Lantern slides of characteristic Victorian scenery; Victorian fossils; photographs of characteristic land formations of Great Britain.

By Mr. H. Clinton.—Insect preparations under microscope.

By Mr. J. Cronin.—Nine species of growing Victorian ferns, from Melbourne Botanic Gardens; also branches of Lilly-pilly, *Eugenia Smithii*, and leaves of Victorian Cabbage Palm, *Livistona australis*, for decoration of hall.

By Miss C. Currie.—Branch and wood of Myall, *Acacia pendula*, from New South Wales.

By Mr. C. Daley, F.L.S.—Representative collection of rocks and minerals from Maldon, Victoria; types of stone axes, hammer stones, knives, grinding stones, chipped and flaked cutting and scraping implements, &c., of the Victorian aboriginals; about fifty characteristic photographs of Victorian lake, mountain, and ocean scenery (lent by the Government Tourist Bureau).

By Mr. E. Fischer.—Collection of about 300 species of minute Victorian beetles.

By Mr. C. French, jun., on behalf of Entomological branch of Department of Agriculture.—Cabinet drawers of Victorian insects destructive to fruit, fruit trees, garden plants, seeds,

&c.; cabinet drawer of Australian Phasianidæ (stick insects); cabinet drawer of Victorian beneficial insects; cabinet drawer of Victorian scale insects (Coccidæ); twelve Victorian insectivorous birds (mounted).

By Mr. C. J. Gabriel.—The largest Victorian volute shell, *Voluta mamilla*, Gray, showing different stages of growth; examples of rare Victorian shells; ship-worms, showing destruction caused to marine constructions; and a common cowry and its varieties.

By Mr. J. Gabriel.—Collection of Victorian seaweeds (mounted). The greater part of the collection was made by the late Mr. H. Watts, one of the founders of the Club.

By Mr. W. Glance.—Auriferous quartz specimens from Western Australia.

By Mr. A. D. Hardy, F.L.S.—Specimens of nests of trap-door spiders, from Queensland; collection of timbers of Victorian trees; honey from twelve species of eucalypts; forest fungi destructive to timber; and other exhibits relating to forestry, on behalf of the Forest Department of Victoria.

By Mr. J. H. Harvey.—Stereoscope, with views of Yarrangobilly Caves, N.S.W.

By Mr. R. A. Keble.—Minerals occurring in basalt at Richmond and Clifton Hill quarries.

By Mr. J. A. Kershaw, F.E.S.—Platypus and young; Echidna and young; case of common Victorian shore crabs; Paper Argonauts, *Argonauta nodosa*, with animal and eggs; case illustrating life-histories of common Victorian insects; Bot-fly, *Gastrophilus equi*, and portion of stomach of horse with larvæ ("bots") attached; large silken bag constructed by the larvæ of the Bag-shelter Moth, *Teara contraria*.

By Mr. G. A. Keartland.—About forty Australian bird-skins, including Alexandra Parrakeet, *Spathopterus alexandræ*, Yellow-collared Parrakeet, *Platycercus semitorquatus*, Keartland's Honey-eater, *Ptilotis keartlandi*, Crow-Shrike (albino), *Gymnorhina leuconota*, and Painted Finch, *Emblema picta*; also aboriginal stone axes, glass and quartzite spear-heads, hair girdles, string made from wild cotton, and bag made from palm-leaf fibre.

By Mr. J. P. McLennan.—Aboriginal stone axes, wedges, hammers, and mill stones.

By Mr. E. E. Pescott, F.L.S.—Series of aboriginal spear-points, from North-West Australia.

By Messrs. E. E. Pescott, F.L.S., and C. French, jun.—Sixty lantern transparencies of Victorian orchids (exhibited by electric light), also living plants of the orchids *Pterostylis reflexa*, *P. nutans*, *P. concinna*, and *Acianthus exsertus*.

By Mr. F. Pitcher.—Mounted specimens of Victorian ferns, grasses, sea-weeds; flowering specimen (female) of Stunted

Sheoke, *Casuarina distyla*, Vent., from Belgrave; young and mature specimens of fungus known as Native Bread, *Polyporus mylitta*, from Warburton and Somerville; dried specimen of foliage of Long-leaved Box, *Eucalyptus elæophora*, F. v. M., some leaves measuring 10 inches in length, from Beechworth.

By Mr. A. L. Scott.—Granite under microscope—(a) ordinary light, (b) under polarized light between cross nicols.

By Mr. J. Searle.—Drawings of fresh-water crustacea; fresh-water crustacea, &c., under microscope.

By Mr. F. Spry.—Cabinet drawer of Australian ants; also moth, *Stathmopoda melanochra*, Meyr., the larva of which is very destructive to scale insects; Victorian aboriginal weapons.

By Mr. J. Stickland.—Various objects under microscope.

By Mr. A. C. Stone.—Aboriginal implements, &c.

By Mr. P. R. H. St. John.—Essential oils prepared from Victorian trees and shrubs.

By Dr. C. S. Sutton.—Flowering examples of the "Sandringham Flora" from Langwarrin, including *Correa alba*, *Melaleuca squarrosa*, &c.

By Mr. J. Wilcox.—Under microscope, tube-building rotifer, *Meliceria ringens*.

By Mr. H. B. Williamson.—Fifty photographs of Victorian trees, also drawers of fruits of eucalypts.

By Mr. F. E. Wilson.—Case of Victorian Coleoptera.

By Mr. F. Wisewould.—Flowering specimens of Native Heath, *Epacris impressa*, pink, &c., from Pakenham.

After the usual conversazione the meeting terminated.

THE DODD INSECT EXHIBITION.—It is gratifying to know that Mr. F. P. Dodd's enterprise in bringing his splendid collection of North Queensland and New Guinea insects to Melbourne has been appreciated by southern folks, the attendance having been so good that Mr. Dodd has arranged, after a visit to Adelaide, to reopen the exhibition on the 5th August next. So unique a display has never been seen in Melbourne before, and should certainly not be missed by any nature-lover.

A NEW ELEPHANT.—The *Illustrated London News* of 2nd February last contains an illustration, from a photograph taken on the spot, of an unidentified species of dwarf elephant recently shot in the Congo State by Mr. J. R. Evans. Two specimens, a male and female, have been received in London by Messrs. Rowland Ward, the famous taxidermists, for mounting. They stand between $5\frac{1}{2}$ feet and 6 feet high, being thus only half the height of the ordinary African elephant, while the tusks are very much smaller in proportion. They are called by the natives the "swimming" or "water" elephant.

THE TALL TREES OF AUSTRALIA.

BY A. D. HARDY, F.L.S., State Forests Department.

(Read before the Field Naturalists' Club of Victoria, 11th March, 1918.)

"THE Sequoia is not only the oldest of trees, but the mightiest, and, while from time to time there have been reports of rivals in Australia, yet these rivals, when brought to the ultimate test—that of the tape-line—have shrunk before it, leaving the Sequoia the monarch of them all." Thus the American Museum of Natural History expresses what might be taken to be the last word on the question of tall tree sizes.

It is not the intention in the present paper to challenge the claim quoted above, but I propose to give, among other notes, some tape-line measurements, and introduce some survey figures, in order to raise the Australian record to the point of respectful competition, without boasting.

If reports be true, the greatest girth record belongs to neither Sequoia nor Eucalyptus, for a Cypress at Santa Maria, Mexico, according to F. Starr, has a circumference of 160 feet at 4 feet above ground. In "*Les Merveilles de la Vegetation*" (F. Marion, Paris, 1866) we may read of some old trees of enormous girth, many of them oaks. The old Dragon Tree, near the summit of Teneriffe, with height 24 metres and diameter 15 metres, and others, are apt to be lost sight of. The circumference of the Mount Etna Chestnut is said to be 180 feet. Knight and Stepp give 50 feet as the diameter of an Oriental Plane near Constantinople, while a Lime (*Tilia*) in Lithuania has an unchallenged girth record of 87 feet.

And since the height of a tree is also its length, we may note that neither Eucalyptus nor Sequoia is anything like champion among long plants, the reputed length of the Great Sea-Wrack (*Macrocystis*) being up to 900 feet (one writer gives "500 metres"!); and one of the Climbing Palms (*Calamus*) is stated by Gosse "to be found almost a quarter of a mile in length," which astonishes even Knight and Stepp, who quote his statement (from "*Omphalos*"). Schimper, however, states that Treub measured a torn-down portion of one of these climbers, and found it to be 240 metres (788 feet).

American publications treat mostly of living trees that can be viewed to-day by anyone visiting the Sequoia country in California, and this is where we must take second place. We can produce some fine records and some very tall trees, but probably nothing quite so huge as the giant conifers. The great Sequoias have been preserved as objects of national pride and as of wide interest; our giants have vanished, and by this time have rejoined the humic layer, and, unrecognized, stare

at us from the naturally regenerated forest in the juvenility of a succeeding cycle.

Trees of over 300 feet are not plentiful, but while we have unexplored forests in inaccessible places it would be unwise to say that finality has been reached with our present best record.

Although accounts in scientific prints are not necessarily perfect, those of popular journals, judging by some that we have read, should be accepted with caution. Here are some height figures, given at various times, some of which have been referred to without enthusiasm by Mr. Maiden :—

420 feet	..	Dandenongs	..	D. Boyle, 1862.
420	..	Blacks' Spur	..	Reported by H. Heaton as measured by F. v. M.
415	..	Cape Otway	..	F. v. M., "Select Extra-Tropical Plants."
521	..	"	..	D. Boyle.
480	..	Blacks' Spur	..	Klein, quoted by F. v. M., <i>Jour. Bot.</i>
480	..	"	..	H. Heaton (measured by F. v. M.)
471	..	Baw Baw	..	"G. W. Robertson" (F. v. M. in "Extra-Tropical Plants").
500	..	"	..	"W. G. Robinson" (F. v. M.)

The last two probably refer to the same tree, and the name of the surveyor should be G. W. Robinson.

In the *Lone Hand* in 1911 an article appeared in which the writer deplored the incredulity of the times, and stated that "the Baron" (F. v. Mueller) "made a practice not only of estimating the heights of the tallest trees which came under his notice, but of having them actually measured." The value of the article may be measured by Victorian botanists and surveyors in terms of the following extract :—"In this district (Gippsland) a great number of trees measuring 300 feet have been found, while *specimens of 400 feet are not uncommon.* . . . Mueller is stated to have said that our gum-trees attain a height of 500 feet, *but the tallest tree even the Baron ever measured was 480 feet!*" (The italics and the exclamatory note are mine.—A. D. H.)

Although we are not seriously concerned with estimates, the following extracts from tables of "certified estimates," prepared by Kerner, are of interest :—

Height.—

Peppermint Tree, <i>Eucalyptus amygdalina</i>	140-152 metres.
Mammoth Tree, <i>Sequoia gigantea</i>	.. 79-142 ..

Diameter.—

Mammoth Tree, <i>Sequoia gigantea</i>	.. 11 ..
Peppermint Tree, <i>Eucalyptus amygdalina</i>	8 ..

which, being interpreted, means that Kerner's accepted maximum height and circumference of the White Mountain Ash, *E. regnans*, are respectively 500 feet and $82\frac{1}{2}$ feet, and corresponding figures for the Big Tree, *Sequoia gigantea*, are 466 feet and $113\frac{1}{2}$ feet approximately. Kerner probably accepted F. v. M.'s figures, but this point remains. Anton Kerner von Marilaun was professor of botany in the University of Vienna, and his "Natural History of Plants" was translated by Professor Oliver, of London University, assisted by two graduates in science; and Baron Ferdinand von Mueller, M.D., &c., was Government Botanist of Victoria, and a botanist of world-wide repute. They were not Australians, nor even Britons, and unlikely to be swayed by unconscious bias in favour of Australian trees, but—.

SEARCH FOR TALL TREES ENCOURAGED.

An attempt was made to gather reliable information about our tall or big trees in order to place it on show at the Centennial Exhibition, Melbourne, in 1888. A reward of £20 was offered to anyone who would guide the authorities to a tree of 400 feet in height, with an additional reward of £3 for every 5 feet in excess. The Hon. James Munro personally offered £100 in addition to the foregoing. We may be sure that land surveyors, cattle men, forest rangers, paling splitters, miners fossicking for tin along the mountain forest streams, and others, were on the look-out for tall trees. Then, if ever, was the time for the fabulous giants to materialize; but, although Government surveyors and others were instructed to report, and the money reward widely advertised, the tallest tree found was only 326 feet 1 inch in height, with the small girth of 25 feet 7 inches at 6 feet from the ground. This tree was discovered on a spur of Mount Baw Baw, Gippsland, about 90 miles from Melbourne. The tree of greatest girth was found near Neerim township, about 80 miles easterly from Melbourne: it measured 55 feet 7 inches round at 6 feet from the ground, and 227 feet up to where the top was broken off. The seven trees of note were photographed and measured, and the record shown at the Exhibition was an atlas, folio size, entitled "The Giant Trees of Victoria," the survey and photography having been effected by a party including Mr. J. Duncan Pierce, civil engineer and photographer, and Mr. C. R. Cunningham, surveyor: Mr. W. Davidson, late chief engineer of the Public Works Department, was associated with these. The work cost £600, the cost being borne by the Lands Department, the Public Library trustees, and the Exhibition Commissioners.

The following tabulation is an extract from the State Forests Department's annual report 1910-11, in which a summary of

the giant tree investigation up to that date appeared, the list being one referable to the plates in the album :—

	Species.	Height.	Girth.	Locality.
I.	<i>Eucalyptus amygdalina regnans</i>	307 feet	22 ft. 8 in. measured 6 feet from ground	Mt. Monda, Fernshaw, 52 miles from Melbourne
II.	<i>Eucalyptus amygdalina regnans</i>	227 feet (top broken off)	55 ft. 7 in. measured 6 feet from ground	Neerim Township Reserve, 79 miles from Melbourne
III.	<i>Eucalyptus amygdalina regnans</i>	326 ft. 1 in.	25 ft. 7 in. measured 6 feet from ground	Spur of Mt. Baw Baw, Gippsland, 91 miles from Melbourne
IV.	<i>Eucalyptus amygdalina regnans</i>	303 ft. 6 in.	25 ft. 7 in. measured 6 feet from ground	Stony Creek State Forest, Narbethong, 60 miles from Melbourne
V.	<i>Eucalyptus amygdalina regnans</i>	290 feet (top broken off)	32 feet measured 6 feet from ground	Forest of the Otway Ranges, 113 miles from Melbourne
VI.	<i>Eucalyptus amygdalina regnans</i>	.. ..	.. ..	Head of Sassafras Gully, Dandenong Ranges, 29 miles from Melbourne
VII.	<i>Eucalyptus amygdalina regnans</i>	219 ft. 9 in.	48 ft. 6 in. measured 6 feet from ground	Sassafras Gully, Dandenong Ranges, 31 miles from Melbourne

For extra-Victorian and non-botanical readers a short description of our giant tree *par excellence* may be given. The White Mountain Ash, *Eucalyptus regnans*, F. v. M., is one of about 230 species of the genus, which, as most folk know, is a member of the Myrtle family, and is therefore distantly related to the Pomegranate (*Punica*), the Monkey Nut (*Lecythis*), and more closely to *Melaleuca*, *Callistemon*, *Tristania*, and *Eugenia*.

The White Mountain Ash, often referred to in old publications as *E. amygdalina*, but later as *E. amygdalina* var. *regnans*, F. v. M., was raised to specific rank by Ferdinand von Mueller. It is an evergreen tree, with a gently-tapering trunk,* though old trees, especially in more exposed positions, often have considerable short-length buttresses. The profile of an old, buttressed eucalypt approaches the curve known as cissoid. The tree is thin-skinned and susceptible to scorching by fire, the greater portion of the trunk decorticating in long, thin flakes or ribbons, which taper in thickness from one-eighth or one-tenth of an inch to nothing where they run off above, while about the base and often on the lower fifth, fourth, or even third part of the trunk the rougher bark persists. This butt bark may be an inch or so in thickness just above the buttresses, and to this is due a vernacular synonym, "Blackbutt," a name properly applied to *E. pilularis*. The giant stem supports a comparatively scanty canopy, which, even in old age, is not so ungraceful as that of *Sequoia*. The leaves are stalked, flat, curved, lanceolate, coriaceous, with pages equally green and shiny, and contain an aromatic oil of a smell akin to peppermint. The flowers

* I have measured five 20-foot logs from one tree, and found the middle section to be of same diameter at both ends—cylindrical.

grow on short stalks radiating from a common peduncle, and form an umbel in the leaf axil. Because the timber resembles European Ash the tree was called Mountain Ash, and, later, White Mountain Ash, in contradistinction to Red Mountain Ash or Victorian Woolly Butt, *E. delegatensis*, the wood of which has a pinkish-brown tinge. It is the chief lumber-tree of Victoria, and luxuriates in the eastern and Otway forests. The fissile, porous wood is used largely for house construction, furniture, and fittings, and for a variety of other purposes, while chemical products such as acetic acid, acetone, formalin, and creosote, charcoal, &c., are obtained by retorting timber of no use to the sawmiller. Defective trees are not milled, but split up into palings, over 10,000 broad palings 6 feet in length having been obtained from one giant. Such, in short, is the tree which we offer as a not unworthy competitor with the Sequoias.

In his "Forest Flora of New South Wales," J. H. Maiden, I.S.O., F.R.S., gives space to the question of giant eucalypts, and is as modest in his claim for the eucalypt as his contemporary, Sargent, in America, is in recording the Sequoia. Maiden is sceptical concerning stories of trees of 400 feet existing in Australia to-day, though he does not go so far as to suggest that such giants never existed.

MEASURED HEIGHTS.

The following are three measurements which exceed those in the atlas of giant trees referred to above:—

(1) In the fifth progress report of the Royal Commission on State Forests and Timber Reserves, in 1889, it is stated that the Engineer of the Shire of Colac had measured a Mountain Ash, *E. regnans*, in the parish of Olangolah, which was 64 feet 6 inches in girth at a height of 8 feet, and that the same surveyor measured a prostrate Mountain Ash in the same parish, the latter being 329 feet to a point at which the top was broken off by the fall; the diameter 4 feet at 16 feet from the base end; and the girth 3 feet 6 inches at a height of 255 feet, and 2 feet 5 inches at 328 feet.

(2) Mr. G. W. Robinson, civil engineer and surveyor, was engaged in the Dandenong forest over 60 years ago. Even then, he says, the tallest and straightest trees had been taken out by the shingle-splitter. The present writer's father (the late John Hardy, Government Surveyor) said a few years ago that he never measured a 400-foot tree, and, though trees of 300 feet were common enough, and up to 350 feet not infrequent, the bigger trees had already been felled and removed by the paling-splitter. Mr. Robinson, however, records as his best big tree measured one which was "342 feet to the com-

mencement of the 'die-back' portion of the tree," and, as the stem there was from 6 to 7 inches in diameter, he estimated the "die-back" portion to have been from 15 to 25 feet, thus giving an approximate length of 360 feet. "The last of the big trees in that district," he says, "were cut down in 1862."

(3) The third is our best measurement, by a legally-qualified measurer. I sent out many inquiries drawing attention to Mr. Robinson's contribution to the *Victorian Naturalist*, seeking evidence as to a taller tree. The replies were, with one exception, in the negative, and the exception was that from Mr. G. Cornthwaite, licensed surveyor, Colac. In response to my further inquiry, I received a letter from Mr. Cornthwaite, and of which, with his permission, I am recording the part appropriate to the subject in hand:—

"Colac, 12th June, 1916.

"Dear Sir,—In reply to yours of the 6th inst., in reference to the big tree measured by me in Gippsland, I beg to say that I cannot find the old notes taken at the time, but I am quite sure as to the measurement of the length. The tree was growing on allotment No. 1, parish of Narracan South, about 2 miles from Thorpdale, and was in a dense forest of tall trees, but this one was manifestly taller than the surrounding trees. The measurements were taken during the Christmas holidays of 1880. I measured the tree as it was standing by means of a clinometer and chain, and made it 370 feet. Afterwards, when it was chopped down, I measured it—375 feet, allowing for the stump. The tree was a Victorian Mountain Ash or 'Blackbutt,' and, where it was spring-boarded, about 12 feet from the ground, was about 6 feet in diameter. About 240 feet length of the barrel was worked up into palings, &c., and all the material for a six-roomed house was obtained from it. My brother also worked a paling tree in the same locality afterwards, which was regarded as the champion paling tree of Gippsland. The palings were worth £100 at the stump. . . . My brother had the stack of timber photographed.

"(Signed) G. CORNTHWAITE."

The greatest recorded girth of a eucalypt is that given by the Conservator of Forests (Mr. Hugh Mackay), with photograph, in the "Handbook to Victoria," prepared for the information of the British Association meeting at Melbourne in 1914. The tree pictured is "King Edward VII.," and is an imperfect specimen of *E. regnans* growing near Marysville, on a slope of the main Dividing Range. The girth of 80 feet was measured at about 10 feet from the ground, thus avoiding the greater spread of the buttresses. But the old fire-scarred stumps of larger stems exist in the Otway region. "King

Edward VII." measures about 112 feet round at the ground line; present height of the tree is only 200 feet.

The general slinness of our trees has been animadverted on by at least one American writer, which reminds me of having, with Dr. Eames and Mr. Synnott, M.A., of Harvard University, visited the forest on the slopes of Donna Buang during an official visit for the Forests Department. There (the American visitors assisting) I measured *E. regnans*, of average sawmilling girth, in the locality. One was 242 feet high (by clinometer and tape) and innocent of buttresses, with a diameter of only 4 feet 6 inches at 5 feet from the ground. Another, which I personally measured with clinometer and tape, in the Beenak Ranges, was 290 feet, with girth of only 18 feet at 5 feet from the ground. This tree had very slight buttresses. Near the source of the Bunyip another tree had only 4 feet diameter and a height of 260 feet. Usually old trees are buttressed.

AMERICAN TREE RECORDS.

In California there are two species of *Sequoia*. There is the Big Tree, *Sequoia gigantea* (also called *S. Wellingtonia*), and the Redwood, *S. sempervirens*. Both are evergreens, with persistent, rough, thick bark, conforming to the flutings of the stems. The Big Tree is the bulkier of the two. Redwood is the taller, and, while the former has stiff greyish-green foliage something like that of a Cypress or Araucaria, the latter has its small linear leaves flattened out, and the general appearance of a twig is like that of a Yew. Big Tree grows at higher altitudes—5,000–8,000 feet—and remote from the sea; Redwood grows nearer the coast, and below the zone favoured by the Big Trees. Sargent states that *Sequoia Wellingtonia* reaches, at maturity, 275 feet, with trunk diameter of 20 feet near ground, occasionally becoming 320 feet high, with diameter 35 feet. For *Sequoia sempervirens* the same authority records 300–340 feet, with a slightly tapering and irregularly-lobed trunk rarely 28 feet in diameter at the much-buttressed base, and with bark 6 inches to 12 inches thick. In "Silva of North America" Sargent gives 325 feet for a Big Tree as the tallest of two measured, and of Redwood says:—"20 to 28 feet at the much-buttressed base and 350 feet tall. The Redwood, which is the tallest American tree, probably occasionally reaches a height of 400 feet or more. The tallest specimen I have measured was 340 feet high."

According to the Southern Pacific Railway Guide, the Big Tree (there called *S. gigantea*) has specimens that tower nearly 400 feet to the sky, and one is said slightly to exceed this, while many measure from 70 to 90 feet round. The largest, recently discovered, has a base circumference of 109 feet.

"The trees," says the writer, "are not mere poles or slender shafts, such as the eucalypts of Australia, but proportionate and symmetrical in girth and height. The bark varies from 11 to 40 inches in thickness. . . The beauty of the tree is enhanced by its flutings, which traverse the trunk from base to apex." Several trees are specified as being 300 feet high, and one with a girth of 90 feet.

The Department of the Interior (U.S.A.), in "The Sequoia National Park," tells of *S. gigantea* only, and in this park trees of dimensions as follow exist :—

			Height.		Diameter.
General Sherman	..	..	279.9 feet	..	36.5 feet
General Grant	..	..	264	..	35
Abraham Lincoln	..	..	270	..	31
California	..	..	260	..	30

The American Museum of Natural History (from a publication of which was selected the quotation that introduces this article) says of the Big Tree, *Sequoia gigantea*, after belittling the eucalypt, that the Kauri Pine of New Zealand, so far as size goes, is a really dangerous rival, and two examples are on record having respective *diameters* of 24 feet and 22 feet.

In a list of fourteen specimens particularized by the Museum are two worthy of special note—viz., specimen "C," of King's River Grove, has a height of 276 feet and a circumference (near the ground) of 116 feet, while specimen "G," of Calaveras Grove (dead, without bark), has diameter 23 feet 2 inches at 3 feet from the ground, and height to present top 365 feet (estimated former height, 400 feet). Other heights mentioned are 302, 321, 325, 319, 315, 311, and 270 feet, the diameters running up to 96 feet.

By the courtesy of the Conservator of Forests I am enabled to quote from the Department's copy of *American Forestry* (June, 1916), wherein *Sequoia* is described, but in this case it is not the Big Tree, but the *tall* tree—the Redwood, *S. sempervirens*. The writer of the article (S. B. Detwiler) says :—"There are a few trees in the world that have attained greater diameters and some that grow to greater heights, but no other tree with a trunk of huge size rises so gracefully to the majestic height of the Sequoias." He quotes from John Muir as follows :—"Trees from 10 to 15 feet in diameter and 500 feet [a misprint for 300, obviously.—A. D. H.] high are not uncommon, and a few attain a height of 350, or even 400, with a diameter (at the base) of 15 to 20 feet or more, while the ground beneath them is a garden of fresh, exuberant ferns, lilies, Gaultheria, and Rhododendron. This grand tree, *Sequoia sempervirens*, is surpassed in size only by its near relative *Sequoia gigantea*, or Big Tree, of the Sierra Nevada, if, indeed, it is surpassed. The

sempervirens is certainly the taller of the two. . . . The greatest size of the Big Trees is 300 to 330 feet in height, and a diameter (10 feet above the base) of 30 to 37 feet. Exceptionally large specimens of the Redwood are 325 to 350 feet high and 18 to 20 feet in diameter 10 feet above the base. Ordinarily the Big Tree does not exceed a height of 250 to 280 feet and a diameter above the swollen base of 12 to 17 feet. The usual size attained by the Redwood is 8 to 12 feet in diameter and 190 to 280 feet in height."

Sequoia sempervirens and *Eucalyptus regnans* have some points in common, however, and a few may be stated.

They are the tallest trees in their respective countries. They are valuable timber trees—each, perhaps, the most useful its country produces. They are both evergreens, the old leaves remaining more than one season. The greater part of the seed is infertile. The seed is exceptionally small for such large trees—in *E. regnans* less than that of a gooseberry. They both rejoice in climatic conditions wherein the temperature rarely falls below 15° F. (30° for *Eucalyptus*), or rises above 100° F. (90° F. for this *Eucalypt*), with a rainfall of 20–60 inches. Their woods are fissile.

Having stated their points of agreement, a few differences may be mentioned. The Redwood is immune from fungoid and insect pests. *E. regnans* is subject to longicorn and other borers, termites ("ants"), and fungoid disease such as the bracket-like *Xylostroma*, with mycelium like a sheet of chamois leather conforming concentrically to the heartwood rings. The wood of Redwood is non-porous, and easily seasoned; that of *E. regnans* has large pores visible to the naked eye, and requires careful seasoning and filling before final dressing. Redwood is a soft, brownish-red colour, and light; *E. regnans* is a pale straw colour, hard as oak almost, and comparatively heavy. The former resists decay in contact with the ground; the latter has not such endurance. Redwood is a conifer; *E. regnans* is of the "Myrtle blooms," to use Lindley's old term. The former has rough, persistent bark, and the latter decorticates annually, leaving the greater part of the trunk smooth; and finally—not to make too long a tale—this point of difference, important in forestry: *Sequoia sempervirens* suckers freely, while *Eucalyptus regnans* reproduces by seed only, so far as I am aware.

Both *Sequoia gigantea* and *sempervirens* are cultivated as ornamental trees in parks and gardens of south-east Australia, especially in the belt between the summit of the Dividing Range and the sea, in Victoria. At Ballarat the Big Tree is doing well, many trees being planted in the park near Lake Wendouree; and fine young specimens about 100 feet high are on Mount

Macedon, at 2,250 feet altitude. The Redwood may be seen in Melbourne Botanic Gardens, with the Big Tree (both small), and also at Macedon and Daylesford.

BIBLIOGRAPHY.

- Bentham, G., F.R.S. ... "Flora Australiensis," 1866.
 Caire, J. ... In the *Victorian Naturalist*, January, 1905.
 Chamier, G., M.Inst.C.E. "Australian Timber—Karri"
 Cooper, Ellwood ... "Forest Culture and Eucalyptus Trees." San Francisco, 1896.
 Ewart, A. J., D.Sc., Ph.D. In "Report of Department of Agriculture," 1907-10.
 " In "Phil. Trans. Royal Society, London," 1908.
 Guilfoyle, W. R., F.L.S. ... "Australian Botany," 1884.
 Hardy, A. D. ... An. Rep. State Forests Department, Vict., 1910-11.
 Harris, W. K. ... In the *Lone Hand*, 1911.
 Howitt, A. W., F.G.S. ... In "Trans. Royal Society of Victoria," 1890.
 Kerner, A. [trans. Oliver]... "Natural History of Plants," 1894.
 Mackay, H. ... In "Handbook Vict. B.A.A.S."
 Maiden, J. H., F.L.S., F.R.S. ... "A Critical Revision of the Genus Eucalyptus." 1905.
 " "Useful Native Plants of Australia," 1889.
 " "The Forest Flora of New South Wales," 1905.
 Mueller, Baron F. von ... "Eucalyptographia," 1879-84.
 " "Second Census of Australian Plants."
 " *Gardener's Chronicle*, 1862.
 " *Journal of Botany* (Seemans), 1862.
 " "Select Extra-Tropical Plants," 1885.
 " "Introduction to Botanic Teachings," 1877.
 " "Fragmenta Phytographice Australiæ," 1858-81.
 Perrin, George ... In the *Australian Builder and Contractor's News*, 1893.
 Pierce, J. D., C.E., and Cunningham, C. R. ... "The Giant Trees of Victoria," 1888.
 Robinson, G. W., C.E. ... In the *Victorian Naturalist*, June, 1911.
 Rodway, L., F.L.S. ... "Tasmanian Flora," 1903.
 Royal Commission on State Forests and Timber Reserves, Fifth Progress Report, 1899.
 Sargent, Charles S. ... "Silva of North America," 1896.
 Semon, Richard ... In "The Australian Bush," 1899.
 Smith, A. ... In "Treasury of Botany," 1866.
 Warren, W. H., Wh. Sc., M.I.C.E., &c. ... "Australian Timbers," 1892.
 Woolls, W., Ph.D., F.L.S. "The Plants of New South Wales," 1885.

AUSTRALIAN METEOROLOGY AND GEOGRAPHY.—A series of lectures on this subject, by Dr. Griffith Taylor, Physiographer in the Commonwealth Weather Service, especially for the benefit of teachers, was commenced at the University on 21st June. Particulars can be obtained from the Registrar.

THE REPRODUCTION OF TERRESTRIAL ORCHIDS.

To the Editor *Victorian Naturalist*.

SIR,—In the *Victorian Naturalist* for February and March last (vol. xxxiv., pp. 160 and 176) is a paper on the above subject by Mr. E. E. Pescott, F.L.S., F.R.H.S. Being interested in the cultivation of orchids, and having had some experience in their growth from seed, I would like to make a few remarks on Mr. Pescott's paper.

There are few terrestrial species of the genera dealt with by Mr. Pescott that are worth growing except from a purely scientific point of view. In my collection, beside half a dozen or more exotics, I have three Australian—*Phaius grandifolius*, *Calanthe veratrifolia*, and *Spathoglottis Souteri*. The *Phaius* and *Calanthe* are referred to in Mr. Pescott's paper.

Undoubtedly terrestrial orchids—and in this all others may be included—very rarely grow from seed in a state of nature. Personally, I think this is a wise provision, considering the immense number of seeds ordinarily produced.

I cannot endorse the following statements:—"Little is known regarding the seeds of these plants. . . Whether they are germinable . . . or whether they are all abortive is not known. Apparently there is no necessity for the production of seed, owing to the tuberous increase, and apparently the elaborate apparatus or arrangement of the organs is to some extent but a survival of the pollination and fertilization operations of other days."

It was Darwin's work on orchids that so fascinated me many years since that when I had the opportunity I commenced to grow a few, and since then have largely added to my stock. Though I have not been able to devote as much attention to the subject as I would have liked, I have, however, been successful in raising three varieties of terrestrial orchids from seed, the only ones tried.

As a matter of fact, a good deal is known about the seeds of orchids—how to raise them, that they are germinable, and that there is a distinct necessity in the economy of the plants for the production of fertile seed. The first orchids raised artificially from seed were terrestrial ones.

That orchids are very largely reproduced by tubers below the ground (or by stems or bulbs above ground) is perfectly correct; but that will not account for the wide distribution of the same species where it is not possible, in the course of nature, for the tubers to reach. Then they must grow from seed distributed by natural agencies.—Yours, &c.,

HUGH DIXSON.

"Abergeldie," Summer Hill, N.S.W., 4th June, 1918.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, 443 Collins Street (Telephone Central 355).

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. C. DALEY, F.L.S., F. PITCHER, J. A. KERSHAW, F.E.S.
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

SATURDAY, 13TH JULY.—**Entomological Museum.** Objects—**Entomology and Vegetable Pathology.** Leaders—Messrs. C. French, Jr. and C. Brittlebank. Members to meet at entrance Flinders Street Extension (just past Spencer Street) at 2.30 p.m.

SATURDAY, 10TH AUGUST.—**Warrandyte.** Object—**Wattles.** Leaders—Misses Fuller and Nethercote. The journey will be made by motor provided sufficient names be handed in to the Hon. Sec. by 31st July. Car to leave Cathedral corner at 1.30 p.m.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

SPECIAL NOTICE.

The Excursion programme is now being prepared and the Committee will be pleased to receive suggestions from members as to suitable localities to visit. These should reach the Secretary not later than 20th July. Leaders for Excursions are also needed and voluntary assistance in this direction will be welcomed.

Wild Flower Show.—It has been decided to hold the Wild Flower show this year on Tuesday, 1st October, for which the Melbourne Town Hall has been secured. In addition to the many features of last year, it is proposed to conduct a stall for the sale of native plants growing in pots, and this notification is given early in order that members may make the necessary preparations.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1 -, 1 6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1 6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1 6 and 2/-
ENTOMOLOGICAL PINS, assorted per box of 1 oz.,	2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. **KILLING BOTTLES** (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * **CABINETS.**—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. **INSECT CEMENT**, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 8th August, 1918.

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

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

CONTENTS:

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	47
NOTES ON THE CHARACTERISTIC VEGETATION ABOUT YARRAM. BY J. W. AUDAS, F.L.S., F.R.M.S.	62

✻ PRICE SIXPENCE. ✻

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 12th AUGUST, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Miss Irene Hearn,
64 College Parade,
Kew.

Mr. Edward Dakin,
Mount Street,
East Kew.

Mr. Leonard Thom,
69 Wattle Road,
Malvern.

PROPOSER.

Miss K. Hearn.

Mr. F Pitcher.

Mr. J. A. Kershaw, F. E. S.

SECONDER.

Mr. P. R. H. St. John.

Mr. J. Stickland.

Mr. E. S. Anthony.

AS COUNTRY MEMBER—

Mr. F. P. Dodd,
Kuranda,
North Queensland.

Mr. E. S. Anthony.

Mr. F. G. A. Barnard.

AS ASSOCIATE MEMBER—

Miss Alice Hearn,
64 College Parade,
Kew.

Miss K. Hearn.

Mr. P. R. H. St. John.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"An Entomologist's Trip to New Guinea." By Mr. F. P. Dodd.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

The Victorian Naturalist.

VOL. XXXV.—No. 4. AUGUST 8, 1918.

No. 416.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting was held at the Royal Society's Hall on Monday evening, 8th July, 1918.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about eighty members and visitors were present.

CORRESPONDENCE.

From Dr. G. Sweet, University, stating that she had inquiries from America for articles on Australian polyzoa, and asking any member who could spare reprints to forward them to her.

REPORTS.

A report of the extra excursion to Heyington on Saturday, 15th June, was, in the absence of the leader, Dr. G. B. Pritchard, F.G.S., given by Mr. F. G. A. Barnard, who said that there had been a good attendance of members, and an instructive afternoon had been spent. Meeting at Burnley station, the party walked through Richmond Park, where the changes which have taken place in the position of the Yarra in the course of time were pointed out and explained. The river was then crossed, and the geological features of Heyington cutting were demonstrated in an interesting manner. The cutting contains some fine examples of altered bedding; one particularly fine example was figured in the *Naturalist* for September, 1910 (*Vict. Nat.*, xxvii., p. 80), also intrusive dykes, &c. The characteristics of the valley of Gardiner's or Kooyongkoot Creek were then pointed out, and the party separated on reaching the Riversdale-road tram.

A report of the visit to the Economic Museum, &c., at the Botanic Gardens on Saturday, 22nd June, was given by the leader, Mr. F. Pitcher, who reported a good attendance of members. The museum was inaugurated during the *régime* of the late Mr. W. R. Guilfoyle as director of the Gardens, and he (the leader) had had the principal part in its planning and arrangement during the director's absence in England. The value of such a collection was pointed out, and attention directed to the numerous examples of timbers, fibres, food products, fruits, gums, resins, oils, perfumes, &c., all of plant origin. The carpological collection, which occupies a series of show-cases in the centre of the building, was mentioned as being unique; it comprises about 2,500 species of seeds and seed-vessels arranged in botanical sequence, each fully labelled. Those of the eucalypts, acacias, and pines are

found to be of especial value for reference, as the recognition of the species depended so much upon their fruits. The arrangement of the Victorian and Australian herbarium cabinets was also explained, and some of their contents examined. Leaving the Museum about 4 o'clock, the visitors walked across the Oak Lawn to the laboratory, where Mr. P. R. H. St. John, who was co-leader for the afternoon, demonstrated the process of obtaining oil from the leaves of a eucalypt, and exhibited a large series of oils distilled at the Gardens from various Australian shrubs and trees. Afterwards, at the invitation of Mrs. Pitcher and Mrs. St. John, an adjournment was made for afternoon tea to the *employés'* meeting room, when, in proposing a vote of thanks to the leaders and their entertainers, Mr. Barnard referred to the approaching retirement of Mr. Pitcher from his position as assistant director after a period of about forty-nine years' service in the Gardens. Finally, a visit was paid to some of the plant-houses and conservatories, which were gay with begonias, primulas, orchids, &c., the scarlet-bracted poinsettias being greatly admired.

ELECTION OF MEMBERS.

On a ballot being taken, Miss R. S. Chisholm, 64 Henry-street, Windsor, Mr. T. Dunbabin, Elwood, Mr. W. T. C. Kelly, LL.B., 432 Collins-street, Melbourne, and Mr. Phillip Morrison, 1 Bowen-street, Hawthorn, were duly elected as ordinary members; and Mr. Alex. H. Dennett, 286 City-road, South Melbourne, as an associate member of the Club.

GENERAL BUSINESS.

The chairman referred to the success of the exhibition of specimens in connection with the annual meeting, and expressed the Club's thanks to all who had assisted.

REMARKS BY EXHIBITORS.

Mr. P. R. H. St. John called attention to the sample of oil of the Coast Grey Gum of New South Wales, *Eucalyptus punctata*, De Cand., distilled by himself at the Botanic Gardens laboratory at the time of the recent visit to the laboratory.

Mr. F. Keep called attention to a flower of *Eucalyptus pyramidalis*, a Western Australian species, grown in his garden at Balwyn, stating that the tree, which was about eight feet, usually had one or two buds on it, which took some six months to develop into the perfect flower.

PAPER READ.

By Mr. T. Steel, F.L.S., communicated by Mr. F. G. A. Barnard, entitled "Tracks of the Garden Snail."

In the paper, which was instigated by some remarks of Professor Sir Baldwin Spencer at the February meeting of the

Club, the author explained what he took to be the method by which the apparently interrupted tracks made by snails are produced. The intermittent track was due as much to the surface crawled over as to the action of the animal, a smooth surface, such as glass, yielding an unbroken line, because the mucus is easily spread by the animal's foot as it progresses, while on rough surfaces the mucus remains where deposited, or the interrupted patches are connected by an almost invisible film.

Prof. Spencer said that he agreed with Mr. Steel's theory, but he had hoped that some less experienced member would have taken the matter up.

The chairman said that he had tried some experiments with a snail by causing it to cross the edge of a razor, which it did by looping its body and avoiding the edge, and so escaped receiving any apparent injury. He said that a somewhat similar question was, "How does the larval form of the Cup Moth move?" This, he thought, would provide an interesting problem for a junior member.

LECTURE.

The president then introduced Mr. Joseph Hatch, of Hobart, who had kindly offered to give an illustrated lecture on "The Bird Life of Macquarie Island."

Before dealing with the question, Mr. Hatch said that stories of cruelty to the birds at the island were in circulation, and he had received from the Premier of Tasmania a copy of a letter from the Society for the Prevention of Cruelty to Animals, Adelaide², calling attention to the matter. At his request the letter was read by the hon. secretary, when the lecturer said he would deal with it during the course of his remarks.

By means of a fine series of lantern slides the lecturer gave some idea of the scenery of Stewart Island, New Zealand, of Antipodes Island, and of Macquarie Island. The latter is situated some 800 miles south of Invercargill, or 600 miles south of Hobart, and had been leased by him for some twenty years for the purpose of obtaining penguin and sea-elephant oils. On the latter are several rookeries of Royal Penguins, but only two of them are utilized for commercial purposes, and then only the birds which have reached the age of twelve months are used, older birds being useless. Three other species of Penguins are found on the island—the King, Emperor, and Victoria; but none of these yields sufficient oil to render its killing profitable. A description was given of the method of treating the birds, and a denial given to the stories which have been circulated ascribing great cruelty in the methods adopted. Some interesting notes were given regarding the

life-histories of the birds. The one-year-old birds return to the rookeries early in January, the date of arrival being almost identical each year. The parent birds arrive in August in order to lay their eggs, and it is remarkable that, though the young birds do not arrive till five months later, they instinctively seek out and attach themselves to the parent birds' nests, while the parent birds will, whenever possible, occupy the nest they occupied on the previous visit. The nest, if it can be so called, consists merely of a few stones and rubbish scratched together; in this a single egg is laid. The egg is afterwards supported on the feet of the bird and covered by an expansion of the abdomen, which seems to take the place of the pouch in the marsupials. When the old birds are taking the young to sea for the first time, should the water be rough, they are able to discharge a quantity of oil from a special gland, and by means of this oil the water is calmed, and the young birds are able to take their first swimming lesson in comfort. The elephant seals, or sea-elephants—so called from the projecting upper lip of the animal, which may be likened to a proboscis—are found only on the west coast of the island, where they land during August for the purpose of changing their coats, which is done almost as completely as by a snake. These seals average from 15 to 20 feet in length. He emphatically denied that anything more than necessary cruelty occurred with regard to the penguin-oil industry, and asserted that, after twenty years of working, the birds were just as numerous as ever, and, as a matter of fact, the birds received a certain amount of protection from his operations, for the Skua Gulls sought every opportunity to secure the penguins' eggs, and had to be kept down by shooting.

On conclusion of the lecture a number of questions were asked, from which it was elicited that the birds are killed by being knocked over by heavy sticks; that the killing season lasted about six weeks, during which perhaps 1,500,000 birds were killed, and yet there would be no diminution the next year; and that the pictures shown had been taken some twelve years ago.

Prof. Sir Baldwin Spencer said that he had listened to the lecture with interest because he wished to call attention to the great destruction of bird-life going on at Macquarie Island, and, notwithstanding the lecturer's statement, he had Sir Douglas Mawson's message in mind—"Can you do nothing against the slaughter that is going on at Macquarie Island?" He thought the Club should approach the Tasmanian and New Zealand Governments and request that the proceedings at the island be placed under some kind of supervision.

Mr. Hatch denied the allegations of Sir D. Mawson, who, he

said, had not written on personal evidence. Prof. Spencer said that Sir D. Mawson was not alone in his statements; other naturalists had made similar statements.

At this stage Mr. Hatch offered to take any accredited representative scientist to the island free of cost next month, and allow him to investigate and photograph as much as he desired.

The chairman said that cruelty of quite as serious a type was practised in Victoria every year with regard to the shooting of quail and wild-fowl, when numbers of maimed birds were not collected by the shooters. He thought that, as the Club had always taken a leading part in trying to lessen the slaughter, an effort should be made, in conjunction with the Ornithologists' Union and other societies, to take advantage of Mr. Hatch's offer.

A hearty vote of thanks to the lecturer was moved by Mr. F. G. A. Barnard, who said that, apart from the question of cruelty, of which he was not competent to judge from the evidence before him, the lecture, combined with the excellent series of views, had been a most interesting one, and had enabled the members to get some idea of the teeming bird-life of the Antarctic. Whether further operations should be stopped was a matter for scientific investigation; the requirements of trade and commerce demanded the utilization of surplus material of every kind.

The motion was seconded by Dr. B. Nicholls, who endorsed the remarks of the mover, and said that the lecturer had been quite frank in his statements, and apparently had held nothing back which might be used to damage his case.

The motion was supported by Mr. A. H. E. Mattingley, who said that Mr. Hatch had shown the meeting one of the wonders of the ornithological world, and they were indebted to him for the lucid manner in which the data had been put before them. Many years ago he had heard of cruelty being practised at the island, and had interviewed one of Mr. Hatch's *employés*, who had been three years on the island. This man assured him that no cruelty was involved in the industry, and that no diminution was noticeable in the number of birds which arrived at the island each season. He had gone so far as to make arrangements to visit the island and see for himself, but unfortunately this *employé*, a Mr. Burton, died before arrangements could be completed, and, as it would have been most dangerous to attempt a landing on the island without a competent guide, he had been forced to abandon the idea. He had also interviewed members of the Mawson expedition on the subject of unnecessary cruelty, and was assured that none took place. He had recently received a communication from the Royal Society for the Protection of Birds, England, of which he had been elected an honorary life fellow, asking him

to make an exhaustive inquiry into the penguin-oil industry, and it was opportune that Mr. Hatch should have happened to be in Melbourne at the present time in order to give his version of the question. He hoped Mr. Hatch's offer to convey an expert to and from the island free of cost would be taken up, and the question settled. He would be pleased to accept the responsibility of the investigation.

On being put to the meeting, the motion was carried unanimously.

EXHIBITS.

By Mrs. Edmondson.—Fresh specimens of a *Pimelea* from Western Australia, known as "Quaylup Bells," from the locality whence obtained (Quaylup, near Jeeramungup, 60 miles east of Broome Hill).

By Mr. C. J. Gabriel.—Four species of Australian *Trigonia* shells (marine)—viz., *Trigonia lamarckii*, Gray, N.S.W.; *T. strangei*, Dodd, N.S.W.; *T. margaritacea*, Lam., Victoria; *T. margaritacea*, Lam., var. *bednalli*, Verso, South Australia, with a fossil species, *T. howitti*, M'Coy, from Jimmy's Point, Gippsland Lakes, for comparison.

By Mr. F. Keep.—Flower of *Eucalyptus pyriformis*, a Western Australian species, grown at Balwyn.

By Mr. P. R. H. St. John.—Flowers of Indian Coral Tree, *Erythrina indica*, grown at Botanic Gardens—an unusual flowering time, seeing that it is a tropical shrub; crude oil of *Eucalyptus punctata*, De C., Coast Grey Gum, New South Wales and Queensland, distilled at Melbourne Botanic Gardens, 22nd June, 1918.

After the usual conversazione the meeting terminated.

NOTES ON THE CHARACTERISTIC VEGETATION ABOUT YARRAM.

By J. W. AUDAS, F.L.S., F.R.M.S., National Herbarium, Melbourne.

(Read before the Field Naturalists' Club of Victoria, 8th April, 1918.)

As nothing has yet been presented to this Club on the plants of the Yarram district, the following brief sketch will, I trust, prove interesting to many who delight in the wild-flowers of our State. For the benefit of such enthusiasts, who are unable to get so far afield, and who are desirous of learning something of the botany of the locality, I have prepared a few notes on certain characteristic plants which may be of interest to members. Yarram, it may be stated, is situated near the extremity of the South-Eastern line, about 136 miles from Melbourne, and some ten miles from the shores of Corner Inlet.

Commencing the tour on the 20th October last, and leaving the city by the early train on a typical spring morning, the view presented was both gratifying and restful. Along the route the bounteous season with which the State had been favoured was manifest—wherever the eye ranged there was a growth of vivid emerald. Nothing of material interest was noted until Lang Lang was reached, where a heathy stretch of about seven miles was passed through. Here some colour was given to the scene by the wealth of the pale yellow and glorious golden-brown shades of *Dillwynia floribunda*, the pretty blue of *Dampiera stricta*, the fine, large, peach-like blooms of *Leptospermum myrsinoides*, and the pure white Jasmine-like flowers of *Ricinocarpus pinifolius*—the latter a neat shrub two to four feet in height, with linear leaves and a profusion of fragrant blooms.

On leaving Nyora the nature of the country changes from plain to undulating and hilly. *En route* a stretch of gaunt and dry *Eucalyptus regnans*—the so-called Blackbutt or Mountain Ash—was to be seen. This eucalypt attains the great height of 300 feet—or even more in sheltered forest glens—and is one of the loftiest trees known. Its circumference at six feet from the ground has been known to be sixty feet and upwards. The wood is fissile, well adapted for the manufacture of railway carriages, and second, if not equal, to Blackwood, *Acacia melanoxylon*, for the purpose named. Of late it has been greatly used for the making of household furniture, and is useful also for shingles, fruit cases, staves, inner building material, and other purposes. As the foliage contains much oil, it has to be specially guarded against bush fires, from the effects of which it seldom recovers.

When passing over the Hoddle Range, near Fish Creek, the leguminous shrub, *Gompholobium latifolium*, with its handsome, large pale yellow flowers, was observed in mature bloom. It is a slender shrub of three to four feet in height, and well worthy of cultivation. The red variety of *Correa speciosa* was also in gorgeous bloom, and presented bright red patches to the tops of the hills. From here a grand panoramic view of a portion of Wilson's Promontory is obtained, and some of the intricate and densely-wooded mountains are plainly visible, also a fine view of Corner Inlet, while the picturesque Mount Singapore appears close at hand, though really it is several miles distant.

From Foster onward the country passed through was chiefly covered with grass-trees interspersed plentifully with the widely-diffused Long Purple Flag, *Patersonia longiscapa*, and the "Butterfly Iris," *Diplarrhena Moræa*, also such ubiquitous plants as *Bulbine bulbosa*, *Wahlenbergia gracilis*, *Dillwynia*

cincrascentis, *Pimelea humilis*, *Ranunculus lappaceus*, and *Goodenia geniculata*.

Detraining at Alberton, a northerly course was taken for Yarram, four miles distant, which I made my headquarters during the visit. "Yarram"—correctly speaking, "Yarram Yarram"—is an aboriginal name meaning "Beautiful beautiful." The place was originally a favourite camping-ground of the natives, and the actual site on which the township is built was the spot where the aborigines gathered for corroborees, &c. The township came into existence about thirty years ago, and is up-to-date, well laid out, and progressive, being electrically lighted and containing some fine buildings—namely, three large hotels, hospital, banks, post-office, and others.

On the day after arrival an interesting trip to Gellion's Run was undertaken. It is attractive country, close to the coast, on Corner Inlet, between Port Welshpool and Port Albert. Leaving at 11 a.m., the drive was through Alberton. Taking the first turn to the right off the main road and crossing the Albert River, we turned into a track to the left. The recent rains had made the going very heavy, and water seemed to be everywhere. There was little to observe botanically in this flat, swampy ground over which we drove, the vegetation consisting chiefly of Swamp Paper-bark, *Melaleuca cricifolia*, and Swamp Gum, *Eucalyptus ovata*. After about half an hour's drive, crossing, *en route*, Muddy Creek, we reached the entrance to the run. Advancing, the face of the country changed, and beautiful park-like scenery came into view, where *Banksia*, *Casuarina*, *Exocarpus*, *Leucopogon*, *Hakea*, *Acacia*, *Cassinia*, *Pultenæa*, *Myoporum*, and *Eucalyptus* were the principal genera. The undergrowth consisted chiefly of a multiplicity of small shrubby plants such as *Pultenæa capitata*, *Hibbertia virgata*, *Epacris microphylla*, *Dillwynia cricifolia*, *Bossia cinerea*, *Daviesia ulicina*, *Aotus villosa*, *Ricinocarpus pinifolius*, *Olearia glutinosa*, and the broad-podded *Platylobium formosum*. The predominant colour of the flowers was yellow, which gave the landscape a bright hue. Notable exceptions of colour were *Tetralthea pilosa*, the magenta-coloured flowers of which were a feature of the hillocks, also *Casia vittata*, of a rich blue, and *Comesperma cricinum*, which produces masses of small pinkish-coloured blooms.

The soil was sandy, and it seemed to me that the ground over which this vegetation had spread was originally sand hummocks. A stop was made for lunch in a sheltered hollow, and after that repast we proceeded further, negotiating a few hillocks until a small plain was reached, where a forest of the Common Grass-tree, *Xanthorrhœa australis*, was seen in full

flower, with inflorescence from eight to ten feet in height. The trunks presented a grotesque appearance, being blackened and charred from the effects of a recent bush fire, which had destroyed the dense crowns of wire-like leaves. According to the late Baron von Mueller, this grass-tree is a great source of wealth, as varnish and nitro-picric acid may, with great ease and little cost, be obtained from the resin of these plants. An informative paper on the subject was read before this Club by Mr. R. A. Keble a little time ago, which will be found in the *Naturalist* for November, 1915 (vol. xxxii., page 101). Where the fire had burned off the undergrowth the ground became vegetatively carpeted with orchids which are usually sparsely found in other localities. Generally, fires have a stimulating effect on certain orchids, but here the result was more prolific than could be credited to the buried tubers, and the probable explanation appears to be that conditions have been created which are favourable to the germination of tubers dormant from former seasons. Certain species seldom bloom well except after a bush fire. This is notably the case with *Lyperanthus nigricans*, *Prasophyllum australe*, *P. elatum*, and *Caladenia Menziesii*. Growing abundantly were *Thelymitra ixioides*, in colours blue and pink, *T. longifolia*, *T. aristata*, *T. antennifera*, *Caladenia latifolia*, *C. Patersoni*, *C. carnea*, *C. Cairnsiana*, *C. congesta*, *C. deformis*, *Cyrtostylis reniformis*, *Diuris longifolia*, *D. sulphurea*, *D. maculata*, *Microtis porrifolia*, *Glossodia major*, *Orthoceras strictum*, and *Cryptostylis longifolia*.

After crossing at the top of a lagoon we came into similar country to the first encountered. The track here was a real bush one. Stunted grass-trees frequently appeared in the centre; very often we had a bump or two as the wheel of the jinker caught a stray one. The flowers, however, increased in beauty and profusion, and we pulled up on a level stretch where plants of exquisite beauty were everywhere visible. The bright blue flowers of *Dampiera stricta* were vying with those of *Gompholobium Huegelii* in glowing yellow and red. The handsome Erect Guinea-Flower, *Hibbertia stricta*, the showy Long-leaved Flax Lily, *Dianella longifolia*, and the Tufted Blue Lily, *Stypandra cæspitosa*, which forms characteristic rush-like clumps, were everywhere showing a riot of growth and profusion of flowers. *Tetralthea ciliata*, with its pretty pink four-petalled blossoms and dark-coloured stamens, was in the height of bloom. This is one of the best known and most admired plants of our bush, and when gathered, it may be mentioned, the blooms will last quite a long time as cut flowers. Sometimes it is called "Wild Boronia," which is quite erroneous, as it belongs to the Tremandraceæ, or Milkwort family. *Bauera rubioides* (Saxifragaceæ), sometimes known under the

name of "Native Dog Rose," figured prominently. It is a dainty little pink-flowered, straggling shrub, and well worth cultivating in gardens. *Patersonia glauca* and *P. longiscapa*, two charming plants which are widely diffused, were very much in evidence; their petals are three in number—the former are blue, and the latter a beautiful purple. *Sowerbaea juncea*, a neat little liliaceous plant about a foot high, was fairly plentiful. Its heads of flowers are nearly globular, and of a pale purple colour. The composite plants *Helichrysum Baxteri*, *H. obtusifolium*, *H. bracteatum*, *Senecio lantus*, and *Olearia ciliata* were exceedingly abundant, and presented a beautiful colour scheme, graduating from white to yellow and blue. The most conspicuous leguminous plant was *Dillwynia floribunda*; it is a slender, pretty species, a foot or two in height, and bears a profusion of almost sessile yellow flowers. Small plants of *Sebæa ovata* and *Erythraea australis* were countless in number, the colour of their flowers being yellow and pink respectively. The latter is sometimes used as a tonic medicine, and seems to be increasing in popularity as a domestic remedy. About and upon everything *Billardiera scandens*, often called "Dumplings," entwined itself to a considerable extent, and at times it was difficult to determine the character of the plant over which it had spread. Its conspicuous cylindrical fruit hangs in elegant festoons for several months of the year, and when in blossom its lemon-yellowish flowers make it a desirable acquisition as a climber about a verandah or trellis work. The well-known leguminous climber or twiner, *Hardenbergia monophylla*, with its racemes of small purple flowers, artistically entwined itself around the eucalypt saplings and smaller shrubs. This beautiful twiner has already found its way into the favour of many gardeners, who, perhaps, are not even aware that it is indigenous to our State. Among other interesting plants it was a pleasure to find a fine patch of *Boronia anemonifolia* in full bloom, in colours pale pink and also deep cerise, which gave a charming effect to the scene. Some nice young plants were secured for home cultivation, which I presented, on my return, to the Curator of the Melbourne Botanic Gardens and to the Principal of the Horticultural Gardens, Burnley.

A drive from Yarram to Port Albert *viâ* Brewery Bridge and Tarraville is a delightful trip. In times gone by a large brewery stood by the bridge so named. The building has gone, but the bridge remains. This is a favourite spot for picnic parties in spring and summer, and many may be seen enjoying themselves under the shade of the eucalypts and blackwoods. The charming climbers *Clematis aristata* and *Tecoma australis* were among the most beautiful features of the vegetation, and at this time were a perfect bower, scrambling over everything

they possibly could. The former has pure white flowers and feathery fruits, while the latter bears a profusion of cream-coloured flowers, tinged inside with reddish-purple. The Common Whitethorn or May-tree, *Cratægus oxycantha*, has almost taken possession of the river-banks in some places; it was in full flower, and made a gorgeous display in pink and white. Another introduced plant, *Cytisus linifolius*, one of the Brooms, which has yellow flowers, has spread rapidly, and the Common Reed, *Arundo phragmites*, a tall cosmopolitan grass with shining plumes, made a lovely border along both banks of the stream, and bound the earth on the river-banks with its extensively creeping root-stocks. Proceeding, the roadside was enlivened by numerous Spur-winged Plovers and White-backed Magpies. In the grass lands the Bluebell, *Wahlenbergia gracilis*, the Pointed Everlasting, *Helichrysum apiculatum*, Slender Speedwell, *Veronica gracilis*, Bugle, *Ajuga australis*, Yellow Autumn Lily, *Tricoryne elatior*, Tiny Goodenia, *Goodenia humilis*, Small St. John's Wort, *Hypericum japonicum*, Swamp Mazus, *Mazus pumilio*, and Swamp Isotoma, *Isotoma fluviatilis*, with its bright star-like flower-heads, were blossoming profusely. Soon we reached the little settlement of Tarraville, which, in the coaching days from Sale to Port Albert, was known as a flourishing place, but which now looks most forlorn. At one time sixteen mounted constables were stationed at Tarraville, and old residents say that it was no uncommon sight to see twenty teams camped near the River Tarra (our old friend from the hills, which runs through Tarraville to the sea). Now, alas! only about a dozen or fifteen of the most habitable houses remain. Madame Crossley's old home, much decayed, is pointed out. The church in which she sang in her youth is in fair repair, and this year the congregation celebrated its diamond jubilee.

Resuming our journey and recrossing the Tarra River, the road to Port Albert leads through bush country of a heathy nature, on which the more striking plants seen in full bloom were *Euphrasia collina*, *Hibbertia densiflora*, *H. fasciculata*, *H. acicularis*, *Stylidium graminifolium*, *Stackhousia linarifolia*, *Caustis pentandra*, *Leptocarpus Brownii*, *L. tenax*, *Epacris lanuginosa*, *Arthropodium strictum*, *Platylobium obtusangulum*, *Pimelea phyllicoides*, *Cyathodes acerosa*, *Pultenæa paleacea*, *Scaevola microcarpa*, *Helichrysum leucopsidium*, *Chamæscilla corymbosa*, and *Comesperma volubile*—the latter, a pretty creeper with delicate blue petals, was climbing over the undergrowth.

Port Albert, landwards, is surrounded by a flat, sandy soil, varied with "tea-tree" swamps; the vegetation is composed chiefly of Coast Bearded Heath, *Leucopogon Richei*, Sea Box,

Alyxia buxifolia, Coast Acacia, *Acacia longifolia*, var. *sophoræ*, Coast Boobialla, *Myoporum insulare*, Coast Tea-tree, *Leptospermum lævigatum*, Scented Paper-bark, *Melaleuca squarrosa*, and Apple Box, *Eucalyptus Stuartiana*. Since the navigation of the Lakes' Entrance was proved practicable, and especially since the formation of the Gippsland railway, Port Albert has dwindled in importance. It has a post and telegraph office, a State school, a mechanics' institute, two churches, &c., and is mainly supported by the fishing grounds. This is one of the principal feeders of the Melbourne market, and one of the best places on the Australian coast to catch the toothsome flounder, which is daily sent by rail to Melbourne. Along the creeks which run into Port Albert and Corner Inlet good sport can be had with the gun. These and the Albert River are a great resort for anglers, all the streams about having been stocked with trout. Ninety-Mile Beach, with its great wash of ocean thundering in giant rollers, is a great picnicking resort, also the old Port—that is, the original Port Albert, a little distance from the present settlement, where, in the fifties, ships direct from England and also Tasmania and Melbourne landed passengers and goods, the latter to be carted many a mile by horse team or bullock waggon. The machinery for the Long Tunnel mine, Walhalla, was all carted from this port.

It had been my intention to pay a visit to Snake Island, an area of 11,500 acres, which lies about eight miles to the south-west of Port Albert; but, as boating facilities could not be arranged, I had to content myself with the shorter journey to Sunday Island, which has an area of 2,537 acres. This island, which lies about three or four miles from Port Albert, in a south-westerly direction, consists of small, unconnected sand hillocks timbered with rather stunted growths of *Eucalyptus viminalis*, *E. ovata*, *E. amygdalina*, *Banksia marginata*, *B. integrifolia*, and *Acacia melanoxylon*. The scrub is composed mainly of *Leptospermum scoparium*, *Melaleuca ericifolia*, and *Leucopogon Richei*, which form dense thickets of bushes or low trees, and which are intersected with salt-water swamps fringed by belts of White Mangrove, *Avicennia officinalis*. On the north-east end the vegetation consists chiefly of Coast Tea-tree, *Leptospermum lævigatum*, and on the south-western parts *Stipa teretifolia*, *Poa cæspitosa*, *Spinifex hirsutus*, *Mesembryanthemum æquilaterale*, and *Scirpus nodosus* tend to arrest the progress of shifting sands, but they are all much inferior to the introduced Marram Grass, *Ammophila arundinacea*, and Sand Lyme Grass, *Elymus arenarius*. *Lomandra longifolia* (Liliaceæ) forms characteristic rush-like clumps over the sand-hills, while *Lepidosperma elatius* and other Cyperaceous plants cover large spaces. On the southern end of the island there is a pier about

a quarter of a mile in length, also a signal station and residence of the harbour master. From the look-out a splendid view of Mount Singapore, Mount Hunter, and the granite ranges of Wilson's Promontory can be obtained. Inland, over the flats of Port Albert and Tarraville, Mount Fatigue and Tom's Cap can be discerned, and to the east a line of sand dunes and the long wash of ocean rolling in and breaking in foamy surf on the Ninety-Mile Beach.

Lying about four miles to the north-east of Yarram there is a large area of forest, which is under the control of the Forests Department. A portion of the forest is fenced and held as a reserve for future high school purposes. Under the guidance of the forest ranger for this district, Mr. Harvey, an indefatigable and enthusiastic guide, I spent a day collecting in this locality. On setting out we were attracted by the beautiful scarlet flowers of *Kennedya rubicunda* clambering over the vegetation along the Tarra River, which we crossed about a mile from the town. After proceeding along the main road for about two miles we diverted to the left, and, passing the cemetery, we soon reached the heart of the forest. Here many of the eucalypts had obtained fair heights and proportions; the principal species represented were Yellow Stringybark, *Eucalyptus Muelleriana*, White Stringybark, *E. eugenoides*, Red Stringybark, *E. macrorrhyncha*, Messmate Stringybark, *E. obliqua*, Common Peppermint, *E. amygdalina*, Blue Gum, *E. globulus*, Long-leaf Box, *E. elæophora*, Mountain Grey Gum, *E. goniocalyx*, and Yellow Box, *E. melliodora*. The trees of the latter were simply a mass of blossom, and bees and other nectar-loving insects were swarming around them. Here I was delighted with the beautiful blooms of *Correa speciosa*, its bells of large red flowers presenting a pleasing appearance. We also noticed a pretty little fragrant plant, *Myosotis suaveolens*, and a Dwarf Currant Bush, *Choretrum lateriflorum*; the latter is a small shrub with erect, slender, broom-like branches and very diminutive scale-like leaves. A little further on our track was enlivened by the showy yellow flowers of *Pultenæ juniperina* and the pretty *Grevillea alpina*, which was covered with its curling clusters of crimson blooms. Passing through some clumps of *Acacia discolor*, we noticed for the first time *Scævola hispida*, one of the prettiest of our smaller native shrubs. It was in full bloom, and its large flowers, with sky-blue petals, were an inch or more in diameter. Here and there an occasional Wild Cherry Ballart, *Exocarpus cupressiformis*, and Black Sheoke, *Casuarina suberosa*, were met with, their coniferous appearance adding variety to the scene.

In many places *Acacia oxycedrus* had reached a height of twelve feet or more, whereas, in its native element (upon the

sea-coasts) it rarely attains a height of more than three or four feet. Everywhere the tops of the Acacias and Cassinias were interwoven with the cord-like stems and branches of the Larger Dodder Laurel, *Cassytha melantha*, rendering some of the parts almost impenetrable. Another smaller species, *C. pubescens*, was met with, but it prefers the smaller shrubs. A third species, *C. glabella*, with a stem hardly thicker than a thread, infests species of Lomandra and Lepidosperma preferentially, but fastens on almost anything in its way; it is chiefly found on the coast plain and other open tracts. I chanced upon many nice clumps of *Prostanthera rotundifolia* growing in moist places along the valley of a stream, while a little beyond flourished thickets of *Cassinia aculeata*, laden with dense umbel-like flower-heads, varying from white to pink. Most of the shrubs were similar to those met with on any Victorian range, comprising Acacias, Persoonias, Indigofera, Leptospermum, Panax, Exocarpus, Casuarina, Hakea, Pultenæas, and the ubiquitous *Bursaria spinosa*. The fern *Pteris aquilina*, or Bracken, covered large areas. This fern is reputed to have anthelmintic properties, and if it could be manufactured commercially there would, no doubt, be a tremendous scope for it. On our return journey we passed through a fine grove of *Banksia serrata*. This is a proteaceous tree which produces very ornamental timber, and is highly prized for firewood. The trees were laden with quaint bottle-brush-like flowers, beautifully scented and full of honey.

Another outing which I greatly appreciated was that to the Tarra Valley, twenty miles to the north-west of Yarram. An early start was made so that the trip could be accomplished in one day, and my companions were two local residents, Messrs. C. and D. Hill. A few miles out from the township are the well-known "Tooloonook" flats, where large herds of well-bred and sleek cattle were seen grazing in pastures knee-deep in lush grass. A little further on we reached the timber country, which here was composed chiefly of Red Stringybark, Messmate Stringybark, Long-leaf Box, and Blue Gum. Of the latter some splendid tall specimens were seen. One can scarcely praise too highly the qualities of the Blue Gum. Its bark, leaves, and flowers are aromatic, and its dense foliage gives excellent shade, while its remarkable rapidity of growth (sometimes attaining a rate of two feet and upwards a month) render it particularly suitable for avenues. Its wood is deemed to equal the English Oak, and, to all the foregoing qualities, we may add the supreme one—that being its adaptability to climate. It flourishes in almost any altitude, and in India it grows at a height of 8,000 feet above sea-level in such parts as the Himalayas and southwards.

Further on we reached the North Devon State school. Calling on the head-master, Mr. Evans, I was pleased to find that he took a keen interest in wild-flowers, and on learning the nature of my visit he readily (with the children of the school) took advantage of the opportunity to collect some local plants. Upwards of fifty species were gathered during the outing, chief of which was a large blue-flowering orchid, *Thelymitra canaliculata*. It proved a new addition to the Victorian list, but had been previously recorded from Western Australia. Other orchids collected represented seven species, among them being *Caladenia Patersoni*, which was common everywhere on open ground, and presented at least four well-marked varieties in colour and form. *C. deformis* was seen in colours pink and blue; *Caleana major* in rich maroon; *Diuris punctata*, purple; *Thelymitra carnea*, red; *T. flexuosa*, yellow; and *T. pauciflora*, white. The latter has only recently been recorded as new for Victoria. The most interesting among the other plants collected were *Hibbertia diffusa*, *Stylidium graminifolium*, *Sprengelia incarnata*, *Brachycome scapiformis*, *Rutidosia pumilio*, *Helichrysum rosmarinifolium*, *Pultenaea villosa*, *Lobelia rhombifolia*, *Lagenophora Billardieri*, *Cymbonotus Lawsonianus*, *Microseris Forsteri*, *Mitrasacme polymorpha*, and *Wahlenbergia gracilis*. The typical form of the latter is generally fifteen or eighteen inches in height, with a blue flower often about half an inch in diameter; but here a form two inches high, with a minute floweret, was found.

On the hills further onward the timber became heavier and the undergrowth more luxuriant. Here I noticed for the first time growing in their natural habitat *Pittosporum undulatum* and *Acacia Howittii*; the latter is endemic to Victoria and peculiar to this district. It is a beautiful species, well worthy of cultivation, and, like the former, makes a useful hedge plant.

As the road approaches the Tarra Valley the signs of practical improvement brought about by the early settlers increase, and the general contour of the country improves. The natural richness of the soil, not only along the hillsides, but right over the tops of the Strzelecki Ranges, proclaims itself by the dense covering of grass. From here to the summit the road winds on hillsides, with the river on one side and hills with giant Mountain Ash on the other. In some places it is hewn out of the rocky cliffs rising sheer from the river. As we ascend we gratefully accept the sitting accommodation provided by a large gum stump to rest awhile, as the atmosphere is close and sultry. From this vantage-point the Christmas Bush, *Prostanthera lasianthos*, and Tree Lomatia, *Lomatia Fraseri*, in full bloom, obtruded themselves on our notice, also the dainty

bronze-coloured foliage of the Myrtle Beech, *Fagus Cunninghami*: growing on a branch of the latter I discovered the rather peculiar edible fungus *Cytlaria Gunnii*, which greatly resembled a bunch of grapes. Advancing, the pretty flowers of *Prostanthera rotundifolia* and *Goodia lotifolia* met our eye at almost every turn. On a clayey cutting we came upon some nice patches of that interesting little moss, *Dawsonia superba*. It is an erect plant, from nine to twelve inches in height. Its dark green foliage and short, thick fruit-stalk, tipped with woolly-looking capsules, give it, as its name implies, a superb appearance. Accompanying it was a very pretty little lichen, *Baomyces heteromorphus*. This lichen may easily be mistaken for a fungus, but it is a true lichen, and resembles somewhat a tiny mushroom with a rose-pink head, the whole plant not being more than half an inch high. As we proceeded, each step revealed a vista of increasing beauty, and the valley became more clothed by the dense vegetation, comprising Blanket-wood, Sassafras, Silver Wattle, Musk, Mountain Pepper, Hazel, Mutton-wood, Christmas Bush, with the tree-ferns *Dicksonia* and *Alsophila*. After ascending a steep incline a sudden bend in the road revealed a picturesque waterfall, with a drop of eighty feet or more. Near it the Valley Tree-ferns grew luxuriantly, and clinging to their brown trunks by adventitious roots were some fine specimens in flower and fruit of the rare shrub *Fieldia australis*, the only representative of the Gesneriaceæ in our State. About a mile further on the head of the gully was reached, and from our elevated position a splendid view of the valley and wooded ranges was obtained.

Working our way through the tangled vegetation for a short distance our path was strewn with fallen trees—the result of decay and storm. Many of the trees were much decomposed, and mosses and fungi had taken possession and beautified them with their varying colours of green and gold. One of the first mosses to attract our attention was *Cyathophorum pennatum*, which had thrown its mantle of feathery greenery over some fallen tree-ferns. Another moss, *Hypnodendron spininervum*, in splendid fruit, and about four inches high, was collected. This plant has a minute palm-like appearance, and makes beautiful herbarium specimens when pressed. Further on we found *Ptychomnion aciculare* and *Thuidium furfurosus* in fruit, besides *Plagiochila*, *Lepidozia*, *Lejeunia*, *Frullania*, and other hepatics.

During the trip a wide area of country was gone over. About 100 species of the more uncommon flowering plants and 25 species of Cryptogams were collected. The flora was varied and interesting, the outing, on the whole, being a very pleasant one.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. B. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, 448 Collins Street (Telephone Central 355).

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

SATURDAY, 24TH AUGUST.—**Bayswater.** Object—**Wattles.** Under leadership of Mr. J. W. Audas, F.L.S. Meet at Flinders Street Station for 1.35 p.m. train (Fern Tree Gully line). Second class return fare, 1/7.

SATURDAY, 31ST AUGUST.—**Clayton.** Object—**Botany.** Leader—Mr. H. B. Williamson. Excursionists will travel by the Dandenong train leaving Flinders Street Station at 1.30 p.m. Second class return fare, 1/1½.

SATURDAY, 7TH SEPTEMBER.—**Black Rock.** Object—**Botany.** Leader—Mr. J. P. McLennan. Meet at Flinders Street to catch 1.45 p.m. train to Sandringham.

SATURDAY, 14TH SEPTEMBER.—**Bendigo.** Objects—**Geology and Botany.** Leaders—Messrs. C. Daley, F.L.S. and D. J. Paton. (Excursionists will avail themselves of the special excursion trains to Bendigo, of which full particulars will be given at ordinary monthly meeting).

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

SPECIAL NOTICE.

Volunteers willing to render assistance at the forthcoming Wild Flower Show on 1st October (especially on the Ladies' Committee) are requested to communicate with the Hon. Secretary at the earliest possible opportunity.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted per box of 1 oz.,	2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. 8½ in., 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. **KILLING BOTTLES** (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. ••••• **CABINETS.**—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. **INSECT CEMENT**, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 5th September, 1918.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	73
EXCURSION TO BURNLEY QUARRIES	78
ONE YEAR'S. COLLECTING MICRO-FAUNA, BOTANICAL GARDENS LAKE, MELBOURNE BY J. SHEPHARD, J. SEARLE, AND J. STICKLAND	79
NOTES	78, 84

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 25 MACKILLOP ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 9th SEPTEMBER, 1918.

1. Correspondence and Reports.
2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Miss W. Gill,
Hawksburn Road,
Hawksburn.

Mr. William Miller,
St. George's Road,
Croxtan.

PROPOSER.

Miss K. Hearn.

Mr. E. S. Anthony.

SECONDER.

Mr. J. Wilcox.

Mr. W. Glance.

AS ASSOCIATE MEMBER—

Miss Elsie Hearn,
64 College Parade,
Kew.

Miss K. Hearn.

Mr. J. Wilcox.

4. General Business.
5. Remarks by Exhibitors, relative to their Specimens.
Ten minutes' adjournment for examination of Exhibits.
6. Reading of Papers and Discussion thereon.
"An Ornithological Trip to the Nhill District." By Mr. F. Erasmus Wilson.
7. Reading of Natural History Notes.
8. Exhibition of Specimens and Conversazione.

EXCURSIONS.

SATURDAY, 14TH SEPTEMBER.—Bendigo. Objects—**Geology and Botany.** Under the leadership of Messrs. C. Daley, F.L.S. and D. J. Paton. Excursionists will proceed from Spencer Street by train about 6 a.m., and shortly after arrival at Bendigo will proceed by tram, and then on foot to Spring Gully and One Tree Hill, returning by another route through the bush. Members intending to join this excursion should notify their intention at the September meeting. A second trip can be arranged for those desirous of remaining till Monday. Excursionists should take lunch with them, and, if stopping over, should also make early arrangements for accommodation.

SATURDAY, 21ST SEPTEMBER.—Oakleigh. Object—**General.** Leaders—Messrs. E. E. Pescott, F.L.S. and C. Plante. Excursionists will visit the Metropolitan Golf Links (by invitation), where various native flowers grow luxuriantly. Meet at Flinders Street Station (opposite Mutual Store) for 1.55 p.m. train.

SEPTEMBER 21ST TO 28TH.—Excursion to Grampians. Full particulars at Tourist Bureau.

SATURDAY, 5TH OCTOBER.—Frankston. Objects—**Botany and Ornithology.** Leaders—Messrs. J. G. Mann and J. Gabriel. Meet at Flinders Street Station (opposite Mutual Store) to catch 1.10 p.m. train.

SATURDAY, 12TH OCTOBER.—Alphington. Object—**Aquatic Zoology.** Under leadership of Mr. J. Searle. A short walk from the station leads to the interesting ponds close to the Yarra. Excursionists leave Prince's Bridge Station by 2.10 p.m. train.

The Victorian Naturalist.

VOL. XXXV.—No. 5. SEPTEMBER 5, 1918.

No. 417.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th August, 1918.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about seventy members and visitors were present.

CORRESPONDENCE.

From Royal Australasian Ornithologists' Union, intimating that Mr. A. H. E. Mattingley and Capt. S. A. White, of Adelaide, had been appointed as its representatives to visit Macquarie Island and report on the alleged cruelty practised there in the obtaining of penguin oil, and asking for the Club's endorsement of the appointment.

Professor Sir Baldwin Spencer, K.C.M.G., thought that, as the question had been brought before the Club originally, the Club should take the matter up. It was important to know whether the gentlemen named were going as the guests of Mr. Hatch or independently.

Mr. F. Keep drew attention to a paragraph in the *Herald* of that evening quoting the conditions under which the island had been leased to Mr. Hatch's company by the Tasmanian Government, one of which was that the lessees should provide free transit and sustenance to a representative of the Government who would be authorized to investigate the method of working.

Professor Spencer moved that the president and Mr. J. A. Kershaw be appointed a committee to watch the interests of the Club, and to communicate with the Tasmanian Government on the matter. The motion was seconded by Mr. G. A. Keartland, supported by Messrs. D. Best and J. A. Kershaw, and carried.

REPORTS.

A report of the visit to the Science Branch of the Department of Agriculture on Saturday, 13th July, was given by Mr. C. French, jun., Government Entomologist, who acted as leader so far as his branch was concerned. He reported an attendance of about twenty-five members and friends, who evinced considerable interest in the collections. A number of life-histories of various injurious insects were explained. The cabinets contain, besides Australian species, representative specimens of various kinds from other parts of the world, numbering several thousands, and have been largely added to during recent years, the collection of scale-insects alone

amounting to fully five hundred named species. Those interested in fungus and allied pests were guided by Mr. C. C. Brittlebank, Government Vegetable Pathologist, who pointed out the life-cycles of several diseases affecting agricultural and horticultural products. A number of spirit specimens were examined, also portions of mycological herbarium, including the grain smuts and the various fungi causing disease in garden flowers, fruit and forest trees, potatoes, &c.

A report of the excursion by char-a-banc to Warrandyte on Saturday, 10th August, was given by the leaders, Miss A. Fuller and Miss G. Nethercote, who reported an attendance of about forty members and friends. The weather had been perfect, and the object of the visit—to see the silver wattles in full bloom—was attained, for the trees along the river-banks were at their best. Making the outward route through Kew and Doncaster, the country was found to be fresh and green everywhere, while the return journey through Templestowe and Heidelberg was equally charming. A fair variety of eucalypts was seen, many of which, especially the trees of Red Box, *E. polyanthemos*, were bearing burdens of the Mistletoe, *Loranthus pendulus*, which was also noticed on a Tagasaste, commonly known as Tree-Lucerne. Several other acacias, such as the Spreading Acacia, *A. diffusa*, Golden Wattle, *A. pycnantha*, Prickly Acacia, *A. verticillata*, Hedge Acacia, *A. armata*, were noted, in addition to the Silver Wattle, *A. dealbata*. On reaching Warrandyte a halt was made at the bridge, and the stream crossed to the northern side, where a ramble of a few hundred yards was taken to a vantage spot, from whence was obtained a lovely view of wattle, river, and woodland. Being early in the season for most flowering plants, but few species were found in bloom, among them being the Native Heath, *Epacris impressa*, Common Hovea, *Hovea heterophylla*, Purple Coral-Pea, *Hardenbergia monophylla*, Scented Sundew, *Drosera Whittakeri*, Dusty Miller, *Spyridium parvifolium*, Snow-bearded Heath, *Leucopogon virgatus*. After partaking of afternoon tea a start was made for town, which was reached shortly after six.

ELECTION OF MEMBERS.

On a ballot being taken, Miss Irene Hearn, 64 College-parade, Kew, Mr. Edward Dakin, Mount-street, Kew, and Mr. Leonard Thorn, 69 Wattle-tree-road, Malvern, were duly elected ordinary members; Mr. F. P. Dodd, Kuranda, North Queensland, a country member; and Miss Alice Hearn, 64 College-parade, Kew, as an associate member of the Club.

GENERAL BUSINESS.

The chairman stated that the caretaker of the Royal Society's premises, Mr. Laurence, had enlisted, and was about

to proceed to the front, leaving his wife and young daughter to keep the home together. His brother had come from New Zealand to take up the duties of caretaker, and he desired, on behalf of the Club, to congratulate Mr. Laurence on the step he had taken, and to wish him "God-speed" and a safe return. The announcement was received with acclamation.

Mr. Laurence, who was in khaki, thanked the meeting for the endorsement of the chairman's kind words, and said that he greatly appreciated the goodwill of the members.

Professor Sir Baldwin Spencer, K.C.M.G., said that since the last meeting of the Club a matter of some importance had arisen about which he desired to say a few words. For many years past this Club has taken a very great interest in the National Park at Wilson's Promontory; as a matter of fact, it is due to the efforts of this Club some twenty years ago that steps were taken to try and secure Wilson's Promontory as a National Park for Victoria.* During the last few weeks there has been a determined attempt made to have certain portions of the reserve thrown open to tin-mining. Should such an attempt succeed it would practically be farewell to the National Park, and all the work done so far in enclosing, stocking, and planting the Park would be so much labour wasted. He hoped that it would not be necessary to make more than a formal protest to the Government in the matter; but, in order to be ready for any occasion that might arise, he would move—"That the president, hon. treasurer, and hon. secretary be the official representatives of the Club to act on any deputation which might be arranged before the next meeting of the Club."

The chairman said that Prof. Spencer's plan would doubtless commend itself to all the members, many of whom of recent standing were not aware of the long struggle made in securing the reservation, which he thought began nearer thirty than twenty years ago. Prof. Spencer had himself been one of the leaders in the movement, and had put a deal of strenuous work into the matter. The only ground for the present menace to the Park could be that, owing to the war, things have to be done now in the interests of industrial affairs which would not be thought of at any other time.

The motion was seconded by Mr. P. R. H. St. John and carried unanimously.

The hon. secretary announced that the Canterbury Horticultural Society purposed holding, in connection with their ordinary show, an exhibition of wild-flowers in the Camberwell Drill Hall on Tuesday, 3rd September, in aid of the Highton (Balwyn) Rest Home for Soldiers.

* A full account of the movement will be found in the *Naturalist* for January, 1905 (vol. xxi., p. 128).—ED. *Vict. Nat.*

The chairman reminded members of the opportunity of seeing the Grampian flora afforded by the Railway Department's excursion from the 21st to 28th September. He also said that there was a little difficulty as to what object the proceeds of the wild-flower exhibition, to be held by the Club in the Melbourne Town Hall on Tuesday, 1st October, would be devoted, as, to prevent overlapping, the authorities had set aside October for hospital collections, while the Club desired to help the Y.M.C.A. war funds. He hoped to be able to make a definite announcement at the next meeting. There would, however, be no doubt about the holding of the exhibition, and the hall had been secured for the date mentioned.

REMARKS ON EXHIBITS.

Mr. E. S. Anthony called attention to a case of New Guinea insects illustrating the paper to be read later by Mr. F. P. Dodd on his experiences in that island.

Miss A. Fuller exhibited a number of dried Indian flowers, and read some notes concerning them.

Prof. Sir Baldwin Spencer, K.C.M.G., called attention to his exhibit of a number of specimens of wood-lice, collected in the Northern Territory, where he came across a procession of these crustaceans, evidently migrating, which was about thirty yards broad, and took an hour and a half to pass a given spot. The effect of the sight was that the ground seemed to be moving rather than that the creatures were moving over the ground. It was impossible to estimate the countless millions contained in the moving mass.

Mr. A. L. Scott drew attention to his exhibit of a specimen of aventurine felspar, so named from the peculiar sparkle which it shows, due to foreign inclusions in the crystals.

Mr. C. L. Plumridge called attention to his exhibit of a flowering specimen of *Epacris longiflora*, now in full bloom. The plant was obtained by him some five years ago at Wentworth Falls, N.S.W., and was then about one inch in height. He said that the Epacrids should commend themselves to flower-lovers, as they flower at a time when other flowers are scarce. The cultural requirements were very simple—a light, peaty soil, thorough drainage, firm potting, and no coddling.

At this stage the president requested Mr. F. Chapman, vice-president, to take the chair, as he desired to leave early.

PAPER READ.

By Mr. F. P. Dodd, entitled "A Naturalist in New Guinea."

In the absence of the author, the paper was read by his son, Mr. F. W. Dodd, and gave a most interesting account of some

six months spent in New Guinea—from May to October, 1917. The trip was made principally with the view of making collections of butterflies and moths, but other insects were also taken. Some notes were also given about the bird and plant life of the Astrolabe Range, some twenty miles from Port Moresby. The author said that six months was far too short a time to exhaust the novelties of even the limited area visited, while in the higher Owen Stanley Range there should be inexhaustible treasures for naturalists of every taste; but time and the proper season must be at the disposal of any who desire to thoroughly explore any given district.

The chairman said he had been greatly interested in the paper, especially the remarks about the "Fever-bird"—a name given to the Long-tailed Nightjar, on account of its "Chop, chop, chop" note being kept up at intervals during the night, and so annoying patients suffering from fever. He had been told by a doctor recently that if one shifted camp frequently there was not so much danger of malarial fever as when living permanently in one place.

Mr. H. B. Williamson expressed his pleasure at the author's statement that he had killed only two birds in the course of his thirty years' collecting, one of these being a Butcher-bird that was destroying his specimens.

Mr. F. Pitcher asked whether *Eucalyptus platyphylla* is truly deciduous or whether the condition of the tree might not be influenced by some obscure cause. Mr. Dodd said that the same species, known around Kuranda as the "Poplar Gum," lost its leaves regularly during October and November.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—Fresh flowers of Spreading Acacia, *Acacia diffusa*, Edwds., from plant grown by exhibitor; the species seems to do well in cultivation, and is free of insect pests.

By Mr. F. P. Dodd.—Butterflies, moths, &c., from New Guinea, in illustration of paper.

By Miss A. Fuller.—Dried flowers, &c., from India.

By Mr. C. L. Plumridge.—Pot-grown specimen of *Epacris longiflora*, in bloom.

By Prof. Sir Baldwin Spencer, K.C.M.G.—Specimens of wood-lice, from Northern Territory, in illustration of note.

By Mr. A. L. Scott.—Specimens of aventurine felspar.

After the usual conversazione the meeting terminated.

GRAMPIANS EXCURSION. — Intending excursionists are reminded that the list at Tourists' Bureau will close in a few days.

EXCURSION TO BURNLEY QUARRIES.

OF the large number who visited these quarries on Saturday, 11th May, only three proved to be pond-lifers. After the departure of the geological section, these three set to work under somewhat disadvantageous conditions, by reason of the rain. Material was collected from several of the pools for home examination, and proved to be fairly good. As some description of the quarries was given after the last Club excursion to the locality (see *Vict. Nat.* for April, 1917, vol. xxxiii., page 176), it need not be repeated here. Concerning the flora and fauna of the pools taken on this occasion, we may say that some forms noted were of considerable interest. Special mention may be made of some fine colonies of *Zoothamnium*, in which the muscle band running down the centre of the pedicle did not reach the point of attachment thereof, so that when the group retracted part of the pedicle folded up and part remained rigid. One very remarkable diatom taken—viz., *Bacillaria paradoxa*—is an object of perennial interest. Of this organism it may be remarked that it seems to do equally well in salt, brackish, and fresh water. The rare alga *Monostroma*, sometimes to be obtained in these pools, was not found this time. The following is a list of the forms noted:—Algae.—*Zygnema*, sp., *Spirogyra*, two sp., *Lyngbya* (? sp.), *Enteromorpha intestinalis*, *Synedra*, sp., *Eunotia* (? sp.), *Bacillaria paradoxa*, *Pleurosigma*, sp. Protozoa.—Sarcodina: *Diffugia*, sp. Mastigophora: *Euglena viridis*, *Anisonema grande*; Infusoria: *Vorticella*, sp., *Zoothamnium* (?) *dichotomum*, *Stentor Roeselii*, *Paramœcium aurelia*, *Stylonichia mytilus*, *Vaginicola*, sp., *Pyxicola* (?) *affinis*, *Thuricola* (?) *operculata*, *Chilodon cucullulus*. Worms.—Rotifera: *Rotifer vulgaris*, *Floscularia ornata*, *Brachionus bakeri*, *B.* (?) *urceolaris*, *Pterodina* (?) *patina*, *Philodina* (?) *citrina*, Gastrotricha: *Chætonotus* (?) *larus*. Arthropoda: *Xiphocaris*, sp. (?), *Chydorus*, sp., and a few insect larvæ. Included in above are some kindly identified by Mr. J. Wilcox.—J. STICKLAND.

TALL TREES.—In connection with Mr. A. D. Hardy's most interesting paper in the July *Naturalist* (vol. xxxv., p. 46), I would like to call the attention of readers of the *Naturalist* to a valuable paper by Mr. T. F. Cheeseman on "The Age and Growth of the Kauri," in vol. xlv. of the *Trans. New Zealand Inst.* Besides giving information on the height of trees, including Australian, Mr. Cheeseman deals in a masterly manner with the determination of the rate of growth of the Kauri Pine, and describes very clearly the necessary precautions to be taken in making observations of this kind.—THOS. STEEL, Sydney.

JUNE 1915	JUNE 1916	JUNE 26	JULY 9	JULY 23	AUG 6	AUG 20	SEP 3	SEP 17	OCT 1	OCT 15	OCT 29	NOV 12	NOV 26	DEC 10	DEC 24	JAN 7	FEB 21	MAR 7	MAR 21	APR 4	MAY 18	MAY 31	JUNE 14	JUNE 28
ENTOMOSTRACA																								
<i>Bekella symmetrica</i>																								
<i>oblonga</i>																								
<i>asymmetrica</i>																								
<i>tenera</i>																								
<i>Brunella minuta</i>																								
<i>Bormina longirostratus</i>																								
<i>Cyclops australis</i>																								
<i>Brunella longicornis</i>																								
<i>Ceriodaphnia rotunda</i>																								
<i>Simoccephalus gibbosus</i>																								
<i>Cyclops Leuckarti</i>																								
<i>albidus</i>																								
<i>Chydorus gibbosus</i>																								
<i>Pteroxis inermis</i>																								
<i>Synchaeta pectinata</i>																								
<i>remula</i>																								
<i>Notops hyothopus</i>																								
<i>brachionus</i>																								
<i>clarulus</i>																								
<i>Anura aculeata</i>																								
<i>(sp.)</i>																								
<i>Cochlearis</i>																								
<i>Triarthra longicela</i>																								
<i>Polyarthra platyptera</i>																								
<i>Brachionus unceolaris</i>																								
<i>angularis</i>																								
<i>pala</i>																								
<i>Pterodina trilobata</i>																								
<i>Pedalion mirum</i>																								
<i>Notus quadricornis</i>																								
<i>Proales parvica</i>																								
<i>Conochilus (sp.)</i>																								
<i>Asplanchna (sp.)</i>																								
<i>Volvox aureus</i>																								
ROTIFERA																								

ONE YEAR'S COLLECTING MICRO-FAUNA, BOTANIC GARDENS LAKE, MELBOURNE.

BY J. SHEPHARD, J. SEARLE, AND J. STICKLAND.

THIS investigation was undertaken as a result of a discussion by the members of the council of the Microscopical Society of Victoria. It was intended that members generally should take part in it, but this was not found practicable; but the three members deputed to manage the scheme persevered, and succeeded in making periodical visits for a whole year.

The visits were made mostly between the hours of one and three in the afternoon, and approximately fortnightly. Stick nets were used, but the chief instrument was the tow-net, of the "Kofoid" pattern.

The boat on the lake was made available by the courtesy of the Director of the Gardens, Mr. Cronin, and the attendant concerned materially helped by his willingness to meet the wishes of the workers. As the plankton was the chief aim of the work, on each occasion the net was towed by the boat along open water of different portions of the lake, care being taken to observe nearly the same track on each visit. The resulting gatherings were brought away in jars in living condition, preservatives not being used. The towing was mostly done near the surface, but occasionally in the deeper parts of the lake vertical hauls were made, which gave at times very interesting results. Visits were also paid to the shady parts, and differences in the plankton between them and the open parts were found to occur. Collection from the shore by means of the hand net were made. Mr. Stickland largely devoted his efforts in this direction, the other members paying more attention to the gatherings from the lake by means of the boat and tow net.

The lake has been formed from what was originally a swamp covered with tea-tree, some of which may still be seen growing near the eastern arm of the lake. Part of the scheme for the prevention of floods in the lower reaches of the Yarra was the straightening of the channel of the river. During the course of this work a bend in the river bordering the Gardens was cut off, and when the new boundaries were made this piece of water was enclosed in the Gardens, and made part of the lake, which now covers an area of several acres. The easterly extremity is shallow, being only three or four feet in depth; but the western end, being part of the old river, is considerably deeper, being in places over twenty feet deep. There is a very dense growth of weed, which keeps the Gardens staff well employed in keeping it within reasonable bounds. The interesting plant *Vallisneria* is the most plentiful. The lake is supplied with

water from a reservoir in Studley Park, which is filled from a pumping station on the Yarra, near Dight's Falls, and therefore it must receive from time to time importations from the reaches of the river higher up.

The first visit of the series was made on 26th June, 1915, when an excursion of the Microscopical Society was held. Afterwards the visits were made approximately fortnightly for a year, the last of the series being on 9th June, 1916. The dates of the visits only varied a day or two either way from the exact fortnightly interval.

It was early noticed that the better swimmers among the plankton were found diffused throughout the lake, and special attention was given to these in order to find indications of periodicity of occurrence. The examination was largely directed to this aim. The material was taken home and searched over as soon as possible — Mr. Searle specializing on the Entomostraca, Mr. Stickland the Protozoa, and Mr. Shephard dealing with the Rotifera. Early examination is specially necessary in the two last-mentioned groups, as, when crowded in the jars, it was found that forms extremely plentiful on collection would disappear in a few hours and leave no trace. As already stated, preservation of the material was not attempted to any extent, attention being focussed chiefly on recording the occurrence of the various forms observed. Estimates of the relative prevalence of the forms were made.

The material obtained would have occupied the whole time of several workers to fully deal with it, and, as the work was effected in the leisure time of those concerned, it will be understood that the list of actual identifications of the groups mentioned by no means represents the whole of those to be found in the lake. It is manifest that sedentary forms collected round the margin from a few positions could not be relied on to give accurate results as to their prevalence at a given time throughout the whole lake, the number of such found on a given occasion being more dependent on the diligence of the collector than the actual occurrence of the animals themselves. A sedentary form cannot spread rapidly, and may occur on the plants at one part of the shore and be entirely absent at another. If, however, a sedentary form is found in every place tried, and on a number of successive visits, it must then be regarded as prevailing throughout the whole area. Such a case would be an exception, and such were found.

Vorticella campanula was on several occasions found on every bit of stick or weed examined over a large area. *Cordyllophora lacustris* also occurred in this way. This latter form, known for many years as an inhabitant of this lake, seemed to disappear for something like fifteen years, but was, during the whole

time of this examination, very plentiful, the growth of colonies on small branches secured to stakes in shady positions being watched for months. Very large aggregations were found on willow roots and floating branches. The sexual stages of this hydroid were not seen, although carefully looked for. Some years ago a sedentary rotifer, *Lacinularia elongata*, occurred very plentifully over a large area of the lake, but no member of this group occurred similarly during the period of this investigation. *Megalotrocha alboflavicans* came nearest to it, being nearly always noted. Polyzoa of the world-wide species, *Plumatella repens*, occurred in great quantity in separated colonies. Another form, *Fredericella sultana*, was found, but was not nearly so plentiful. The free-swimming forms must be regarded as the best subjects to reveal indications of periodicity of occurrence. Volvox—claimed by botanist and zoologist alike—although a slow swimmer, is certainly a diffusible form, and was noted on every visit; two species were found—a monœcious form, closely resembling descriptions of *V. globator*, and a diœcious species, which is probably *V. aureus*. This latter greatly preponderated in number. Warm weather evidently favoured the growth of this organism, for it was found in the summer in enormous quantity. A relation was established between Volvox and the parasitic rotifer *Proales parvita*. Whenever Volvox was plentiful, then *Proales* was found in numbers. Two of the workers were able to settle for themselves the question as to how the rotifer finds its way inside the hollow sphere of Volvox, for they were repeatedly observed eating their way through the walls of their temporary cage and swimming away in search of another victim. The converse operation of entering another host was not witnessed, but sufficient of the process was seen to leave no doubt that entrance was similarly effected. Developing ova of *Proales* were found in Volvox on several occasions.

Regarding the three groups, Entomostraca, Rotifera, and Protozoa, the two former were chiefly obtained by the systematic use of the tow-net, and the results in the case of the species occurring with sufficient frequency are shown graphically on the appended diagram, drawn up with the kind assistance of Mr. A. D. Hardy. Besides the forms thus indicated there were many others, the complete list of forms certainly identified comprising twenty-two species of Entomostraca, forty-eight Rotifera, and fifty Protozoa. The most noticeable feature in the list of Entomostraca is the absence of *Daphnia carinata*, found in most of the ponds around Melbourne. It is a large and variable species, and, when present in a pool, is generally found in considerable numbers. On a visit to the lake some two years prior to starting on this investigation, another—and,

till then, rare—species of *Daphnia*, *Daphnia lumholtzi*, was found to be extremely numerous; this disappeared very quickly, and during our year's collecting not a single specimen of it was taken. The almost complete absence of the Ostracoda was also noticeable. A few specimens of *Cypridopsis minna* were taken on one or two occasions, but species like *Cypris leana*, that delight in weedy pools, were absent from every gathering we made. The Copepoda in the list are found in all the pools around Melbourne, and one would expect to find other species common to the Yarra valley represented in the lake; but they were not seen throughout the year under notice.

All the great groups of Protozoa were represented in the material collected, with the exception of the Sporozoa, which, being endo-parasitic animals, were, of course, not noted. Fixed and free-swimming forms were nearly equally numerous. Of the genera comprised in the former, nearly half consisted of Vorticella and its allies; one of these latter—a Vaginicola with an annulated tube or lorica—being probably new to science. It is not, however, confined to the Botanic Gardens lake. Protozoa, with few exceptions, were not taken in great numbers at any one time. The times of occurrence of several species, however, seem to indicate that the appearance of many, at any rate, is not confined to special seasons.

Of the Rotifera, the absence of new forms is noticeable. Three forms are, however, possibly new—a species of *Anuræa*, an *Asplanchna*, and a *Conochilus*. The *Anuræa* was first seen by one of the party some time previously at Laanecoorie, and obtained later by Dr. Kaufmann near Box Hill, and it has been observed in other localities, occurring plentifully. In the lake it was fairly numerous. None of the literature referred to shows any figure at all like it. The genus *Asplanchna* is a puzzling one to divide into species. Mr. Rousselet endeavoured to make several common species clear, and pointed out some mistakes of identification; yet with his paper at hand it was impossible to certainly identify the form found at the lake, for the characters relied upon by that authority to separate the respective species appeared to occur simultaneously in the form in question. The *Conochilus* appeared very interestingly in a collection made in Great Lake, Tasmania, during the progress of this work. It was found in immense numbers, and ample opportunity for examination was afforded. Years ago this form was seen in collections from Heidelberg. Mr. Rousselet, to whom drawings were submitted, was inclined to regard it as *C. unicornis*, the species it nearly resembles; but fuller opportunities of examination strongly lead to the decision that it is not identical. In this connection it may be mentioned that *Pterodina trilobata*, a form included in the

appended list, was doubtfully regarded at first, but has since appeared in South African collections, and is now fully accepted.

A full list of the forms identified is given below :—

ENTOMOSTRACA.

Boeckella symmetrica.	Cyclops australis.
„ oblonga.	Ilyocryptus (sp.)
„ asymmetrica.	Chydorus globosus.
„ tenera.	Alonella (sp.)
„ minuta.	Brunella viridis.
Ceriodaphnia rotunda.	„ longicornis.
Simocephalus gibbosus.	Camptocercus australis.
Bosmina longirostratus.	Atheyella australica.
„ (sp.)	Pseudomoina lemnae.
Cyclops leuckarti.	Pleuroxis inermis.
„ albidus.	

ROTIFERA.

RHIZOTA.		Anuraea aculeata.
Melicerta ringens.	„ cochlearis.	
„ conifera.	„ (sp.)	
Floscularia coronetta.	Asplanchna (sp.)	
„ campanulata.	Rattulus carinatus.	
Lacinularia elliptica.	„ longiseta.	
„ elongata.	Diurella stylata.	
„ socialis.	Triarthra longiseta.	
„ reticulata.	Polyarthra platyptera.	
Cephalosiphon limnias.	Euchlanis macrura.	
Æcistes (sp.)	„ dilatata.	
Limnias ceratophylli.	Brachionus urceolaris.	
„ natans.	„ angularis.	
„ annulatus.	„ pala.	
Megalotrocha alboflavicans.	„ bakeri.	
Conochilus (sp.)	Monostyla bulla.	
	Noteus quadricornis.	
	Salpina macracantha.	
	Proales parasita.	
	Metopidia acuminata.	
	Scaridium (sp.)	
	Stephanops (sp.)	
	Pterodina trilobata.	
	„ patina.	
	Dinocharis pocillum.	
	Pedalion (sp.)	

PROTOZOA.

SARCODINA.		MASTIGOPHORA.	
Arcella vulgaris.		Anthophysa vegetans.	
Centropyxis aculeata.		Astasia trichophora (?)	
Diffugia pyriformis.		Dinobryon sertularia.	
Actinophrys sol.		Euglena viridis.	
Actinosphaerium eichornii.		Codosiga (sp.)	

Monosiga (sp.)
Phacus triqueter.
Rhipidodendron huxleyi.
Stylobryon petiolatum.
Peridinium (sp.)
Spongomonas intestinalis.
Trachelomonas lagenella.
 " *hispida*.
 " " (sp.)
Uvella virescens.

INFUSORIA.

Carchesium polypinum.
Coleps hirtus.
Chilodon cucullulus.
Euplotes patella (?)
Epistylis flavicans.
Litonotus diaphanus.
Loxophyllum meleagris.
Paramecium bursaria.
 " *aurelia*.

CRUSTACEA.

Niphocaris (sp.)

Platycola dilatata.
 " *longicollis*.
Pyxicola affinis (?)
 " *carteri*.
Pyxidium inclinans.
Opercularia nutans.
Ophrydium sessile.
Ophryoglena atra.
Trachelius ovum.
Trachelocerca olor.
Stentor polymorphus.
 " *roeselii*.
 " *barretti*.
Stichotricha secunda.
Stylomichia mytilus.
Thuricola operculata.
Urocentrum turbo.
Vaginicola crystallina (?)
 " (sp. nov. ?)
 " *grandis* (?)
Vorticella campanula.
Volvox globator (?)
 " *aureus* (?)

HYDROIDS.

Hydra oligactis.
Cordyllophora lacustris.

POLYZOA.

Plumatella repens.
Fredericella sultana.

RE-NAMING AUSTRALIAN BIRDS: IS IT NECESSARY?—Mr. A. J. Campbell, C.M.B.O.U., &c., has issued in pamphlet form an address delivered at a conversazione of the Royal Australian Ornithologists' Union on 3rd July last. The object of the address is to call attention to the hopeless confusion into which the list of Australian birds is being thrown by those energetic literary ornithologists who are engaged in searching obscure and scarce literature for chance references and earlier names for many of our birds. He contends that the greater number of Gould's names are scientifically correct, and should remain as the basis of an Australian bird-list. Many of these names have been in use for upwards of seventy years; why replace them with names which, in many instances, are totally inapplicable? And we think most naturalists will agree with his contention. Mr. Campbell promises, after the war, a volume descriptive of his experiences in various parts of Australia, which should have a ready sale.

Field Naturalists' Club of Victoria

EXHIBITION OF WILD FLOWERS

MELBOURNE TOWN HALL

Tuesday, 1st October, 1918

OPEN AFTERNOON AND EVENING

Members and friends are requested to make a strong effort to secure Wild Flowers for the Annual Display, to be held as above, in aid of the National Fund of the Y.M.C.A.

Large quantities of flowers will be required for display and for sale.

It will greatly facilitate handling at the Town Hall, where little time is available for setting out the flowers, if **each species is kept separate** and, if possible, **forwarded in bunches**. The stems should be well wrapped in damp paper or cloths, and enclosed in wooden or tin boxes, lined with paper.

DO NOT SPRINKLE WATER OVER THE BLOOMS.

Consignments from Country friends should be timed to **reach Melbourne** by last trains on Monday, 30th September, addressed—

“Field Naturalists' Club,

“Town Hall,

“Melbourne.

“Cut Flowers—Perishable.”

with name of sender marked thereon.

Gummed printed labels will be supplied on application.

Railway freight will be arranged at this end.

Notification should be given to the Secretary, Mr. E. S. Anthony, 448 Collins Street, Melbourne, that packages have been despatched.

SPECIAL NOTICE.

Wild Flower Show—Ladies' Committee.—Ladies willing to assist at the forthcoming Exhibition of Wild Flowers in any capacity are desired to communicate with Miss A. Fuller (convener), 20 Berkeley Street, Glenferrie, as soon as possible in order that plans may be promptly arranged.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted per box of 1 oz.,	2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. ••••• CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 10th October, 1918.

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

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

CONTENTS :

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	85
EXCURSION TO BAYSWATER	85
EXCURSION TO CLAYTON	86
EXCURSION TO BLACK ROCK	87
TRACKS OF GARDEN SNAIL. BY THOS. STEEL, F.L.S. ..	91
AN ORNITHOLOGICAL TRIP TO THE NHILL DISTRICT. BY F. ERASMUS WILSON	93

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST {D. EXTRA.})

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-31 BOURKE ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 14th OCTOBER, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Mr. John Henry King,
" Bolewin, Burke Road,
East Malvern.

Mr. F. B. Sutherland,
Vauxhall Road,
Canterbury.

PROPOSER.

Mr. C. C. Plante.

Mr. E. E. Pescott, F.L.S.

SECONDER.

Mr. A. D. Hardy, F.L.S.

Mr. C. French, Jr.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"A Sketch of the Geological History of Australian Plants (second paper)—
The Mesozoic Flora." By Mr. F. Chapman, A.L.S.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 6. OCTOBER 10, 1918.

No. 418.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on 9th September, 1918.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about 60 members and visitors were present.

CORRESPONDENCE.

From Mr. A. H. E. Mattingley, stating that pressure of departmental duties made it impracticable for him to leave the State during the near future, and withdrawing his offer to go to Macquarie Island in connection with the oil industry.—Received.

From the Microscopical Society of Victoria, offering to show micro-exhibits at the wild-flower show on 1st October.—Received.

REPORTS.

A report of the excursion to Bayswater on Saturday, 24th August, was read by the leader, Mr. J. W. Andas, F.L.S., as follows:—Owing to the rainy conditions prevailing, only four members took part in the excursion to Bayswater. The party included two ladies, who expressed themselves pleased with the outing, notwithstanding the unfavourable weather. On leaving the station we proceeded along the railway reserve, and came across many early spring flowers in bloom, but nothing of any great rarity was noticed. On reaching the Dandenong Creek we diverged a short distance from the railway enclosure in a westerly direction, and obtained a good view of the Silver Wattle, *Acacia dealbata*, displaying its annual wealth of beautiful bloom along the banks of the stream. Other Acacias, such as *A. stricta*, *A. melanoxydon*, and *A. myrtifolia*, were in full flower—the latter, a pretty little shrubby plant with its glorious yellow blossom and beautiful scent, being worthy of special mention. Everywhere the dwarf shrub, *Hovea heterophylla*, was met with displaying its bluish flowers, while its relative, the climber *Hardenbergia monophylla*, with bright purple flowers, was equally conspicuous. About twenty-five species of plants were seen in flower, of which the more interesting were:—*Euphrasia collina*, *Pultenaea stricta*, var. *Gunnii*, *Spyridium parvifolium*, *Acacia tenuifolia*, *A. juniperina*, *Stackhousia linariifolia*, *Leptorrhynchus tenuifolius*, *Pimelea humilis*, *Dillwynia cinerascens*, *Hakea acicularis*, and the orchid *Pterostylis longifolia*. We returned from Ringwood, which

was reached at about 6 p.m., after an interesting walk of about four miles.

The botanical excursion to Clayton on Saturday, 31st August, was reported by the leader, Mr. H. B. Williamson. Fifteen members, including the president and assistant secretary, spent a pleasant and profitable time in the afternoon around Clayton, and were favoured by fine weather. Although rather early for most of the spring flowers, the number of species recorded was very fair. From Clayton railway station the party walked in a north-westerly direction for half a mile into a patch of Manna Gums growing on a sandy rise, and sheltering tea-tree, heaths, and various scrub plants. The form of *Eucalyptus viminalis* growing here and elsewhere on this coastal region is rather puzzling to one accustomed to the smooth-barked form which grows to such a fine tree, and it takes a good deal of inspection to distinguish it from *E. Stuartiana*. Among the scrub, Silky Tea-tree, *Leptospermum myrsinoides*, Wedding Bush, *Ricinocarpus pinifolius*, and Common Heath, *Epacris impressa*, were most conspicuous, the first not yet blooming, the second just coming out, and the last rather past its best. Three Hibbertias—"Guinea-flowers"—made a good show, especially *H. densiflora* and *H. fasciculata*. Grey Bossea, *Bossia cinerea*, Gorse Bitter Pea, *Daviesia ulicina*, Common Hovea, Common Flat Pea, *Platylobium obtusangulum*, and Scarlet Coral Pea, *Kennedyia prostrata*, were the only leguminous plants found in bloom, except the Acacias, the Bossea being by far the most attractive. Of Acacias in bloom, *A. oxycedrus*, *A. stricta*, *A. juniperina*, and *A. armata* were the only ones noted, the first-named being the most abundant, and the last chiefly along the fences as a hedge plant. One tree of Lightwood, *Acacia implexa*, was seen badly infested with galls, but not in bloom. The search for orchids was rewarded by the finding of *Pterostylis nutans*, Nodding Greenhood, *P. concinna*, Trim Greenhood, the little *Acianthus exsertus*, Common Gnat Orchid, and the larger Glossodia. Of lilies only one was noted in bloom—*Chamaescilla corymbosa*, Blue Squill. This patch of timber and scrub is near the Clayton school, and the leader stated that it formed a favourite collecting-ground for his pupils, who had brought to school and pressed about 360 species since October last, probably 200 of which were gathered in this scrub. With the help of his pupils he intends to make a census of the locality, which comprises about 80 acres. Leaving this area, the party proceeded along the North-road to the railway crossing, and there made a detour to the south into the heath scrub, which was found to contain small areas of depression where water lodges, and which are difficult of access at this time of the year. These areas are worth searching in the late

months of the year. Swamp Daisies, *Brachycome cardiocarpa*, in bloom, were found by our party. After loading themselves with wild-flowers, the excursionists walked by the shortest route to Oakleigh, where they entrained for home.

A report on the botanical excursion to Black Rock on Saturday, 7th September, was read by Mr. J. W. Audas, F.L.S., who, in the unavoidable absence of Mr. J. P. M'Lennan, had led the party. The day was gloriously bright and springlike—an ideal day for collecting botanical specimens—and a large number of excursionists took advantage of the weather. On leaving Sandringham station the party took cabs to Black Rock. Here some little time was devoted to plants growing near the seashore, many of which were seen in flower, such as *Leucopogon Richei*, *Myoporum viscosum*, *Clematis microphylla*, *Rhagodia Billardieri*, *Atriplex cinerea*, *Leptospermum lævigatum*, *Muehlenbeckia adpressa*, *Tetragona implexicoma*, and *Acacia sophoræ*. Under the tea-tree the orchids *Pterostylis nutans* and *P. concinna* were fairly common. On turning inland near the Ebdon Park estate the more showy orchids, *Glossodia major* and *Thelymitra antennifera*, were noted. Here also the Acacias *A. suaveolens*, *A. armata*, and *A. oxycedrus* were prominent features, together with *Correa speciosa*, *Bossia cinerea*, *Daviesia ulicina*, *Casuarina distyla*, *Ricinocarpus pinifolius*, *Hibbertia densiflora*, *H. fasciculata*, *H. stricta*, and *Leucopogon virgatus*. Having ascended a hill, we had a splendid view of the surrounding country, and noted the much-increased building operations, which have greatly curtailed this collecting-ground during the past few years. From here the party rambled for about two miles through the heathy country towards Cheltenham, and searched for flowers, with very good results. During the afternoon about fifty species of plants were noted in bloom, the more noteworthy being *Pimelea octophylla*, *P. phyllicoides*, *Hypolaena fastigiata*, *Trachymene heterophylla*, *Stylidium graminifolium*, *Aotus villosa*, *Microseris Forsteri*, *Goodenia geniculata*, *Kennedy prostrata*, *Platylobium obtusangulum*, *Chamaescilla corymbosa*, *Anguillaria dioica*, and *Hypoxis glabella*. Passing through the Cheltenham Cemetery *en route* we observed some fine specimens of the Lilly-pilly, *Eugenia Smithii*, laden with its large purplish fruits. Taken altogether, the outing was much enjoyed by the members present, who numbered about twenty-one. We returned to town by the 5.15 p.m. train from Cheltenham.

ELECTION OF MEMBERS.

On a ballot being taken, Miss W. Gill, Hawksburn-road, Hawksburn, and Mr. Wm. Miller, St. George's-road, Croxton, were elected as ordinary members; and Miss Elsie Hearn, of College-parade, Kew, as an associate member of the Club.

GENERAL BUSINESS.

Penguin (and other) Oil Industry.—The president reported that Mr. Kershaw and he had made many inquiries, and finally it had been decided to invite Capt. White, of Adelaide, to represent the Club at any inquiry at Macquarie Island into the methods of oil production, especially where it concerned the alleged danger of decimating the penguins and other animals. The Premier of Tasmania had written, in reply to a communication by the sub-committee, as follows:—

"Dear Sir,—Referring to your communication of the 16th instant with regard to the destruction of penguins and sea-elephants at Macquarie Island, I beg to inform you that a licence was granted to Mr. Joseph Hatch in connection with the penguin oil industry, after a very full inquiry, and with the concurrence of the Ornithological Association, Melbourne. The lessees have to provide free transit and sustenance for a Government expert to accompany them. A Captain White, of Adelaide, is undertaking these duties in an honorary capacity.

"Instructions have been issued that no Emperor Penguins are to be killed; neither is the existing plant to be increased, and, if necessary, all arrangements entered into with the lessees are to be subject to three months' notice.—Yours faithfully,

"(Signed) W. H. LEE, Premier.

"29th August, 1918."

Captain White, the chairman said, was willing to represent the Club if occasion offered, but no definite arrangement had been made when that gentleman's letter came to hand. Meanwhile, Mr. Mattingley had, owing to pressure of business, found it impracticable to make good his offer.

Wilson's Promontory National Park.—The president stated that, as a member of the sub-committee appointed at last meeting to watch and act if required in the matter of tin-mining in the park, he had attended a deputation to the Minister of Mines (Mr. Barnes, M.L.A.) Many representative men were present besides naturalists. He asked Professor Sir Baldwin Spencer, who had put the case for the societies, to report the proceedings, and, if he could, forecast the result.

Professor Spencer said:—"We had our deputation to the Minister of Mines, and the Minister of Lands was also there. We had a deputation which was strongly representative of all the societies. We placed the case before the Minister. We were introduced by Mr. Mackey, the present Speaker, who, years ago, when he was Minister for Lands, was instrumental in preserving the Promontory. We put the case as strongly

as we could, and I am glad to say we had the support of all the clubs, and more especially of the A.N.A. They are very strongly with us, and I hope that the result of that will be that there will be no leasing of land for mining purposes in the Promontory. We must leave no stone unturned to achieve that result. The forces against us are very strong, of course, at the present time. No one who feels what the Empire needs would like to feel they were hurting the Empire, but what we do feel is that the claims that have been put before the Minister to obtain the minerals on the Promontory are rather feeble. There are, of course, many other parts of Australia and Victoria which could more easily be exploited than the Promontory. This society was the first to move in the direction of having the Promontory preserved. It is quite possible that the Minister of Mines may go down and see that great extent of country apparently idle; it is, and we hope it will remain so. The deputation was successful, and the representatives of the Club are doing their best to see that the area be maintained always as a National Park."

The president said that there was some danger of the Minister going down there uninstructed from the society's point of view. It was impossible, in the time of a deputation, to cover all the ground without wearying the interviewed one; but what did the average Minister know about natural history? The park was for more than large animals like kangaroos, emus, and the like. The platypus, water-rat, bandicoot, and other shy creatures were desired to multiply there, and the Minister might easily go down and see nothing of these timid ones of the sanctuary. Tin-mining, if allowed, would make their increase impossible, and their extermination probable. He thought that a representative of the Club should be appointed to go down with the Minister if the opportunity was offered.

Sir Baldwin Spencer urged the utmost vigilance by the Club and individual members. He moved, and Mr. Pitcher seconded, a resolution that Mr. Kershaw, F.E.S., represent the Club. The resolution was carried unanimously.

Brisbane Ranges.—Mr. St. John gave notice of his intention to move later for action towards reservation of the Brisbane Ranges as a National Park, which could be visited in a day's excursion. Mr. Chas. French, jun., said he favoured and would support the proposal.

WILD-FLOWER SHOW.

The president said that the show arrangements were well in hand, and he reported progress of the show committee's work. The hon. editor, Mr. Barnard, was in Western Aus-

tralia, and hoped to be able to send over a fair sample of the flora of that State, as he had written enthusiastically concerning it. The assistance of the Microscopical Society would materially help towards success.

An animated discussion took place concerning the time for the sale of floral exhibits at the show. Miss Nethercote desired to have the selling begun before the visitors wearied and dropped out. She suggested 8.45 p.m. as the time. Miss Rollo suggested that the flower exhibits be sold all the time, but that no exhibit so sold be removed before 9 o'clock.

On a motion by Mr. C. J. Gabriel, seconded by Mr. Daley, F.L.S., it was decided to alter the time of selling from 9.30 to 9 o'clock.

REMARKS ON EXHIBITS.

Mr. A. L. Scott described for the uninitiated the meaning of polarized light and cross nicols in connection with his exhibit of zeolites.

Mr. Audas referred to a previous record of *Haloragis rubra*, the late Charles Walter having noted it for the Wimmera district in 1905, and stated that the species is endemic to Victoria.

Mr. P. Crosbie Morrison remarked, in connection with his exhibit of water-beetles, that Professor Sir Baldwin Spencer had raised a question relating to the migratory habits among lower forms of life. He wished to record that at about the beginning of last February he came upon a tremendous crowd of water-beetles, composed of two distinct species, one belonging to the Dytiscidae and the other to the Gyrenidae. They covered the whole surface of the river for a quarter of a mile, and the whole mass apparently was moving up-stream.

PAPER READ.

By Mr. F. Erasmus Wilson, entitled "An Ornithological Trip to the Nhill District."

The author gave an interesting account of bird-life in the Nhill district, in the southern part of the Mallee, some 240 miles north-west of Melbourne, where a large number of characteristic birds of the district were met with.

The president congratulated the author on having read an informative and interesting paper. When the National Park question had been settled and the Brisbane Ranges scheme launched, the time would have arrived for the reservation of a Mallee sanctuary, since there were forms of animal and plant life there which would not survive transference to Wilson's Promontory.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—*Haloragis rubra*, Schindl., Red Raspwort, collected by Mr. Smith at Sunbury, 15/6/18.

By Miss A. Fuller.—Orchids collected during the excursion to Black Rock.

By Mr. C. J. Gabriel.—Marine shells—*Chlamys leopardus*, Rve., from North-West Australia; *C. pallium*, Linn., from Malden Island; *Chlamys plica*, var. *flabelloides*, Rve., from Japan.

By Mr. F. Keep.—*Acacia prominens* and *A. fimbriata*, for comparison.

By Mr. P. Crosbie Morrison.—Water-beetles of the families Dytiscidæ and Gyrenidæ.

By Mr. A. L. Scott.—Zoolites from Giant's Causeway, Ireland, between crossed nicols.

By Mr. H. B. Williamson.—*Grevillea Williamsoni*, F. v. M., collected in Grampians, October, 1893.

After the usual conversazione the meeting terminated.

TRACKS OF GARDEN SNAIL.

BY THOS. STEEL, F.L.S.

(Communicated by E. S. Anthony.)

(Read before the Field Naturalists' Club of Victoria, 8th July, 1918.)

IN the *Victorian Naturalist* for March last (vol. xxxiv., p. 171) Professor Baldwin Spencer asks for information regarding the track left by the common introduced garden snail, *Helix aspersa*, which is in the form of a series of short, thick, detached lines or patches. I have made a number of observations on the subject, and think I have arrived at the correct explanation.

The mucus which forms the track appears to be discharged intermittently from the orifice of the large mucus gland near the anterior end of the ventral surface, and its purpose is to serve as a lubricant for the smooth passage of the animal's body. As the animal moves forward the mucus is thus deposited in isolated portions, with the result that on a rough surface, such as asphalt, most of the mucus remains where deposited, and is not spread forward to any extent. On a smooth surface, such as glass, the mucus is carried forward, through the animal's ambulacral surface being in close contact with the glass, and so a continuous trail is formed. When snails crawl on rough surfaces, such as asphalt, wood, or a hard earth footpath, the mucus is frequently carried across from one deposit to another in the form either of a thin film or a mere thread, thus forming

a series of connections or bridges between successive discharges.

Snails crawling on linoleum leave a very clear intermittent trail, the waxy surface of the linoleum not lending itself to the spreading of the mucus as glass does, and thus tending to preserve intact the separate deposits. When a snail is crawling on glass the muscular motion of its foot or sole is very clearly seen from beneath, passing forward in a series of simultaneous waves like those seen in the legs of a crawling myriapod. The tracks of slugs, *Limax*, &c., closely resemble those of snails, but on a smaller scale, and the bridging from one deposit to another, on rough surfaces, is usually more complete.

Both snails and slugs secrete two kinds of mucus, apart from that secreted by the genital mucus gland. That forming the track is, as has been mentioned, the product of the large ventral mucus gland. In both cases it is a clear, glairy, very tenacious substance. When the animal is crawling quietly, without being disturbed, the mucus is quite translucent, and under the microscope shows only a few scattered rounded cells and some nucleated cells, which I suppose to be epithelium cells. As a distinctive term I would propose to call this secretion the ambulacral mucus. On the other hand, the secretion coating the dorsal surface, both of snails and slugs, and which may perhaps best be distinguished by terming it dermal mucus, is turbid, and when examined microscopically is seen to be densely crowded with minute structureless granules or cells of varying dimensions, mostly sausage-shaped, and reminding one of a crowd of diatoms. When the animal is irritated by touching or in other ways, the secretion is poured out abundantly. It is the product of numerous epidermal glands resembling those described by Dr. A. Dendy in his description of the anatomy of a land planarian, *Trans. Royal Soc. Victoria*, 1889. (See also "Outlines of Zoology," by J. Arthur Thomson, 1892 edition, pp. 319, 321.)

Sometimes, particularly when the animal is disturbed when crawling, the mucus of the track contains portions of the dermal mucus trailed off as the snail moves along. The ambulacral mucus is frequently stained with streaks of yellow or green, through contamination with excrementous matter. Snail mucus is not coagulated by boiling water, but is coagulated through dehydration, by alcohol.

I have used the term "mucus" in referring to these secretions because I think it a better term than slime, which is sometimes used, and besides, in the text-books, the large ventral gland is usually known as the mucus gland.

It may be here mentioned that in *Proc. Linn. Soc. New South Wales*, 1915, p. 114, there is an illustrated paper by the present writer describing the feeding tracks of *Limax maximus*.

AN ORNITHOLOGICAL TRIP TO THE NHILL DISTRICT.

By F. ERASMUS WILSON.

(Read before the Field Naturalists' Club of Victoria, 9th Sept., 1918.)

ACCOMPANIED by my wife, I left Melbourne by train on 3rd October, 1917, *en route* for Winiam East, a district lying about 10 miles south-east of Nhill, and bordering the northern fringe of a so-called desert, which stretches for some 20 miles towards the Grampians. Next evening we arrived at the home of our host, Mr. Robert Oldfield, who had kindly invited us to spend a holiday with him.

Four types of country are found in this district, viz.:—(a) Well-grassed flats, timbered with a variety of White Gum, Grey Box, *Eucalyptus goniocalyx*, and Buloke (Casuarina). (b) Buckshot ridges, which are densely clothed with Broom-bush, *Melaleuca uncinata*, interspersed with mallee eucalypts of two varieties, Casuarinas, Hakeas, and the beautiful holly-like Grevillea, *G. æquifolium*. These ridges derive their name from the fact that the soil is thickly strewn with ferruginous pebbles somewhat resembling shot in appearance. (c) White sandy country, upon which the principal vegetation is Brown Stringybark, *E. capitellata*, a species of Banksia, and an occasional Murray Pine (*Callitris*). (d) The above-mentioned desert, which is mostly low-lying, flat country, with occasional sandy hillocks dotted about. Stunted Sheoke, *C. distyla*, a dwarfed growth of Banksia, and many kinds of short flowering shrubs abound, whilst the hillocks are scantily covered with Brown Stringybark.

Apart from the desert, the country is essentially mallee, but one misses the dense tracts of Porcupine Grass, *Triodia irritans*, that are met with further north, and which provide a home for such interesting forms of bird life as *Amytis* and *Stipiturus*. Porcupine Grass is found in the district, but only in small, isolated clumps, and the most diligent search failed to show any trace of the forms above mentioned. Otherwise, the ornithological fauna is much the same as that of the Kow Plains district, with one notable exception—viz., the Chestnut-backed Ground-Bird. Although the country is eminently suitable for this bird, I did not come across it in any of my rambles, and inquiries made locally convinced me that it does not inhabit the locality.

On the flats are many dead eucalypts, the hollow limbs of which provide ideal nesting-sites for the Parrot tribe. The Red-backed Grass-Parrot, *Psephotus flammatonotus*, is by far the commonest species, and at the time of my visit most of them were busily engaged in rearing their broods. I was much interested in observing a male feeding his mate, which

he usually does in a tree some distance from the nest. Having delivered one beakful, he always seemed to have some difficulty in regurgitating the next lot, and would keep bobbing his head, first down and then up, in his effort, the time taken in regurgitating a beakful averaging about ten seconds. These birds are exceptionally tight sitters, and it is almost impossible to flush them from the nesting hollow by the usual method of hammering the tree with a tomahawk. They are very fond of charcoal, and I have vivid recollections of pilgrimages of these beautiful birds to a charcoal heap in the Gunbower district. Mallee Parrots, *Barnardius barnardi*, Rosellas, *Platycercus eximius*, and Yellow-vented Parrakeets, *Psephotus xanthorrhous*, also breed locally, and Mr. Oldfield informs me that the Many-coloured Parrot also occasionally visits the district. I was disappointed in not meeting with species of the genus *Euphema*, but, from the description of a parrot supplied to me by a resident, I feel convinced that a more diligent search would have rewarded me. On one occasion I saw a flock of about sixty Black Cockatoos, *Calyptorhynchus funereus*, feeding on the seeds of eucalypts and Hakeas. The hollow trees were also tenanted by Boobook Owls, *Ninox boobook*, and Owlet Nightjars, *Egotheles novæ-hollandiæ*, but neither of these birds was at all plentiful.

The White Gums and a species of mallee were out in full flower, and thousands of Lorikeets had congregated to feast upon the nectar, the Purple-crowned species, *Glossopsitta porphyrocephala*, being by far the most numerous. A few Musk Lorikeets, *G. concinna*, and Swift Parrots, *Lathamus discolor*, were also identified in the flocks. When first I saw Purple-crowned Lorikeets entering a hollow I thought I had located a nest, but further observation, together with an examination of the hollow, showed me that they were only using it as a roosting-place, and had evicted a pair of Red-tipped Pardalotes, *Pardalotus striatus*, to further their convenience. In the case of two hollows observed, the birds would be away all day and return just before nightfall. Unlike other birds, instead of pausing before entering a hole, they dash straight in, and one wonders how they avoid injuring themselves owing to their impetuosity.

Red-tipped Pardalotes were calling everywhere in the White Gum timber, and every available knot-hole seemed to be occupied by them. Some had only started building, whilst occasional nests examined contained fully-fledged young. I discovered three nesting-hollows of the dainty little Tree-Martin, *Petrochelidon nigricans*, one being occupied by four birds and the other two by three birds each. One of the latter I was able to reach, and found it to contain a nest constructed of dry

grass and feathers from a young emu, and lined with small eucalypt leaves. It contained three fresh eggs. All three birds were very tame, and kept flying in and out of the hollow whilst I was sitting on a limb about two feet from the entrance. Four feet higher up a pair of Red-tipped Pardalotes were building a nest, and exhibited very little fear.

Wherever a few Grey Box trees grew, there would be found a family of Brown Tree-creepers, *Climacteris scandens*, and never far away would also be a pair of Babblers, *Pomatorhinus temporalis*. A large hollow near the house was occupied by a pair of Laughing Kingfishers, *Dacelo gigas*, and their family was hatched out soon after our arrival. The parent birds were singularly quiet, and I heard them laughing only on one occasion during my fortnight's stay. On 4th October I observed two Sacred Kingfishers, *Halcyon sanctus*, at the Nhill swamp. This is a week earlier than I have noted them in the vicinity of Melbourne.

Black-backed Magpies were very plentiful, and, whilst most of them were accompanied by their young, a few were still sitting on eggs. One was observed devouring one of the large mallee cockroaches, *Geoscaphus robustus*. Only two colonies of Choughs were noticed, and they had long since concluded their nesting operations. Black-winged Bell-Magpies, *Strepera melanoptera*, are rather rare hereabouts, and some had reared their young before my arrival. I succeeded in locating one nest built in a very slender sapling, that contained a pair of hard-set eggs. These birds are very wary, and silently leave the nest long before one gets anywhere near it.

There are some fine swamps in the vicinity that are generally tenanted by hosts of wild-fowl. They had all been dried up in the recent drought, and, having only been lately filled again, very little bird-life was present. The only species I noted were Mountain-Duck, Maned Goose, Black-throated Grebe, Little Cormorant, Spur-winged Plover, and White-fronted Heron. Mr. Oldfield is an adept at imitating the alarm call of the Noisy Miner, and would frequently amuse me by giving it when ducks or parrots were flying overhead. The effect was marvellous, the parrots immediately darting for the most bushy tree available, whilst the ducks dropped instantly into the water, expecting every moment to be attacked by a falcon or hawk. Mr. Oldfield remarked that it was an excellent artifice to utilize when duck-shooting, and had frequently stood him in good stead when the birds refused to alight within gunshot of him. Black-breasted Plover, *Zonifer pectoralis*, frequented the open paddocks, and from their actions I judged them to be nesting.

Mr. W. Blucher showed me two fine old nests of the Wedge-

tailed Eagle that had been used the previous season, and also one that was in course of construction. In the latter instance I was surprised to see the number of sticks beneath the nest, that had evidently fallen away before the birds had succeeded in building a stable foundation. At the base of one of the nests Spotted-sided Finches had built their grass home. A fine Whistling-Eagle was flushed from her nest situated in one of the highest trees in the district. The only other members of the Accipitriformes that I noticed were a Brown Hawk, *Hieracidea orientalis*, and a pair of Kestrels, *Cerchneis cenchroides*.

Above the crops, Brown and Rufous Song-Larks (*Cincloramphus*) vied with each other for vocal supremacy, the latter species being the more numerous. Pipits, *Anthus australis*, were very common in the crop lands, and were also seen on the desert where patches had been burnt. One nest, containing three fresh eggs, was found, completely hidden by a bunch of stubble that was lying over it. The Mallee form of the Australian Brown Flycatcher, which Mr. Gregory Mathews calls *Micræca fascians howei*, was seen occasionally, and I was fortunate in discovering a nest, placed on a horizontal fork of a eucalypt at a height of fifteen feet from the ground. It contained a handsome pair of fresh eggs. The nest was much more substantial and deeper than those of the *Micræca* that I have seen further south. The owners were waging constant warfare with two Black-and-White Fantails that were nesting near by, and who would persist in alighting near the Brown Flycatchers' nest. On two occasions I saw Restless Flycatchers, *Scisura inquieta*, and found their nests, one containing fresh eggs and the other fully-fledged young.

The gums being in blossom, honey-eating birds were naturally present in great numbers. The most conspicuous were the White-bearded species, *Meliornis nova-hollandie*. They were there in thousands, most of them attending to the wants of half-grown chicks. Three or four nests containing eggs were noticed, and I found that the favourite lining material was the felt-like matter that is obtained from the Banksias. The usual nesting site was in a Prickly Hakea bush. Other Honey-eaters identified were *Glyciphila albifrons*, *G. fulvifrons*, *Ptilotis ornata*, *P. penicillata*, *Acanthogenys rufigularis*, *Anthochaera carunculata*, and the Mallee forms of *P. leucotis* and *Melithreptus brevirostris*, the latter being a common bird. Once I thought I caught a glimpse of *P. cratitia*, but it was too far off for positive identification. Mr. A. J. Campbell records seeing this species north of Nhill. A nest of *P. nova-norciæ* found was in a very unusual situation, and is, I think, worthy of record. It was built in a bare fork of a gum sapling about twelve

feet from the ground; it contained two heavily-incubated eggs.

The genus *Pachycephala* is represented by two species, *P. gilberti* and *P. meridionalis*, the former being the more frequently met with, and I was fortunate in finding nests of each species. *P. gilberti*, as is well known, usually utilizes a deserted nest of the White-browed Babbler as a nesting site, but in one instance that came under my notice it had departed from the usual custom, and constructed the nest in a fork beside the Babbler's nest; so close was it, however, that it looked like a bulge upon the Babbler's nest. One nest of this species that I located when in course of construction eventually contained the unusual complement of four eggs, which, I was able to ascertain, were laid on four consecutive days. The nest of *P. meridionalis* was also built into a White-browed Babbler's nest; this is rather unusual for this species. Another bird that in the Mallee favours old nests of the Babbler is the Harmonious Shrike-Thrush, the notes of which, as I pointed out in a previous paper in *The Emu*, differ greatly from those inhabiting southern Victoria. The eggs also are smaller. Since my return I have received a unique set of eggs of this bird from Mr. Oldfield; they are almost entirely devoid of markings.

Scrub-Robins, *Drymodes brunneopygius*, were fairly plentiful in the Broom-bush country, and I succeeded in finding five nests, all of which were just ready for eggs. In each case, however, although I studiously avoided touching the nests, they deserted them. One pair of birds rebuilt near by, but I only found their second nest the day before my departure. One large young one was seen in the scrub, and was being fed by both parents. The notes of the Scrub-Robin, although uttered in a low tone, are remarkable for their carrying power, and this is often very misleading when one is endeavouring to locate a bird. *Hylacola cauta* is very rare at Winiam, and was only noticed on three occasions.

The common wren is the Purple-backed species, *Malurus assimilis*, and altogether I found seven nests. Four contained newly-hatched chicks, one was being constructed, and the other two contained sets of four eggs, one set being fresh and the other heavily incubated. Four eggs seem to be the usual complement, as three of the nests contained four young. Having had no previous experience of the nidification of this species, I at first spent much time searching in fairly thick cover, but later discovered that they select the most ridiculously open situations. They seem to rely for protection upon the old appearance of the nest. Most of them I found might easily pass at a first glance for one of last year's nests. One was placed at the foot of a dead Banksia, another in the bare

stems of a clump of Broom-bush, and the others were attached to the partially-foliaged, standing stems of mallee gums that had been cut off by the eucalyptus oil distillers. In each case I found two adult males in close proximity to the nest, apparently living in harmony, as no signs of discord were noticed on any occasion. The Winiam birds are larger than specimens of the same species that I collected at Kow Plains, and have very fine long tails. *Malurus cyaneus* is also present in the district, but is comparatively rare, and only inhabits the outskirts of the scrub. It also was breeding. A specimen I secured of this bird was compared with a series of skins of *M. cyaneus* kindly placed at my disposal by Mr. J. A. Kershaw, of the National Museum, Melbourne. It is small in comparison with skins obtained in Victoria, and approached nearest to a specimen labelled "Junction of Murray and Darling." The wings are paler than those of other Victorian birds, and the eggs are very small indeed, one set I obtained being spotted with black. It seems to be a bleached form, and perhaps an examination of a series of skins may lead to its obtaining sub-specific rank.

On two occasions I came across Black-capped Tree-runners, *Neositta pileata*, six birds forming the flock in both instances. A long search revealed a nest situated about 15 feet up in a dead stringybark sapling. It contained newly-hatched young, and all six birds assembled whilst I was investigating it.

The genus *Acanthiza* was represented by five species—*A. chrysorrhoa*, *A. lineata*, *A. reguloides*, *A. pyrrhopygia*, and a new species that I have named *A. winiamida*. Whilst speaking of *Acanthizas* I should like to acknowledge my indebtedness to Mr. Edwin Ashby, M.B.O.U., for placing at my disposal a very fine series of skins of *Acanthizas* to assist me in working out the new species. Three nests of *A. pyrrhopygia* were found, two containing fresh eggs and one with an incubated set. One of the nests had only just been started on 7th October. The nest was completed on the 10th, the first egg laid on the 11th, second on the 13th, and the third on the 15th. The Red-rumped Tit, like the Brown Tit, is a splendid mimic, and I heard it imitating the Narrow-billed Bronze-Cuckoo, the Short-billed Tree-Tit, and the Silver-eye to perfection. One nest was placed about four feet up in a *Hakea*, another about the same height in a *Casuarina*, and a third nest found was situated about a foot from the ground in a tiny *Casuarina* seedling.

Nesting-mounds of the Mallee-Fowl, *Leipoa ocellata*, were frequently met with in the dense scrub, but in only one instance had they started nesting operations, although an abundance of rain had fallen previously. Only one egg was found in the

nest that was being used. Mr. Oldfield visited this mound at a later date, and evidently disturbed the female just as she was about to lay. The mound had been scooped out, and he found a small conical hole, evidently prepared for the reception of the egg. After a careful examination Mr. Oldfield considered that the bird must have formed the depression by forcing her head into the mixture of sand and *débris*. From an examination of Mallee-Fowls' excreta it was evident that they eat the berries of the native cranberry, which grows rather plentifully in the neighbourhood.

Emu spoors and droppings are met with everywhere in the scrub, but on only one occasion did I see one. They breed in the district, and occasionally bring their offspring to feed on the crops. Mr. Oldfield has seen the old birds following the tracks of the seed-drills and picking up single grains of wheat. At one period of the year they subsist almost solely upon the flowers and berries of the Flame Heath, *Astroloma conastaphioides*. This was proved conclusively by numerous examinations of their excreta, which was almost a solid mass of the undigested seeds and portions of the flowers of this plant.

Two species of *Petroica* were observed—viz., *P. leggii* and *P. goodenovii*, but only one pair of each. Short-billed Tree-Tits were very abundant, and two nests, both in course of construction, were found.

Golden-rumped Pardalotes, *Pardalotus xanthopygius*, are rather rare, and after a diligent search one nest was found that contained four fully-fledged chicks. On being disturbed one of the chicks flew fully twenty yards, and successfully alighted on a limb, although it was the first time it had left the nesting-burrow. White-browed Babblers may be heard calling everywhere in the scrub country, and their bulky stick nests are quite a feature of the landscape. Eggs and young in all stages were noticed.

The order Columbiformes was represented by two species only—the Ground-Dove, *Geopelia tranquilla*, and the Bronze-winged Pigeon, *Phaps chalcoptera*.

On the last day of my visit Mr. Oldfield kindly drove me out to the salt lake that lies near the heart of the desert. In the summer time this sheet of water dries up, and quantities of beautiful white salt are collected. White Gums and thick tea-tree border the lake, whilst upon the ridge stunted grass-trees, *Xanthorrhoea australis*, and a few clumps of Porcupine Grass grow. The drive across the desert was made particularly enjoyable owing to the wealth of wild-flowers that were blooming on all sides, and the Biblical quotation, "And the desert shall blossom as the rose," never applied more aptly than it did upon that October morning drive. Glorious shades

of pink and blue were contributed by the boronias, *B. filifolia* and *B. carulescens*, and of yellow by the Yellow Stackhouseia, *S. flava*, and the Crowded Parrot-Pea, *Dillwynia floribunda*. Other interesting flowering plants were the Slender Rice-flower, *Pimelea linifolia*, Daphne Heath, *Brachyloma daphnoides*, Rosemary Grevillea, *G. rosmarinifolia*, and the Violet Spyridium, *S. subochreatum*. On the outskirts of the desert two varieties of Myrtle, *Micromyrtus microphylla* and *Calytrix tetragona*, grew in great profusion, their snowy-white and delicate pink-shaded blooms being good to look upon. Amongst this wealth of colour the plaintive call of the Tawny-crowned Honey-eater, *Glyciphila fulvifrons*, seemed much out of place. It assailed us, however, from all sides, as this bird is very common right throughout the desert. An occasional family of Purple-backed Wrens, a few Pipits, and the new *Acanthiza* seem to be the only species that dwell permanently in this arid country. The small belt of gums at the lake attracts a few other species, the following being noted there:—*Myzantha garrula*, *Rhipidura tricolor*, *Artamus sordidus*, and *Pardalotus striatus*.

I am indebted to Mr. Audas, F.L.S., of the National Herbarium, for identifying the various plants mentioned in the paper.

[Owing to pressure on space, the list of birds observed by Mr. Wilson will appear in the next *Naturalist*.—ED. Vict. Nat.]

THE GREAT WAR.—We regret to announce that another member of the Field Naturalists' Club has suffered bereavement through the loss of a son while on active service. We extend our sympathy to Mr. F. Pitcher, who was unable to take an active part in the recent exhibition of wild-flowers owing to the receipt of a cable stating that his younger son, Driver Ernest Arthur Pitcher, had died in France on the 17th of September. We trust that his brother Albert, still on active service, may be spared to return to his bereaved parents.

THE EXHIBITION OF WILD-FLOWERS.—It has not been possible to prepare an account of the annual exhibition of wild-flowers held in the Melbourne Town Hall on Tuesday, 1st October, in time for this *Naturalist*. The exhibition was again a marked success, and it is expected that the net result will closely approach that of last year. Members who received tickets for sale will greatly facilitate the closing of accounts by forwarding to the hon. treasurer, at once, all money in hand and unsold tickets.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Bisdon," Kelburn Street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSES. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 19TH OCTOBER.—**Ringwood.** Objects—**Orchids and Physiography.** Leaders—Messrs. C. French, Jr. and F. Chapman, A.L.S. Members will meet at Flinders Street Station (opposite Mutual Store), for 1.40 p.m. train. Second class return fare, 1/5.

SATURDAY, 26TH OCTOBER. — **South Morang.** Object — **Ornithology.** Under the leadership of Mr. G. A. Keartland. Excursionists will travel by Whittlesea train leaving Spencer Street Station at 1.34. p.m. Second class return fare, 1/6.

TUESDAY, 5TH NOVEMBER (CUP DAY).—**Labertouche via Longwarry.** Object—**General.** Leader—Miss Currie. Meet at Flinders Street Station (opposite Mutual Store) for 7.52 a.m. train. Second class return fare to Longwarry, 10/- Provisions should be taken. Intending excursionists are requested to hand their names to the leader or Hon. Secretary at the October monthly meeting in order that arrangements for conveyance from railway terminus may be made.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/8; 14 x 10, 7/8; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 6/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/8
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/8 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 7th November, 1918.

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

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

CONTENTS:

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	101
EXCURSION TO BENDIGO	107
AN ORNITHOLOGICAL TRIP TO THE NHILL DISTRICT ..	111
KITCHEN MIDDENS AND NATIVE OVENS	113
NOTES	112, 119, 120

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe:

DULAU & CO., 37 Soho Square, London.

Melbourne:

WALKER, MAY & CO., PRINTERS, 429-31 BOURKE ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 11th NOVEMBER, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—	PROPOSER.	SECONDER.
Miss R. Gunn 35 Merton Street, Albert Park.	Mr. A. D. Hardy F.L.S.	Mr. E. S. Anthony.
Miss B. Jennings, 70 High Street, Malvern.	Mr. F. Pitcher,	Mr. J. Gabriel.
AS COUNTRY MEMBER.		
Miss E. E. Mackenzie, 5 Clissold Street, Ballarat East.	Mr. C. J. Gabriel	Mr. C. Daley, F.L.S.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"Science in Antarctica." By Dr. Griffith Taylor, B.E., B.A., F.G.S. Illustrated by Lantern Slides.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 7. NOVEMBER 7, 1918.

No. 419.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th October, 1918.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

REPORTS.

A report of the excursion to Bendigo on Saturday, 14th September, was given by Mr. C. Daley, B.A., one of the leaders, who said that, considering the distance, a fair number of members had attended. Attention was principally directed to the flowering plants, of which many species not to be found in the neighbourhood of Melbourne were noted. Among them may be mentioned the Fairy Wax-flower, *Eriostemon obovalis*, the Anemone Boronia, *Boronia anemonifolia*, *Loudonia Behri*, &c. He said the district was one exhibiting several plant formations, and should be worth visiting again. He was greatly indebted to his co-leader, Mr. D. J. Paton, for his local knowledge in selecting interesting localities.

A report of the excursion to the Oakleigh golf links on Saturday, 21st September, was forwarded by Mr. E. E. Pescott, F.L.S., one of the leaders, who stated that there had been a good attendance of members, who were greatly pleased to see the way in which the indigenous vegetation on the links had been preserved as far as possible, and that other indigenous trees and shrubs are being introduced whenever an opportunity occurs. A magnificent specimen of the Scarlet Gum of Western Australia, *Eucalyptus ficifolia*, was seen adorning the lawn in front of the club-house. The Coastal Tea-tree, *Leptospermum laevigatum*, was doing well, and is increasing yearly from seed. Of acacias there are many species, all doing well, and it was interesting to note that here *Acacia Elata* was flowering in the spring instead of in summer. The party was entertained at afternoon tea by Messrs. Plante and Stewart, who have evinced great interest in the welfare of the various trees and shrubs which adorn the links. He suggested that members of the Club might from time to time present to the golf club seeds or plants of uncommon species which they might come across in their rambles, and so increase the variety of the indigenous flora.

A report of the excursion to Alplington on Sturday, 12th

October, was given by Mr. J. Stickland, who acted as leader in the unavoidable absence of Mr. J. Searle. He stated that, owing to threatening weather, the attendance was small, but the afternoon turned out better than expected. A number of interesting captures were made in the various ponds visited. Among the specimens obtained was a very beautiful form of the polyzoan *Fredericella sultana*, possessing an unusually large number of tentacles. Some interesting fresh-water algæ were also secured, and other specimens which had not yet been identified.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. John H. King, "Bolewin," Burke-road, East Malvern, and Mr. F. B. Sutherland, Vauxhall-road, Canterbury, were duly elected ordinary members of the Club.

GENERAL BUSINESS.

The hon. treasurer, Mr. G. Coghill, said that the financial results of the recent exhibition of wild-flowers would not be nearly so good as last year; still, he expected to be able to hand over to the Y.M.C.A. National Fund for Soldiers about £125, as against £212, the result of the previous exhibition. He considered the display as fine, if not finer, than the previous one, but the number of calls being made upon the public for patriotic purposes had probably affected the result. The amount from sale of tickets showed that most of the tickets sold were presented at the doors, whereas in previous years numbers were bought merely for the sake of helping the patriotic object in view.

The chairman said that the Club should not be discouraged by the comparison between the results of the two exhibitions. Last year it was more of a novelty, and the presence of the Governor-General doubtless made it more popular. The weather was better then, whereas this year the evening turned out showery. In the afternoon the Town Hall was well filled, and people had difficulty in getting near the exhibits. In many cases exhibitors had spent considerable sums in going long distances to obtain flowers, and if these sums were added to the net result it would be found that the contribution of the members of the Club and their friends to the Y.M.C.A. National Fund was a very handsome one.

The chairman said that since the last meeting of the Club two members had suffered severe bereavement—Mr. F. Chapman, A.L.S., by the loss of his daughter while on a visit to a neighbouring State, and Mr. F. Pitcher by the loss of his son while on active service in France. To each he desired to offer the sincere sympathy of the Club.

PAPER.

Owing to a misunderstanding, the lantern had not been secured for illustrating the paper by Mr. F. Chapman, A.L.S., entitled "A Sketch of the Geological History of Australian Plants: Second Paper.—The Mesozoic Flora." It was therefore decided to postpone the reading of the paper until it was possible to display the slides prepared at the same time.

NOTES ON WILD-FLOWER EXHIBITION.

An interesting discussion arose as to bettering the exhibition of wild-flowers in future years. Mr. F. Keep suggested that visitors should be requested to move in one direction only, but this was considered impracticable. Mr. D. Best drew attention to the absence of common names, and suggested that if the flowers were sold by auction a larger sum would be raised. Mr. J. Stickland thought that greater publicity might be given by means of calico signs, and the object of the exhibition had not been stated in the advertisements. The hon. secretary stated that the displaying of signs had been refused at the Tourists' Bureau and the Town Hall.

It was suggested by Mr. Best that prizes might be offered for the best exhibits of certain kinds of flowers suitable for sale by auction. Mr. G. Coghill said that the complaint that certain exhibits were missing before the closing of the exhibition was probably due to the lady flower-sellers, who had not a sufficient supply of flowers to meet the demands of the public, and therefore commandeered some of the exhibits. He considered it inadvisable to offer prizes. If such were decided on, then they should be for flowers grown in school gardens by school children. Miss Nethercote thought that many of the flowers taken from exhibits had been used in the effort to make a systematic exhibit of the flowers on view. Mr. F. Wisewould said that had he known there would have been such demand for certain flowers he could have provided much larger quantities, and would do so on another occasion. Mr. P. R. H. St. John deprecated the offering of prizes, which would only add to the expenses of the exhibition. Mr. H. B. Williamson referred to the absence of popular names, saying that it was quite impossible in the limited time available for the few persons capable of doing so to name a tithe of the specimens exhibited. He suggested that printed certificates might be offered for collections of flowers forwarded from schools.

Mr. F. Chapman said that the microscopists suffered from the small space allotted to them. So many people were interested in the exhibits that the table became congested, and persons were unable to move in any direction, Mr. J.

Searle said he would not advocate having microscopes again. The tables available were not suitable, and sufficient space could not be given to the display. A smaller number of microscopes would have been better.

The chairman said the suggestions made and the ensuing discussion should be helpful for future exhibitions. Regarding the sales of flowers, there was a shortage of the particular kinds the people desired. Though £2 worth of waratahs had been obtained from Sydney, they were soon disposed of. Flannel-flowers also were in great demand, also the Blue Pea (Swainsona). These were the flowers wanted and asked for, and, though the visitors bought others rather than go away empty-handed, the sales suffered considerably from the want of these favourite flowers. On a previous occasion, when Mr. Haughton, of Coghill and Haughton, acted as auctioneer, he obtained good prices for *Boronia pinnata*, another of the favourites. The absence of vernacular names was, as Mr. Williamson said, due to the limited time available for the work and the few persons who were capable of naming at a glance any flower presented to them. Those who have the knowledge should be absolutely free from any other duty, but even then the naming of thousands of specimens is a tremendous task. He agreed with Mr. Searle as to the microscopes. He thought there were enough microscopes present to comfortably occupy the whole of the Town Hall and make an entirely microscope display. Too many instruments had been provided for the space available; at the same time he thanked the members of the Microscopical Society for their enthusiasm and help on the occasion. Regarding the affixing of common names to the exhibits, he said that the Plant Names Committee was, as far as possible, adopting children's names for the plants, and if members knew the debates that took place at the meetings of the committee, and the slow progress that is being made in consequence, they would be satisfied that the committee is doing its best in that direction. He urged any who might know of local names for any of our flowers to send them in to the committee for consideration. It was hoped, when finally revised, that the names would be published in such a form as to be useful in schools.

THE NATIONAL PARK.

The chairman said that there was little to report as to the proposal to prospect for tin at the National Park, Wilson's Promontory, except that the Government proposes to allow a trial under strict conditions of the alleged tin deposit in the Park.

Professor Baldwin Spencer said that if it can be shown that there are really valuable national assets in the Park in the

way of tin, it must be allowed to be mined, for, of course, considerations of national welfare, more especially at a time such as this, come first.

Mr. G. Coghill asked if it were possible to get the Park properly proclaimed, as at present the reservation could be revoked at any time, to which Professor Spencer replied that such a course was highly desirable, but he did not think it was possible to do anything in the matter just at present.

The chairman asked Mr. J. A. Kershaw, F.E.S., secretary to the trustees, who had recently been at Wilson's Promontory, if he would say a few words regarding the Park. In response to the request, Mr. Kershaw said that at present the Park is looking very well, and that recently some important improvements had been carried out, especially near the entrance, where a bridge had been erected over the Darby River, and a track made from there to the landing-place, which had considerably shortened the distance to the main "Rest House." Other new tracks had been made, and a number of valuable animals liberated. The emus are doing particularly well; they are breeding again this year. Recently seventeen were counted round a vehicle when driving through the Park. Red and Grey Kangaroos breed regularly every year, and it is believed that the possums are doing so also. The Ring-tailed Possum was there originally, while the Grey and Tasmanian Black Possums have been introduced. The Lyre-bird has been proved to be well established. About ten have been liberated, and on this last occasion I saw undoubted signs of the presence of Lyre-birds along the track. The Straw-necked Ibis has also been introduced. The Koalas are destroying some of the trees along Fraser's Creek, and in other parts have increased to such numbers that they have had to be reduced by killing or removal to other parts. They now extend right over the whole of the Park. The matter of accommodation for tourists is now engaging the attention of the committee, and an endeavour is being made to induce the local people to come forward and supply accommodation; it would then be possible to send much larger parties to the Park than at present.

NOTES ON EXHIBITS.

Mr. H. B. Williamson called attention to some rather interesting wild-flowers, some of the exhibits from the display at Ballarat the previous Saturday, including *Pomaderris phyllifolia*, *Marsdenia rostrata*, *Micrantheum hexandrum*, *Phebalium* (*Eriostemon*) *lepidotus*, *Eriostemon trachyphyllus*, and *Clematis glycinoides*, collected by Mr. T. S. Hart, M.A., at the Nicholson River, Gippsland.

Mr. F. Chapman, A.L.S., exhibited a bamboo ruler (made in Japan) which was received in Melbourne infested with the larvæ of the Dermestes beetle. When the package was opened this particular ruler was almost black with the pest, while the others were unaffected. He also called attention to the flowers of the Bottle-brush Tea-tree, *Melaleuca ericifolia*, grown at Balwyn, which would be a useful shrub in any garden.

Mr. F. G. A. Barnard called attention to his exhibit of travertin limestone, used as ballast on the Trans-Australian railway, obtained at Tarcoola, about 250 miles west of Port Augusta, South Australia.

NATURAL HISTORY NOTES.

Mr. H. B. Williamson exhibited a live larva of a moth, and asked for information about it. Mr. J. A. Kershaw, F.E.S., said that it was the larva of *Porina (Oxycanus) fusco-maculata*, one of the Swift moths. It lives underground, making tunnels under the surface of the soil, and feeding on the roots of various grasses. The tunnels are lined with silk. When fully grown it pupates, and awaits a favourable time for emergence, usually after sundown, on the occurrence of the first autumn rains. They often emerge in large numbers, and after a few hours' flight disappear as mysteriously as they arrive.

Mr. F. Chapman, A.L.S., read a note on the rapid growth of a Sugar Gum, *Eucalyptus cladocalyx*, in his garden at Balwyn, and exhibited a photograph of the tree, which, in eleven years and two months, had attained a height of 53 feet, with a stem circumference at the ground of 43½ inches, and, at six feet, 41 inches.

Mr. A. D. Hardy, F.L.S., read a note forwarded by Mr. G. J. Flood, recording young white swallows in a nest at Moorooduc (Mornington Peninsula). On two occasions two white birds had occurred in the brood reared from this particular nest.

EXHIBITS.

By Mr. F. G. A. Barnard.—Travertin limestone from Tarcoola, South Australia.

By Mr. F. Chapman.—Flowers of *Melaleuca ericifolia*, Swamp Paper-bark, grown in his garden at Balwyn; a desirable garden shrub.

By Mr. F. E. Wilson.—Eight species of Curculionid beetles, from various localities.

By Mr. H. B. Williamson.—Flowering specimens of epiphytal orchid, *Sarcochilus falcatus*, sent by Mr. N. H. Herbert, of Cann River. These were distributed among members for cultivation.

After the usual conversazione the meeting terminated.

EXCURSION TO BENDIGO.

UP to the present year, Bendigo, though possessing many interesting features, had not been selected as a locality for a Club excursion, mainly owing to its distance (100 miles) from town, and the consequent length of time required for travelling ; but, by taking advantage of the extra trains usually run in connection with the annual railway picnic, it was determined this year to make an attempt to visit the district, more particularly as an enthusiastic country member living in the town was well acquainted with the principal collecting grounds. Hence, on Saturday, 14th September, eight members of the Club, including two ladies, after some varied experiences due to the confusion of many trains and crowds of passengers, ultimately assembled on the Bendigo station, where they were met by our fellow-member, Mr. D. J. Paton, and Miss Paton. The journey to Bendigo was not without interest either to the student of humankind or to the lover of nature in its less highly developed forms. There is no railway section in Victoria of like extent so varied in feature as that to Bendigo. Passing over the almost treeless basaltic plains of Keilor, dotted here and there by old volcanic vents, and occasionally traversed by deep-cut water-courses, the country rises towards the Divide and the heavily-timbered Macedon forest ; thence the course is through mountainous or hilly country, mostly of Silurian and Ordovician sedimentary rocks, in which the quartz reefs occur, interspersed with areas of Plutonic rocks such as granite, granodiorite, and porphyry, and Tertiary deposits, in which the alluvial of the goldfields is deposited. Passing the Divide, one sees the extensive Malmsbury reservoir and the Coliban water-race, which supply Bendigo and the vicinity, as well as a large area of orchards and market gardens north of Castlemaine, with water. The thriving town of Castlemaine, the productive apple orchards of Harcourt, the granitic ranges over which Mount Alexander prominently stands out, are passed through before entering the Big Hill tunnel, at whose further extremity the Ordovician measures again commence in the rich auriferous zones of the Bendigo goldfield. Glimpses of floral luxuriance inviting observation were frequently seen in the railway cuttings or along the slopes of hills adjacent to the permanent way, and spring everywhere clothed mountain, hill, and dale with her verdant or enamelled covering. Before the last members of the scattered contingent were gathered in at Bendigo, and arrangements made for accommodation, it was after mid-day. Then the party proceeded by tram to Back Creek, whence a divergence was soon made into the bush in a southerly direction, along the hills where the outcropping

but unfortunately barren quartz reef shows the southern extension of the famous Garden Gully line to Spring Gully, the farthest point at which shafts have been sunk without striking a profitable lode. These ranges are mostly covered with a secondary growth of ironbark trees, both red and grey, *Eucalyptus sideroxylon* and *E. paniculata*, interspersed with the fragrant Golden Wattle, *Acacia pycnantha*, the Gorse Bitter Pea, *Daviesia ulicina*, whilst purple *Tetrathecas*, yellow *Hibbertias*, the Heathy Parrot-Pea, *Dillwynia ericifolia*, *Droseras*, and the humbler liliaceous plants grew beneath. *Cassinia arcuata*, Drooping Cotton-bush, grows thickly along the lower slopes. Near the outflow in the cutting at Spring Gully reservoir is a good example in vertical section of a synclinal axis, marking "centre-country" on the Garden Gully line of reef, in connection with the saddle-reef formations for which Bendigo is famous. Here a halt was made for our long-deferred lunch, after which we followed for some distance the water-race, amid a profusion of blooming Fairy Wax-flower, *Eriostemon obovalis*, *Dillwynia ericifolia*, *Hardenbergia monophylla*, *Grevillea aquifolia*, and *Acacia armata*, all in fine flower, sprays of the latter being unusually beautiful. Leaving the race, a course was taken south-west towards Diamond Hill, where an extensive but isolated patch of the pink and white *Boronia anemonifolia*, bearing distinctive leaves, perfumed the air with its strong but not unpleasant scent. From here we passed in an easterly direction through the bush towards One-Tree Hill, at the foot of which three members of the party left us to return by road to the railway station, the remainder making the ascent of the hill, on which grew more robust trees, chiefly *Eucalyptus melliodora*, *E. viminalis*, *E. macrorhyncha*, *E. amygdalina*, as well as the ironbarks. From the summit of the hill a very extensive view is obtainable. To the south, over the ranges, Mount Alexander loomed prominently, with lordly Macedon in the distance; eastward could be discerned Mounts Ida and Pleasant, in the direction of Heathcote; northwards, beyond the adjacent ranges, the flat, alluvial plains to the Murray were almost unbroken in contour, the Whipstick Scrub showing distinctly; north-west, on the horizon, were isolated hills or peaks, probably Mount Korong and Pyramid Hill; while westward, past the reservoir, were ranges connected with the Big Hill spur. Spreading away from the outskirts of the bush at our feet, the "Golden City" itself, with its hills and valleys, from which 20 million ounces of gold have been taken, stretched along the Bendigo Creek basin. On the slope at the back of One-Tree Hill was a specimen of *Acacia implexa*, and the common Rock Fern, *Cheilanthes tenuifolia*, and Maiden Hair grew in the moister soil. From here we

followed the track for some distance through the bush, *Acacia pycnantha*, with its lovely blooms, arousing our admiration. Then, leaving the track, return was made as direct as possible to the tram terminus, the city being reached about 7 p.m. Owing to the lack of abundant rain, the bush was not so moist as usual in September, and in consequence some flowers were not at their best. Orchids were rare, *Glossodia major*, *Diuris longifolia*, *Caladenia carnea*, *Pterostylis nutans* (a very fine patch) being observed. The most notable features were the unfailing profusion of the Wax-flower, the gregarious habit of the Anemone Boronia, and the splendid bloom of *Acacia pycnantha*, *A. diffusa*, and *A. armata* amid the ironbark trees. The Geebung, *Persoonia rigida*, was in fruit, also the Cranberry, *Astroloma humifusa*. No Loranthus (Mistletoe) was seen, the ironbarks especially, as the name would indicate, being unsuitable as a host for the parasite.

Next day the intention had been, first, to inspect transversely the main lines of reef along the most productive auriferous zone; but the party, being more interested in the flora, grudged the time, so proceeded by tram at 10 a.m. to Eaglehawk, the north-western extremity of the field. Opportunity was taken *en route* to note incidentally the main lines of reef—New Chum and Victoria, Garden Gully and Hustler's—the many abandoned claims and dismantled plants showing that gold-mining has indeed fallen on evil days. At Eaglehawk, passing through the well-kept public gardens by Lake Neangar, we proceeded under Mr. Paton's guidance to Lightning Hill, which commands a good view. The extensive surface workings, showing the outcropping reef formation and quartz spurs, were inspected; then we proceeded to the fringe merging into the Whipstick Scrub, which in its vegetation is somewhat distinct from the range country, although a continuation of the same auriferous area. The ground is gently undulating, and the soil drier and hotter, so we found earlier flowering than at Spring Gully, and other differences in a changed environment. The eucalypts of the scrub were smaller, more resembling in growth those of the Mallee, *E. viridis*, a Mallee species, being strongly characteristic of the area. *Acacia pycnantha* had faded, but *A. acinacea* was in very fine bloom, whilst the rarer *Acacia calamifolia*, here in luxuriant growth, although slightly past its best, still showed some beautiful masses of golden blossoms, and a little earlier must have made a glorious show along the Raywood road. The *Eriostemon* was neither so plentiful nor so full of bloom. *Correa speciosa* was very poor. *Tetralthea ciliata* was in good flower. *Brachylome daphnoides*, in bud in the ranges, was here in flower and fruit, as was also *Leptomeria aphylla*, the Leafless

Currant-bush, with its acid fruits. Some interesting and peculiar scrub plants were the pretty Shrub Violet, *Hybanthus floribundus*, the rarer *Westringia rigida*, with its variety *Grevilleana*, *Crowea axillaris*, closely allied to the Wax-flower, also the Star-hair, *Asterotricha ledifolia*, and *Melaleuca decussata*, the Cross Honey-Myrtle. *Boronia anemonifolia* was found dispersed through the scrub. Orchids were represented by *Caladenia carnea*, *C. carulea*, *C. congesta*, *Diuris longifolia*, *Pterostylis longifolia*, *P. nutans*, and *P. mutica*. *Calythrix tetragona*, the common Fringe Myrtle or Hair-cup, was beginning to flower. Patches of *Loudonia Behrii* were just ready to burst into their golden pennants. *Exocarpus cupressiformis*, with immature fruits, *Casuarina quadrivalvis*, *C. distyla*, and *Hakea rugosa* were represented. A feature of the scrub was the great prevalence of *Cassytha melantha*, the large Dodder Laurel, often strangling its host or weighing its victim to the ground. On humbler plants *C. glabella*, the Tangled Dodder-Laurel, was equally destructive. A few plants of *Marianthus procumbens* and *Prostanthera hirtula* were seen. *Hibbertia acicularis*, in profuse bloom, was gay with its guinea flowers, whilst three or four species of the *Droseras* glittered in the sun. We had lunch at the Blue Jacket reservoir, which supplies Raywood with water, and found on our trip that the water-races which we encountered were of great advantage to us and the flora alike. We further explored the scrub as far as Wallace's Reef, spending a very interesting time. Birds were not very numerous at our visit. We heard or saw the Brush Wattle-bird, the Harmonious Thrush, the Pallid and the Bronze-Cuckoos (the latter calling continuously), the Derwent Jackass, and Welcome Swallows. At lunch two New Holland Honey-eaters fluttered trustfully around us. It was interesting to note the differences, not only in time of flowering, but in character and growth, of the many plants common to the ranges and the scrub. The delimitation of species to one area or the other, owing to situation and environment, was also noticeable. One is rather surprised to find in such unpromising places, where the stony ribs of the earth are so scantily covered with soil, that there is such a variety and profusion of flowers. This excursion can be profitably repeated, the Bendigo district offering, within easily accessible distances, three or four types of vegetation worthy of study and interesting for comparison. The party returned to Melbourne early on Monday morning, having thoroughly enjoyed the outing, which our enthusiastic fellow-member, Mr. D. J. Paton, and Miss Paton did everything in their power to make pleasant.—C. DALEY.

AN ORNITHOLOGICAL TRIP TO THE NHILL DISTRICT.

BY F. ERASMUS WILSON.

*(Read before the Field Naturalists' Club of Victoria, 9th Sept., 1918.)**(Continued from page 100.)*

Following is a detailed list of the birds observed during the trip. A longer sojourn in the district would probably have enabled me to add several more species, particularly amongst the aquatic birds:—

- Emu (*Dromaius novæ-hollandiæ*).
- Mallee-Fowl (*Leipoa ocellata*).
- Ground-Dove (*Geopelia tranquilla*).
- Bronze-winged Pigeon (*Phaps chalcoptera*).
- Black-throated Grebe (*Podiceps gularis*).
- Spur-winged Plover (*Lobivanellus lobatus*).
- Black-breasted Plover (*Zonifer pectoralis*).
- Straw-necked Ibis (*Carphibis spinicollis*).
- White-fronted Heron (*Notophoxyx novæ-hollandiæ*).
- Maned Goose (*Chlamydochen jubata*).
- Mountain-Duck (*Casarca tadornoides*).
- Little Pied Cormorant (*Phalacrocorax melanoleucus*).
- Whistling-Eagle (*Haliastur sphenurus*).
- Brown Hawk (*Hieracidea berigora*).
- Kestrel (*Cerchneis cenchroides*).
- Boobook Owl (*Ninox boobook*).
- Musk Lorikeet (*Glossopsitta concinna*).
- Purple-crowned Lorikeet (*Glossopsitta porphyrocephala*).
- Black Cockatoo (*Calyptorhynchus funereus*).
- Rosella (*Platycercus eximius*).
- Ring-necked Parrot (*Barnardius barnardi*).
- Yellow-vented Parrot (*Psephotus xanthorrhous*).
- Red-backed Parrot (*Psephotus hæmatonotus*).
- Swift Parrot (*Lathamus discolor*).
- Owlet Nightjar (*Ægotheles novæ-hollandiæ*).
- Great Brown Kingfisher (*Dacelo gigas*).
- Sacred Kingfisher (*Halcyon sanctus*).
- Spotted Nightjar (*Eurostopodus guttatus*).
- Pallid Cuckoo (*Cuculus pallidus*).
- Narrow-billed Bronze-Cuckoo (*Chalcococcyx basalis*).
- Bronze-Cuckoo (*Chalcococcyx plagosus*).
- Welcome Swallow (*Hirundo neoxena*).
- Tree-Martin (*Petrochelidon nigricans*).
- Brown Flycatcher (*Micræca fascians*) (*M. f. howei*).
- Scarlet-breasted Robin (*Petroica leggii*).
- Red-capped Robin (*Petroica goodenovi*).
- Short-billed Tree-Tit (*Smicrornis brevirostris*).
- Crested Bell-bird (*Oreoica cristata*).
- Southern Whistler (*Pachycephala meridionalis*).
- Gilbert Whistler (*Pachycephala gilberti*).
- White-shafted Fantail (*Rhipidura albiscapa*).
- Black-and-White Fantail (*Rhipidura motacilloides*).
- Restless Flycatcher (*Seisura inquieta*).
- Black-faced Cuckoo-Shrike (*Graucalus melanops*).
- White-shouldered Caterpillar-eater (*Campephaga humeralis*).

- Scrub-Robin (*Drymodes brunneopygius*).
 Rufous-rumped Ground-Wren (*Hylacola cauta*).
 Australian Babbler (*Pomatorhinus temporalis*).
 White-browed Babbler (*Pomatorhinus superciliosus*).
 Brown Song-Lark (*Cinclorhamphus cruralis*).
 Rufous Song-Lark (*Cinclorhamphus rufescens*).
 White-fronted Bush-Chat (*Ephthianura albifrons*).
 Winiam Tit (*Acanthiza winiamida*).
 Buff-tailed Tit (*Acanthiza reguloides*).
 Yellow-tailed Tit (*Acanthiza chrysorrhoa*).
 Striated Tit (*Acanthiza lineata*).
 Red-rumped Tit (*Acanthiza pyrrhopygia*).
 Blue Wren-Warbler (*Malurus cyaneus*).
 Purple-backed Wren-Warbler (*Malurus assimilis*).
 Wood-Swallow (*Artamus sordidus*).
 Grey Shrike-Thrush (*Colluricincla harmonica*).
 Pied Grallina (*Grallina picata*).
 White-winged Chough (*Corcorax melanorhamphus*).
 Whiteface (*Apheloccephala leucopsis*).
 Black-capped Tree-runner (*Necositta pileata*).
 Brown Tree-creeper (*Climacteris scandens*).
 White-eye (*Zosterops dorsalis*).
 Red-tipped Pardalote (*Pardalotus striatus*).
 Yellow-rumped Pardalote (*Pardalotus xanthopygius*).
 Brown-headed Honey-eater (*Melithreptus brevirostris*) (*M. atricapillus mallee*).
 Tawny-crowned Honey-eater (*Glyciphila fulvifrons*).
 White-fronted Honey-eater (*Glyciphila albifrons*).
 Western White-eared Honey-eater (*Ptilotis nova-norciae*).
 Yellow-plumed Honey-eater (*Ptilotis ornata*).
 White-plumed Honey-eater (*Ptilotis penicillata*).
 White-bearded Honey-eater (*Meliornis nova-hollandiae*).
 Noisy Miner (*Myzantha garrula*).
 Red Wattle Bird (*Anthochaera carunculata*).
 Spiny-cheeked Honey-eater (*Acanthogenys rufigularis*).
 Australian Pipit (*Anthus australis*).
 Spotted-sided Finch (*Stagonopleura guttata*).
 Australian Raven (*Corvus australis*).
 Black-winged Bell-Magpie (*Strepera melanoptera*).
 Butcher-bird (*Cracticus*, sp.)
 Black-backed Magpie (*Gymnorhina tibicen*).

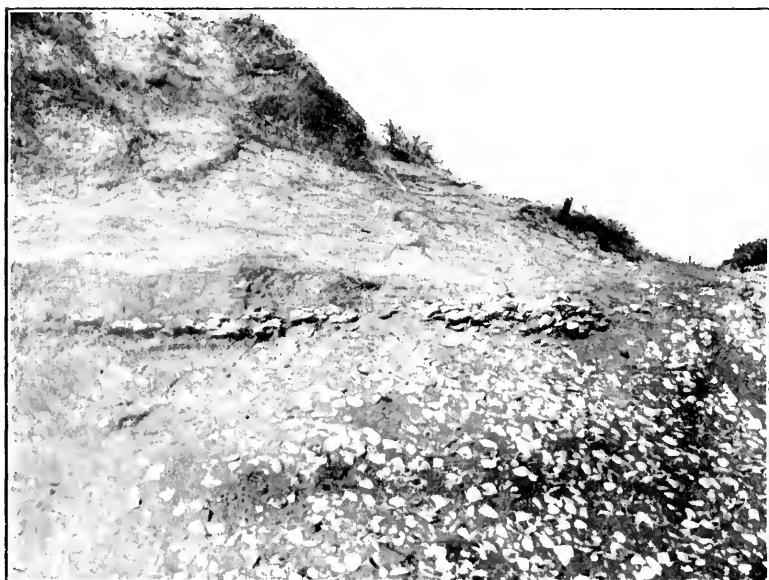
USEFUL VICTORIAN PLANTS.—The October part of the *Journal of Agriculture of Victoria* contains two articles from the pen of Mr. J. W. Audas, F.L.S., of the National Herbarium. The more important, entitled "Indigenous Fibrous Plants of Victoria," lists some fifty-six trees, &c., from which fibres can be obtained. The cultivation of many of these would, however, have to be undertaken, as at present they do not grow in sufficient quantities at any one place to render their treatment profitable. The second article, dealing with the Sunflower and its many valuable qualities, is worth the attention of stock-raisers.

PLATE I.—Fig. 1.



GENERAL VIEW OF KITCHEN MIDDENS ON WILSON'S
PROMONTORY.

Fig. 2.



OLD KITCHEN MIDDEN,
Unearthed by the wearing away of a sand hummock.

PLATE II.—Fig. 1.



GENERAL VIEW OF NATIVE OVEN NEAR KOONDROOK.
Behind the trees a swamp leads down to the River Murray.

Fig. 2.



NATIVE SKELETON IN SITU IN AN OVEN NEAR KOONDROOK.
The body was placed lying on its right side.

KITCHEN MIDDENS AND NATIVE OVENS.

BY SIR BALDWIN SPENCER, K.C.M.G., F.R.S., D.Sc.

(Read before the Field Naturalists' Club of Victoria, 13th May, 1918.)

DURING a recent visit to the National Park, at Wilson's Promontory, Mr. C. French and myself spent a considerable amount of time investigating the kitchen middens that cover many acres of ground on its western shores. Though there is nothing of any special importance in connection with them, yet there are one or two points that are perhaps of sufficient interest to record—all the more because we have very few detailed accounts of any kitchen middens in Victoria. We read, for example, in Brough Smyth's "Aborigines of Victoria" that "on the coasts of Victoria . . . they are found to consist mainly of one kind of shell—namely, the mussel, *Mytilus dunkeri*, with a small proportion of the "mutton fish," *Haliotis nivosus*, the periwinkle, *Lunella undulata*, and the cockle, *Cardium tenuicostatum*."

The middens examined by Mr. French and myself were those extending along the coast northwards from the mouth of the Darby River to about half-way to the entrance to Shallow Inlet. Wherever there is a little valley amongst the sand-hills, there the surface is strewn over with shells, that may be scattered more or less irregularly over the depression and up the sides of the hills, or may be gathered together in more definite and restricted heaps.

The sand is very light, and is continually blown about, first one way and then another, by the strong winds, which alternately expose and cover the shells and material of various kinds in the middens. For the most part the shells and other remains form a simple layer on the ground surface, and in many cases look as if the natives had only comparatively recently been holding a feast, except that their great number and the acres of ground that they cover indicate that they represent the accumulations of a long period of time. In other cases, however, they occur in layers that may be several feet below the surface. One such layer is fortunately exposed on the face of a miniature sand cliff, a short distance to the north of Buckley's Rocks. It lies about six feet below the surface of a depression amongst the sand-hills, close to the foot of one of these. As the illustration shows, it has been exposed to view by the gradual wearing away of the sand-hill by which it must once have been covered. The latter is now overgrown with small shrubs and herbage, indicating the fact that a very long time has passed by since the natives fed upon these particular molluscs and left their shells on what was then the ground surface. The outcrop of this special layer

of shells is seen in fig. 2, Plate I. The foreground surface is covered with shells which have been exposed by the shifting of the sand. They may be of comparatively recent date, but the layer on the left-hand side, which is seen projecting from the surface of the sand-dune, must be of some considerable age. Probably many of those in the foreground have been derived from this layer by the gradual wearing back of the face of the little cliff.

There are doubtless many other layers of shells representing old "middens" hidden away under the sand-hills—in fact, in the few places where tracks have been made, as at the mouth of the Darby River, cuttings through the sand and loamy ground have revealed abundant remains of shells, and more especially the opercula of *Turbo undulatus*, indicating the fact that it is long ago since the aborigines first made their camping-ground on the shores of the Promontory.

There are, at the same time, two lines of jagged, rocky reefs running out into the sea a little way to the north of the Darby River, and evidently it was from these that the aborigines derived their main supply of shell-fish. At the present time, though but few shells are seen on the beach, this is strewn with endless numbers of the opercula of *Turbo undulatus*. It is a curious feature that, whilst these opercula are so plentiful, there are very few shells, or even fragments of them, thrown up on the sandy, shelving shore. It must mean that the opercula are more difficult to destroy than the shells; in fact, one can imagine that they could easily, when detached from the soft parts of the animal, be washed ashore and buried on the beach, whilst the shells would become filled with sand, and, weighted in this way, would easily be pounded into fragments when dashed against the rocks or hurled on the sand by the huge breakers that incessantly pound on the shore-line.

The middens contain the remains of various species of mollusca, together with very crude forms of stone implements that the aborigines used for the purpose of smashing the shells. These consist of fragments derived from the adjacent dune sandstone, of small masses of quartzite evidently obtained from the hills in the interior of the Promontory, and of very roughly flaked pieces of chert, the nearest supply of which lies at least 40 miles away, so that it must have been carried here by the natives. There is no doubt whatever that these stone implements, which are scattered about amongst the broken shells on the little flats among the sand-dunes where there is no local outcrop of rock, were made, carried here, and used by the aborigines. They are of the crudest possible form, and, if found away from such indubitable evidence of their actual use, would be difficult to recognize as of human manufacture.

However, in this particular case there is fortunately no doubt whatever in regard to their human origin. It is only very rarely that any well-made implement is found in the middens, which do not indicate the permanent camps of the natives. They were only, so to speak, temporary eating-places—the real camping-grounds lying further inland. We only found one ground axe, and, previously, Mr. Kershaw met with a bone awl; but such more highly developed implements are of rare occurrence, and must have been accidentally left behind.

The following is a list of the mollusca found in the various middens, for the identification of which I am indebted to Mr. J. A. Kershaw. The only other traces of animal life, with one exception referred to later, were a few fragments of claws of the rock lobster, *Palinurus*, sp., and broken bones of birds, but it is very doubtful how far these are to be regarded as genuinely associated with the middens:—*Haliotis nævosa*, *Turbo undulatus*, *Scutus anatinus*, *Ostrea edulis*, *Litorium spengleri*, *Arca lobata*, *Voluta papillosa*, *Purpura succincta*, *Donax epidermia*, *Patella tramoserica*, *Natica plumbea*, *Mytilus latus*, *Mytilus rostratus*, *Mactra rufescens*, and *Chiton*, sp.

In the great majority of cases various species were found mingled together and often strewn irregularly over considerable areas of ground (fig. 1); but in some middens there were heaps, three or four feet in diameter, composed of only one species, as in the case of *Turbo undulatus*, which, with its opercula, was the most largely represented form; *Patella tramoserica*, *Donax epidermia*, *Purpura succincta*, and *Mytilus rostratus*. Deposits of the latter especially were found here and there amongst the fine loamy soil forming the hillocks on the southern bank of the Darby River, a little way in from its mouth. On the north bank of the stream there is also, where the track comes down steeply to the old foot-bridge, a deposit of the same fine loamy material, with abundant remains of ancient middens.

In relatively only a few cases we found traces of charred wood and of the effects of fire on shells, more especially of *Turbo* and its opercula, that had evidently been cooked in hot ashes; but, for the most part, the animals had been eaten in the fresh state, just as the civilized man now eats his oyster.

As already stated, these shells and crude stone implements indicate the temporary feeding-places of the natives, and not their camping-grounds; but in one case we came across the remains of a native. The bones, consisting of parts of the cranium, the lower jaw, ribs, arms, and leg bones, were lying exposed on the surface of a small midden, mixed up with the remnants of shells. They were all more or less friable, and had evidently been uncovered and re-covered, time after time,

by the drifting sand. Whether the body had been deliberately buried or whether the native had chanced to die on the spot and his body had been left on the surface, it is impossible to say; but there was at least no evidence of definite burial, and the bones lay on the surface amongst the remnants of the shell-fish, on which he had probably been feeding. This is, so far as I know, the only record of remains of an aboriginal in the coastal kitchen middens, but in the interior of Victoria human skeletons are not infrequently found buried in what are usually described as "native ovens," "mirnyong heaps," or "mirnyongs." These have been referred to by Brough Smyth,* who says:—"They occur, so far as I am aware, only in the eastern and south-eastern parts of Australia, where the soil is less absorbent and the climate wetter, and in some parts colder than the sandy Territory of Western Australia. . . . They are found in the valleys of rivers and creeks, on the margins of lakes and lagoons, just inside the 'points of timber' or portions of forest which project into the plains, on rising grounds in the plains, near the seashore, and in every locality where fish, game, or food of any description is to be found. The positions of the mirnyongs have been carefully selected, so that, as far as possible, the occupants may obtain an extensive view of the surrounding country, while they themselves are screened from any passer-by."

There is some considerable discrepancy in the accounts of these mounds, ovens, or mirnyongs, under all of which names they have been indiscriminately described, but it is possible that the names as used, for example, by various writers in Brough Smyth's work are applied to two different structures by different workers. One is led to suspect that this may be so partly because they seem to be roughly divided into two series by their shape, and partly because of the nature of their composition and contents. Those of the one set are more or less elongate or oval in shape. Of these Brough Smyth† says:—"There are numerous old *mirrn-yong* heaps on the banks of the River Plenty, on the Darebin Creek, and the Merri Creek, near Melbourne. . . . They are in general of an oval shape, about one hundred feet in length and about forty feet in breadth, and rising to a height of twelve feet or more. They are composed of burnt clay, a little soil, quantities of charcoal and ashes, burnt and unburnt bones, and stones. They enclose numerous fragments of black basalt, chips of greenstone, in some places whole and broken tomahawks, and in more than one have been found human skeletons, as if they

* Brough Smyth, "Aborigines of Victoria," vol. i., pp. xxxvi. and 238; vol. ii., p. 233.

† *Op. cit.*, vol. i., p. 239.

had been used in later times as places of burial." These are, without doubt, the remains of cooking grounds.

Those investigated and described by Mr. Etheridge,* on the North-West Bend of the River Murray, near to Morgan, evidently also belong to this series, and were genuine cooking mounds or "ovens." In regard to them Mr. Etheridge says:—"They consist of oval, or, at any rate, longer than broad depressed mounds, often of considerable extent, as much as one hundred feet long, made up of soil, burnt clay, wood ashes, charcoal, burnt fresh-water shells, burnt and unburnt bones, tomahawks (whole or fragmentary), chips of other rocks, and works of industry, such as bone awls, bone nose-ornaments, and the less perishable articles of aboriginal everyday use. Within these heaps the scattered cooking places, composed of stone, occur, each site having been used by generation after generation of blacks, and the entire mass slowly heaped together, thus representing the work of a long period of years."

On the other hand, there is a second series which are always approximately circular in outline, very much in general appearance like huge mound-birds' nests. It is these that are evidently referred to by Chauncy† as existing close to the outlet of Lake Connearwarren, near to Mortlake. Unfortunately, he gives no details except as to size. They vary in diameter from 99 feet with a maximum height of five feet to 75 feet with a maximum height of three and a half feet.

In 1898 Mr. R. H. Walcott, Mr. C. French, jun., and myself investigated some of these "native ovens" close to Koondrook, on the Murray River. The latter is here bordered by swamp land covered with gum-trees, many of which are marked with great scars, showing where the natives secured the bark out of which they made their primitive canoes. On the margin of this swamp land, where it gives place to the wide, open plains that stretch for long distances back from the banks of the Murray River, there are many of these mounds or "ovens." A careful examination of ten of these, the general structure and form of which is shown in Plate II., fig. 1, affords really very little indication as to their origin and use. So far as we could discover, the mounds are composed of loose soil with lumps of material looking much like burnt earth; but we found, except for the latter, no traces of anything that could indicate their having been used continuously as "ovens." We dug trenches right across the mounds, which varied in diameter from 20 to 40 feet, their greatest height being not more than

* R. Etheridge, Proc. R.S., S.A., vol. xvii., p. 22.

† In Brough Smyth's "Aborigines," vol. ii., p. 232.

five feet above the ground level. There was no sign of the alluvial soil being disturbed. In whatever way the mounds had been formed, the material of which they were constructed had been gradually heaped up on the original ground surface. We found no trace of charred wood or stones, nor any remains of animals that had been cooked—in fact, nothing whatever to indicate that they had been used as ovens. It is most unfortunate that none of the early settlers, so far as I can ascertain, have given us any sufficiently definite first-hand information in regard to these remarkable structures. Dawson's account,* though apparently he had never seen them in use, is the best. He says that they "were the sites of large, permanent habitations, which formed homes for many generations. . . . The vast accumulation of burnt earth, charcoal, and ashes which is found in and about them is accounted for by the long continuance of the domestic hearth. . . . They never were ovens, or original places of interment. . . . They were only used for purposes of burial after certain events occurred while they were occupied as sites for residences—such as the death of more than one of the occupants of the dwelling at the same time, or the family becoming extinct, in which instance they were called 'muuru kowuutung' by the Chaa-wuurong tribe . . . meaning 'ghostly place,' and were never afterwards used as sites for residences, and only as places for burial."

In five of those that we examined we found aboriginal skeletons, the bones of some of which had evidently been disturbed by burrowing rabbits. The bodies did not appear to have been buried in any special position, so far as looking towards any special point of the compass was concerned, and the only animal remains that we found associated with them were sixteen tibio-tarsi of the Native Turkey, *Eupodotis australis*, all of which were lying close to one skeleton. The accompanying illustration (Plate II.) will serve to show the nature of the mounds and the position of the bones of one of the skeletons, which in this case was lying on its right side. In view of the habits of the natives, it is difficult to understand the entire absence of any traces, in the form of stone implements, charred wood, shells, or bones, in mounds such as we examined, if they are the remains of permanent dwelling-places. They persist as relics of our aboriginals who have passed away in Victoria, and, beyond the fact that a certain number of them have been used as burying-grounds, we know very little about them, and have no satisfactory explanation, and now never can have, of their primary origin and use.

* "Australian Aborigines," p. 103.

THE GREAT WAR.—The death, in France, while on active service, of Private Gervase E. Somers, at the early age of 19 years, has caused another blank in the family of a country member of the Field Naturalists' Club—Dr. Edgeworth Somers, of Mornington, to whom the sympathy of fellow-members is extended. Dr. Somers's eldest son fell at Gallipoli in 1915, while a third son is serving as a trooper in Palestine.

COMMONWEALTH MILITARY SURVEY OF AUSTRALIA.—Some time ago attention was called (*Vic. Nat.*, xxxiii., p. 143) to several of the military survey maps of Victoria as being useful to naturalists on their excursions. Since that date a map has been issued, entitled "Ballan, Sunbury, Meredith, and Melbourne," on the smaller scale of half an inch to one mile, equal in area covered to four of the maps previously referred to. This includes two of the maps (Sunbury and Melbourne) already issued on the larger scale of one inch to one mile. The present map is of interest to naturalists because it includes the Lerderderg Ranges, north of Bacchus Marsh, and the tract of semitableland country known as the Brisbane Range, south-west of that town, of both of which the late Mr. J. G. O'Donoghue was so fond, and gave so many interesting details in vols. xxvi., xxvii., and xxix. of the *Naturalist*. The highest point of the latter is given as 1,403 feet, and the contour lines show how extremely steep is its eastern face, the 700-foot line being little more than a mile away. The map also includes the course of the Moorabool from Bungaree to Lethbridge, a picturesque valley, some 30 miles in length as the crow flies, but considerably longer by the windings of the stream. The map is issued at the same price as the others—viz., one shilling.

NAMES OF VICTORIAN RAILWAY STATIONS.—There has recently been published, in pamphlet form, a handy list of the railway stations in Victoria, with, as far as ascertainable, the origins and meanings of their names. In accomplishing this difficult task, the author, Mr. Thos. O'Callaghan, J.P., ex-Commissioner of Police, must have spent a large amount of time, for such information as he has got together requires a considerable amount of sifting before it can be accepted as correct. It may be thought that such a work has little interest for naturalists, but a glance at its pages will show that a large number of our towns, and hence railway stations, have derived their names from the native names of natural objects in their vicinity. Take, for instance, "Albacutya." This is given as "Native, from Ngelbakutya, sour quondong." In his introductory remarks the author gives a number of origins of prominent places in other Australian States. An interesting

addition which might have been included would have been the year of opening of each station, and so be an authoritative record to be referred to when discussions arise, as they often do, on such a topic. The work, which extends to just 100 pages, has been published by the Railways Commissioners, and is on sale by booksellers at one shilling per copy. It forms a companion volume to similar lists issued by the Railway Departments of South Australia and Queensland. Another work of a similar character which would be extremely useful, and might well occupy the spare time of an enthusiast, would be the origins and meanings of the names of the counties and parishes of Victoria.

THE NATIONAL PARK OF TASMANIA.—In the *Hobart Mercury* of 4th October last, Mr. J. W. Beattie, the well-known photographer, gives an account of a recent trip to the Tasmanian National Park, which is situated near the terminus of the Derwent Valley railway, about fifty miles north-west of Hobart. The park is some 27,000 acres in extent, and includes several alpine lakes, Mt. Field West (4,721 ft.), and other peaks, and the Russell Falls among its scenic features. The vegetation also is very fine, and the reservation should form a splendid haven for native birds and animals. Mr. Beattie credits the park with having scenery such as will satisfy the most exacting of Australian trippers.

WHITE SWALLOWS.—About the middle of November last year I happened to be visiting at one of my father's farms at Moorooduc, when I noticed an apparently white bird in an ordinary Welcome Swallow's nest in a buggy-shed. On a closer investigation I found that there were four young swallows just ready to leave the nest, two of which were pure white with black eyes, the other two being like their parents. I handled them and showed them to others. When I put them back into the nest, they flew out and round the place with their parents. Next morning I could find only one, but as a Boobook Owl was noticed in a pine tree not far away I presume it was responsible for the missing bird. To-day I received a letter from my father in which he mentions that the swallows had built again in the same place, and, as before, two of the young are white. Should any bird-lover be desirous of seeing these birds I will be pleased to give directions as to finding the place, which is about two miles from Moorooduc station, on the Mornington line.—G. J. FLOOD. Titles Office, Melbourne, 14th October, 1918.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. B. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn Street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 16TH NOVEMBER.—**Zoological Gardens.**
Leader—Mr. D. Le Souëf. Meet at Main Entrance Gates at 2.30 p.m.

SATURDAY, 30TH NOVEMBER.—**Pakenham.** Objects—**Physiography and Botany.** Leader—Mr. F. Wisewould. Meet at Flinders Street Station (opposite Mutual Store) for 7.52 a.m. train. Intending excursionists are requested to advise the leader or Hon. Secretary at the November ordinary meeting.

CHRISTMAS EXCURSION.

Arrangements are in hand for the trip to Marysville during the Christmas holidays particulars of which can be obtained from the leaders Messrs. F. Pitcher and J. Stickland. In order that accommodation and travelling arrangements may be finally completed, it is necessary that the names of those contemplating joining the excursion should be handed in not later than the November meeting. It is anticipated that the cost of board will not exceed £2 5s. Train and coach fares will be extra.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/8
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 5th December, 1918.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	121
EXHIBITION OF WILD FLOWERS	124
A NATURALIST IN NEW GUINEA. BY F. P. DODD ..	127
THE BUCHAN CAVES	132

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-31 BOURKE ST.
1918.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 9th DECEMBER, 1918.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. General Business.

4. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

5. Reading of Papers and Discussion thereon.

"A Sketch of the Geological History of Australian Plants.—The Mesozoic Flora." Illustrated by lantern slides. By Mr. F. Chapman, A.L.S.

6. Reading of Natural History Notes.

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

7. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 8. DECEMBER 5, 1918.

No. 420.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 11th November, 1918.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about sixty members and visitors were present.

DECLARATION OF SIGNING OF ARMISTICE.

The chairman announced that the news had just been posted at the newspaper offices that a cessation of hostilities between the Allied nations and the Germans had taken place that morning, and that the terms of the armistice had been accepted by the German delegates. The meeting immediately rose *en masse* and sang the National Anthem, concluding with three cheers for the King.

REPORTS.

A report of the excursion to Ringwood on Saturday, 19th October, for physiography and orchids, was given, as regards the former object, by the leader, Mr. F. Chapman, A.L.S., who reported a large attendance of members and friends. The afternoon turned out very pleasant, and the view from "Pine-mont," which was the vantage-point from whence the physiography of the district was pointed out, was very fine. After discussing the various features in the landscape, the party turned towards Mitcham, examining on the way a quarry on the bank of the Mullum Mullum Creek, where some years ago fragments of a brachiopod were secured by Dr. E. O. Thiele. Mr. C. French, who acted as leader for orchids, reported that about thirteen species were noted during the afternoon, of which *Calochilus Robertsoni*, *Caladenia suaveolens*, and *Thelymitra ixioides* were the most uncommon.

A report of the excursion to South Morang on Saturday, 26th October, was given by Mr. P. R. H. St. John, who acted as leader in the absence of Mr. G. A. Keartland through illness. The party crossed the Plenty by the new bridge, and spent some time in exploring the hills on the eastern side, the country being of quite a different character to the basaltic plateau on the western side. Both flowers and birds were scarce, but the picturesque views along the stream to some extent compensated for the dearth of natural history specimens. Tea was taken

at the hotel, and an hour or so spent in pleasant chat before the train left for town.

A report of the excursion to Labertouche, *via* Longwarry, on Tuesday, 5th November (Cup Day), was, in the absence of the leader, Miss C. Currie, given by Mr. F. G. A. Barnard, who said that a fair party had gone from town to Longwarry, where they were met by the Messrs. Currie, Hardie, and Crabb, and driven out to the Boronia patch, situated alongside the Labertouche Creek, in the parish of Jindivick. The ground covered by the party was much the same as on the previous occasion, as reported in the *Naturalist* for January last. The Boronia, *B. pinnata*, was found to be in fine condition, and the visitors were greatly charmed with the effect produced by the masses of delicately perfumed flowers. With the exception of *Drymophila cyanocarpha*, the other plants seen in flower were not particularly noteworthy. Among the ferns collected was *Lomaria Patersoni*, a species not common so near Melbourne. Birds were not numerous, but the Bell-Miner was heard several times.

On the motion of Messrs. Barnard and Coghill, a hearty vote of thanks was accorded to Messrs. T. B. Currie, A. B. Currie, W. B. Hardie, and F. Crabb for their kindness in providing vehicular accommodation and other hospitality on the occasion.

ELECTION OF MEMBERS.

On a ballot being taken, Miss B. Jennings, 70 High-street, Malvern, was duly elected an ordinary member, and Miss E. Mackenzie, 5 Clissold-street, Ballarat East, as a country member of the Club.

GENERAL BUSINESS.

The chairman said that he had during the day received a communication from the secretary of the Forest League (Victorian branch), stating that the proposal to have the western portion of Kangaroo Island, South Australia, set aside as a national park was to come before the South Australian Parliament that afternoon, and requesting him, if possible, to wire to Capt. White, of Adelaide, the Club's support of the proposition. He had communicated by telephone with a number of members, who were unanimous in their desire to further the proposed reservation, and he had therefore wired Capt. White to that effect.

Mr. F. G. A. Barnard said that he knew the Field Naturalists' section of the Royal Society of South Australia had been for some years endeavouring to have the reservation made, and moved that this meeting endorse the president's action. The

motion was seconded by Mr. J. L. Robertson, and carried unanimously.

The chairman also drew attention to the exhibition of flower and bird paintings executed by Mrs. Ellis Rowan, now on view at the Art Society's rooms, Alfred-place, stating that they were well worthy of inspection. The subjects were mainly New Guinean, and some exceedingly beautiful flowers were represented. Some coloured drawings of Mount Macedon fungi were in themselves worth seeing.

PAPER READ.

By Dr. Griffith Taylor, B.E., B.A., F.G.S., entitled "Science in Antarctica."

This took the form of a lecturette illustrated by lantern slides. The lecturer, who was a member of the Scott Expedition to the South Pole in 1910-14, gave an account of the different scientific investigations carried out on board the vessel as it proceeded south. He then described the surroundings of the winter quarters, with some account of the bird and animal life in the vicinity.

The chairman congratulated the lecturer on the interesting nature of his remarks, and said that, considering the excitement all around on account of the signing of the armistice, if the lecture had not been so interesting the audience would have left the room long before its conclusion.

REMARKS ON EXHIBITS.

Mr. F. G. A. Barnard called attention to some micro-photographs of different objects made by Mr. Garriques, of Broken Hill, who would be glad to correspond and exchange with other workers in the same direction.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—Twenty-five species of flowering plants from Grampians, collected November, 1918, including *Calectasia cyanea*, R. Br., Blue Tinsel Lily; *Melaleuca squamea*, Lab., Mealy Honey-Myrtle; *Grevillea oleoides*, Sieb., Olive Grevillea; *Pultenaea styphelioides*, Cunn., Heathy Bush-Pea; *Phebalium pungens*, Bth., Prickly Phebalium; *Epacris paludosa*, R. Br., Swamp Heath; and *Lhotzkya genetylloides*, F. v. M., Snow Myrtle. Also the following peculiar to the Grampians:—*Pultenaea rosea*, F. v. M., Rosy Bush-Pea; *Stylidium soboliferum*, F. v. M., Bristly Trigger Plant; *Bauera sessiliflora*, F. v. M., Showy Bauera; *Leucopogon thymifolium*, F. v. M., Thyme Beard-Heath; *Pultenaea Benthami*, F. v. M., Grampians Bush-Pea; also the orchids *Caladenia angustata*, Lindl., and *Calochilus cupreus*, Rogers, both new for Victoria.

By Miss C. Currie.—Flowering specimens of *Boronia pinnata*, Smith, obtained on Labertouche excursion.

By Mr. F. Keep.—Flowering specimens of *Melaleuca densa*, *Prostanthera nivea*, *Jacksonia scoparia*, *Callistemon rigida*, *C. saligna*, and *Leptospermum scoparium* (N.Z. form), grown at Canterbury.

By Mr. C. Oke.—Rare Victorian bug, *Peltophora pedicellata* (first record for Melbourne district).

After the usual conversazione the meeting terminated.

EXHIBITION OF WILD-FLOWERS.

THE Melbourne Town Hall was a brilliant scene on Tuesday, 1st October, 1918, the occasion of the Field Naturalists' Club's annual exhibition of wild-flowers, the net proceeds being again handed over to the Y.M.C.A. for its National Fund for Soldiers. The exhibition was opened in the afternoon by the Lord Mayor (Cr. Stapley), who, in his remarks, referred to the suitability of many native plants for garden culture, as evidenced by the splendid collection forwarded by Mr. J. Cronin, Director of the Botanic Gardens, representative of the large number of indigenous shrubs, &c., cultivated there. At one time Australian flowers were, he said, reported to be scentless, and the birds without song, but these assertions had long been dispelled, and he thought Australian boys and girls could love their wild-flowers quite as much as English children loved their buttercups and daisies, or the Scotch lassies their bluebells. He commended the Club for donating the proceeds to patriotic purposes. The president of the Club, Mr. A. D. Hardy, F.L.S., in proposing a vote of thanks to the Lord Mayor for opening the proceedings, said that the Field Naturalists' Club was not solely responsible for the exhibition. Many friends outside had co-operated with members by forwarding flowers, and the Microscopical Society of Victoria had provided a large number of microscopes, by which the more intricate portions of the flowers could be made plain. There was a large attendance of members and the general public, especially in the afternoon, when it was difficult to get near some of the more interesting exhibits.

The display of flowers was quite equal to that of previous years, and included specimens from every Australian State. The Western Australian specimens—"kangaroo-paws," everlasting, &c.—obtained mainly through the efforts of Miss Amy Fuller, elicited a great deal of admiration, while the Waratahs from New South Wales were equally popular. The display of cultivated indigenous flowers made by the Melbourne

Botanic Gardens was very fine, and included representatives of other Australian States.

It is impossible to record the flowers sent by the various exhibitors, owing to the limited time available for opening them up and arranging their display. The Club is, however, indebted to the following persons for the interest they took in the exhibition, which was shown by the valuable contributions forwarded. The principal inter-State exhibitors were :—New South Wales.—Mr. J. H. Maiden, I.S.O., Botanic Gardens, Sydney (representative New South Wales flowers); Mr. D. W. Shiress, Sydney; Mr. W. Gall, Broken Hill (Sturt's Desert Pea); Mr. B. Chalker, Hilltop; and Mr. W. R. D. Baker, Kamarah. Queensland.—Director Botanic Gardens, Brisbane; Miss F. Bage, Brisbane; and Miss Wade, Toowong. South Australia.—Mr. J. F. Bailey, Botanic Gardens, Adelaide; Mr. F. G. A. Barnard (Sturt's Desert Pea, from Tarcoola). Western Australia.—Miss Amy Fuller, Melbourne (from various localities); Miss Meinke, Laverton; Mrs. Buchanan, Dumbleyung; Mrs. Hill, Yalgan; Mr. J. G. Drummond, Moora and Dandargan; Mr. Fisher, Perth; Mr. F. G. A. Barnard ("kangaroo-paws," from Kelmscott). Tasmania.—Mr. C. Lord, Hobart (on behalf of Field Naturalists' Club and National Park Trust); and, in addition, there were several parcels without names of senders.

In the Victorian section the principal exhibit was that from the Grampians, for which Miss G. Nethercote, Miss Perry, Messrs. C. Daley, C. J. Gabriel, H. Hughes, and other friends were responsible. The exhibit included very fine specimens of the Native Heath, *Epacris impressa*, Thryptomene, the Tinsel Lily, &c. A double-flowered specimen of the *Epacris*, and flowers of *Pultenaea rosea*, found only on Mount William, were among rarities shown. The other Victorian exhibits represented nearly every portion of the State, as will be seen by the following list :—Walpeup (Mallee), A. J. Crigan; Homecroft, *via* Warracknabeal, Miss E. Leisch; Golton South, *via* Lubeck, Mrs. A. N. Howard; Hall's Gap, Mrs. E. C. D'Alton; Ararat, Miss Bainfield; Greenwalde, near Heywood, M. Egan; Prairie, J. C. Thomas; Bendigo, D. J. Paton, J. J. Ditchbourne; Dunolly, J. A. Hill; Alma, Master G. Cornthwaite; Castlemaine, G. Coghill, Miss K. Ramsay; Mitta Mitta, S. F. Clinton; Rutherglen, G. H. Adcock; Lima East, Mrs. Evans; Creighton, Miss R. Worland; Kilmore, Miss Hudson; Kilmore Junction, Miss Johnson; Greensborough, Mrs. Ford; Kangaroo Ground, Miss V. Twyford; Tooolangi, Mrs. A. P. Smedley; Marysville, Miss K. Keppel, A. D. Hardy; Warburton, A. W. Grainger; Warrandyte, Mrs. Hoyle; Ringwood and Spring Vale, J. W. Audas; Emerald, W. Scott; Narre Warren, G.

Haysey : Pakenham, F. Wisewould : Bunyip, Mrs. A'Beckett : Longwarry, Miss E. Wallace : Thorpdale, G. Cornthwaite : Darlimurla, State School : Narracan, T. Savige : Heyfield, Miss L. Kilpatrick, — Best : Nyora, G. Coghill : Yarram, State School : Alberton, Misses A. and G. M'Kerrow : Laverton, T. S. Hart : Hampton and Sandringham, Misses Mitchell and Nokes : Frankston, J. R. Mann : Balwyn and Sassafras, F. Chapman. In addition, cultivated native flowers were contributed by Mr. W. R. Grimwade, Toorak : F. Keep, Canterbury : C. L. Plumridge, Kew.

That the display was an extensive one is evidenced by the fact that about 1,000 square feet of table space was occupied.

An attempt was made to show some of the flowers in their systematic arrangement, but only a few of the more familiar orders could be carried out in the brief time available.

A number of Victorian ferns in pots were exhibited by the Melbourne Botanic Gardens, while another table was devoted to a representative collection of Australian orchids got together by Messrs. E. E. Pescott, F.L.S., and C. French, jun., which comprised about one hundred species.

A beautiful basket of Native Heath, made up from the Grampians exhibit by Miss Barrow, was greatly admired. The same lady arranged a bouquet of native flowers for presentation to the Lady Mayoress by the little daughter of the president of the Club.

Miss Amy Fuller kindly exhibited a series of her wild-flower paintings, which attracted considerable attention.

A ladies' committee undertook the sale of flowers, and was very successful, their only difficulty being the want of flowers to meet the demands of the buyers. A supply of plants of the Western Australian Pitcher Plant, *Cephalotus follicularis*, Lab., also found ready sale. Pot specimens of native plants were also on sale, and it is proposed to collect seeds of various plants, &c., during the present summer, so as to have a supply for sale next year.

A very extensive display of objects under microscopes was made by members of the Microscopical Society of Victoria and other friends. This was a great centre of attraction throughout the afternoon and evening.

Refreshments were in charge of the Y.M.C.A., and by this means further funds were received. Music was delightfully rendered by a ladies' string orchestra.

The thanks of the Club are due to those Club members who, headed by Mr. J. Gabriel, gave up considerable time in helping to carry out the details of the display, and to the Royal Horticultural Society and the Carnation, Dahlia, and Sweet Pea Society for the loan of specimen glasses, &c.

A NATURALIST IN NEW GUINEA.

BY F. P. DODD.

(Read before the Field Naturalists' Club of Victoria, 12th Aug., 1918.)

It had long been my wish to visit New Guinea, if only for a few months: so, the opportunity coming last year, I duly left for that naturalists' paradise in May, accompanied by my son, Mr. W. D. Dodd, an experienced entomological and general collector. Our trip was to be purely an entomological one. Before we could get away we had to obtain a "permit" to leave Australia, requiring sundry visits to the Customs Department, the permit extending to February. Earlier it was imperative to undergo vaccination—not in *our* interests, but in those of the natives. This may be a very wise regulation, but to those who had never been in a small-pox district, and North Queensland having been absolutely free from any cases for many years, it does seem a queer one. With passengers from the North-West, Java, Japan, and elsewhere, where small-pox is not rare, the matter is entirely different, but to healthy residents of North Queensland it is excessively annoying to have to undergo the often very unpleasant experience of vaccination. To my gratification, the vaccine did not affect me, so I was granted an immune certificate; but my companion suffered very much, it being painful to see his dreadfully swollen arm, to note his prostration and appearance of severe illness. However, we duly got away by the *Morinda*. On board I was pleased to see Mrs. Ellis Rowan, on yet another journey to carry on her splendid work of flower, and this time, I believe, bird painting. She purposed going hundreds of miles further on, our destination being Port Moresby. Here there was little to interest an entomologist, or even a botanist, for scarcely an insect did we see, and the only trees noticeable were *Eucalyptus platyphylla* and an *Angophora*, scarcely a shrub, a few species of introduced weeds, and several coarse grasses on the hills around. Our eyes searched the hills, near and far away, which were generally disappointing to look at, but here and there, on several of them, were to be observed dark masses of vegetation—masses usually termed scrubs, which, if searched, would doubtless yield something new or something beautiful.

In Queensland and on board we had heard of the Astrolabe Range, only some twenty miles from Moresby, with its fair Rona Falls, a garden with tropical fruits, &c.; so upon this range, more prominent than the rest, we gazed and speculated, but in the blue distance nothing of its vegetation could be recognized—poorly or densely wooded, we could not tell; however, that range was our objective.

We tarried three days at Moresby awaiting an opportunity to get away. From our home in Kuranda we had brought some thirty pupæ of our giant moth, *Coscinocera Hercules*, so in our room these were hung on a cord: one had emerged and perished on the way, and nearly all the others came out during the three nights in port. The news soon spread that two people were hatching out some big moths, so we had some curious or interested callers. Then we began to hear of a great moth a gentleman had captured on the Astrolabe, various measurements—from twelve to fourteen inches—being given: finally the gentleman himself came in, and we learnt that the moth was twelve inches in expanse, but, having no means of killing or preserving it, he allowed it to escape. Still another gigantic creature was mentioned, this being from sixteen to twenty-four inches across, the owner requiring a suit-case to accommodate it! But accounts differed as to the insect itself—a moth with one, a beetle with another. Finally, we traced this to a fine *Batocera wallacei* given at Samarai to Mr. H. P. Schrader, a Sydney gentleman with a love for natural history, and with whom I had corresponded a little: but his beetle we afterwards ascertained was not equal to one of ours of the same species, which was $17\frac{1}{2}$ inches across the antennæ before dry. However, from a more reliable source, I have been informed of a larger moth than *C. hercules*. Mr. Schrader, accompanied by his wife, had been to the Astrolabe a year earlier, and I heard of him often. He had not been impressed with the district, so had gone to Woodlark Island, where he remained some weeks, and, though he obtained some interesting beetles, moths, and butterflies, he considered the results of his visit disappointing. When in Sydney several months ago I saw his collection, which is nicely kept, and noticed two handsome Cossidæ from Woodlark. We obtained one from a hill scrub—a pretty, pearly-white insect with metallic greenish and bronzy spots.

To get to the range we travelled in a slow and heavy motor lorry, but, owing to the muddy condition of the road, we got no further than thirteen miles the first day, camping at a hut, the owner of which was working a copper lode near by. Here for the first time we heard the "Tap-tap-tap" of the drums of the natives, a number working at the mine being camped hereabout: and here we were kept awake by the mosquitoes, their threnodies around our cheese-cloth nets lasting far into the night. In the morning a few minutes' walk across the road brought us to the banks of the Laloki River, a narrow, deep, and fairly rapid stream here, which we had to cross later close to the range. Better trees and longer grass grew here, but still *E. platyphylla* was plentiful. The only butterflies yet seen were a slaty *Tenaris* and two species of *Danaidæ*, one being very dark brown, almost black.

The following day we negotiated the rest of the distance to Sapphire Creek (why "Sapphire" no one seemed to know), which joins the Laloki, and which we had to cross to the accommodation house of Mrs. Wright, one of those hard-working and self-reliant women one finds in the bush, far from busy cities and towns. She has a contempt for natives, snakes, thunderstorms, and men afraid to work. Quite a personality is Mrs. Wright, with a bright welcome for all, and quite at home with high Government officials or ordinary folk; a good one to know in times of sickness, for she has been a nurse in a hospital. Here we had an interesting stay, good meals, and good beds; ascertained that Mrs. Wright was an encyclopædia concerning New Guinea; that she took and despatched mails, looked after much of the rubber from, and many of the stores to, the several up-aloft plantations, we often seeing the mules being loaded or unloaded, for they came down and went up the range several times a week. Upon these mules our precious mails and stores promptly reached us; so much we had to thank Mrs. Wright for. Upon the evening of our arrival a gentleman came in, saying "Are you F. Dodd of Stawell?" A hearty handshake, and soon we were deep in conversation upon mining, cricket, and trips along the tram-line to the heathy Grampians, of those days, of over thirty-three years ago, which have passed all too quickly. This gentleman, Mr. R. G. Prior, son of a once well-known mining manager at Stawell, was in charge of the Laloki copper mine, a mile or so over the not very lofty hills to the right, he representing a big firm or syndicate interested in its future development. He showed me a few butterflies—interesting, as several were new to me. We were now seeing *Lycænidæ*, *Pieridæ*, and other butterflies, the beautiful *Orithyia albicincta* being plentiful, and often almost at our feet; it is rather finer than in Queensland. Several species of small "blues" freely congregated upon damp spots along the road.

Our destination was now the top of the range, 1,800 feet, up a zig-zag and often steep track, said to be three miles in length, to a rest-house which the Colonial Secretary had very kindly placed at our disposal. To get our property up we had to requisition various blacks; two young fellows had been signed on to us at Moresby, Mr. Prior and Mrs. Wright lent us others, and the latter kindly provided me with a horse, for the road was long and hard. My son had gone up with our boys the second day, and reported a comfortable galvanized iron structure with several compartments, and two tanks, some five hundred yards away to the left of the main track, which went to Bisiatabu Mission Station and to the three plantations further along, the last being thirty miles away—lost in the wilds of New Guinea. No more whites after there,

who from here numbered about twenty-two men, women, and two little children, these few scattered white people being surrounded by the recruited blacks and the wilder and more independent members of the hill tribes—over 500 of the former and doubtless several hundred of the latter. Nearly all the natives are fairly honest and reliable, many being as gentle in manner, looks, and speech as women, and often extremely good-looking, but, of course, there are exceptions. Their wants are few, and the plantation blacks are happy enough, judging by their drumming and singing—on Saturday nights kept up for hours. As Mr. Lawson, the missionary, said, they are but as children, and should be treated as such, and reasonable allowance made for their faults. Some of the western men are hatchet-faced, villainous-looking rascals, but their looks are not to be taken as a fair guide. However, I had no time to interest myself deeply in the dark people; naturally, I came much in contact with them, and merely record my impressions. I shall mention them again in these notes.

We crossed a good bridge over the Laloki, then began the ascent, the valley being on the right. Half-way up the range was a fairly extensive scrub, and down to it my son often came during our stay above at the rest-house, nearly two miles away, and many an interesting capture he made. Up to and past the scrub *E. platyphylla* continued, but a different *Angophora* accompanied it to the top of the range, and, quite on the summit, what I took to be a *Casuarina* occurred. *Eucalyptus tereticornis*, a small-leaved *Melaleuca*, and a *Banksia* were also present. From above this scrub the Rona Falls, at the head of the Laloki valley, came into view. Though three miles away, they stood out very distinctly, and from our camp, further away, we could hear their roar very often. Accounts differ as to the height of the falls, but 400 feet appears about correct: the water has a sheer drop to a large rock, seemingly half-way down, parting and passing evenly on each side of the rock. They are not easy of access, and but few appear to have closely approached them. The view is said to be very fine, but we were too busy to attempt to reach them. More water flows in the dry season than over the Barron Falls, but less during the wet season. The river takes its rise about twenty-five miles further back, and in the direction we were to go later. Over to the left of our rest-house another scrub occurred, but, outside these masses of vegetation, the country was uninteresting and unproductive. To get about in the open was difficult, the long tangled grasses impeding one's movements and concealing stumps, fallen timber, and rocks, so that much net work was impossible. The scrubs, with masses of shrubby undergrowth, overrun with thin ropy creepers, were not ideal

collecting spots; besides, they were often wet. However, my companion, stopping at nothing, as a rule brought in fine collections, myself assisting when not engaged in setting, &c. He would often go away for several days, send a black back with the first day's captures, the other black the next day, then turn up himself the third day, having passed the nights at the mission station or a plantation, where he was always welcome.

We were upon what is known as Hombron Bluff, from which magnificent views were obtainable. To the west, towards Moresby, were many hills, with here and there ranges, and also to the north-west. We could not see the town owing to intervening hills. Well to the left was the sea, and beyond Moresby we could see it again. The country past the Sapphire and Laloki junction, and miles on each side, was often buried in mist; from our lofty perch it was a charming sight, this sea of mist with hills jutting therefrom in divers places. At Hombron, in and along the sides of a valley formed by the semicircular ridge upon which we were, were the Government Gardens, but in an unfavourable locality; only a little soil was rich and level, many of the beds being at too great a slope. Gradually the gardens lost their interest, and were, when I came away, likely to be let, as there was a comfortable residence on the grounds. Here grew a very fine banana, probably the Gros Michel, which is finding favour in Queensland. We could procure bunches at a trifling cost when we desired, so rarely were we without a good supply. Obtainable also were pawpaws, sweet potatoes, limes, and occasionally beans and tomatoes. These gardens were under the charge of Mr. C. Speedie, a Victorian, but who, for want of labour and means to irrigate, could do little in the way of experimental cultivation; however, several varieties of coffee were growing luxuriantly, a patch was under tea, another arnatto, and another sisal hemp; a big area of this aloe was passed on our way to Sapphire. Then there were granadillas, ordinary passion fruit, custard apples, and various citrus fruits, &c. Ornamental plants were few, any good Queensland garden possessing a greater variety of Crotons, and, as to the many-coloured Acalyphas, the graceful Aralias, and the beautiful Dracenas, they were practically unrepresented—rather disappointing to one after being acquainted with so many in North Queensland. There was but one Acalypha, so I sent to Kuranda for some dozen kinds, Mr. Speedie being pleased with their variety and beauty, for the majority thrive, and I daresay several of the Astrolabe plantations have these now growing. The one species of Acalypha had been freely used for the purpose of ornamenting the grounds and the tracks around

the Hombron ridge, altogether there being several miles of this rather gay species to be seen—brown intermixed with various shades of red. The gardens are on a scrub-headed creek which runs east, then turns to the north, and, joined by other water-courses, eventually reaches the Brown River, that junctioning with the Laloki some distance away. The upper portion of Hombron is precipitous, the summit, fairly flat, often ending suddenly in a precipice of several hundred feet. In the clefts and on the abutments were various orchids and ferns, &c., inaccessible to those unsupplied with ropes and such necessities. The rocks are often in great boulders, themselves composed of rounded pieces of various sizes apparently fused together by heat, many being as large as an ordinary cottage; they stand boldly out here and there on the mountain-tops and sides, some in the bed of the river.

At Hombron we obtained many fine insects. Soon we ascertained that *Coscinocera hercules* was present, we taking in our several localities nearly forty cocoons containing living pupæ, but, though some of the cocoons were heavy, the moths were not equal in expanse to the Queensland form, which we frequently had up to $10\frac{1}{2}$ inches—once $10\frac{7}{8}$ inches. Three pupæ remained when we reached Kuranda, the last moth proving to be a magnificent female $11\frac{1}{2}$ inches across when spread on the setting board; but, owing to evisceration and drying, may have contracted a little, though it remains the finest specimen that has passed through my hands, and maybe is the largest moth in any collection. As regards wing area, it comes easily first in the giant moths of the world. I have heard of an *Attacus atlas* $11\frac{3}{4}$ inches in expanse, but the hind wings of *hercules* would easily place it first were *atlas* even of greater expanse.

(To be continued.)

THE BUCHAN CAVES.—Satisfaction will be felt at the intention of the Government to light the Buchan Caves with electricity in place of using magnesium ribbon, as at present. Last year 3,465 visitors were admitted to the caves, about £350 being paid in entrance money. The opening of the railway to Orbst has brought these caves within 18 miles of a railway station, but unfortunately the distance from town (225 miles) places them beyond the reach of the tourist possessed of only moderate means or limited by time. To the man of leisure the district offers many attractions besides the caves, which in several respects rival the famous ones at Jenolan, in New South Wales. Some remarkable limestone cliffs occur on the banks of the Murrindal River, the motor trip along the Nowa Nowa Arm of Lake Tyers is unrivalled, while the views in every direction are charming. Folders can be obtained at the Tourist Bureau.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn Street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSERS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 14TH DECEMBER.—**Lower Fern Tree Gully.** Leader—Mr. A. N. Burns. Object—**Insect Life.** Members will assemble at Flinders-street Station (opposite Mutual Store) in time to catch 1.35 p.m. train, booking second class to Lower Fern Tree Gully. Leader will join party at Ringwood.

CHRISTMAS EXCURSION.

Members who have signified their intention of joining the Excursion to Marysville are asked to meet the leaders at the close of the Ordinary Meeting, 9th December, to make final arrangements.

SATURDAY, 18th JANUARY, 1919.

EXCURSION TO SYDENHAM.

Will those members contemplating joining this excursion, kindly notify the leaders, Messrs. F. Chapman and A. L. Scott, at the December meeting, so that early arrangements may be made in connection with the motor conveyance. Seats will only be booked for those whose names are thus handed in.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 1 1/2 x 10, 7/6; 1 1/2 x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3 1/4, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, 1/2 inch, 1 and 1 1/2 in. wide, 1/- each; 2 and 2 1/2 in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.

VOL. XXXV.—No. 9.

JANUARY, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 9th January, 1919.

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

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

CONTENTS :

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	133
EXCURSION TO RINGWOOD	135
A NATURALIST IN NEW GUINEA. BY F. P. DODD—(continued)	137
NOTES	136, 144

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-31 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 13th JANUARY, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Mr. F. W. Mann, LL.B.,
Walsh Street,
South Yarra.

Mrs. E. W. Outhwaite,
789 Malvern Road,
Armadale.

PROPOSER.

Mr. C. C. Plante.

Mr. C. C. Plante.

SECONDER.

Mr. P. R. H. St. John.

Mr. E. S. Anthony.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"Nature in the Serra Ranges."—By Mr. J. W. Audas, F.L.S.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 9. JANUARY 9, 1919.

No. 421.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th December, 1918.

Mr. J. Gabriel, one of the vice-presidents, occupied the chair, and about fifty members and visitors were present.

REPORTS.

A report of the visit to the Zoological Gardens on Saturday, 16th November, was given by Mr. C. Daley, F.L.S., who said that over twenty members and friends had attended. In the unavoidable absence of the Director, Mr. D. Le Souëf, C.M.Z.S., Mr. A. Wilkie, one of the staff, had acted as leader, and pointed out some of the more interesting animals, birds, &c., at the same time relating something of their habits, &c. Unfortunately, before the tour of the Gardens had been completed rain set in, and to some extent interfered with the plans of the leader; however, a very instructive afternoon had been spent, and he desired to move that a vote of thanks be accorded to Mr. Wilkie for having given up his afternoon to the party. This was unanimously agreed to.

The hon. secretary stated that the excursion to Pakenham, arranged for Saturday, 30th November, had been abandoned owing to an accident to the leader, Mr. F. Wisewould, resulting in a broken arm, preventing him from taking the part he desired in the outing. He was glad, however, to report that Mr. Wisewould was progressing favourably.

GENERAL BUSINESS.

Mr. F. G. A. Barnard directed the attention of members to a paragraph in that day's *Argus* recording the names of those who had passed the qualifying examination for shorthand writer, and said that the list included the name of Miss D. Philpot, who for some time had acted as honorary stenographer at the monthly meetings. He desired to offer her the members' congratulations on her success. This was carried by acclamation.

REMARKS ON EXHIBITS.

Mr. F. G. A. Barnard drew attention to an exhibit of flowering branches of *Elæocarpus cyaneus*, Ait., the Blue Olive-berry, a handsome Victorian shrub or small tree, grown by Mr. C. L. Plumridge, who informed him that it was flowering a month later than usual.

Mr. P. R. H. St. John called attention to his exhibit of flowers of the Western Australian eucalypt, *E. erythronema*, Turcz.—the normal form, with crimson stamens, and a variety raised by a member, Mr. B. Hodgins, with pale yellow stamens.

PAPER READ.

By Mr. F. Chapman, A.L.S., entitled "A Sketch of the Geological History of Australian Plants: the Mesozoic Flora."

The author said that in the first paper on the subject, published in the *Naturalist* for January last (vol. xxxiv., p. 140), he had dealt with the Palæozoic or earliest forms of plant life exhibited by Australian fossils. In the present paper he would deal with the forms found in formations belonging to the middle period of geological history. He then gave some account of the principal plant remains found in the various formations belonging to the Mesozoic period, illustrating his remarks by a fine series of lantern slides, many of which depicted forms not previously illustrated. He remarked that further investigation of the interesting flora of this period would probably lead to the discovery of other coal-bearing deposits in Australia at present unknown.

Mr. Barnard said the members were deeply indebted to Mr. Chapman for the interesting paper he had read, and more especially for the excellent way in which his remarks had been illustrated. It was interesting to find so many points of agreement between the fossils of Australia and other parts of the world.

Mr. P. Morrison asked how the fossil ginkgos compared in size with the ginkgo tree of to-day, to which the author replied that the fossil leaves were exactly of the same size and type as the ginkgos now living in Japan and to be seen in our own Botanical Gardens.

In reply to the chairman, he said that, with regard to the preservation of remains of the mud-fish so perfectly, this arose from the fact of the animal being provided with tough scales, which resisted compression more than those of ordinary fishes.

NATURAL HISTORY NOTES.

Mr. P. R. H. St. John said that in a recent issue of the *Mirror*, a Sydney newspaper, in its natural history column, it was stated that the newly-hatched young of Black Swans were white, and those of White Swans were black. This, he said, was wrong, and could be seen at present by examples at the Botanical Gardens, where broods of both swans were almost indistinguishable, being of a dull greyish-white.

Mr. H. B. Williamson said that when visiting Sherbrooke Falls a few days before, he had been surprised at the hundreds

of pieces of unrolled tree-fern fronds lying on the ground, and asked for information as to what had caused the destruction. He exhibited several of the fronds, which appeared as if they had been bitten off. He could find no trace of insect action, and attributed it to birds, but the question arose, What bird?

Mr. Barnard said he had a long experience of fern gullies, and had never noticed anything of the kind.

[It has since been suggested that this was the work of possums, which are very fond of anything succulent, such as young tree-fern fronds.—ED. *Vict. Nat.*]

EXHIBITS.

By Mr. F. Chapman, A.L.S.—Specimens of burrowing beetles, *Scitala sericans*, Er., and *Anodontonyx*, sp. (Scarabæidæ), from a turf-heap at Balwyn.

By Mr. C. A. Nethercote.—Fine specimens of the Blue Pin-cushion flower, *Brunonia australis*, Smith, also white example of the same, from Wandin; flowers of Austral Bluebell, *Wahlenbergia gracilis*, A. De C., with white example.

By Mr. C. L. Plumridge.—Flowering specimens of Blue Olive-berly, *Elæocarpus cyaneus*, grown at Kew.

By Mr. P. R. H. St. John.—Flowering specimens of *Eucalyptus erythronema*, Turcz., of Western Australia, also yellow-flowered form raised by Mr. B. Hodgins at Essendon.

By Mr. A. L. Scott.—Wolfram from Wilks's Creek, near Marysville.

After the usual conversazione the meeting terminated.

EXCURSION TO RINGWOOD.

THE excursion to Ringwood on Saturday, 19th October, was arranged for orchids and physiography, and was well attended, the afternoon being very fine and pleasant. On the botanical side of the excursion little of note was recorded, so it is left to the physiographer to give some little account of the outing. Ascending the prominent hill about half a mile to the north of Ringwood station by a fairly easy, circuitous road, the sandy and rubbly nature of the soil was noticed, conducing to favourable growth and condition of the numerous rock-loving plants seen on the slopes, the cultivated succulents and garden plants becoming more prominent as we neared the residence on the summit of the hill, which stands at about 600 feet above sea-level. The hill affords one of the best panoramic views of this specially interesting country. Here we are in the heart of an area of uplift, block-faulting, river-erosion, and stream-capture. The main river systems are so complicated in their history

that all has not yet been worked out in regard to their past and present phases. The varying and associated levels of ridges, hills, and mountains point to peneplains or denudation levels of moderate to vast antiquity. "Pinemont" stands out, as do other hills in the vicinity, as a monument to the indefatigable work of patriarchal rivers. It is called a monadnock, in keeping with other like hills formed by surrounding denudation, the typical one being Monadnock Hill, in New Hampshire. To the north lie the Plenty Ranges, with Kangaroo Ground and its lava-sealed river-bed in the middle distance. Just below, to the east, is the great strath of the Croydon sunkland, with its prolific orchards, and farther afield the forest-clad volcanic stump, the Dandenong Ranges. Sweeping along the eye-line to the south-east the level of the lower peneplane is strikingly seen, whilst to the west are the lava-covered plains under which lie buried the old river valleys of the Plenty and adjacent river systems. Descending "Pinemont" on the south-western side, a cart track led us to the old quarry. A cursory examination with eye and hammer showed only a few impressions and stains, probably due to the worm *Trachyderma*. It was from this quarry that fragments of a brachiopod were obtained some years ago by Dr. Thiele. As the matter of determining the horizon in this district is of some importance to geologists, it is hoped that future geological collectors will concentrate their attention upon it. The walk to Mitcham station took us along the banks of the Deep or Mullum Mullum Creek for a short distance. The torrential nature of the stream-bed here was noticed, which shows it still possesses considerable erosive force, and to be actually in the phase of rejuvenation, as evidenced by its steep banks. The many interesting problems for geologists arising out of this short ramble amply repaid any special efforts of the members to attend the excursion.—F. CHAPMAN.

SEEDS OF NATIVE SHRUBS AND PLANTS.—With the view of encouraging the growth of those members of our indigenous flora suitable for garden plants, it is hoped to have on sale at the next exhibition of wild-flowers packets of seeds of various kinds. Country members especially can help materially in this direction by collecting, during the summer, seeds suitable for the purpose. Care must be taken that these are true to name. The following gentlemen will be glad to give advice and receive collections:—Dr. C. S. Sutton, Rathdown-street, North Carlton; Mr. P. R. H. St. John, Botanic Gardens, South Yarra; Mr. C. Daley, B.A., Clarinda-street, Caulfield; or Mr. H. B. Williamson, Princes-avenue, Caulfield East.

A NATURALIST IN NEW GUINEA.

BY F. P. DODD.

(Read before the Field Naturalists' Club of Victoria, 12th Aug., 1918.)

(Continued from page 132.)

We obtained many beautiful moths of the families Pyralidæ and Geometridæ, those of the Milionias of the latter being particularly showy. Sphingidæ were disappointing; all but one we took being well known in Queensland, so evidently it would be necessary to go further north or west, or into the higher mountains, to obtain good species. By rearing and capturing we soon had a good series of the showy *Troides*, *Priamus pronomus*, and took several worn examples of another of the genus, it having dull sooty wings, with an extensive yellow area in hind wings. The eyed butterflies of the genus *Tenaris* were plentiful; one large species we failed to capture, but in the Lycenidæ we were very successful. By observing the yellow *Cecophylla* ant, which is absolutely different from the *virescens* of Queensland, to this day erroneously called *Smaragdina* (which is an Indian species, and probably different from the Papuan), we bred two brilliant insects of the genus *Arhopala* and captured two others, one being a magnificent species over two inches in expanse, and of most brilliant violet-purple. To our surprise the common *Arhopala eupolis*, a green tree-ant associate in Queensland, was found with another ant altogether—a black insect with white-grey abdomen, common in the forest country of Queensland and here. At raspberry bushes and a scale-infested shrub we took several species of the beautiful genus *Miletus*, *M. rovena* and a *Philiris* being partial to the shrub. Altogether, our Lycenid collections were very satisfactory.

We several times saw *Nyctalemon orontes*, and were puzzled more than once with its flight, the movements appearing quicker than usual with this well-known day-flying moth; but, obtaining some gregarious caterpillars, they duly pupated as *Papilio* do, so we wondered what we should get in a butterfly. It was a surprise to find that we were rearing *Papilio laglaizei*, an almost perfect mimic of the moth; then we understood the differences in flight, for sometimes we, knowing nothing of the butterfly, had very naturally taken specimens of it for the moth. The deception above is almost perfect, but the under side is widely different in the hind wing; however, like the moth, the mimic keeps its wings flatly spread when at rest. *N. orontes* is not so large as in Queensland, is without the violet reflections from the olive-green bands, but the black is deeper and bands slightly more greenish. At Mrs. Wright's I had seen

two or three species of Euplceas settling on tools that had been used by the natives, these insects, with tongues extended, searching for damp spots left by perspiration. In the building we used later at Sapphire Creek were some bags of rice belonging to the Copper Company, and natives would come for these now and then. These men, hot from the walk, and perspiring, would lean against the verandah posts or against the doorway. After the men left we were always visited by these dark butterflies, they settling where the natives had leaned. Now and then the Hesperid, *Hasora chromus*, would act in a similar way, and once one of these skippers settled on the bare, damp arm of a visitor. Mr. Prior informed me that small butterflies would occasionally settle on his arm. One day I noticed a Lycænid flying about a saddled horse that had just been tied up to a post. Curious, I crossed to it, and found the attraction to be the recently-vacated saddle, the insect resting there with tongue extended; so quiet it was that I caught it between my fingers, it being a male of *Hypolycæna phorbæ*, an *Œcophylla* ant associate. I could relate many instances of curious habits of butterflies—habits somewhat similar to these—however, forbear doing so; but of all the butterflies that drink at damp sand or dirty puddles, I have *never seen a female*. Strange, is it not, that many males on a much higher plane are afflicted with a great thirst too? Strange it is, and occasionally regrettable!

In passing through one plantation at night we were often charmed with the fire-fly display. These beetles would congregate upon several trees adjacent to one another; a little distance from the circle but a few specimens would be observed. Upon the favoured trees the insects would be in hundreds, and it quite seemed that they diffused their light together; there would be the greater flash, and numerous smaller ones in between. The light given out by this species is pale bluish, and from the trees, and above where odd individuals were flying, it was a beautiful sight.

We took three species of large shielded grasshoppers. The name "grasshopper" is inapplicable to these and other long-antennæd Locustidæ. Various small species may be in grass, but the greater number and the larger species are found upon shrubs and trees; moreover, all are much less inclined to jump than the grasshoppers proper. Our largest species was six inches in length.

A large twilight-singing Cicada we did not see, though we often heard its really mournful song; but another evening singer we did get, a grass dweller, which sings for only 25 minutes or so. We approached our first two victims warily, and, seeing whitish things whence the song proceeded, and well knowing

the elusiveness of Cicadas generally, grabbed and caught them. We each caught one, and a "pop" was the result. We had burst the poor things, for, in singing, the body is distended to at least three times the normal size. We found these insects were to be easily caught, and after the abdomen contracted I blew up several, but had no means of keeping them distended then. We took several pairs, the female being the darker of the two.

We changed our camp several times, went 19 miles further to Sogeri rubber plantation, owned by the British New Guinea Development Co., employing 220 to sometimes 240 natives, all kept in order by a manager and two assistants. It was amusing the day we started off from Hombron, bound for Sogeri, we forming quite a procession. Our property, made up in 50 to 80-lb. parcels, was carried by natives, the men's loads on poles resting on their bare shoulders, the silly fellows disdaining pads; consequently, many complained of sore or chafed shoulders. Some women were of the party, they taking good loads, such as two kerosene tins of odds and ends, in a netted dilly-bag resting on their bent back and supported from the forehead with a band. An old pipe-stem-legged fellow was in charge of the females, he looking quite imposing with our lampshade on his head, with a cockatoo feather projecting from the top. We got to Bisiatabu Mission Station (eight miles) the first day, finishing the journey the next. On the second day we passed Koitaki plantation, with many trees being tapped. This property is a paying one. Here we saw a small herd of fine cattle in splendid condition. At Sogeri, in a big grass house, surrounded by young rubber trees, and in the midst of acres of sweet potatoes, we passed a pleasant and interesting six weeks, fresh species being captured, as we were in richer country. My companion roamed the district, often being out alone at night with an acetylene lamp, or sometimes with one of our boys, always hunting, and perfectly satisfied with a good day's or night's sport. The natives had a great respect for the man who, alone, would wander through tracks and along scrub margins by himself at night, but we learnt that we had reputations as snake-men, that being spread by Mrs. Jensen, the kindly wife of the manager of the plantation (whom we had met during our sojourn in the Herberton district seven years ago), we being credited as being proof against snake-bite. When we went to the house after our journey we were announced as "Two snake-man, two snake-man come." So we often had a snake dangling near our door, and my companion would frequently tie one to his butterfly net on his shoulder when coming home, and—accidentally, of course—incline it towards any passing blacks, with excellent effect. When a snake was

discovered in the fields we would be hailed and requested to kill it—perhaps a harmless little thing eighteen inches long. During the despatching process various nervous natives would stand back at respectful distances. To pick up a murdered snake and take one step towards a native would set him off at a run. A large legless lizard was a snake to them, too. Even our boys, wilder fellows from a mountain village, greatly disliked snakes, though in some quarters natives ate them; but those fellows were looked upon as low-grade. One of our boys, when allowed a week-end home, generally returned lazy and listless, which we supposed to be the effects of excessive betel-nut chewing (the palm occurred in some of the scrubs). One day, after a prolonged absence, he came to explain that “Snake bite him, he been sick.” Pitying the rascal, I asked to see the punctures, which he seemed disinclined to exhibit. I pressed him, and was shown a little place from which the skin had been scratched off by a stick or stone! However, for the trifle of 10s. a month paid these men, and the food and tobacco, &c., we gave them, we could not expect too much. Many a heavy load they carried for us, and they were loyal in a way, but, as to gratitude, the gentle Papuan understands it not. We were regarded as being too tender-hearted towards our dusky assistants, for we rewarded them above their pay, &c., when we supposed their work deserved a little recognition.

As to the birds: At Port Moresby we saw *Rhipidura tricolor*, and, though the friendly little bird was not observed at Sapphire or Hombron, it was at Sogeri, and loved the top of our grass house. It usually roosted in a clump of bamboos, and often during the night would utter its notes, though in an imperfect and sleepy way. It may have been fancy, but the individuals we saw seemed slightly larger than the Queensland form. At Moresby we saw a Black-and-White Butcher-bird fly at a half-fledged chicken and send it off squawking. Probably Butcher-birds are mischievous that way, for the black *Cracticus quoyi* of Queensland scrubs would often bounce and frighten fair-sized chickens and induce them to take cover; but I never saw one actually attack a young fowl. We noticed several handsome pigeons, one being olive-green above with pink feathers in the wing. My companion procured some seven or eight skins, but we were not after birds. It is my boast that I have killed only two birds in 35 years—one being a Black Butcher-bird which was too much interested in some larvæ of *Coscinocera hercules* that I had on a garden tree. We frequently saw the great ungainly Hornbills—jet black birds with white tail and yellow and chestnut neck; they can be heard great distances away, and the swish of the wings of a single specimen may be distinctly heard when the bird is fully 700 feet in the air. Two

Pittas were heard, one having a very mournful note. The Chestnut-breasted Cuckoo was always present, at the foot of the ranges or on the top; its monotonous "Pee-pee-pee" could be heard at all hours of the day and night, so one wonders whether it ever sleeps. At Port Darwin I have heard it hour after hour at night. It has occurred to me that these sleepless birds (Cuckoos) may deposit their eggs in other birds' nests at night. The Koel and Channelbill not only call out at night, but fly too. The Long-tailed Nightjar is another bird with a monotonous note, its "Chop-chop-chop" being kept up, at intervals, at night. Some dislike the species; I am used to it. I have heard it called the "Fever-bird"—an absurd term, but given it because fever patients are often irritated and kept awake by it. A blackish *Malurus*, with yellow-white patch on the shoulder, was frequently seen; it is rather larger than Australian Wrens, and all individuals seemingly are alike—all that I saw were. In flying they pass readily as males of *Papilio ægeus*. The Dollar-bird and the Shining Starling, *Calornis metallica*, were present at Sapphire Creek in October. The former, I think, purposed nesting in a *E. platyphylla*, but we saw no nests of the latter, they, seemingly, being only intent upon feeding on a shrub with smallish, whitish berries occurring in the vicinity. Whether the Starlings in New Guinea migrate as those in Queensland do I am unable to say; the Queensland communities arrive in August and depart in April.

Kangaroos, wallabies, rats, wild pigs, and Cassowaries were near us at times, our shooting boy getting a fair-sized pig one day, and was accounted a hero by the dusky gentlemen around. We, of course, allowed him nearly all the animal. Nothing was wasted, even the hide, after a perfunctory singeing, passing as a delicacy. Our boys did a thriving trade with the plantation blacks, for they crave for meat, and often came to us with a coin wanting to purchase tinned beef, &c. That "beek" (pig) was talked of for many days.

There grows in the scrubs a very fine nut, maybe a *Terminalia*. It is egg-shaped, slightly flattened, and from four to four and a half inches long. The kernel is two inches long by three-quarters thick, and is crisp, rich, and tasty. The shell is three-quarters of an inch thick, and extremely hard. The natives open it readily with a sharp stone struck by another. It requires to be eaten soon after falling, or it becomes rather tough. I sent some to Kuranda, which were pronounced good.

Our meals were largely made up of vegetables and fruit. On the plantation we obtained sweet potatoes, bananas, and pineapples; from the blacks pumpkins, two smaller varieties of bananas, and several species of yams; and from port occasional parcels of English potatoes and onions. A selection

of these, with green pawpaw and some rice, with a pigeon or several slices of bacon, made a savoury meal. When we had wallaby the camp oven was requisitioned, and we would feast royally on a baked dinner. Fried bananas were a never-failing source of satisfaction; fine big ones often figured three times a day on our menu.

At Sogeri my companion contracted a sharp attack of malaria, though I never saw an Anopheline mosquito there, the only one I did see being at Sapphire Creek some weeks later. It alarmed me to find that his temperature in a few hours reached 105° , and I passed an anxious two nights sitting up; however, after reducing his fever by following Mr. and Mrs. Jensen's advice, they kindly had him conveyed on his stretcher by a party of natives to their house, where he made a good recovery in eight or nine days. The whites think little of fever, many regarding it as a matter of course; but I think quinine is often taken unnecessarily. The treatment advocated by a well-known doctor is 90 grs. a month, 15 grs. being taken every ninth and tenth day. One evening the overseer, who lived near us, came home complaining of fever: at 7 o'clock we found his temperature to be 105.1 ; duly sweated him and changed his saturated garments, leaving him at midnight. He was up at the head station at 6.30 a.m. calling the roll and seeing the natives off to work for the day, but was, of course, not right for several days. I incline to the opinion that my son's fever was a recurrence of the Queensland form, which he had contracted at Johnston River some months before, and brought on by a cold bath in the creek, which he had been cautioned against, and over-exertion on the previous day, which was hot, and being too long without a meal. I very rarely took quinine, and then only in 5-gr. doses, though sitting up night after night setting insects gave the mosquito every chance to attack. However, I would exercise greater caution in a district known to be infested with the mosquitoes.

Upon our journey to Sogeri, when passing Kotaki plantation (Mr. Sefton, manager), we saw in the distance the richly red D'Albertis Pea dangling from some tall trees, but were too busy to make a close inspection.

On Sogeri plantation we came across the holes of a great ground spider and dug some of these out, obtaining a dozen fine specimens. The hole was vertical for nine or ten inches, then turned horizontally for another ten inches, where we would find the creature in a chamber containing beetle and other fragments. It exhibited wild surprise when uncovered, and was easily pushed into the lethal jar when frantically endeavouring to climb the sides of the excavation we had made.

Passing from Hombron, and looking inland, we were impressed with the fine views of the Owen Stanley Ranges, perhaps 50 or 60 miles distant, lower mountains in the foreground leading gradually to the lofty ones. They presented a beautiful and imposing appearance. As naturalists we speculated as to the entomological wealth they contained—perhaps more remarkable insects than any yet discovered. What wonders privileged collectors will yet bring from these great and mysterious hills! No part of New Guinea has yet been properly exploited by the naturalist. An expedition here, or one there, in the vast scrubs and mountain fastnesses, with natives as collectors, scarcely yields satisfactory results, so the time has yet to come before any single square mile of the richly-timbered districts can be said to have yielded its best entomological treasures. Then how about the mineral and botanical wealth of these practically unknown scrub-clad heights—these wonderful ranges, so near our beloved Australia? We know that Sir W. Macgregor, with a strong party, many years ago ascended the tallest of these (13,000 feet). Away, far away, we get other mountains, probably towering much higher into cloudland than the Owen Stanley. How galling to many Australians it must be to know that, through the regrettable action of men supposed to have been wise, those wonderful hills and vast areas of marvellously rich country were meekly and sheepishly allowed to pass to other nations! Some we may recover through this awful war; let us hope the balance may be peaceably acquired by purchase or exchange.

Eight miles from Hombron is the Bisiatabu Mission Station, presided over by Mr. and Mrs. Lawson, Seventh Day Adventists, and the most hospitable of people. My son and I were made at home there at once, and, upon my journey to Sogeri and back some weeks later to Hombron, these kindly people, quite unasked, sent me a horse. The mission grounds are delightfully pretty, and are at the margin of the great scrubs, which now stretch forth for miles. The mission produces rubber, splendid pineapples, and other fruits and various vegetables, so probably costs little to maintain. From here Mr. Lawson, generally alone, visits the several native villages about here and beyond the plantations. Here we first heard the "Wok-wok" of the Red Bird-of-Paradise, a common and noisy species from here and onward. The exquisite little King Bird-of-Paradise also occurs about here, but is rare.

Upon our return to Hombron we stayed a month, then journeyed to Sapphire Creek, finding it very hot after our sojourn in the higher country. We remained at Sapphire a month, then caught the *Marsina* back to Cairns, after an absence from Queensland of six months. On board was Mrs.

Rowan, who had been so much further than ourselves, to an out-of-the-way part of New Guinea, and who, though the victim of a severe attack of fever, bravely carried on her interesting and splendid work of flower and also bird painting. That attack of fever I fear she will be long in throwing off, for, meeting and talking to the lady in Melbourne recently, I noticed that she was far from being well, and judged the cause to be the fever contracted in New Guinea.

A six months' visit to New Guinea is far too short a period in which to gain a fair knowledge of the insect life there; moreover, we were not there at the most productive time of the year, nor in a good locality, so, all being well, I hope yet to visit a more interesting and productive spot.

Our thanks are due to all whom we met, Government officials, business, plantation, and mission people being exceedingly kind, and all giving us every reasonable assistance towards prosecuting our inquiries into the natural history of this great country.

"THE GUM TREE."—The December (1918) issue of this journal is to hand, and its articles should all help to promote its objects—the conservation, propagation, and utilization of Australian trees.

BUTTERFLIES.—The month of December, 1918, will long be remembered by lepidopterists for the countless numbers of the fine Meadow Brown butterfly, *Heteronympha merope*, Fab., seen everywhere—in city, in park, and even in houses. This butterfly differs considerably both in the size and the coloration of the sexes, and the uninitiated were probably of opinion that more than one species was concerned in the influx. Though the coloration of this species is simply brown with black markings, the female (the larger of the two sexes) is really a handsome insect, and makes a fine display as it lazily flits from one object to another. The question which has arisen as to why this multitude of butterflies seems unanswerable; whether attributable to abundance of food in the larval state, to suitable temperature at that period of its existence, or to the absence of enemies when in the adult form, are moot points. Seeing that the larvæ feed on various grasses, little apprehension need be feared as to any serious consequences likely to ensue on this visitation. Some years ago the Painted Lady, *Pyrameis Kershawi*, M'Coy, was equally common.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston Street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn Street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCH.

Committee:

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 18TH JANUARY.—**Sydenham.** Owing to insufficient names having been obtained to warrant the engagement of a motor char-a-banc, and the cost of hiring a smaller conveyance being prohibitive, it has reluctantly been decided to abandon this Excursion.

In view of the above, it has been arranged to conduct an Excursion as under:—

SATURDAY, 18TH JANUARY.—**Bulleen District.** Objects—**Geology and Physiography.** Leaders—Messrs. F. Chapman, A.L.S., and A. L. Scott. Meeting place—Mont Albert Tram Terminus (*via* Deepdene) at 2.30 p.m. From thence walk down Union Road across Belmore Road and visit volcanic plug at Whitethorn Road. Travel to Koonung Creek, following same to Bulleen Road, where Silurian fossils are obtainable. Return *via* tram at Harp of Erin or Deepdene. Total distance of walk, 5 miles, or, omitting Bulleen section, about 3½ miles.

MONDAY, 27TH JANUARY (FOUNDATION DAY).—**Portarlington.** Objects—**Geology and Shore Life.** Leaders—Messrs. F. Chapman, A.L.S., and J. Gabriel. Excursionists will travel by s.s. "Courier," leaving No. 2 Berth, Queen's Wharf, at 10 a.m. Provisions should be taken, but hot water and tea will be provided by the leaders.

SATURDAY, 8TH FEBRUARY.—**Botanical Gardens.** The President and Committee invite members to meet them at the Main Entrance Gates (Domain Road) at 2.15 p.m. Besides the inspection of the Gardens, the Excursion will partake of a social character.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch.
1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.

Vol. XXXV.—No. 10.

FEBRUARY, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 6th February, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA 145

A SKETCH OF THE GEOLOGICAL HISTORY OF AUSTRALIAN
PLANTS: THE MESOZOIC FLORA. BY FREDERICK CHAPMAN,
A.L.S., &C., PALEONTOLOGIST, NATIONAL MUSEUM, MELBOURNE 148

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

SPECIAL NOTICE.

OWING to the PROCLAMATION issued by
the Health Authorities forbidding the holding
of gatherings in public buildings, the usual

ORDINARY MONTHLY MEETING

appointed for Monday, 10th February, 1919,

IS ABANDONED.

*Notice will be given to members of the resumption
of the Monthly Meetings in due course.*

A. D. HARDY,

President.

E. S. ANTHONY,

Hon. Secretary.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's
Hall, on the 4th Monday Evening of each month for the purpose of
receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 10. FEBRUARY 6, 1919.

No. 422.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th January, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

CORRESPONDENCE.

From the Advisory Council of Science and Industry, notifying that a copy of Dr. Griffith Taylor's memoir, entitled "The Australian Environment," had been forwarded for the Club's library, and stating that copies could be obtained at a cost of five shillings each.

REPORTS.

In the absence of the leader, Mr. A. N. Burns, a brief report of the excursion to Lower Fern-tree Gully on Saturday, 14th December, was given by Miss C. C. Currie, who said that a fair party attended, and that some interesting lepidoptera were taken, but only a few plants in bloom were met with.

A report of the Christmas week excursion to Marysville was given by the leader, Mr. J. Stickland, who reported a very enjoyable time, but the natural history results were not very striking. Mr. F. G. A. Barnard said that the beech and fern scenery met with was very fine, and that the "Glover Walk" excelled any place he had previously visited.

ELECTION OF MEMBERS.

On a ballot being taken, Mrs. E. W. Outhwaite, 769 Malvern-road, Armadale, and Mr. F. W. Mann, LL.B., Walsh-street, South Yarra, were duly elected members of the Club.

GENERAL BUSINESS.

It was suggested by Mr. F. G. A. Barnard that if the names of exhibitors and the particulars of the specimens exhibited were read out before the usual adjournment for inspection took place members would know what exhibits directly appealed to them, and could thus give them more attention. He moved that the order of business be altered so as to enable this suggestion to be tried for a time. Some discussion ensued, and Mr. F. Pitcher seconded the motion, which was adopted.

PAPER READ.

By Mr. J. W. Audas, F.L.S., entitled "Nature in the Serra Range."

The author gave the observations of several days among the wild-flowers in the Serra Range, in the Grampians, during which he met with a large number of interesting species.

Mr. Barnard congratulated the author on the interest of his remarks, but thought the title hardly correct, as he had expected the paper to refer to the Serra Range shown on the map of Victoria as extending from Mount William south-westerly to Mount Abrupt.

Miss Nethercote and Mr. C. Daley, F.L.S., said that the part of the Grampians visited by Mr. Audas is shown on the tourist map as the Serra Range.

NATURAL HISTORY NOTES.

Mr. A. E. Keep made some interesting remarks regarding the presence of Lyre-birds near the Sherbrooke Falls, Dandenong Ranges, during the Christmas holidays. He was fortunate enough to hear and see a male bird on its dancing-mound, and afterwards a young bird came within a few feet of him during its search for food.

The chairman instanced the value of recording natural history notes and particulars of exhibits in the *Naturalist*, stating that a country member, Dr. J. R. M. Thomson, of Lismore, N.S.W., had brought the Society and the *Naturalist* under the notice of the pupils attending the public school at Keerrong in that district, with the result that they had requested him to forward for exhibition at a Club meeting certain specimens then on the table. He considered the Club was indebted to Dr. Thomson for his action, and trusted he would convey to the pupils the Club's appreciation of their thoughtfulness.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—About forty species of dried plants in illustration of his paper, including *Micromyrtus microphylla*, Benth., Fringed Heath-Myrtle, *Laxmannia sessiliflora*, R. Br., Nodding Lily, *Prostanthera hirtula*, F. v. M., Hairy Mint-bush, *Kunzea parvifolia*, Sch., Crimson Kunzea (white variety), *Correa speciosa*, Andw., Red Correa, *C. æmula*, F. v. M., Hairy Correa, and *Pultenaea luxiflora*, Benth., Spreading Bush-Pea.

By Mr. F. G. A. Barnard.—Flowering specimens of *Nuytsia floribunda*, the Christmas-tree of Western Australia, forwarded by Mr. D. Herbert, Government Botanist, Perth, W.A.; also specimen of wolfram ore (weighing 2¼ lbs.) from Wilks's Creek, Marysville.

By Mr. C. E. Cole.—Insects, including specimens of Ichneumonidæ, Lepidoptera, and Hemiptera, the latter having a colour pattern very similar to some Bracon flies (Braconidæ), also exhibited.

By Mr. T. S. Hart, M.A.—Four species of Victorian *Cassythas* (Dodder Laurels) from various localities; also *Restio tetraphyllum*, from Springs reserve, near Clayton.

By Mr. F. Keep.—Flowering specimens of the White Paper-bark Myrtle, *Melaleuca genistifolia*, of Queensland, grown at Canterbury; the flowers, being very sweetly scented, have been very attractive to the brown butterfly, *Heteronympha merope*, so numerous lately.

By Mr. P. C. Morrison.—Photographs of scenes at Marysville taken during recent excursion; branch of beech, with knot, to which the fungus *Cyttaria Gunnii* was attached when found; also specimen of black snail, *Paryphanta atramentaria*, from Marysville excursion.

By Mr. F. Pitcher.—Young specimens of the fungus *Polyporus mylittæ*, Cooke, known as "blackfellows' bread," from Drouin. The sections shown were cut with a penknife a few days after the specimens were unearthed. Also, section of a bitumenized paper drain-pipe recently found during excavations for new buildings at South Yarra.

By Mr. J. Searle.—Specimens of "Narethaite," a form of limestone found at Naretha, W.A., on the Trans-Australian Railway; also *Daphnia longispina*, found at Heidelberg, new for Australia.

By Mr. J. Stickland.—Photographs of Marysville and district, in illustration of excursion report; also frond of *Lomaria fluviatilis*, measuring three feet in length.

By Mr. P. R. H. St. John.—Young plant and seeds of *Ginkgo biloba*, Madien-hair Tree, or "Pa-koo" of China.

By Dr. J. R. M. Thomson, on behalf of pupils of Keerrong public school, N.S.W.—Single valve of large fresh-water mussel, showing fine "mother-of-pearl," for which the shells are collected commercially in the district; also jasper and chalcedony pebbles from a creek tributary of the Richmond River, the chalcedony pebbles being enhydrous (containing water), and a fractured pebble showing mammillate structure of wall of cavity.

By Mr. H. B. Williamson.—Photograph of *Prostanthera Walteri*, taken at Buffalo Gorge, December, 1918.

After the usual conversazione the meeting terminated.

NATIVE FIBRE PLANTS.—In the *Journal of Agriculture, Victoria*, for December, Professor Ewart, D.Sc., Ph.D., Government Botanist, points out in an interesting article that the term "fibre plant" has recently been used in a misleading sense in attempting to indicate opportunities for new industries, and gives the conditions which must govern any idea of utilizing Australian plants for such purposes.

A SKETCH OF THE GEOLOGICAL HISTORY OF AUSTRALIAN PLANTS: THE MESOZOIC FLORA.

BY FREDERICK CHAPMAN, A.L.S., &c., Palæontologist, National Museum, Melbourne.

(Read before the Field Naturalists' Club of Victoria, 9th Dec., 1918.)

IN continuing this sketch of the Australian fossil flora (a contribution on the Palæozoic flora having appeared in *Vict. Nat.*, xxxiv., p. 140, January, 1918), we have seen how several of the Upper Palæozoic types of plant-life survived into Triassic times. Some of these persisted as important components of the succeeding floras of the Jurassic and even Cretaceous periods. Thus, the ferns *Cladophlebis* and *Tæniopteris*, and some conifers, as *Araucarites* and *Brachyphyllum*, ranged throughout the Mesozoic system. This steady survival of so many important plant types seems to indicate that the geographical conditions controlling this area of land-surface—a legacy of the Gondwana-land period—did not suffer any great disturbance during the period extending from the Trias to Cretaceous inclusive.

LOWER MESOZOIC.

In commencing with the Triassic flora, we may note that the sediments may best be studied in New South Wales, whilst, for richness of plant-types, the Queensland Mesozoic beds perhaps take pre-eminence.

In New South Wales the Hawkesbury series comprises, in ascending order—1, *Narrabeen Stage*; 2, *Hawkesbury Stage*; 3, *Wianamatta Stage*. They consist of sands, shales, and conglomerates. These beds represent the sedimentation of a vast area which was undergoing degradation, where shallow lakes, sand-dunes, and local desert conditions formed the prevailing features of the country.

The Narrabeen Stage—with its *Estheria* shales, cuprififerous shales, sandstones, conglomerates, and chocolate shales—denotes an oscillatory series between brackish and fresh-water conditions, as shown by the presence of ripple-marks, worm-burrows, and sun-cracks. These conditions were not very favourable for plant-life, excepting of a lowly kind, but the remains of ferns would be brought down by swollen streams acting on loosened soil. At Cremorne Point, Sydney Harbour,* a bore which penetrated the Narrabeen beds proved them to rest on the Newcastle Series (Carbopermian). At 620 feet 6 inches above this junction a series of sandstones, shales, and conglomerates was found, 1,112 feet 6 inches in thickness,

* J. E. Carne, "Kerosene Shale Deposits of New South Wales," *Mem. Geol. Surv. N. S. Wales, Geol.*, No. 3., 1903, p. 141.

containing *Thinnfeldia*, *Sphenopteris*, *Tæniopteris* (*Macrotæniopteris*), *Odontopteris*, *Sagenopteris*, *Schizoneura*, and a branchiopod, *Estheria*.

One of the striking features of Sydney's buildings is the general use that is made of the Hawkesbury sandstone. This is worked as a freestone, and from its weathered structure, which can be well seen on the time-worn cliffs in the harbour, it distinctly shows the cross-bedded nature of the sand-mounds of which it is formed. This cross-bedding is seen in all dune-formations, recent and geologically ancient; but, notwithstanding this, we find certain text-books still attempting to teach an invariable rule that it is due to rippling under water. In some cases, of course, the fine-bedded current stratum is due to sub-aqueous action, and possibly even on occasion in the Hawkesbury sandstone, but in the writer's opinion this was subordinated to wind action.

The handsome fern-like plant, *Thinnfeldia odontopteroides*, is a typical fossil of this stage. It is remarkable that until quite recently no reproductive organs were found in Australian specimens of this genus.* Prof. Seward says, in reference to *Thinnfeldia* †:—"It is by no means improbable that many of the species referred to this genus are closely allied to Palæozoic Pteridospermi," and further suggests that "search should be made for fertile specimens or for evidence as to the association of seeds with *Thinnfeldia* fronds." ‡ It is, therefore, with no little interest that palæobotanists welcome the description by Dr. A. B. Walkom, of Queensland, of fertile fronds of *T. Feistmanteli* and *T. lancifolia*, discovered by Mr. B. Dunstan at Denmark Hill, Ipswich.§ These interesting specimens are so well preserved as to exhibit the cell-structure of the sporangium wall; the latter have no apparent annulus, and thereby show some affinity to the tropical ferns of the family *Marattiaceæ*.

Plant remains are numerous in the Wianamatta shales, one of the most interesting being the large-leaved forerunner of the Jurassic *Tæniopteris*—*Macrotæniopteris*. This latter genus or sub-genus has also occurred || in the Triassic sandstone at Bald Hill, near Bacchus Marsh. A careful examination of the type of *Tæniopteris Sweeti* fails, however, to reveal any distinction from *T. (Macrotæniopteris) wianamattæ*. Other

* Raciborski, in 1894, figured a fertile specimen of *T. rhomboidalis*, showing sori but no definite sporangia, from the Jurassic of Poland.

† "Fossil Plants," vol. ii., 1910, p. 537.

‡ *Op. cit.*, p. 538.

§ Queensland Geol. Surv., publ. No. 257, 1917, pp. 15, 16, 18, pl. i., fig. 3; pl. iii., fig. 3; text fig. 5.

|| Proc. R. Soc. Vict., vol. x., part 2, 1898, p. 285.

plant remains in the Wianamatta shales have been referred to by Feistmantel,* and are:—*Thinnfeldia odontopteroides*, Morr., sp., *Odontopteris microphylla*, McCoy, *Pecopteris tenuifolia*, McCoy, *Cladophlebis australis*, Morr., sp., and *Podozamites distans*, Presl. From the fact that this topmost series of the Trias contains myriads of the little branchiopod, *Estheria*, I would be inclined to regard these beds as Rhætic, as in the northern hemisphere, where this crustacean similarly occurred in geologically ancient fresh or brackish lakes in Scotland and England. Reverting to the Bacchus Marsh locality, McCoy has already named a *Ptilophyllum* (*P. Officeri*)† from the Triassic sandstone of Bald Hill, and provisionally referred other plant fragments to *Schizoneura*‡. Having examined this specimen afresh, I can confirm McCoy's identification of the *Ptilophyllum*, which, by the way, appears to be closely allied to *P. oligoneurum*, T. Woods.§

The Hawkesbury Series (Triassic) of New South Wales, taken as a whole, is particularly rich in plant remains, amongst which are *Phyllothea Hookeri* and *Schizoneura australe*, in the equisetalean group; *Thinnfeldia odontopteroides*, *Cladophlebis denticulata*, var. *australis*, *Tæniopteris* (*Macrotæniopteris*) *wianamattæ*, *Tæniopteris lentriculiformis*, *Stenopteris rigida*, and *Cycadopteris scolopendrium*, amongst the ferns or Pteridospermi; *Podozamites lanceolatus*, a cycad; *Ginkgo dilatata* and *Baiera multifida*, in the ginkgoales; and *Araucarites*, a conifer.

The conifers, from their first appearance in Carbopermian times, were becoming established through the Trias and Lower Jurassic, until, in the Middle and Upper Jurassic, they often form the bulk of the Victorian black coal. The ferns and other components of the humid zone were greatly in evidence; whilst the ginkgoales seem to indicate a moist forest vegetation. On the other hand, there were marked differences between the floras of the Lower Mesozoic in New South Wales and the Ipswich Series in Queensland, probably due to differences in local conditions, such as the arid tracts indicated by the æolian deposits of this period. For the coast had been subjected to a stage of base-levelling shown in the wonderfully rich fish fauna that probably had its habitat in numerous chains of brackish lakes periodically inundated by high tides.

* Mem. Geol. Surv. N. S. Wales, Pal., No. 3, 1890, p. 40.

† Proc. R. Soc. Vict., vol. vi., 1894, p. 143.

‡ Ann. Rep. Secy. Mines, Vict., 1891 (1892), p. 30. See also "Records Geol. Surv. N. S. Wales," vol. iv., p. 32. The reference by McCoy to the "*Schizoneura* bed" as underlying the *Gangamopteris* bed is due to an error in Ferguson's first report, but since rectified by him. Officer and Balfour (*op. cit.*, 1894, p. 143) correctly surmises this bed to be above the *Gangamopteris* bed.

§ Proc. Linn. Soc. N. S. Wales, vol. viii., 1883, p. 149, pl. vii., figs. 2-4.

The Lower Mesozoic beds of Queensland are represented by the Ipswich Series. Mr. A. B. Walkom, who has lately devoted much study to this flora,* finds its affinities to lie with the Trias and Rhaetic of other areas (China, South Africa, Europe). Amongst the plants of this series the following have been described by Walkom, Tenison-Woods, and others:—*Phyllothea australis*, *Neocalamites herensis*, *Schizoneura*, sp., *Cladophlebis denticulata*, var. *australis*, *Coniopteris delicatula*, *Dictyophyllum rugosum*, *Thinnfeldia Feistmanteli*, *T. odontopteroides* and *T. acuta*, *Danaëopsis Hughesi*, *Sagenopteris rhoifolia*, *Sphenopteris lacunosa* and *S. superba*, *Tæniopteris spatulata*, var. *Carruthersi*, *T. lenticuliformis* and *T. Dunstani*, *T. (Macro-tæniopteris) wianamattæ*, *Stenopteris elongata*, *Ginkgo antarcticus* and *G. cf. magnifolia*, *Baiera Simmondsi*, *B. bidens*, *B. ipsviciensis* and *B. ginkgoides*, *Stachyopitys annularoides* and *S. Simmondsi*, *Bennettites*, sp., and *Pterophyllum multilineatum*. Having regard to the sequence of the Queensland beds, the flora has proved of great value in determining their relationships, notwithstanding that many of the plants are common to the later (Walloon) Series.

In Tasmania also the Mesozoic flora is well developed, but the beds still require systematic palæobotanical investigation. The series is known as the Upper Coal Measures, and probably both Lower and Upper Mesozoic beds are there represented. Amongst the more striking plant remains are *Phyllothea australis*, *Stenopteris elongata*, *Thinnfeldia odontopteroides* and *T. lancifolia*, *Cladophlebis denticulata*, var. *australis*, *Tæniopteris spatulata*, var. *Carruthersi*, *Pterophyllum*, and *Phænicopsis elongatus*. This latter species, with grass-like leaves, was formerly referred to *Zeugophyllites*; its plant relationship is uncertain, and Heer and others have suggested its affinities with *Baiera*. *Phænicopsis* also occurs in the Stormberg Series of South Africa, which is regarded by A. C. Seward as of Rhaetic age, a period of a uniform and widely-distributed flora. However, Walkom finds this genus in his Walloon Series (Upper Mesozoic) and not in the Lower (Ipswich) Series, so that, in Queensland at least, it is abnormally late in its appearance. The widely-spread *Stenopteris* of the Australian Mesozoic flora may have an alliance with the cycads, as suggested by Saporta.

In the lower part of the Mesozoic series (Trias and Rhaetic) belong the Leigh Creek Coal Beds of South Australia. This occurrence is interesting as being rather exceptional for this

* "Mesozoic Floras of Queensland," 1915-17. Since this paper was written, a detailed and very useful summary of the geology of the Mesozoic rocks of Queensland has been published by Dr. A. B. Walkom (Proc. Linn. Soc. N. S. Wales, vol. xliii., part 1, 1918, pp. 37-115).

horizon to be coal-bearing, unless we include part of the Upper Coal Measures of Tasmania. From Leigh Creek Mr. R. Etheridge, jun., described *Thinnfeldia odontopteroides* and *T. (Macrotæniopteris) wianamattæ*, from bore cores.

UPPER MESOZOIC (UP TO CRETACEOUS).

Both in Queensland and Victoria a rich assemblage of plant remains of this period have been discovered. So far as they can be correlated, these floras show a close affinity with the Upper Oolite plants of Yorkshire, in England, but embrace several types of an older character found in widely-distributed deposits of the Rhaetic, Lias, and upward. The Victorian black coal deposits in the Gippsland Basin especially, as well as the same beds, poor in coal, on the Wannon River and near Geelong, have furnished many species of ferns and conifers. Of the commonest ferns may be cited *Tæniopteris*, *Cladophlebis*, *Sphenopteris*, and *Thinnfeldia*, the latter including the more ancient species *T. odontopteroides* and one peculiar to the upper beds, *T. Maccoyi*, having a larger and apparently thicker frond, probably a moist-conditioned modification of the species usually found in deposits of a more arid nature. Another species, *T. indica*, of the Rajmahal Hills flora, occurs near Jumbunna, South Gippsland. Roots of ferns found in the Gippsland coal measures, known as *Rhizomopteris*, have been referred by the writer to *Tæniopteris spatulata* * on account of their having been discovered in close relationship and general community. They resemble the creeping root-stock of a Hart's Tongue Fern (*Scolopendrium*). Prof. Zeiller had already referred to the probable habit of *Tæniopteris* fronds growing in tufts as in the genus mentioned. *T. spatulata*, a widely-distributed species, and occurring in the Indian Jurassic flora, is here regarded as the central type, with *T. Daintreei* and *T. Carruthersi* as narrow and broad varietal laminæ respectively. The ubiquitous *Cladophlebis denticulata*, which is found not only in most of the Australian States, but in England, Germany, Austria, Italy, Scandinavia, Siberia, Greenland, North America, Persia, China, Japan, India, and New Zealand, is doubtfully referred to the *Polypodiaceæ* on account of its fructification. *Coniopteris hymenophylloides*, another widely-distributed fern of the Oolitic and Upper Jurassic generally, is closely allied, according to Prof. Seward, to either *Dicksonia* or *Thyrsopteris*, and is definitely a member of the Tree-ferns (*Cyathaceæ*).

Amongst the mosses (*Bryophyta*) we have in Victoria *Marchantites*, a liverwort, as at Scarborough, in Yorkshire;

* Rec. Geol. Surv. Vict., vol. iii., part 1, 1909, p. 110.

whilst the pteridophytes are represented by the Horse-tail, *Equisetites wonthaggiensis*. Of the ginkgoales, both *Ginkgo* and *Baiera* occur, but these two genera are more abundant in the Queensland Mesozoic series.

Conifers are well represented by *Podozamites* (species of McCoy's, probably of Araucarian affinities), *Araucarites* (both leaves and cones), *Palissya*, *Albertia*, *Taxites*, and *Brachyphyllum*. These conifers are also found in the other States—*Araucarites*, *Palissya*, and *Podozamites* in New South Wales, whilst *Taxites* and *Brachyphyllum* have been obtained from the Walloon Series, Queensland.

In Western Australia, at Mingenew, the cycad *Otozamites* and the conifer *Pagiophyllum* occur.

The Talbragar beds of New South Wales contain, besides an important fish fauna, *Tæniopteris Daintreei* and *Cladophlebis*, as well as *Podozamites lanceolatus*.

Tasmania yields a rich fern flora, most of the genera being common to some of the other States. Besides those forms already noted under Lower Mesozoic, we may mention the following, which are common to the Victorian Jurassic:—*Thinnfeldia odontopteroides* (recorded as *T. media*), *T. lancifolia* (recorded as *T. superba*), *Cladophlebis denticulata*, var. *australis*, and *Stenopteris elongatus* (recorded as *Trichomanides spinifolium*). In a note sent to the writer in 1912, the Government Geologist of Tasmania, Mr. W. H. Twelvetrees, mentions the interesting fact that *Phænicopsis elongatus* ("Zeugophyllites") is found abundantly throughout the Mesozoic in Tasmania, and further adds:—"Our Ida Bay beds would seem to be the lowest, succeeding, I think, our Triassic Sandstones (Knocklofty, &c.)" As regards the occurrence of *Tæniopteris* in the Tasmanian Mesozoic flora, *T. spatulata*, var. *Daintreei*, is absent, but Johnston describes *T. tasmanica* and *T. Morrisiana* from Spring Hill and Longford respectively. These forms seem to be closely allied to *T. Tenison-woodsi*, which in Queensland ranges throughout the Mesozoic.

The Walloon Series (Upper Mesozoic) of Queensland has been investigated by Walkom, who enumerates the following comprehensive flora:—*Equisetites rotiferum*, *Cladophlebis australis*, *Phlebopteris alethopteroides*, *Dictyophyllum Davidi*, *Hausmannia*, *Thinnfeldia Feistmanteli*, *T. odontopteroides*, *Sagenopteris rhoifolia*, *Sphenopteris Baileyana*, *Tæniopteris spatulata* (including var. *Daintreei* and var. *major* = var. *Carruthersi*), *T. crassinervis*, *Stenopteris elongatus*, *Phyllopteris Feistmanteli*, *Ginkgo* cf. *magnifolia*, *Baiera Simmondsi*, *Ptilophyllum pecten*, *Pterophyllum abnorme*, *P. contiguum*, *P. Nathorsti*, *Pseudecten eathiensis*, *Otozamites Queenslandi*, *O. obtusus*, *O. Feistmanteli*, *O. cf. Mandelslohi*, *Araucarites poly-*

carpa, *Brachyphyllum crassum*, *Taxites planus*, and *Phœnicopsis elongatus*.

It is beyond the limits of a short summary like the present to give an adequate idea of the richness of the Upper Jurassic flora in Australia. We may, however, point out the chief features noticed in our upward survey of rocks of the Jurassic period. The precocious members of the Jurassic flora found in the Carboniferous epoch, as *Brachyphyllum*, *Baiera*, *Ginkgo*, *Cladophlebis*, and *Tæniopteris*, reach their maximum in the Upper Jurassic of Victoria, Queensland, New South Wales, and Tasmania. It is somewhat puzzling to find *Stenopteris*, *Phœnicopsis*, and *Thinnfeldia*, genera with a tendency to typify Lower Mesozoic beds elsewhere, commingled with later forms, as *Coniopteris*, the Upper Jurassic types of *Sphenopteris*, and *Cladophlebis* (related to our living Royal Fern, *Todea*). Of the latter genus I have identified *C. indica*, a Rajmahal species, from Bellarine, near Geelong. If we regard the Rajmahal beds as Liassic, one portion of our flora from the Victorian Coal Measures points to a Lower Mesozoic horizon, whilst the other has affinities towards the Oolitic of Europe. Only a full and detailed study of our several Mesozoic floras will help to clear up this seeming stratigraphical discrepancy.

CRETACEOUS.

The Cretaceous palæobotanical record for Australia was, until quite recently, a very meagre one, the plant remains recorded being as follows:—

Algæ.—Remains of Diatomaceæ (*Coscinodiscus*, &c.) have been noted by Messrs. Dun, Rands, and David from limestone at Maranoa, Queensland, belonging to the Rolling Downs formation. Also Coccoliths washed from the Upper Chalk of Gingin, Western Australia, have been recorded by the writer.

An Upper Cretaceous fern, *Didymosorus* ? *gleichenoides*, was described by R. Etheridge, jun., from the Desert Sandstone formation at the Croydon goldfields. The species to which this fern is provisionally referred is an Indian (Rajmahal) form, of Liassic age.

Blocks of driftwood are found embedded in the Rolling Downs Limestone of Longreach, Queensland, and some of these have been sent to Dr. M. Stopes, of the British Museum, for determination. They are probably either coniferous or cycadaceous.

The record of a *Glossopteris* from the Desert Sandstone of Queensland was long regarded with suspicion. One of the specimens, collected by Norman Taylor, came from the tableland south of the Mitchell River; the other, by W. H. Rands, from Betts's Creek, near Cape goldfield. This mystery has lately been cleared up by J. H. Reid, of the Queensland Geo-

logical Survey,* who shows the Betts's Creek beds (*Glossopteris* shales and *Vertebraria* beds) to belong to the Carbopermian, upon which the Desert Sandstone lies unconformably.

The Burrum beds, with plant remains and associated mollusca-bearing marine deposits, were formerly referred to the Lower Trias-jura. They have now, through the investigations of Mr. B. Dunstan and Dr. H. C. Richards, been established as part of the Cretaceous Series.† Quite lately the flora has been studied by Dr. Walkom, and that gentleman has most kindly placed at my disposal some valuable lists of determined plants from this series, which are not yet published *in extenso*. The notes by Dr. Walkom are as follows:—

“The Cretaceous floras, as far as Queensland is concerned, are three in number—viz., (1) a small flora from the Marine Cretaceous in the Maryborough Series, (2) the flora of the Burrum Series, (3) the flora of the Styx River Coal Measures.

“1.—The flora of the Maryborough Series (Publ. 262, Queensland Geological Survey—in the press) consists of some fourteen species, as follows:—*Equisetites* cf. *E. rajmahalensis*, *Sphenopteris*, sp., *Tæniopteris elongata*, sp. nov., *T. Tenison-woodsii*, *Tæniopteris*, sp., *Ginkgo digitata*, *Ginkgo*, sp., *Ptilophyllum* (*Williamsonia*) *pecten*, (?) *Pterophyllum*, sp., *Araucarites polycarpa*, *A. mesozoica*, sp. nov., *Araucarites*, sp., *Pagiophyllum Jennetti*, sp. nov., (?) *Taxites*, sp., (?) Roots.

“These occur definitely in the marine beds, in some cases fragments of plants occurring in the same specimen as marine shells. The Maryborough Series is regarded as probably the equivalent of the Rolling Downs Series of Western Queensland.

“2.—The flora of the Burrum Series has been very inadequately described in the past. I have just completed the MS. of my description of it, and have described some 35 species, as follows:—*Cladophlebis australis*, (?) *Thinnfeldia lancifolia*, (?) *Dictyophyllum*, sp., *Sphenopteris flabellifolia*, *S. erecta*, *S. burrumensis*, sp. nov., (?) *Chiropteris*, sp., *Phyllopteris lanceolata*, sp. nov., *P. expansa*, sp. nov., *Microphyllopteris gleichenoides*, *M. acuta*, sp. nov., *Stenopteris elongata*, *S. laxum*, *Ptilophyllum pecten*, *Zamites takurænsis*, sp. nov., *Nilssonia Schaumburgensis*, *N. mucronatum*, *Otozamites*, sp., *Tæniopteris spatulata*, *T. Howardensis*, sp. nov., *Ginkgo digitata*, *Baiera bidens*, *Araucarites polycarpa*, *Araucarites* (scales), *Brachyphyllum crassum*, *Elatocladus planus*, (?) *Elatocladus*, sp., *Nageiopsis* (?) *zamiioides*, *Pagiophyllum Jennetti*, *P.* (?) *peregrinum*, (?) *Sphenolepidium*, sp., *Podozamites Kidstoni*, *P. lanceolatus*, *Podozamites*, sp.

* Publ. No. 254, Geol. Surv. Queensland, 1916.

† “The Cretaceous Rocks of Woody Island, Queensland, and its Neighbourhood, and their Relations to the Burrum Formation.” Rep. Aust. Assoc. Adv. Sci., Melb. Meeting, vol. xiv. (1913), 1914, pp. 179-188.

"As a result of comparison with other Mesozoic floras, I have come to the conclusion that the Burrum flora is a typical Lower Cretaceous flora (Neocomian-Barremian or Wealden), most closely comparable with the American Kootani and Patuxent floras and the German Wealden.

"In Western Queensland there is a fresh-water series overlying the Rolling Downs, and it is regarded as the equivalent of the Burrum Series. Mr. Dunstan calls the Western Series the Winton Series. Very few fossils come from the latter.

"3.—The Styx River fossil flora has not yet been examined. Plants are not very abundant, but the flora is certainly as recent as the Burrum flora, and I am inclined to think that it may be later, perhaps Upper Cretaceous."

In a later note Dr. Walkom informs me that he finds the Styx Series younger than the Burrum flora, and probably of Lower Cretaceous age. It contains a remarkably interesting assemblage of plant fossils, as there occur, besides *Cladophlebis*, *Tæniopteris*, *Araucarites*, and *Podozamites*, leaves of angiosperms (flowering plants) which have not before been recorded from the Mesozoic of Australia. This flora also shows a strong resemblance to the flora of the Waikato Heads, in New Zealand.

A rather extensive dicotyledonous flora has been determined from flaggy quartzites of the Lakes Eyre, Torrens, and Frome districts, South Central Australia. These, together with others from Queensland described by Ettingshausen, have been referred by Prof. Tate * to the Desert Sandstone Series (Upper Cretaceous), but the components of this flora are so distinctly Miocene in character that not by the greatest effort of the imagination could they be accepted as Upper Cretaceous.

The foregoing rapid survey of the flora of the Australian Mesozoic has been attempted in the hope of revealing the wonderfully interesting character of the plant life of that period. Much remains to be done in systematizing our knowledge of these relics of ancient forest and gully, especially in relation to their distribution in time. When this has been more thoroughly accomplished there is no doubt much will have been learned of the position and occurrence of other coal-bearing deposits in Australia, which up to the present lie hidden and unsuspected beneath the earth's surface.

In the concluding paper of the series, on the Tertiary Flora, it is proposed to figure some of the more typical and interesting forms.

* See Horn Exped., part 3, 1896, pp. 66-68. Also Etheridge, R., jun., Mon. Cret. Invert. Fauna, Mem. Geol. Surv. N. S. Wales, Pal., No. 11, 1902, pp. 51-56. It is there noted (p. 51, footnote) that "considerable uncertainty exists as to the exact stratigraphical position of these plant beds." These beds were referred to by the writer under "Miocene leaf-beds" in "Australasian Fossils," 1914, p. 91.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S.

MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston-street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn-street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSERS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 8TH FEBRUARY.—**Botanical Gardens.** Meeting place—Main Entrance Gates, at 2.15 p.m. The President and Committee invite members to meet them at a **Social Gathering**, as above.

Non-members wishing to take part in the Excursion may obtain tickets, entitling them to join the party and partake of light refreshments, at a cost of 1/-, upon application during the afternoon to the Hon. Secretary.

SATURDAY, 22ND FEBRUARY.—**Richmond Quarries.** Objects—**Aquatic Zoology and Geology.** Leaders—Messrs. Wilcox, Stickland and Daley. The party will assemble at East Richmond Station, on the Kew and Camberwell lines at 2.30 p.m. The rendezvous may also be reached by Electric Tram from Prince's Bridge, alighting at Church-street, Richmond, a few yards from the Station.

SATURDAY, 8TH MARCH.—**Melton.** Objects—**Physiography and General.** Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer-street Station for 7.40 a.m. train. It is proposed to visit the valley of the Djerri-warrah Creek (4½ miles) and, if time permit, the patch of mallee about 1½ miles beyond. Lunch should be taken.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ½ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.

VOL. XXXV.—No. 11.

MARCH, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 6th March, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	..	..	157
EXCURSION TO MARYSVILLE	..	..	157
NOTES	..	..	164

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 10th MARCH, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS COUNTRY MEMBER—

Mr. R. A. Howie,
Powelltown.

PROPOSER.

Mr. A. D. Hardy, F.L.S.

SECONDER.

Mr. A. W. Grainger.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"Destruction of Mutton Birds at Philip Island."—Mr. J. Gabriel.

"Notes on a Trip to Western Australia."—Mr. F. G. A. Barnard.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 11. MARCH 6, 1919.

No. 423.

FIELD NATURALISTS' CLUB OF VICTORIA.

OWING to the regulations regarding the influenza epidemic prohibiting the holding of public meetings, &c., the February meeting of the Club was not held.

EXHIBITION OF WILD-FLOWERS.

The following letter has been received from the National Committee of the Y.M.C.A.:—

“To the Hon. Secretary Field Naturalists' Club of Victoria,
Melbourne.

“Dear Sir,—I have pleasure in acknowledging receipt of your letter of 8th inst., enclosing cheque for £141 2s. 9d., representing the net proceeds of the wild-flower exhibition held at the Melbourne Town Hall in October last. This generous gift is gratefully appreciated by my committee, and comes as a welcome addition to our funds at this time, when the demands that are being made upon our resources in connection with the demobilization of the troops is becoming increasingly insistent. We recognize that the arrangements in connection with the exhibition must have involved a considerable amount of thought, time, and energy on the part of the responsible officials, and will be glad if you will kindly accept for yourself, and convey to all who in any way helped towards its success, the committee's warmest thanks.—Yours sincerely,

“J. HENRY LANG,

“National General Secretary.

“Melbourne, 13th February, 1919.”

EXCURSION TO MARYSVILLE.

THE Christmas excursion to Marysville proved most enjoyable in every way. A party of eight, including two ladies, proceeded to Healesville by the 8 a.m. train on Christmas morning. Owing to a special having left a little while before, there was little crowding, and we were able to travel together. Healesville (38 miles) was reached in due course; there we found a vehicle waiting to convey us the remaining twenty-three miles of our journey. As the number of excursionists was smaller than had been expected, some delay was experienced while a smaller vehicle was being substituted for that originally selected to make the trip; however, by 11.30 a.m. we were on the road. The weather was dull, with showers threatening, the absence of sunshine to fully reveal the beauties of the bush and the surrounding hills being greatly regretted. The road between

Healesville and Marysville is famed as being one of the most picturesque in the State, passing as it does over the Blacks' Spur, celebrated for its tall trees. At about six miles out the turn-off to Mount Juliet was passed on our right, and in another mile the Maroondah River, formerly known as the Watts, was crossed. Here was the site of Fernshaw, a well-known tourist resort in the sixties and seventies, but since resumed in the interests of Melbourne's water supply. Morley's track, a favourite walk of Fernshaw visitors in times gone by, branches off up the valley of the Maroondah just where the road takes a sudden turn to the left at the foot of the Spur. A photograph on the table depicts three tree-ferns, said to be sixty feet in height, which were to be seen along this track. Ascending the Spur, the road rises rapidly—about 1,200 feet in three miles. During the first mile or two the under-scrub has been greatly thinned out during recent years by bush fires, which, at the expense of the beauty, enables more extensive views to be obtained in a south-westerly direction. The splendid scenery of the upper part of the Spur was greatly admired. On the left is the beautiful Myrtle Creek, with its dense vegetation of many kinds, with a heavily-timbered slope rising up behind. Many huge trees are to be seen close to the road, but the trunk of one of the largest, known as "Uncle Sam," now lies prostrate on the side of the road near the drinking trough. While ascending the Spur the remarkable conical hill known as Mount Dom Dom was seen close by, on the right, with the huge mass of Mount Strickland (4,000 feet) a few miles beyond. As we descended the eastern slope, now in the Murray watershed, at a break in the forest known as Zeal's Look-out, a very fine view across the Acheron Valley to the rugged Cathedral Mountain, near Buxton, was obtained. A short halt was made at Narbethong, in the valley of Fisher's Creek, and then progress was resumed through rather uninteresting country to the Acheron bridge, whence the road gradually ascends till it again reaches an altitude of 2,000 feet at the Bald Hill, dropping again 500 feet before reaching Marysville, which township was reached about 4.30 p.m., just as heavy rain, which had been threatening for some time, set in, lasting for an hour or more. Here we were cordially welcomed to the hotel by Miss Keppel, and soon had our rooms allotted to us. There was very little in the way of a floral display along the road we had traversed, the Blue Pincushion, *Brunonia australis*, the pink Trigger-flower, *Stylidium graminifolium*, and the Fringed Lily, *Thysanotus tuberosus*, being perhaps the most noticeable. After tea, as the rain had stopped and there was still an hour or so of daylight, some of the party went for a walk for a couple of miles along the Wood's Point road, which rises sharply beyond the Steavenson River. Here the

sweet-scented *Stackhousia linarifolia*, *Veronica Derwentia*, and the ubiquitous *Goodenia ovata* were blooming freely. Beautiful cloud effects were seen as the sun set, masses of vapour appearing as if entangled among the trees on the hillsides. During the evening we made up plans for the ensuing days, embracing the different trips detailed in the paper contributed to the Club's meeting in March, 1916, by Mr. F. Pitcher and myself, entitled "An October Week at Marysville" (*Vict. Nat.*, xxxiii., p. 32), and it will be needless to repeat in detail the descriptions of the places visited on that occasion.

On Thursday morning most of the party made a before-breakfast visit to the "Beauty Spot"—a group of tree-ferns, &c., at the head of a small stream running into the Steavenson. A visit to the Steavenson Falls had been chosen as the first outing of the excursion, and after breakfast all made their way thither by the easy track which gradually ascends the narrow valley until stopped by the rocky wall forming the falls. Owing to the dryness of the season we had not expected to find much water coming down the falls, so were agreeably surprised at the volume descending. High up among the rocks a flowering shrub attracted attention, and on specimens being secured it was found to be *Callistemon salignus*, var. *viridiflorus*. The Native Elder, *Sambucus Gaudichaudiana* and the Blanket-wood, *Senecio Bedfordii*, were also in bloom. Perhaps the most noticeable feature along the track was the robust growth of *Daviesia latifolia*, often known as the "Native Hop," from the bitter taste of its leaves. Many of the bushes had a height of at least eight feet, with stem diameters of an inch and a half. Only a few flowers remained, but when in full bloom it must have presented a fine sight. In the afternoon a visit was paid to Keppel's Look-out, on Mount Bismarck, about two or three miles south of the township, with an altitude of 3,000 feet, as indicated by Mr. Barnard's aneroid. This instrument, presented to its owner at the last annual meeting of the Club, it may be remarked, was fully availed of during the different outings, and, in such hilly country, added not a little to their interest. All admired the fine view down the Acheron Valley from this elevated spot, and, though rain compelled us to get such shelter as we could, it did not last long, and the after effects on the distant hills fully made up for any discomfort we had experienced. The large Shrubby Pimelea, *P. ligustrina*, with *Helichrysum scorpioides* and *Stellaria flaccida*, were met with during the afternoon. Of course, tree-ferns and smaller species abounded everywhere here, as elsewhere throughout the various trips.

Friday, 27th December, had been set apart for a whole-day trip to the Taggerty Valley and Keppel's Falls. The day

turned out all that could be desired, and the beautiful scenery along the stream was the admiration of all. In about seven miles the pavilion at "The Meeting of the Waters" was reached, and after a little trouble the billy was boiled and luncheon had. After spending as long as we could spare here viewing Keppel's Falls, &c., we turned homewards, making a short detour along the Glover Walk to the Cameron Cascades, a place of exquisite beauty, tree-ferns, beeches, sassafras, and shrubbery combining to make a scene which it is impossible to describe. A remarkably fine growth of the fern *Lomaria fluviatilis* was seen here, some of the fronds being three feet in length and in perfect order. One of the largest beeches seen was growing here, its trunk being about eight feet in diameter. Several flowering spikes of the Potato Orchid, *Gastrodia sesamoides*, were met with, and a plant of *Billardiera longiflora*, laden with purple fruits, was a notable sight. This plant was subsequently noted in full bloom. The creeper *Lyonsia straminea* was found in the "Forest of Arden," both in flower and in fruit. Several of the beautiful green and black butterflies, *Papilio macleayanus*, confined to our higher mountainous districts, were seen flying about the flowering shrubs along the river. The Strap-fern, *Lomaria Patersoni*, so named from its long, narrow, undivided fronds, was noticed in the deep shade of the beeches in many places. A peculiar globular fungus, *Cytharia Gunnii*, which seems to be found only on the beech, was secured by Mr. P. Morrison, in the Forest of Arden, a new locality for this rare species. Some ten years ago I found specimens of this fungus on the same host tree in Myrtle Creek, on the Blacks' Spur. The altitude of the pavilion at "The Meeting of the Waters" was found to be about 600 feet above Marysville, so that the walk was not an arduous one. Afternoon tea was taken at the termination of the Talbot Drive, and the hotel was reached about half-past eight, all having thoroughly enjoyed the fifteen-mile tramp.

Saturday was devoted to the walk to Bald Hill, another view-point overlooking the Acheron Valley. The day promised to be warm, and, though not a very long journey, it was thought better to take lunch and give a whole day to the trip. From the northern end of the Spur, which is bare of timber, an extensive view of the Acheron Valley, the Cathedral Range, the Black Range, and of Narbethong was obtained. Few flowering plants were met with; the flowers of *Brachycome diversifolia*, which were so fine when seen in October, 1915, were at this time of year much diminished in size. After spending two or three hours admiring the view, we returned by the route of the morning. This range is of a different geological formation to most of the country around Marysville, being Silurian or Ordovician instead of the prevailing granite or dacite.

Sunday was spent quietly, most of the party attending the morning service at the local church. In the afternoon some went to "Michael Dene," a nice fern gully not far from the township; others renewed their acquaintance with the Steavenson Falls.

For Monday a visit to the Cumberland Falls, distant about eleven miles along the Wood's Point road, was decided on. Three of the party, considering the trip would tax their walking powers too severely, arranged to join some visitors at the hotel who were driving thither. The others, starting at 6 a.m., breakfasted at a spring on the road about five miles out, and by noon had completed the first half of their journey. The driving party arrived about one, and all had lunch together. The road rises quickly after crossing the Steavenson River, and traverses a part of Mount Grant known as Robley's Spur. At first the densely-timbered valley of the Steavenson River on the right is overlooked, with Mount Bismarck forming a background to the picture. A little further on the road crosses to the other side of the ridge, and the view is now down the valley of the Taggerty, with Mount Margaret beyond. An elevation of 3,000 feet or more is attained, and the road then becomes comparatively level. The views from Nicholls's Look-out and other spots were much admired. Shortly after passing Tommy's Bend, a celebrated beauty spot in former days, the road crosses the divide into the southern (Yarra) watershed. About here some fine beeches were showing the beautiful coppery tints of their young foliage. Halting at the Bellell Creek, or O'Shannassy River, so that the travellers might refresh themselves at the stream, some interesting insect larvæ were noticed in the water on the stones, probably the larvæ of one of the Ephemerids. The road, as it ascended the divide near Mount Arnold, attained about 3,600 feet, and was bordered with flowering shrubs, the white flowers of *Olearia* (*Aster*) *stellulata*, var. *lyrata*, and *O. myrsinoides*, and *Cassinia aculeata* being prominent, with here and there a bush of *Prostanthera mellissifolia* in full bloom, bearing delicate lavender flowers. Several stems of *Dianella tasmanica*, with its beautiful blue flowers, occurred here also. As we descended the slope towards the Corra Linn and Cumberland Creeks many magnificent specimens of the Mountain Ash Gum, *Eucalyptus regnans*, grew alongside the road, and at a spot about half a mile from the road, to which a track has been blazed, is the giant tree known as "King Edward VII.," which has a girth of 87 feet. A photograph of this huge trunk is one of the adornments of the hotel vestibule. One of the features of the road was the fine growth of *Lomaria fluviatilis*, which occurred everywhere on the shady side, while *L. lanceolata* was absent. The only snake of the outing was seen here, but escaped capture. After lunch

at the falls, on the advice of the walking party, who had gone about a mile further and found a group of magnificent gums, we did so also, and were well compensated for the walk, most of the trees being fully 250 feet high. The walking party had been much interested here by the curiosity of a Wonga Pigeon, *Leucosarcia melanoleuca*, which seemed to regard them with wonder and astonishment, so many persons to be seen at one time in such an unfrequented spot being evidently more than it could understand. The falls, which were visited in November, 1890, by the Yarra Falls excursion party of the Club (*Vict. Nat.*, vii., p. 161, with photograph), were found to be largely hidden from view by the wealth of vegetation with which they are surrounded, only the upper part being well seen. The gorge down which the stream precipitates itself is very beautiful, and a fairly easy track descends for some 200 feet or more alongside the rushing water. The pedestrian party left before the others, having decided to add some three or four miles to their return journey by trying to get through to the Taggerty River, along the Glover Walk, and thus return to Marysville by way of the Forest of Arden and the Talbot Drive. This they did without mishap, and report a succession of glorious fern and beech scenes along the Walk, and, notwithstanding that they did not reach the hotel till 10 p.m., seemed thoroughly pleased with their sixteen hours in the open. One of this party, it may be mentioned, was a lady, who seemed perhaps the least tired of all by the hard day's work. Those who returned by vehicle had some glorious sunset scenes over the Taggerty Valley as they made the descent of Mount Grant.

Tuesday, 31st December, was the last day of the stay, which had passed all too quickly. As we were timed to leave for Healesville at 3 p.m., we had a few hours available in the morning, which were devoted to exploring the track to the wolfram mine on Wilks's Creek. This track leaves the Keppel's Look-out track about $1\frac{1}{2}$ miles from the village, and bears southerly through fairly open forest towards Mount Strickland. On reaching Wilks's Creek we found it to be of the usual mountain gully type, with King and other ferns in profusion, but time did not permit the completion of the journey to the mine. We noticed here, as well as in another place, nice plants of *Mimulus moschatus*, the musk of our shade-houses, doing remarkably well. After lunch some of us collected a few seedling ferns from the side of the water-race before packing our belongings. Our final duty was to pen and sign an appreciation of our experiences at Marysville in the visitors' book for the delectation of those who may follow, we having been greatly interested in the notes made by the late Baron von Mueller, Rev. Tenison-Woods, Mr. C. French, and others of kindred tastes in days gone by.

From the number of birds observed while sitting quietly in the bush, it would appear that ornithologically the district is also good, but, as none of us professed much knowledge of birds, little can be said under that heading. One Lyre-bird and many Gang-Gang Cockatoos, King Parrots, Blue Wrens, Robins, &c., were seen. A male Scarlet-breasted Robin was particularly fond of the top of the lamp outside the hotel, and could generally be seen there morning and evening. Insects were very scarce, beetles particularly so. Of butterflies three or four species were noted: the common brown, *Heteronympha merope*, Painted Lady, *Pyrameis kershawi*, and the Mountain Swallow-tail, *Papilio macleanianus*—the last-named insect was seen in considerable numbers in many places. Reptilia were represented by a Blue-tongued Lizard and numerous smaller species, and the Black Snake previously mentioned.

In addition to the plants already named the following were seen in bloom in different places:—*Loranthus pendulus*, *Sisyrinchium pulchellum*, *Helichrysum rosmarinifolium*, *H. ferrugineum*, *H. leucopsidium*, *Dipodium punctatum*, *Lagenophora Billardieri*, *Mentha laxiflora*, *Leptospermum scoparium*, *Viola hederacea*, *Senecio vagus*, and *S. australis*.

Although it cannot be claimed that anything particular was done in the way of scientific work, the beautiful scenery naturally attracting most attention, all of the party seemed well satisfied with the excursion, which was made all the more pleasant by reason of the exceptionally favourable weather experienced at a time of year when extreme heat might have been expected. The elevation of Marysville (1,600 feet), and the presence of ranges up to 4,800 feet within a few miles, may perhaps account for the invigorating air, which enabled us to cover some seventy miles on foot during the week. The outstanding features of the district are undoubtedly the profusion and robustness of the vegetation, many of the Myrtle Beeches of the Forest of Arden possessing trunks six to eight feet in diameter, being correspondingly tall, while other flowering plants usually found as dwarf shrubs are here almost arborescent, and, instead of occurring as scattered specimens, grow in dense thickets to the exclusion of other species. Many more plants might have been mentioned, but only those prominent at the time of our visit are recorded, for the names of some of which I am indebted to Mr. F. Pitcher, who was put down as co-leader of the excursion, but was unfortunately unable to take part in it. The tourist map issued by the Lands Department was found of great service during the outing, and, as a copy of it was posted under the hotel verandah, it was easily referred to and discussed before and after each day's trip.—J. STICKLAND.

LYRE-BIRDS.—Nature-lovers who have stayed at Sherbrooke this season have had a special opportunity of hearing Lyre-birds. There is quite a family party of these remarkable birds that seems to have its principal habitat in the forest adjacent to the tables and fire-places erected for the convenience of picnickers at the junction of the track from Sherbrooke with those leading to Belgrave and the "Giant Tree." They can be heard calling round this portion of the reserve at almost any time in the day, but the best opportunity is, of course, the early morning. It is well worth the labour of getting out of bed betimes to listen to a performance by this wonderful mocking bird, with his remarkable imitations of the Laughing Jackass, the Coachwhip-bird, and a sound like a stonebreaker's hammer, with many other calls. After a good many attempts, I was one morning fortunate enough to see one of these birds doing his dance on a mound not many yards distant from where I had concealed myself. I watched him going round and round, nodding his head up and down and stamping his feet, all the time emitting strident notes and imitating the birds that I have above mentioned. At times he would spread his wings as well as his tail-feathers and positively rush round the little hillock. At this time there was a whirring sound made, and it was somewhat difficult to distinguish as to whether it came from the fluttering wings or from the bird's throat. I was near enough to be able to notice the beautiful effect of the brown and white bars on the contour of the tail feathers, from which the bird derives its name, gleaming in the sunlight above the vivid green of the bracken fern. I stayed and watched this fascinating performance for some minutes, when all at once something snapped, or else the Pilot-bird, *Pycnoptilus floccosus*, uttered his warning note, for the bird stopped instantly, dropped his tail, and silently sped away far into the bush. I advanced cautiously, and was investigating the freshly-trodden mound, when something moved from under a fallen tree-trunk, and a young Lyre-bird came out—so near that I could almost have touched him. He looked at me and I at him, and, apparently concluding that I was harmless, he continued, to my intense delight, to scratch and pick, and now and again to raise his head and emit his clear, piercing, metallic-sounding note. It was interesting to watch how his throat swelled up as he did so. It is earnestly to be hoped that the rangers will take special care to confiscate, as they have the right to do, all guns or pea rifles carried in this reserve; otherwise it is to be feared that these glories of the bush, who are evidently becoming tamer and more trustful of man than they used to be, will, for this very reason, fall victims to so-called sportsmen.—A. E. KEEP. 10th January, 1919.

Field Naturalists' Club of Victoria.

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S.

MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston-street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn-street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 8TH MARCH — **Melton.** Objects — **Physiography and General.** Under the leadership of Mr. F. G. A. Barnard. Meet at Spencer-street Station for 7.40 a.m. train. It is proposed to visit the valley of the Djerriwarrah Creek ($4\frac{1}{2}$ miles) and, if time permit, the patch of mallee about $1\frac{1}{2}$ miles beyond. Lunch should be taken.

SATURDAY, 22ND MARCH.—**Macedon.** Object—**Forestry.** Leader—Mr. A. D. Hardy, F.L.S. Excursionists will journey by train leaving Spencer Street Station at 6.40 a.m. Members intending to take part in this excursion are requested to notify the leader or Hon. Sec. at or before the March ordinary meeting on 10th inst., as it is necessary to secure accommodation by coach from rail terminus, and also, if needed, to arrange a luncheon. Total estimated cost of rail and coach fares with luncheon, 13/- Should members prefer to take their own provisions, this can be done. As soon as list of party is complete, the leader will communicate with each member.

SATURDAY, 29TH MARCH. — **Beaumaris.** Object — **Marine Zoology.** Leader—Mr. J. Shephard. Meet at Flinders Street Station (opposite Mutual Store) to catch 1.45 p.m. train to Sandringham. Second class return fare, 1/0 $\frac{1}{2}$.

Easter Excursion to Geelong.—In order that early arrangements may be made for accommodation, &c., members who purpose participating in this excursion are asked to hand in their names to the leader, Mr. C. Daley, Clarinda Street, Caulfield, or the Hon. Sec. not later than 24th March.

PRELIMINARY NOTICE.

It has been decided to hold an Exhibition in connection with the Annual Meeting in June on similar lines to last year. Fuller details will be published later.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered	14 x 10, 8/-; 16 x 12, 11/-
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ½ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND 'MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 10th April, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	165
NATURE IN SERRA RANGE. By J. W. Audas, F.L.S., F.R.M.S.	171
ON THE DESTRUCTION OF MUTTON-BIRDS AND PENGUINS AT PHILLIP ISLAND. By Joseph Gabriel	178
NOTES	170, 177, 180

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST 1/2D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.

1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 14th APRIL, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—

PROPOSER.

SECONDER.

Mr. G. P. Webb,
Canterbury Road,
Canterbury.

Mr. Walter E. Webb.

Mr. F. Wisewould.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

(a) Discussion on Mr. F. G. A. Barnard's Paper: "Notes on a Trip to Western Australia." Postponed from last meeting.

(b) "Notes on the Census of Victorian Flora." By Mr. H. B. Williamson.

(c) "A week among the Seaweeds at Portsea." By Mr. A. H. Lucas.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXV.—No. 12. APRIL 10, 1919.

No. 424.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th March, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

CORRESPONDENCE.

From Mr. F. P. Dodd, Kuranda, Queensland, stating that the report that his collection of butterflies, &c., recently exhibited in Melbourne had been purchased for transmission to America is entirely without foundation.

REPORTS.

A report of the excursion to Balwyn and Bulleen on Saturday, 18th January, was forwarded by the leaders, Messrs. F. Chapman, A.L.S., and A. L. Scott, who stated that, owing to a very unpleasant hot wind day, only a few members met for the ramble over picturesque country to the volcanic plug at Balwyn and thence to the Koonung Creek, near Bulleen. An account of a former visit to the plug, with illustrations, was given in the *Naturalist* for June, 1913 (vol. xxx., p. 35), and would hold good for the present occasion. The wind had now changed to the south-west, bringing up clouds of smoke from distant bush-fires as well as a welcome change in temperature. From the plug the party proceeded across the paddocks to the Koonung Creek, where it is crossed by the road to Templestowe. There, in some Ordovician mudstone used for road-making, some rather minute fossils were obtained, consisting of several well-preserved specimens of *Chonetes Melbourneensis*, also a fragment of a rhynchonellid, both belonging to the lamp-shell group. A return was then made to Deepdene or East Kew, as suited the members of the party.

A report of the excursion to Portarlington on Monday, 27th January (Foundation Day), was given by the leader, Mr. J. Gabriel, who said that seven members met on board the *Courier*. Nothing of note was remarked on the way down the river or in Port Phillip Bay. On arrival at Portarlington it was found that fortunately we had struck a low tide, and consequently expected some good spoil, but a walk of some three or four miles towards Indented Head (St. Leonards) revealed very little of interest to the naturalist. Some time was spent in endeavouring to obtain some Nemertine worms from a partly submerged sandy patch, but with poor results, the creatures

being so extremely fragile. One or two specimens of a rather singular crustacean, unidentified, were taken, and a very fine piece of the coral, *Plesiastrea urvillei*,* was afterwards picked up. Our lepidopterist fared somewhat badly, his best would-be capture, one of the mistletoe butterflies, managing to elude his net. A collection of the shells along the beach failed to reveal anything of special interest in the twenty or so species collected. Our badge shell, *Nassa fasciata*, usually fairly plentiful on this beach, was somewhat scarce, probably owing to the fact that the day was a holiday.

[An interesting report of the only previous excursion to Portarlington will be found in the *Naturalist* for July, 1890 (vol. vii., p. 31).—ED. *Vict. Nat.*]

The president reported that, notwithstanding the close and muggy weather experienced on Saturday, 8th February, a party of about forty members and friends assembled at the Botanic Gardens in response to the committee's invitation to a ramble through the Gardens, followed by afternoon tea. At his request, the director, Mr. J. Cronin, kindly pointed out to the visitors some of the specially interesting features, including the stove-houses and propagating frames, &c. In the nursery beds were seen numbers of seedling Australian trees and shrubs, Mr. Cronin remarking that it had been found that the best results followed if these seedlings were first transplanted when showing their earliest foliage leaves. The method of growing tree-begonias under a tea-tree shelter appealed to the plant-lovers of the party. Earlier in the afternoon an informal invitation given by His Excellency the Governor-General (an honorary member of the Club) to stroll through the adjoining grounds of Government House had been gladly accepted, Sir Ronald and Lady Helen Munro Ferguson accompanying the party, and pointing out some of the more interesting trees, notably a fine New South Wales Spotted Gum, *Eucalyptus maculata*, now about forty feet in height, with corresponding spread of branches. After a visit to the conservatories their Excellencies accompanied the party into the Botanic Gardens and remained some time examining the many fine specimen trees, &c. Tea was taken in the open near the tea kiosk, the tables being decorated with blossoms of the Scarlet Gum, in various shades, and the orange flowers of *Persoonia pinifolia*. After tea votes of thanks to Mr. Cronin and Mr. St. John for their efforts in making the afternoon such an interesting one were heartily given, and with a final glance at the Australian border the party dispersed.

* [It was on this coral that in March, 1899, the late Dr. Hall based one of his practical papers for beginners, entitled "A Hunt for a Name." (*Vict. Nat.*, xvi., p. 7, May, 1899).—ED. *Vict. Nat.*]

A report of the excursion to the Richmond Quarries on Saturday, 22nd February, was given by the leaders, Messrs. J. Stickland and C. Daley, B.A. The former stated that pond-life was not so prolific as on some former occasions, and had not yet been thoroughly worked out. Mr. Daley drew attention to the fact that the quarries were being made the dumping-ground for rubbish of various kinds, whereas they could be so treated that they could become a picturesque resort. He stated that the geological features of the excavations were worth preserving, and enumerated a number of aquatic birds seen, which appeared to be quite at home in the locality.

Mr. F. G. A. Barnard stated that the excursion to Melton, arranged for Saturday, 8th March, had been abandoned owing to the wet weather.

ELECTION OF MEMBER.

On a ballot being taken, Mr. R. A. Howie, Powelltown, was duly elected as a country member of the Club.

GENERAL BUSINESS.

The chairman warmly welcomed Sergeant C. L. Barrett on his return to the Club after a lengthy service with the A.I.F. in Egypt and Palestine. Mr. Barrett briefly replied, mentioning some of his natural history experiences, and promising to give further details at some future time.

Mr. G. A. Keartland brought under the notice of members the recent attempt to induce the Department of Game and Fisheries to vary the quail season, and extolled the firm attitude taken in the matter by the Minister concerned, who had refused the request. It was resolved to convey to the Department the appreciation of the Club at its action.

Mr. E. Cox referred to the great destruction of fish in inland streams by cormorants during the last few months, and moved that the matter be brought under the notice of the Fisheries and Game Department.

Dr. Sutton stated that similar complaints were being made in Tasmania.

Mr. P. R. H. St. John, in seconding the motion, stated that cormorants were doing considerable damage at the Botanic Gardens lake, though they had suffered for their boldness, he having accounted for two hundred and ten birds with ninety-seven cartridges.

The motion was carried unanimously.

A visitor (Private Potter), at the request of the chairman, mentioned that when at sea, in the vicinity of Cocos Islands, a cormorant had come on board the vessel, and became quite tame, allowing itself to be handled without fear.

PAPERS READ.

1. By Mr. Joseph Gabriel, entitled "On the Destruction of Mutton-Birds and Penguins at Phillip Island."

The author called attention to the serious menace at present threatening the Mutton-bird rookeries at Phillip Island owing to the great increase of foxes. Recently numbers of dead birds had been picked up, showing signs of having been killed by these animals. He suggested the Government be approached with the view of urging that some steps be taken for the destruction of the foxes.

Mr. G. A. Kearnland suggested the poisoning of the foxes in June and July, when the skins are of considerable value. He referred to the fertility of the fox in Victoria as compared with England. Here it was no unusual thing to find six, seven, and eight cubs in a litter, whilst in England the litter would consist of two, or three at most. Recently, in destroying a litter at Bayswater, the remains of no less than thirty-six Lyre-birds' tails were found in and around the log in which the animals lived.

Mr. C. J. Gabriel, on whose report the paper was based, gave further evidence of the menace.

Mr. L. Thorn said that he had seen numbers of foxes when at the rookeries lately.

Private Potter, a resident of the district, said that it was generally believed that the foxes gained access to the island by swimming across the eastern channel from San Remo to Newhaven.

On the motion of Messrs. F. G. A. Barnard and C. J. Gabriel, it was resolved that the committee take whatever action it considers advisable in the matter.

[It has since been announced in the *Argus* of 27th March that a reward of one pound per head is to be given for foxes killed on Phillip Island.—ED. *Vict. Nat.*]

2. By Mr. F. G. A. Barnard, entitled "Notes of a Visit to Western Australia."

The author gave some account of a three weeks' visit to the Perth district in September last, made principally to see the wild-flowers in bloom. He also referred to the geology and general characteristics of that portion of Western Australia. Having travelled by the Trans-Australian railway, he was able to give some idea of the natural history items to be seen along the route, and illustrated his remarks with maps and diagrams.

Owing to the lateness of the hour, remarks on the paper were postponed until the next meeting.

NATURAL HISTORY NOTE.

Mr. H. B. Williamson said that recently, when examining the plant collection of Rev. A. J. Maher, of Wonthaggi, who for eight years had been a diligent collector in the Genoa district, he found eight species of plants which have rarely been collected in Victoria, and are not represented in the National Herbarium collection by any Victorian specimens. The plants are:—*Persoonia lanceolata*, *Andrews, *P. salicina*, Persoon, *Goodenia stelligera*, R. Br., *Leptomeria acida*, R. Br., *Oxylobium trilobatum*, F. v. M., *Dodonaea calycina*, Cunn., *Poranthera corymbosa*, Brong., and *Pteris umbrosa*, R. Br. Mr. Clinton, of Mitta Mitta, had sent him specimens of an acacia, determined as *A. rubida* by Mr. Maiden. This appeared to him to have been confused with *A. penninervis*, var. *falciformis*, and he was exhibiting specimens of the latter for comparison, but there was no mistaking the two species when the pods of each were compared. Specimens of all these plants had been presented to the National Herbarium.

EXHIBITS.

By Mr. J. W. Audas, F.L.S.—Dried specimen of orchid, *Caladenia dilatata*, R. Br., Fringed Spider Orchid, with two labella, collected at Evansford, near Talbot, by Miss R. Cleghorn.

By Mr. F. G. A. Barnard.—Growing fern, *Asplenium*, sp., from Yallingup Cave, Western Australia; also maps, &c., in illustration of paper.

By Mr. C. E. Cole.—Thirty of the thirty-five species of butterflies recorded for Tasmania; also a few Victorian species, taken near Melbourne.

By Mr. C. Daley, B.A.—Basalt from Balcombe Bay, Port Phillip, showing (a) gradual result of atmospheric action in weathering and bleaching, (b) the result of the lava-flow cooling quickly on the surface; also photographs showing basaltic structure at Richmond Quarries.

By Mr. J. Gabriel.—Photographs showing destruction of Mutton-birds, &c., at Phillip Island, in illustration of paper.

By Mr. C. J. Gabriel.—Victorian marine shells, *Chlamys asperimus*, Lam., and *Pecten medius*, Lam., from Western Port Bay.

By Mr. A. D. Hardy, F.L.S.—Fang of Tiger Snake.

By Mr. C. L. Plumridge.—Living larvæ of Emperor Gum Moth, *Antheraea eucalypti*, in several stages.

By Mr. J. Wilcox.—Flowering branches of New South Wales Christmas Bush, *Ceratopetalum gunniferum*, Smith, grown at Canterbury; also frond of bracken fern, *Pteris aquilina*, nine feet in length.

By Mr. H. B. Williamson.—Dried specimens of five species of plants not previously recorded for Victoria, viz.:—*Brachycome microcarpa*, F. v. M., collected by himself at Cann River, January, 1918 (it agrees with a specimen in the National Herbarium, Melbourne, collected by Mr. Sayer in the same locality, and the determination has been confirmed by Professor Ewart): *Pultenaea polifolia*, Cunn., and *P. procumbens*, Cunn., and *Acacia Dawsoni*, R. T. Baker (these were received from Mr. Clinton, of Mitta Mitta, in November last—the two last-named species were determined by Mr. J. H. Maiden, F.L.S.); and *Loranthus longiflorus*, Desr., obtained at Genoa on a Bloodwood Tree, *Eucalyptus corymbosa*, by Rev. A. J. Maher, previously recorded for New South Wales only.

After the usual conversazione the meeting terminated.

“THE AUSTRALIAN ENVIRONMENT.”—The Commonwealth Advisory Council of Science and Industry has issued a most interesting memoir by Dr. Griffith Taylor, of the Commonwealth Bureau of Meteorology. The work extends to 188 quarto pages, and is well illustrated with 15 contour maps in colour and 167 other maps and diagrams, as well as numerous tables of rainfall, &c. The continent of Australia has been divided into fifteen regional divisions, one of which, comprising south-western Western Australia, he has happily named Swanland, as a set-off to Gippsland at the south-eastern corner of the continent. Each division is considered in the light of its value for settlement from a topographical, drainage, and vegetation point of view, the character and origin of the rainfall being the dominating feature. In dealing with the northern half of South Australia, designated “Eyre,” it is remarked that though the Musgrave and Macdonnell Ranges are as high as any Australian mountains, except those in the vicinity of Kosciusko, they have little effect on the rainfall, the lack of moisture arising from the fact that Central Australia is located in the path of the trade wind. The memoir shows a vast amount of painstaking research among different authorities, and weighing of results. It seems probable, unless some violent upheaval takes place, that the greater part of Australia must always remain a pastoral area, the amount of territory that can be irrigated sufficiently for agricultural purposes being a mere trifle. The volume has been excellently produced, and should be of great value in determining policies of settlement. It has been issued at the nominal price of five shillings. The contour maps are also procurable in atlas form at eighteenpence, and will be found useful in any study.

NATURE IN THE SERRA RANGE.

BY J. W. AUDAS, F.L.S., F.R.M.S., Assistant, National Herbarium, Melbourne.

(Read before the Field Naturalists' Club of Victoria, 18th Jan., 1919.)

It was with pleasant recollections of two previous botanizing trips in the Victorian Grampians (*Vict. Nat.*, February, 1913, vol. xxix., p. 146, and June, 1914, vol. xxxi., p. 24) that I found myself able in November last to take advantage of a few days' leisure and renew my acquaintance with what has been aptly named "the wild-flower garden of Victoria." Many parts of the Grampians are still unknown to the ordinary tourist, owing to the inaccessible nature of the country and the absence of habitations; but, by making arrangements for camping out, I was able to botanically examine a large area of the Serra Range, with, I think, interesting results.

Leaving Melbourne by the Adelaide express on Friday, 1st November, I stayed overnight at Stawell, and, making an early start on Saturday morning, reached, about noon, the residence at Hall's Gap of my host, Mr. C. W. D'Alton, who is well known in the district, and who takes a keen interest in all botanical matters, more especially the wild-flowers of the Grampians.

Bent on an orchid excursion, we took, after luncheon, an outing in the vicinity of what is known as the "Wild-Flower Garden." Passing through some country which had been recently burnt by a bush fire, some hundreds of tall, erect spikes of *Xanthorrhœa australis*, or Southern Grass-tree, were observed in full bloom. Here we came upon some nice patches of *Caladenia congesta*, the first being a clump of bright bronze colour, the second consisting of fine spikes of ordinary colouring, some of which had the unusual number of six flower-heads. Hereabouts also flourished abundantly *C. Menziesii*, *C. carnea*, *Thelymitra longifolia*, *T. antennifera*, *T. flexuosa*, and *Diuris longifolia*. After crossing a creek we found *Prasophyllum brevifolium*, *Thelymitra pauciflora*, *T. ixioides*, *Microtis porrifolia*, and *Pterostylis nutans*. Advancing into scrubby country, the shrubs attracted our attention for a while. Fine specimens of *Dillwynia hispida*, a very showy and beautiful shrub, also *D. floribunda* and *D. ericifolia*, were met with. Noticeable also were some nice bushes of *Grevillea parviflora*, *G. oleoides*, *Boronia pinnata*, *Conospermum Mitchelli*, *Astrotricha ledifolia*, *Bossiaea cinerea*, var. *rosmarinifolia*, *Pultenaea juniperina*, and *Kunzea parvifolia* just bursting into bloom. Turning westward in the direction of home, we came upon some fine specimens of *Thelymitra epipactoides* about two to three feet in height, bearing large spikes of beautiful

l nish-coloured flowers. This is one of our tallest and most showy orchids. Near here we also obtained specimens of *Calochilus cupreus*, Rogers, and *Caladenia angustata*, Lindl., both of which are new records for Victoria. Following up a ridge covered with ironstone, we passed great quantities of *Gompholobium Huegelii*, in colours yellow and brilliant red, also *Pultenaea humilis* and *Bossia riparia*, both in yellowish shades: the latter is a leafless plant, and usually attains a height of about two feet. While crossing some recently burnt country we collected some fine specimens of *Lyperanthus nigricans* in full bloom, and before reaching home gathered *Caladenia Patersoni*, *C. dilatata*, *Diuris maculata*, *D. sulphurea*, *Glossodia major*, *Prasophyllum australe*, *Calochilus Robertsoni*, *Thelymitra carnea*, *Microtis atrata*, and *Calceana major*, making in all twenty-six species of orchids for the afternoon.

Provisioned with food for a couple of days, we made an early start on Sunday morning for that portion of the Serra Range lying to the south-west of Hall's Gap. The first stage of the journey was *via* the Stony Creek track, past the diggings, during which some fine belts of timber were passed through, comprising *Eucalyptus ovata* and *E. viminalis*. Near Venus's Bath we saw some nice specimens of *Leptospermum lanigerum*, var. *grandifolium*, the white flowers of which were fully an inch in diameter. This shrub, being quick-growing and of handsome appearance, would make a worthy addition to any garden. Other shrubs seen in flower were *Prostanthera rotundifolia*, *Pomaderris clachophylla*, *Pultenaea villosa*, *Indigofera australis*, *Spyridium parviflorum*, var. *hirsutissimum*, *Panax sambucifolius*, *Coprosma hirtella*, *Dodonaea viscosa*, and *Viminaria denudata*. Continuing up the jinker track, a fine view of Mackey's Peak is obtained, and after passing the "Gulf Stream" we came upon a fine patch of *Utricularia dichotoma*, known locally as "Rock Pansies," many of the plants having the unusual number of four, and in some cases five, purple flowers on each stalk. Further on fine specimens of *Boronia polygalifolia*, var. *pubescens*, *Leucopogon glacialis*, *Linum marginale*, *Pseudanthus ovalifolius*, *Spyridium vexilliferum*, *Laxmannia* (*Bartlingia*) *sessiliflora*, *Acacia vomeriformis*, and *Stypanandra glauca*, with its bright blue flowers, were collected. Mr. D'Alton has this plant growing well in his garden at Hall's Gap in three different shades—blue, white, and pink. It is easily grown, and makes a very ornamental plant. Near the entrance to the Grand Canyon we found in flower *Stylidium soboliferum*, peculiar to these parts, also the remarkably handsome orchid *Thelymitra fusco-lutea*. Proceeding along the track, we passed the prettily situated Pansy Fall. At this place the Stony Creek makes its way through a gorge where a number of nice little falls occur.

Hereabouts grew *Prostanthera debilis* and *Bauera sessiliflora*, both peculiar to the Grampians; the latter is a very handsome shrub, with spikes of magenta-coloured flowers, sometimes fully three feet in length. Just below the Turret Falls, which are quite close to the jinker track, beneath some overhanging rocks, some fine bushes of *Prostanthera hirtella* were found. It was too late for blossoms, it having passed that period. Here was seen a fine pair of Black Cockatoos, *Calyptorhynchus funereus*, which had a nest in the hollow of an adjacent tree. The birds were loth to leave their nest, and allowed us to pass within twenty or thirty yards of them. Along the track some good specimens of *Pultenæa styphelioides*, *P. mollis*, *Pimelea ligustrina*, *Caustis pentandra*, *Phyllanthus thymoides*, *Grevillea aquifolium*, *Hakea rostrata*, *Brachycome multifida*, *Stylidium graminifolium*, *Podolepis acuminata*, *Brunonia australis*, and *Viola betonicifolia* were gathered.

Arriving at Stony Creek diggings at mid-day, we boiled the billy and enjoyed our sandwiches. After a short rest, and before leaving, we collected *Pultenæa subumbellata*, *Goodia lotifolia* (locally known as Clover-bush), *Epacris obtusifolia*, *Sambucus Gaudichaudiana*, *Calytrix tetragona*, *Daviesia ulicina*, *Sphærolobium vimineum*, *Pimelea flava*, *P. curviflora*, *Stackhousia flava*, and *Olearia speciosa*, the latter peculiar to these parts. Proceeding on our journey, we travelled in a southerly direction for a couple of miles, gradually working round till we reached the back of Mount Rosea. Having ascended to the top, we were rewarded with a fine view of the Victoria Valley on the one side and Hall's Gap on the other. As the country began to dip towards the Victoria Valley a fine patch of *Melaleuca squamea* in full bloom was met with, and in the gullies below *Bauera sessiliflora* was a magnificent sight. *Grevillea rosmarinifolia*, with its pretty rose-coloured blooms, and *Trymalium Daltoni* were also growing in the gullies; the latter is a very early blooming shrub, and is at its best in July. The four *Brachylomas* native to Victoria were also found growing in this locality; they were *B. ericoides*, *B. daphnoides*, *B. ciliatum*, and *B. depressum*. Following the creek which flows towards the Victoria Valley, we passed large patches of *Pultenæa Benthami*, also *P. rosea*, both of which are peculiar to the Grampians. Some of the latter shrubs were especially fine here, growing to the height of fully eight feet, which is most unusual, as this plant is usually low-growing. Still keeping to the creek, we passed a peculiar rock known as "The Monument," adjacent to which were some fine patches of *Lhotzkya genetylloides*, *Sprengelia incarnata*, *Thryptomene Mitchelliana*, *Melaleuca decussata*, *Calythrix Sullivanii*, *Correa speciosa*, and *Epacris impressa*; the latter was a magnificent

sight, in colours light and dark pink, and I was surprised to find it in profuse bloom at so late a period of the season. Leaving "The Monument" in the rear, the creek increased in size and volume of water, owing to the many tributaries joining it. On the banks was seen *Epacris paludosa*, with its beautiful heads of wax-like flowers, while further down a large patch, some acres in extent, of *Calectasia cyanea*, or what is locally known as "Satin-flower," presented an unusually pretty scene. Its blue flowers are delightfully glossy, and make beautiful bouquets, which last for months. Another attractive feature here was the abundance and variety of *Helichrysums*, the well-known everlasting daisies; the three best noted were *H. Baxteri*, *H. bracteatum*, and *H. Blandowskianum*, the latter being one of the most attractive everlastings. Its clusters of flower-heads are borne on stalks of almost equal whiteness, which make it valued for wedding bouquets and wreaths. Near at hand a fine waterfall was met with, fully a hundred feet in height. Mr. D'Alton was of opinion that this waterfall was not previously known, so we bestowed on it the name of *Calectasia* Fall, in honour of the beautiful plant growing near by. Further afield some very large patches of *Boronia pilosa* in full bloom was passed through, and the strong perfume emitted from this plant, especially when trodden upon, was very noticeable. For the next few miles we passed through very rough, rugged country, which made travelling extremely arduous, and on the way we noticed that the creek we had been following, and which we named *Rosea* Creek, on account of the large quantities of the beautiful *Pultenaea rosea* growing near its source, had been much flooded at some previous time, as in some places the soil had been scoured out completely, while large heaps of *débris* were accumulated along its course. As dusk was drawing near, we decided to camp for the night, and a sheltered spot was chosen. Soon a large fire was blazing, and the billy boiled, and we were very tired and much in need of our evening meal. After partaking of same we proceeded to make things comfortable for the night by strewing ferns and eucalypt branches on the ground, over which we spread our blankets. It was necessary to keep a large fire going all the time, as the night was extremely cold.

Making an early start in the morning, and following the stream downward, rough country was encountered for four or five miles. The water in the creek became much iron-stained, and presented quite a brown appearance. Hereabouts *Humea elegans* grew abundantly, but no flowering specimens of it were available, as it blooms later in the season. When in full bloom it is a very fine sight, its wide-spreading, drooping panicles and innumerable shining, rose-coloured flowers, which

sometimes vary to white, rendering the plant a valuable acquisition in gardens, where it flourishes without any particular attention. *Boronia polygalifolia*, *Scævola æmula*, *Correa æmula*, and *Hakea ulicina* also grew in considerable quantities along the banks of the stream. It is worthy of mention that in this particular locality several shrubs grew larger and more luxuriantly than as usually met with. For instance, *Dillwynia ericifolia* attained a height of fully ten feet, whereas in many districts its usual height is not more than three to four feet. It was quite surprising to see *Micromyrtus microphylla* grown into a large shrub about eight feet in height, this shrub, as a rule, attaining only a couple of feet. *Calythrix Sullivani*, which is a very ornamental shrub, was unusually large and robust, being about twelve feet in height; this shrub is peculiar to the Grampians, and grows readily under cultivation. *Leucopogon thymifolius*, also peculiar to the Grampians, had attained a large size, some plants noted being fully six feet in height, while on Mount William, where it grows abundantly, the average height is about eighteen inches.

As the creek emerged into flat country, nice specimens of *Prostanthera denticulata* were found in different colours—namely, bluish-purple and lilac. Here *Restio tetraphyllus* made its appearance. The scrub hereabouts was almost a tangle, caused by the twiner *Marianthus bignoniaceus* connecting all forms of vegetation. From a spectacular point of view it was most picturesque, with its pretty, bell-shaped, orange flowers showing up well amid the different shades of green. *Veronica Derwentia*, a very graceful shrub, was in full bloom, and its racemes of pure white flowers, a foot in length, were beautiful to behold. Here we left the creek and followed the Serra Range in a northerly direction, travelling through rough country which has seldom been trodden by the foot of man. On the lower stretches of the hills a fine forest of *Acacia mollissima* was passed through, the majority of the trees reaching a height of eighty feet, and in some instances having a diameter of two feet. Travelling was slow here on account of the dense and tall growth of *Banksia marginata*, *Callitris rhombifolia*, *Cassinia aculeata*, and *Acacia verticillata*, while further on *Acacia verniciflua* and *Kunzea parvifolia* occupied acres in extent, the crimson flowers of the latter making a gorgeous sight. Amid this crimson mass it was remarkable to find one bearing white flowers. Advancing into more open country we passed through fine patches of the following heaths, viz.:—*Styphelia adscendens*, *Astroloma conostephioides*, *A. humifusum*, and *A. pinifolium*, in fruit. Several emus were observed feeding on the berries. A little further on we came upon shrubs which had just recently been rooted up (evidently by wild pigs), as the foliage was not at all withered.

From this point we struck out for a track which led from the Victoria Valley round the end of Mount Difficult to Hall's Gap. *En route* nice specimens were collected of *Olearia lepidophylla*, *Brachycome scapiformis*, *Grevillea parviflora*, *Pultenaea laxiflora*, *Stachhouisia viminea*, *Acacia Mitchellii*, *Conosperma calymega*, *C. cricinum*, *Hibbertia virgata*, *H. densiflora*, and *Phebalium pungens*—the latter a very pretty, twiggy shrub, twelve to eighteen inches in height, bearing white, waxy flowers. On previous visits to the Grampians I had not met with this shrub. Orchids growing in rather unusual surroundings were observed. In some instances they were seen growing from the small fissures in the sandstone rock, those noted being *Calochilus Robertsoni*, *Thelymitra antennifera*, *T. longifolia*, *T. ixioides*, *Diuris longifolia*, *Pterostylis longifolia*, *P. barbata*, *P. concinna*, and *Cyrtostylis reniformis*.

Having reached a large, swiftly-flowing creek containing good water, we decided to boil the billy and have lunch, and enjoy a short respite from travelling. Feeling refreshed, we pushed on and negotiated a high ridge, from the top of which a splendid view of the Victoria Valley was obtained. The head waters of the Glenelg River could be traced, running in a north-westerly direction at the start, and finally turning southward after making a circuit of the northern end of the Victoria Range. The principal point of interest from here is the "Asses' Ears"—a bold prominence on the Victoria Range. Continuing from this spot in a northerly direction, some deep and rugged gullies were encountered, the walls of sandstone in some places being almost perpendicular: however, after much difficult climbing, we eventually reached Scrubby Creek. The vegetation along the creek was very luxuriant. Splendid specimens of *Prostanthera lasianthos* and *Pomaderris apetala* attained a height of fully thirty feet, and *Pimelea spathulata*, an elegant shrub in full bloom, made a very effective display with its pretty heads of drooping greenish flowers. The Acacias, *A. melanoxylon*, *A. verniciflua*, and *A. retinodes*, looked particularly well, the foliage being very regular and ornamental, and of a much lighter shade of green than is usually seen. A great variety of ferns flourished along the banks of the stream; splendid masses of *Gleichenia dicarpa* were observed, and *G. flabellata* was particularly fine. *Todea barbara* grew in profusion, and in some places formed close thickets, while *Lomaria discolor*, *L. capensis*, *Aspidium aculeatum*, *Pteris incisa*, also the tree-fern, *Dicksonia antarctica*, with its stately heads of fronds, added beauty to the scene.

Leaving Scrubby Creek, we soon struck the track we were in search of, and started on our homeward journey. Proceeding now under more comfortable circumstances, along the track

was seen a nice display of *Brachycome diversifolia* growing in a grassy flat, and gleaming gold and white in the sunlight. It was noted that in this particular part of the mountains *Grevillea alpina* and *Styphelia adscendens* assumed trailing forms. Journeying along the slopes of Mount Difficult, *Burchardia umbellata*, *Helichrysum apiculatum*, and *H. Baxteri* were met with in great profusion. The beautifully cœrulean blue flowers of *Brunonia australis* made a splendid show. Under cultivation this plant should make an uncommon and very pretty border. As the day was bright and sunny, *Thelymitra antennifera* (one of the sun orchids) was showing to the best advantage. Passing the saddle on Mount Difficult and descending towards Hall's Gap, nice clumps of *Euphrasia collina* (a graceful flower, varying in shades from white to deep lavender), *Stylidium graminifolium* (with long spikes of magenta flowers), *Patersonia longiscapa* (with rich purple blooms), *Hibbertia densiflora* (with yellow blossoms), and *Dianella revoluta* (with bluish flowers) presented a charming effect with the blending of the various colours.

After this long and interesting trip through partly unknown country, and having covered about thirty-five miles of rough, trackless parts in the two days, we arrived home safely, heavily laden with specimens collected and highly pleased with the results of our undertaking.

"IN QUEST OF ORCHIDS."—During the years 1917-18 a series of twenty-three articles, each of over a column in length, appeared under this title in the columns of the *Federal Standard*, published at Chiltern, Victoria. The articles were written in a very interesting and chatty manner, and described in detail the expeditions of the writer in search of orchids in the Cravensville district, which is some thirty miles beyond Tallangatta. Some fifty-three species were collected in the twelve months within a 10-mile radius. This is indeed a very good record for any one locality. These articles form the second comprehensive series on Victorian orchids, the first having been published in vols. i.-iv. of the *Victorian Naturalist* more than thirty years ago, from the pen of Mr. C. French, sen. The present valuable contribution is from the pen of Mr. Arthur B. Braine, head teacher of the State school at Cravensville, and both he and his pupils have done good work in making this orchid survey in the North-East. Mr. Braine is the discoverer of *Chiloglottis Pescottiana*, and he has also recorded the following orchids as new for this State:—*Chiloglottis trapeziforme*, *Thelymitra canaliculata*, *Drakæa Huntiana*, and *Prasophyllum intricatum*. He has also under observation a *Calochilus* which may prove to be a new species.—E. E. PEScott.

ON THE DESTRUCTION OF MUTTON-BIRDS AND
PENGUINS AT PHILLIP ISLAND.

BY JOSEPH GABRIEL.

(Read before the Field Naturalists' Club of Victoria, 10th March, 1919.)

IN January, 1912, in a paper read before this Club (*Vict. Nat.*, xxviii., p. 206, March, 1912), I called attention to the fact that large numbers of Short-tailed Petrels, *Puffinus brevicaudus*, Tem., popularly known as "Mutton-birds," were being destroyed by the presence of barbed-wire fences near their nesting-places, the birds being injured by contact with the fences during their in and out flights.

It is with deep regret that I now have to bring under the notice of members what I consider to be a far greater menace to the birds, and which may lead to their ultimate extermination on Phillip Island—viz., the presence of foxes on the island, and which are rapidly increasing in numbers.

The notes about this latest menace have been supplied to me by my son, Mr. C. J. Gabriel, who learned the facts while spending a holiday on the island during the early part of January. He states that, not trusting to hearsay, he made several visits to the rookeries, and found abundant evidence in support of the statement, as dead birds were lying about in hundreds.

Members will remember that in my paper reference was made to the great mortality which took place among the birds during 1905, and which was afterwards traced to the scarcity of "whale-food" (Pteropoda), said to be the principal food of the birds. In this instance the dead birds were found along the beaches above high-water mark. They numbered many thousands, and were found as far north as Sydney, and in places hundreds of miles away from the rookeries. These birds, when found, had little fat on their bodies. In that year, when on "The Stacks" with the late Mr. H. P. C. Ashworth, of this Club, we saw the birds coming in, and noticed on examination their emaciated condition.

Now, if we examine the dead birds this season, no trace of starvation is apparent—all are plump and well nourished; but we do find marks of foxes' teeth on the heads of a very large proportion of the dead birds.

The following evidence was collected by my son during his brief stay on the island:—

Mr. Redmile, "Lakesyde," Ventnor, said he "had seen, roughly speaking, 400 dead birds lying about, more Mutton-birds than Penguins."

Mr. Gus Smith, Cowes, stated "that foxes started destruction at Smith's Rookery, where the birds cleaned out the burrows

about 15th October, 1918. Hundreds of birds were seen lying about dead near the burrows. The foxes catch them as they go out in the morning. On one track of about ten yards six birds were found which had just been killed. Few birds were eaten, the majority being just pinched at the neck for the purpose of sucking the blood. One day his dog started a fox near his house, which is about four miles from the nearest rookery, when it dropped a Mutton-bird. When examined the bite on the neck of the bird was readily seen." Mr. Smith further stated that the birds carried away from the rookeries are for food for the young foxes.

Mr. G. P. Dixon, Murray's Rookery, and Mr. W. M'Phee, Cowes, both verified these statements, and it was by the latter that the matter was brought under my son's notice. At Mr. M'Phee's invitation he made a visit to Smith's Beach Rookery. Here, to his sorrow, he found abundant evidence of the destruction going on. In ten minutes sixty-five birds were picked up, in all stages of decomposition, and in the case of the fresh birds with the bite on the head distinctly showing.

The photographs on the table, taken by him, will give some idea of the slaughter taking place. The same conditions prevail at the following rookeries, viz. :—Cape Woolamai, The Nobbies, Swan Lake, Murray's, and Forrest's.

I now appeal to the sympathy of my fellow-members. We are faced with the fact that an extremely interesting bird is being destroyed in large numbers, which may lead even to its extermination on the island, where its presence has hitherto been a source of great enjoyment and interest to large numbers of visitors, while the residents in all quarters are deeply concerned at the presence of the foxes.

"Man is a peculiar animal," says Josh Billings. "He eats everything that flies, runs, walks, swims, creeps, wags, or wriggles, and then wonders what is the matter with himself." He has another peculiarity. Wherever he goes he carries one or more plagues with him, eventually to cause himself worry; and the fox, you will agree with me, is the greatest plague of all, for he robs while you are asleep or awake, and kills far more than he ever eats.

Now, can we not, as a Club, do something to lessen this destruction by urging on the proper authorities the great necessity for destroying the foxes on the island? A reward of so much per head would stimulate a number of residents to take up the warfare against the fox who at present are unwilling to give up the necessary time required. The local residents are very keen on the destruction of the animals, as they fear the time will come when both the Mutton-birds and the Penguins will be *non est* so far as Phillip Island is con-

cerned. The fact that foxes in Victoria are more prolific than in England makes the question a very serious one, and one that should be faced without delay.

[The *Argus* of 27th March contained a notification that a reward of one pound per head is to be offered for foxes killed on Phillip Island.—ED. *Vict. Nat.*]

PHYSIOGRAPHY OF THE MELBOURNE DISTRICT.—Readers interested in local physiography will find two useful and well thought out papers in the recently issued part of the Proceedings of the Royal Society of Victoria (vol. xxxi., new series, part i.) They are by Mr. R. A. Keble, on "The Significance of Lava Residuals in the Development of the Western Port and Port Phillip Drainage Systems," and by Dr. C. Fenner, D.Sc., on "The Physiography of the Werribee River Area." In the former the author reconstructs the district before the time of the volcanic activity, showing the supposed position of the valleys afterwards filled up by the lava flows, and then discusses the development of the new streams as shown on our maps of to-day. Dr. Fenner's paper is a very extensive one, and deals minutely with every feature of an area of about 1,500 square miles, and, like Mr. Keble's, is well illustrated with sketch-maps and diagrams. It gives an interest to the Werribee which hardly existed before, and accounts for the sudden and great differences in level which are the main features of the watershed of the Werribee and its tributary streams.

SCENERY PRESERVATION.—In some respects the Government of New Zealand is far ahead of the Commonwealth or any of the State Governments of Australia. It has an eye to the future, and in preserving the scenery will in years to come earn the gratitude of untold generations. The latest report (to 31st March, 1918) on scenery preservation, by the Lands Department of the Dominion, shows that 24 reserves, covering 21,639 acres, were added to the list of such reserves during the previous twelve months. New Zealand now possesses 505 reserves made for scenery preservation, amounting to 305,421 acres. What are we doing in Victoria that future generations may stand on our vantage points and view our landscapes, or wander along our river valleys and enjoy their welcome restfulness, without continually trespassing on private property? Practically nothing. Scenery is an asset to any country, as the United States and New Zealand well know, and we should make the most of what we have, and not allow it to be marred and disfigured by the private individual for his own advantage.

THE

Field Naturalists' Club of Victoria.

FOUNDED MAY, 1880.

➤ MEMBERS, ➤

31st MARCH, 1919

(With Date of Election and particulars of Branch of Study).

HONORARY MEMBERS.

- Oct. 1885 † ATKINSON, E. D., Sulphur Creek, Tasmania.
July 1883 BROUN, CAPTAIN T., Howick, N.Z.
Nov. 1917 FERGUSON, SIR RONALD MUNRO, G.C.M.G., Government House, Melbourne.
Feb. 1893 * † LUCAS, A. H. S., M.A., B.Sc., Grammar School, Sydney, N.S.W.

LIFE MEMBERS.

- Sep. 1884 BAGE, MRS. EDWARD, "Cranford," Fulton-street, E. St. Kilda.
Sep. 1882 PATEY, B. R., Esq., Premier Buildings, Collins-street, M.

ORDINARY MEMBERS.

- Nov. 1916 A'Beckett, Mrs. T. T., Lansdowne-st., St. Kilda
Sept. 1916 Alexander, W. B., M.A., W.A. Museum, Perth Ornith.
Nov. 1913 * Anthony, E. S., Kelburn-street, Caulfield
April 1906 * † Armitage, R. W., M.Sc., Dipl. Ed., F.G.S.,
F.R.G.S., Finch-street, Beechworth ... Biology, Geol.
Jan. 1914 Armytage, E. A., "Holm Park," Beaconsfield
June 1906 † Audas, J. W., F.L.S., F.R.M.S., National
Herbarium, South Yarra ... Botany
Feb. 1904 † Bage, Miss F., M.Sc., F.L.S., Women's Col-
lege, Brisbane, Q. ... General Biol.
Aug. 1889 † Baker, H. H., 78 Swanston-street, Melbourne Microscopy
May 1880 o Bale, W. M., F.R.M.S., Walpole-street, Kew Hydroids
May 1880 o * † Barnard, F. G. A., 167 High-st., Kew ... Ent., Bot. (Ferns)
Sept. 1899 * † Barrett, C. L., *Herald* Office, Melbourne ... Orn. & Reptilia
Oct. 1913 † Bastow, R. A., 575 Sydney-road, Brunswick ... Mosses
May 1906 Bennett, W. J., St. Kilda-road, Melb. ... Geology
Nov. 1914 Beuhne, F. R., Tooborac
May 1880 o * † Best, D., Mountain-grove, Kew ... Ent. (Col.)
Oct. 1916 Blake, A. S., Ivanhoe
May 1918 Bond, P. H., Scotch College, Hawthorn
Nov. 1904 Booth, J., M.C.E., B.Sc., "The Gables,"
Berkeley-street, Hawthorn ... Amphibia
May 1917 Borthwick, A., Dulwich Hill, Sydney, N.S.W.

- June 1911 † Brittlebank, C. C., Government Vegetable Pathologist's Department, Melbourne ... Ent., Botany
- Nov. 1914 Bryant, Miss M., State School, Yarrowonga
- June 1916 † Burns, A., "Lucerne," Lower Ferntree Gully ... Lepid.
- Dec. 1909 Bury, Miss E., "Verona," Argyle-street, St. Kilda
- Oct. 1916 Carter, Miss R., 17 Claremont-cres., Canterbury
- June 1914 † Chandler, L. G., 56 Dixon-street, M. ... Ornith.
- May 1902 *† Chapman, F., A.L.S., F.R.M.S., Nat. Museum, Melbourne ... Geol., Palæon.
- July 1918 Chisholm, Miss R. S., 64 Henry-street, Windsor
- July 1902 Clark, Alister, "Glenara," Bulla ... Ornithology
- Dec. 1908 Clarke, A. Rutter, Collins-street, M.
- Sept. 1916 Clinton, H., 605 Flinders-street, M.
- July 1882 * Coghill, G., 79 Swanston-street, Melbourne ... Botany
- June 1918 Cole, C. E., 39 Wheatland-road, Malvern
- Nov. 1916 Cornthwaite, W., "Alma," Thorpdale S.
- Nov. 1902 Cowle, Miss L., c/o Mr. Priest, Devonport W., Tasmania
- Jan. 1916 Cox, E., 3 Moore-street, Grace Park, Hawthorn
- Dec. 1910 Cronin, John, Botanic Gardens, Melbourne
- Aug. 1905 Cudmore, F., Murphy-street, South Yarra
- May 1917 Currie, Miss C. C., P.O., Lardner
- Aug. 1918 Dakin, E., 91 Mount-street, E. Kew
- Aug. 1915 *† Daley, C., B.A., F.L.S., Clarinda-street, Caulfield
- Dec. 1892 Danks, A. T., Bourke-street, Melbourne
- July 1902 † Davey, H. W., F.E.S., Airdrie-road, E. Malvern
- May 1880 o * Dixon, J. E., 37 Swan-street, Richmond ... Ent. (Col. & Lep.)
- Aug. 1918 † Dodd, F. P., Kuranda, North Queensland ... Entomology
- Nov. 1917 Drake, Dr. W. E., "Woonda Mia," Upper Beaconsfield
- Nov. 1911 Dunn, E. J., F.G.S., Pakington-street, Kew
- Dec. 1915 Eaton, J., 70 Rathmines-street, Fairfield
- July 1917 Eaves, Mrs. S., Inkerman-road, Caulfield
- Dec. 1901 Edmondson, Mrs. C. H., Riversdale-rd., Hawthorn
- Jan. 1914 Ernst, Mrs. O., Wynnstay-crescent, Ivanhoe
- April 1906 *† Ewart, Professor A. J., D.Sc., Ph.D., F.L.S., National Herbarium, South Yarra ... Botany
- Sept. 1917 Exley, H. J., Male-street, Brighton
- May 1911 Firth, J., Briagolong
- June 1918 Firth, J. M., Beech Forest
- Nov. 1916 Fleming, Miss M., State School, Tempy East
- May 1880 o * † French, C., F.E.S., Kooyong-rd., Malvern ... Entomology
- July 1883 *† French, C., jun., Government Entomologist, Flinders-street, M. ... Entomology
- Mar. 1901 Fullard, A. F., Barker's-road, Hawthorn
- Sept. 1914 † Fuller, Miss Amy, 20 Berkeley-street, Hawthorn
- June 1900 † Gabriel, C. J., 293 Victoria-st., Abbotsford ... Marine Conc.
- July 1883 *† Gabriel, J., Walmer-street, Kew ... Oology
- Nov. 1889 Gates, W. F., M.A., Selwyn-street, Canterbury
- Oct. 1880 *† Gatliff, J. H., 5 Fawkner-street, South Yarra ... Marine Conc.
- Aug. 1911 Gill, A. J., State School, Upper Ferntree Gully
- Feb. 1912 Gladman, F. E., Pt. Nepean-road, Elsterwick
- Dec. 1913 *Glance, W., 72 High-street, St. Kilda
- June 1918 Grainger, A. W., West Warburton
- Dec. 1906 Gray, O., Wedderburn, Victoria
- Jan. 1901 Greenwood, G. F., Bank of Victoria, M.
- Oct. 1913 Gregson, J. B., Lands Office, St. Arnaud
- June 1913 Grimwade, W. R., Orrong-road, Torak
- July 1909 *† Haase, J. F., 367A Little Collins-st., Melbourne

- Dec. 1905 *†Hamilton, Jas. T., F.L.S., Heidelberg-road,
Ivanhoe ... Botany, Geol.
- Sept. 1887 Hammet, E. R., 151 Grey-street, E.M.
- Nov. 1901 *†Hardy, A. D., F.L.S., F.R.M.S., Forests } Bot. (Freshwr.
Dept., Melbourne ... } Algæ)
- Oct. 1914 Harris, Capt. W. J., B.A., High School, Kyneton Geology
- June 1912 Harry, W. L. C., Mentone
- Aug. 1887 †Hart, T. S., M.A., School of Mines, Bairnsdale Geology, Bot.
- April 1913 †Harvey, F. I., 33 Aphrasia-street, Bareena
- Dec. 1905 *†Harvey, J. H., A.R.I.V.A., 128 Powlett-st.,
East Melbourne
- Nov. 1916 Hearne, Miss K., 64 College-parade, Kew
- June 1913 Herriot, Sergt. S. T., Glen Waverley
- Jan. 1884 *Hill, G. R., "Glenrowan," Dandenong-road,
Windsor
- June 1916 Hill, Jas., Westell Farm, Kewell
- April 1901 †Hill, J. A., Galton Sth., *via* Lubeck ... Ent., Orn.
- Nov. 1917 Hodgins, B. R., Moreland-road, Essendon
- Sept. 1914 Hollow, J. G., Bamfield-street, Sandringham
- Mar. 1919 Howie, R. A., Powelltown
- June 1918 Hughes, H., 1 Staniland-grove, Elsternwick
- Sept. 1910 Ingle, Daniel, Wiseleigh
- Aug. 1911 James, A., B.A., B.Sc., 70 Ngarveno-street,
Moonee Ponds
- May 1916 Jameson, W. R., B.Sc., 41 Charles-street, Kew
- Jan. 1905 Jeffery, H. W., Cochrane-street, N. Brighton
- Nov. 1918 Jennings, Miss B., 70 High-street, Malvern
- Nov. 1915 Johnson, Miss M. T., 316 Bridge-road, Richmond
- June 1910 Johnstone, J., Suptdt. State Plantations, M. ... Botany
- April 1904 Kaufmann, J. C., LL.D., Princess-street, Kew ... Pond Life, Mic.
- Feb. 1886 *†Keartland, G. A., Cramer-street, Preston ... Ornith., Oology
- July 1911 †Kebble, R. A., Geological Survey Office, Melb.
- Jan. 1918 Keep, A. E., Alma-road, Caulfield
- Nov. 1915 Keep, F., "Mountfield," Canterbury
- July 1908 †Kelly, Reginald, Healesville ... Botany
- July 1918 Kelly, W. T. C., LL.B., 432 Collins-street, M.
- Mar. 1888 *†Kershaw, J. A., F.E.S., National Museum, M. Zoology.
- Nov. 1916 Kershaw, Miss E., State School, Rainbow
- Oct. 1918 King, J. H., Burke-road, E. Malvern
- Nov. 1913 Kinnear, E. H., 18 Aberfeldie-street, Essendon
- Dec. 1915 Kinsella, J. T., 187 Stanley-street, W.M.
- July 1893 †Kitson, A. E., F.G.S., C.B.E., c/o J. S. Kitson,
Continuation School, Melbourne ... Geology
- June 1903 Kitson, J. S., Continuation School, Melbourne ... Geology
- Oct. 1914 Laver, John, 31 Queen-street, M.
- Dec. 1902 *†Leach, J. A., D.Sc., Education Dept., M. ... Biology, Geol.
- May 1903 †Lees, E. H., C.E., F.R.A.S., Fairhaven, Mallacoota
- Oct. 1905 *†Le Souëf, D., C.M.Z.S., Royal Park,
Parkville ... Ornith., Oology
- Nov. 1915 Luher, R. E., 38 Park-street, W. Brunswick ... Geology
- Feb. 1902 Luly, W. H., Spring-street, Preston
- April 1888 †Lyell, G., F.E.S., Gisborne ... Ent. (Lep.)
- Jan. 1918 MacCaskill, A., jun., "Spion Kop," Coleraine
- June 1887 *†Macgillivray, Dr. W., Broken Hill, N.S.W. Ornith., Oology
- June 1915 Mackenzie, M. G., 1 High-street, Prahran
- Nov. 1918 Mackenzie, Miss E. E., Clissold-street, Ballarat
- June 1911 *Mackintosh, W. G., 110 Spencer-st., Melb. ... Microscopy
- June 1904 *McLennan, J. P., School of Horticulture, Burnley Botany
- Aug. 1899 McNab, L. K., "Braeside," Waiora-rd., Caulfield
- April 1917 McPhee, W. D., State School, Rochester

- Dec. 1902 † Madden, Hon. Sir F., Studley Park, Kew
 Nov. 1917 Maher, Rev. A. J., St. George's Vicarage, Wonthaggi ... Botany
- Jan. 1908 † Mahony, D. J., M.Sc., Dept. of Mines, M. ... Geology
 Jan. 1919 Mann, F. W., L.L.B., Walsh-street, South Yarra
 Dec. 1915 Mann, J. G., "Harbury," Frankston
 May 1918 Mann, W., "Rockmount," Narracan
 Sept. 1918 Miller, Wm., St. George's-road, Croxton
 June 1911 Mitchell, C. R., Manningham-street, W. Parkville
 July 1899 Morgan, W. J., 55 McCarron-parade, Essendon
 June 1918 Morris, F. P., 54 Millswyn-street, South Yarra
 July 1918 Morrison, P. C., 1 Bowen-street, Hawthorn
 Oct. 1895 Mowling, G., "Athol," Auburn-road, Hawthorn
 Sept. 1916 Murphy, T. O., Charlton-road, St. Arnaud
 May 1915 Nethercote, C. A., Callantina-road, Hawthorn
 Oct. 1911 † Nethercote, Miss G., Callantina-road, Hawthorn
 April 1903 † Nicholls, Dr. E. B., 164A Victoria-st., North M. Ornithology
 Nov. 1917 Nokes, Miss G., 411 Collins-street, M.
 Dec. 1904 Oke, Chas., 56 Chaucer-street, St. Kilda ... Entomology
 Jan. 1919 Outhwaite, Mrs. M., 789 Malvern-rd., Armadale
 May 1914 Paton, D. J., 80 Anderson-street, Bendigo ... Botany
 April 1918 Perry, Miss E., High School, Geelong
 Dec. 1913 † Pescott, E. E., F.R.H.S., 9 Seymour-grove, Camberwell ... Botany
- Jan. 1918 Philpot, Miss D., Oswald-street, Garden Vale
 May 1880 * † Pitcher, F., Frechencourt, Punt Hill, S. Yarra Botany
 Nov. 1917 Plante, C. C., Glassford-street, Armadale
 Dec. 1914 Plumridge, C. L., Brougham-street, Kew ... Botany
 April 1913 Purnell, A., Talbot-street, Bareena
 May 1892 Quiney, H., Mortlake ... Ornithology
 May 1909 † Raff, Miss J., M.Sc., 169 Royal-parade, Parkville Botany
 Nov. 1917 Reese, Wm., State School, Strathkellar
 Aug. 1908 Robertson, J. L., M.A., 35 Hutcheson-st., Moonee Ponds
- May 1913 Robertson, Miss A. M., Upper Heidelberg-rd., Ivanhoe
 Nov. 1917 Robertson, Wm., Dalmy-road, Murrumbeena
 Dec. 1916 Robinson, J., Ormond Plant Farm, Ormond
 Jan. 1903 * Roger, W. H. A., National Bank, Swan-street, Richmond ... Ent. (Lep.)
- May 1904 Rollo, Miss J., 65 Tivoli-road, South Yarra
 Nov. 1915 Römcke, Otto, Woodstock-street, Canterbury
 Mar. 1899 Ross, J. Nanneella Estate, Rochester
 Jan. 1910 Ryan, Dr. E., Collins-street, Melbourne
 Aug. 1916 Sachs, Mrs. W., 70 High-street, Malvern
 May 1918 Savige, T. S., Narracan East
 Jan. 1909 Scott, Alex. L., 13 Gisborne-street, Elsternwick Geology
 Nov. 1885 Scott, W., Barnshaw, Emerald
 July 1885 * † Searle, J., 274 Collins-street, Melbourne ... Entomotraca
 Oct. 1909 Semple, Dr. W. H., Kilmore
 Sept. 1910 Shaw, Dr. A. E., F.E.S., Wynnum Sth., Brisbane, Q. ... Entomology
- May 1889 * † Shephard, J., Clarke-st., South Melbourne ... Pond life
 July 1884 * Simson, Mrs. J., "Trawalla," Toorak
 July 1917 Sincock, Miss J. F., 82 Barkly-st., E. Brunswick
 Mch. 1917 Singleton, F. A., 126 Anderson-st., South Yarra Geology
 May 1905 Skeats, Professor E. W., D.Sc., Univ., Carlton ... Geology
 May 1880 * † Sloane, T. G., "Moorilla," Young, N.S.W. Ent. (Col.)
 April 1914 Smith, F. S., Noorat ... Ornithology
 July 1910 Smith, Sydney, Hawson-avenue, Glenhuntly

- Dec. 1901 Somers, Dr. J. E., Mornington
 April 1916 Spencer, Lady Baldwin, Clyde House, 182 Collins-street, M.
 Aug. 1887 *† Spencer, Professor Sir W. Baldwin, K.C.M.G., D.Sc., M.A., F.R.S., University, Carlton ... Biol., Zoology
 Feb. 1882 † Spry, F., Heather-street, South Melbourne ... Entomology
 Nov. 1908 *† St. John, P. R. H., Bot. Gardens, South Yarra Botany
 Nov. 1916 Stamper, C., 17 Chapman-street, N.M.
 Oct. 1914 Stenning, Dr. A. E., B.Sc., 16 Pratt-street, Moonee Ponds
 Jan. 1908 Stephen, W. J., 28 Robinson's-road, Hawthorn
 Nov. 1880 † Stickland, J., 20 Latrobe-street, Melbourne ... Pond life
 July 1885 * † Stickland, W., Thomas-street, Black Rock ... Pond life
 Nov. 1916 Suding, Miss M. G., Main-street, Bairnsdale
 Oct. 1918 Sutherland, F. B., Vauxhall-road, Canterbury
 Nov. 1900 *† Sutton, Dr. C. S., Rathdown-street, N. Carlton Botany
 May 1910 Sutton, Dr. Harvey, Education Dept., Melbourne
 July 1886 *† Sweet, G., F.G.S., "The Close," Wilson-st., Brunswick ... Geology
 Jan. 1911 † Sweet, Miss G., D.Sc., Melbourne University
 Mar. 1918 † Taylor, Griffith, D.Sc., B.E., B.A., F.G.S., Commonwealth Bureau Meteorology, M.
 July 1910 Templeton, Mrs. J. M., George-street, E.M.
 Oct. 1909 Thiele, E. F., Tally Ho ... Ornithology
 Sept. 1916 Thomas, J. F., Tenterfield, N.S.W.
 Feb. 1904 Thomson, Dr. J. R. M., Lismore, N.S.W.
 Aug. 1918 Thorn, L., 69 Wattletree-road, Malvern ... Entomology
 Sept. 1900 † Thorn, W., 29 Chrystabel-crescent, Hawthorn
 April 1883 *† Topp, C. A., M.A., LL.B., I.S.O., Royal-crescent, Armadale ... Botany
 Aug. 1907 *† Tovey, J. R., National Herbarium, South Yarra Botany
 June 1904 Turner, Miss E. J., "The Grange," Domain-rd., South Yarra
 Jan. 1910 Twyford, J., Noel-street, Ivanhoe ... Microscopy
 July 1917 Van Cooth, J., Wattletree-road, E. Malvern
 Dec. 1916 Vincent, C., Barkly-street, St. Kilda
 Feb. 1916 Vroland, A., State School, Elmore
 Nov. 1891 Walker, J. B., Bourke-street, Melbourne
 June 1904 † Waterhouse, G. A., B.Sc., F.E.S., Moore-street, Sydney, N.S.W. ... Ent. (Lep.)
 May 1914 Webb, W. E. 430 Chancery-lane, M.
 May 1906 Wettenhall, Dr. R., University Club, 80 Swanston-street, M.
 Nov. 1916 White, H. L., Belltrees, Scone, N.S.W. ... Ornithology
 April 1913 Whitmore, H., 8 Trafalgar-road, Camberwell
 Sept. 1898 Wilcox, J., 51 Brinsley-road, E. Camberwell
 Jan. 1901 † Williamson, H. B., 11 Waverley-rd., Caulfield E. Botany
 Dec. 1917 Wilson, F. E., Darling-road, East Malvern ... Ornithology
 July 1904 Wilson, J., Moorabbin Pharmacy, Cheltenham
 Aug. 1912 Wise, Miss M. I., Foster-street, Sale
 May 1880 o*† Wisewould, F., Imperial Chambers, 408 Collins-street, Melbourne
 May 1916 Young, J. H., Meredith

REFERENCES.

o Signifies "Original Members," elected May, 1880.

* ,, Members who have held office.

† ,, Members who have contributed Papers at the meetings.

M. Signifies Address—Melbourne ; S.M., South Melbourne ; E.M., East Melbourne.

Ent.	„	Entomology ; Col., Coleoptera ; Lep., Lepidoptera.
Orn.	„	Ornithology ; Ool., Oology.
Geol.	„	Geology.
Bot.	„	Botany.
Conch.	„	Conchology.

ASSOCIATES.

A'Beckett, T. L.	Glance, Karl A.	Le Souëf, Cecil
Dickison, D.	Hearn, Alice	Morris, Gerald J.
Dennett, Alex. H.	Hearn, Elsie	Southby, D. O.

List of Journals to which the Club Subscribes.

Annals and Magazine of Natural History.
 Entomologists' Monthly Magazine.
 Geological Magazine.
 Journal of the Royal Microscopical Society.
 Zoologist.

List of Publications which the Club Receives in Exchange.

VICTORIA—

Publications of National Museum, Melbourne.
 „ Government Botanist, Melbourne.
 „ Department of Mines and Water Supply, Melbourne.
 „ „ Agriculture, Melbourne.
 Transactions and Proceedings of Royal Society of Victoria, Melbourne.
 Transactions and Proceedings of Royal Geographical Society (Victorian Branch).
 The Emu: the Journal of the Royal Australasian Ornithologists' Union.
 The Geelong Naturalist (Geelong Field Naturalists' Club).

NEW SOUTH WALES—

Publications of the Department of Mines and Agriculture.
 „ Department of Fisheries.
 „ Government Botanist, Sydney.
 „ Australian Museum, Sydney.
 „ Australasian Association for Advancement of Science.
 „ Technological Museum, Sydney.
 Journal and Proceedings of Royal Society of New South Wales.
 Proceedings of the Linnean Society of New South Wales.
 The Australian Naturalist (New South Wales Naturalists' Club, Sydney)

QUEENSLAND—

Publications of the Department of Agriculture.
 Proceedings of the Royal Society of Queensland.
 The Queensland Naturalist (Brisbane Field Naturalists' Club).

SOUTH AUSTRALIA—

Proceedings of Royal Society of South Australia.

TASMANIA—

Papers and Proceedings of Royal Society of Tasmania.

The Tasmanian Naturalist (Tasmanian Field Naturalists' Club, Hobart).

WESTERN AUSTRALIA—

Records of the Western Australian Museum, Perth.

Proceedings of the Royal Society of Western Australia, Perth.

NEW ZEALAND—

Transactions of the New Zealand Institute, Wellington.

Records of the Canterbury Museum, Christchurch.

GREAT BRITAIN—

The Selborne Magazine : the organ of the Selborne Society, London.

Bulletin of Miscellaneous Information, Royal Botanic Gardens, Kew

United Empire : the Journal of the Royal Colonial Institute, London.

The Austral Avian Record (London).

Journal of the Quekett Microscopical Club, London.

EUROPE—

Mitteilungen aus dem Naturhistorischen Museum, Hamburg.

Bulletin of the Geological Institute, University of Upsala, Sweden.

ASIA—

Annotationes Zoologicae Japonensis (Tokyo Zoological Society, Japan).

NORTH AMERICA—

Transactions of the Nova Scotia Institute.

UNITED STATES—

Publications of the Smithsonian Institute, Washington, U.S.A.

Publications of the American Museum of Natural History, New York.

Proceedings of the Academy of Natural Sciences, Philadelphia.

Proceedings of the Boston Natural History Society.

Publications of the Field Columbian Museum, Chicago.

Publications of the Missouri Botanical Gardens, St. Louis, Mo.

Transactions of the Wisconsin Academy.

Bulletin of the Buffalo Society of Natural Science.

Bulletin of the Wilson Ornithological Club, Oberlin, Ohio.

Minnesota Botanical Studies, University, Minnesota.

Publications of the University of California, Cal.

Pomona Journal of Entomology, Pomona College, Claremont, Cal.

Publications of the Lloyd Library, Cincinnati, O.

Proceedings Hawaiian Entomological Society.

SOUTH AMERICA—

Revista do Museo Paulista, S. Paulo, Brazil.

T H E

Field Naturalists' Club of Victoria.

FOUNDED MAY, 1880.

OFFICE-BEARERS, 1918-1919.

President :

MR. A. D. HARDY, F.L.S., F.R.M.S.

Vice-Presidents :

MR. F. CHAPMAN, A.L.S. ; MR. J. GABRIEL.

Hon. Treasurer :

MR. G. COGHILL, 79 Swanston-street (Tel. Cent. 2794)

Hon. Librarian :

MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Secretary :

MR. E. S. ANTHONY, Kelburn-street, Caulfield.

Hon. Assist. Secretary and Librarian :

MR. W. GLANCE, Raleigh-street, Windsor.

Hon. Editor of the "Victorian Naturalist" :

MR. F. G. A. BARNARD, 167 High-street, Kew (Tel., Hawthorn, 443).

Committee :

MR. C. DALEY, B.A., F.L.S., MR. J. A. KERSHAW, F.E.S., MR. F. PITCHER, MR. J. SEARLE, DR. C. S. SUTTON.

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.

Field Naturalists' Club of Victoria.

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston-street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn-street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

Easter Excursion.—The projected visit to Geelong for the Easter holidays has been abandoned owing to insufficient names being received for the excursion. The Leader hopes to announce an alternative one-day excursion at the April Monthly Meeting.

ANNUAL EXHIBITION, 9th June 1919.

EXHIBITION OF NATURAL HISTORY SPECIMENS.

In connection with the Club's Annual Meeting, it has been arranged to hold an Exhibition of Natural History Specimens on the lines so successfully adopted last year. The following members have been appointed to take charge of the respective sections concerned. All members are asked to assist and to get into communication with the leader of the section in which they propose to exhibit:—

Botany.—Messrs. F. Pitcher and H. B. Williamson.

Conchology.—Mr. J. Gabriel.

Entomology.—Mr. F. G. A. Barnard.

Ethnology.—Mr. E. S. Anthony.

Forestry.—Mr. A. D. Hardy, F.L.S.

General Zoology.—Mr. J. A. Kershaw, F.E.S.

Geology.—Messrs. F. Chapman A.L.S. and C. Daley, F.L.S.

Microscopy.—Mr. J. Searle.

Ornithology.—Messrs. J. A. Kershaw, F.E.S. and G. A. Keartland.

Physiography.—Dr. Griffith Taylor.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ½ inch.
1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 18, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.

THE VICTORIAN NATURALIST.

VOL. XXXVI., 1919-20.

THE
VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

VOL. XXXVI.

MAY, 1919, TO APRIL, 1920.

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

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

Melbourne:

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE-STREET

1920.

THE VICTORIAN NATURALIST.

VOL. XXXVI.

MAY, 1919, to APRIL, 1920.

CONTENTS.

FIELD NATURALISTS' CLUB OF VICTORIA :—		PAGE
Annual Report	- - - - -	42
Exhibition of Wild-flowers	- - - - -	98, 105, 136
Proceedings	1, 21, 41, 53, 65, 81, 97, 109, 121, 133, 149, 161	
Reports of Excursions	1, 3, 41, 53, 58, 65, 81, 100, 109, 114, 116, 121, 124, 136, 149, 153, 161	
ORIGINAL PAPERS.		
BARNARD, F. G. A.—Notes of a Visit to Western Australia	- - - - -	24
BOOTH, J., M.C.E., B.Sc.—About "Pet Peter," a Flying Phalanger	- - - - -	49
CURRIE, MISS C. C.—The Birds of a Gippsland Garden	-	85
DALEY, C., B.A., F.L.S.—At Wartook (Grampians)	-	141
GOUDIE, J. C.—Notes on the Coleoptera of North-Western Victoria : Part VII.	- - - - -	117
LUCAS, A. H. S., M.A., B.Sc.—A Week Among the Sea-weeds at Portsea	- - - - -	60
LUCAS, A. H. S., M.A., B.Sc.—Ferns Grown in the Open	-	89
NETHERCOTE, MISS G.—A Girls' Camp at the National Park (Wilson's Promontory)	- - - - -	126
SEARLE, J.—The Gleanings of a City Naturalist	-	71
TAYLOR, GRIFFITH, D.Sc., B.E.—A Scientist in Antarctica	-	5
WEINDORFER, G., and FRANCIS, G.—Wild Life in Tasmania	- - - - -	157, 165
WILLIAMSON, H. B.—Notes on the Census of Victorian Plants	- - - - -	11

INDEX.

	PAGE		PAGE
Abnormal Tadpoles -	118	Evelyn, Excursion to -	109
Antarctic, A Scientist in	5	Exhibition of Wild-flowers	98, 105, 136
<i>Astur clarus</i> -	54	Ferns Grown in Open	83, 89
At Wartook Grampians	111	Field Naturalists' Club of	
Audas, J. W.—Through		Victoria—	
the Murra Murra		Annual Report -	42
Country Western		Excursions—	
Grampians -	163	Alphington -	100
<i>Austral Avian Record</i>	147	Beaumaris -	1, 49
Australian Trees and		Belgrave -	138
Shrubs -	23	Bendigo -	100
Australian Wattles -	59	Cheltenham -	81
Barnard, F. G. A.—A		Eltham and St.	
Visit to Western		Helena -	109, 114
Australia -	24	Emerald -	109, 124
Beaumaris, Excursion to	1	Emerald Beaconfield	100
Belgrave, Excursion to	138	Evelyn -	109
Bell-bird and Bell Miner	67	Evelyn to Montrose -	41
Bendigo, Excursion to	100	Fitzroy Gardens	121, 136
Birds of Gippsland Garden	66	Frankston -	121
Booth, J.—About Pet		Geological Museum -	41
Peter, a Flying Pha-		Hurst Bridge -	65
langer -	22, 49	Loch Valley -	153
<i>Boronia anemonifolia</i>	101, 102	Macedon -	1
Butterfly, Australian Ad-		Melton -	161
miral -	68	Mont Albert and Bal-	
<i>Caladenia dilatata</i> (white)	100	wyn -	109, 116
<i>Cassutha melantha</i> -	112	National Museum :	
Census of Victorian		Ethnology -	53
Plants -	2, 11	Richmond Quarries -	3
Cheltenham, Excursion to	81	Ringwood -	81
Chlamydopsis, A Rare		Studley Park -	41, 58
Beetle -	123	Sydenham -	149
Coleoptera of N.W. Vic-		Zoological Gardens -	161
teria -	117	Exhibition of Wild-flowers	
<i>Cryptandra anara</i> -	102	98, 105, 136	
Cudmore, Mr. F. A. -	65	Financial Statement -	46
Currie, Miss—Birds of a		Office-bearers, 1919-20 -	48
Gippsland Garden -	66	Proceedings, 1, 21, 41, 53,	
Daley, C.—At Wartook	111	65, 81, 97, 109, 121, 133,	
<i>Dicksonia antarctica</i> -	54	149, 161	
Dodder-Laurel -	112	Fish Remains of New Zea-	
Edwardes Park -	54	land -	108
Eltham and St. Helena,		Fisheries, Report on Vic-	
Excursion to -	109, 114	torian -	57
Emerald, Excursion to	109, 124	Fitzroy Gardens, Excur-	
<i>Erythraea australis</i> -	82	sion to -	121, 136
Ethnology -	53	Flowers, Bendigo -	103
Evelyn-Montrose, Excur-		Fossil Bluff, A -	168
sion to -	41		

	PAGE		PAGE
Fossils from South Aus- tralia - - -	66, 88	<i>Phascolomys ursinus</i> , var. <i>tasmaniensis</i> - -	158
Frankston, Excursion to -	121	Phosphorescence in Insects	55
Fungus, The Luminous -	2	<i>Pleurotus candescens</i> -	2
Geelong Field Naturalists' Club - - -	132	Portsea, Among Seaweeds at - - -	60
Geological Museum, Visit to - - -	41	Queensland's National Park	20
Gippsland Birds - - -	66	Richmond Quarries, Ex- cursion to - - -	3
Gleanings of a City Naturalist - -	54, 71	Ringwood, Excursion to -	81
Goshawk, Grey-backed -	54	<i>Ruppia maritima</i> - -	69
Gouldie, J. C.—Coleoptera of N.W. Victoria -	117	<i>Science and Industry</i> -	52
Grampians, At Wartook -	111	Sea Tassel, Growth of -	69
Grampians, The Western -	163	Searle, J.—Gleanings of a City Naturalist	54, 71
Green Mountains, The -	20	Seaweeds at Portsea	21, 60
<i>Haloniscus searlei</i> - -	59	<i>Selaginella s'olonifera</i> -	151
Holiday Rambles - -	150	Shearsby, A. J.—Travertin near Yass, N.S.W. -	162
<i>Hovea heterophylla</i> - -	82	Snail, Food of Black -	134
"In Australian Wilds" -	96	Spencer, Retirement of Professor - - -	110
Isopod, A New - - -	59	Studley Park, Excursion to - - -	41, 58
Lake Corangamite, &c., Map of - - -	132	Sutton, C. S.—On the Growth of the Sea Tassel - - -	69
Loch Valley, Excursion to	133, 153	Sweet, The late Mr. George	164
Loch Valley, The - - -	19	Table Cape, Tas. - -	168
Lucas, A. H. S.—Ferns Grown in the Open	83, 89	Tadpoles, Abnormal -	148
Lucas, A. H. S.—Seaweeds at Portsea - -	21, 60	Tasmania, Wild Life in	157, 165
Luminous Fungus - -	2	Taylor, Griffith—A Scient- ist in the Antarctic -	5
Macedon, Excursion to -	1	<i>The Gum Tree</i> - - -	132
Macgillivray, Major Dr. -	53	Travertin near Yass, N.S.W. - - -	162
<i>Macropus ruficollis</i> , var. <i>bennetti</i> - - -	167	Wallaby, Bennett's - -	167
Map—Corangamite, &c. -	132	Wattles, Australian - -	59
Melbourne Zoo, The -	108	Weindorfer, G., and Fran- cis, G.—Wild Life in Tasmania	122, 134, 157, 165
Mont Albert and Balwyn, Excursion to -	109, 116	Western Australia, Visit to	24
Mount Horsfall - - -	155	White Flowers - - -	82
Mundaring Weir, W.A. -	31	Wild Life in Tasmania	122, 134, 157, 165
Musical Sands - - -	151	Wombat, The Tasmanian	158, 165
National Museum, Visit to	53	Williamson, H. B.—Notes on the Census of Vic- torian Plants -	2, 11
National Parks	20, 126, 160	Wilson's Promontory, A Girls' Camp at - -	126
Nethercote, Miss G.—A Week at National Park - - -	99, 126	Yallingup Cave, W.A. -	33
New Zealand, Fossil Fish Remains of - - -	108	Zoo, The Melbourne	108
Patey, The late Mr. B. R.	48		
<i>Petaurus breviceps</i> - -	22, 49		
Phalanger, The Lesser Flying - - -	22, 49		

ILLUSTRATION.

Growth of Sea Tassel	-	-	-	-	-	PAGE 70
----------------------	---	---	---	---	---	------------

ERRATA.

- Page 66, line 24— For “ Croydon ” read “ the Abattoirs.”
- Page 68, line 7 from bottom—For “ Croydon ” read “ the Abattoirs.” (See note on page 88.)
- Page 86, line 6—For “ acacia seeds ” read “ insects.” (See explanation on page 88.)
- Page 97, line 10 from bottom— For “ Bell Miners ” read “ Bell-birds.”
- Page 104, last line—For “ *Hakea rigida* ” read “ *H. rugosa*.” (See text, page 103.)
- Page 107— In second paragraph, insert “ Mr. F. Keep, Mountfield, Canterbury.”
- Page 132, line 5— For “ *Arthrotaxis* ” read “ *Athrotaxis*.”
- Page 135, line 12—Delete words “ long mistaken for an insect.”
- Page 142, line 21 For “ *myrsinoides* ” read “ *lanigerum*.”



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 8th May, 1919.

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

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

CONTENTS :

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	1
EXCURSION TO RICHMOND QUARRIES	4
A SCIENTIST IN THE ANTARCTIC. BY DR. GRIFFITH TAYLOR, B.E., B.A., F.G.S., F.R.G.S.	5
NOTES ON THE CENSUS OF VICTORIAN PLANTS. BY H. B. WILLIAMSON	11
NOTES	19, 20

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST 1½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 12th MAY, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—

Mr. J. G. Thompson,
16 Collins Street,
Melbourne.

PROPOSER.

Mr. C. C. Plante.

SECONDER.

Mr. F. G. A. Barnard.

4. General Business.

Election of two Auditors.

Nominations (in writing) of Office-Bearers for 1919-20.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

(1) "A Week among the Seaweeds at Portsea." By Mr. A. H. Lucas, M.A., B.Sc.

(2) "About Pet Peter—a Flying Phalanger." By Mr. J. Booth, M.C.E., B.Sc.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

FINANCIAL YEAR.

The Club Year closed on 30th April. Any unpaid subscriptions should be forwarded to the Hon. Treasurer AT ONCE. Subscriptions for 1919-20 became due on 1st May, and must be paid on or before 16th June in order to qualify for voting at the Annual Meeting on that date.

The Victorian Naturalist.

VOL. XXXVI.—No. 1.

MAY 8, 1919.

No. 425.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th April, 1919.

Mr. J. Gabriel, one of the vice-presidents, occupied the chair, and about forty-five members and visitors were present.

CORRESPONDENCE.

From the Chief Secretary, in appreciation of the Club's congratulatory motion and letter on the firm attitude taken by him with respect to the recent attempt to vary the quail season.

REPORTS.

In the absence of the leader, Mr. A. D. Hardy, F.L.S., a report of the excursion to Macedon on Saturday, 22nd March, was given by Mr. F. G. A. Barnard, who said that about ten members had proceeded to Macedon by the first train and then driven to Upper Macedon, where, after morning tea, the grounds of Government Cottage were inspected, and several rare specimen trees and shrubs seen. The members then proceeded through the pine plantation of the Forest Department to the top of the range, about 3,000 feet above sea-level; thence tracks were followed to Taylor and Sangster's nursery, where the manager pointed out a number of plants which do well only in the higher elevations. Many of the specimen trees were conspicuous by the autumn tints of their foliage. After-noon tea was taken at "Rosebank," and the party returned to town by the 6 p.m. train.

A report of the excursion to Beaumaris on Saturday, 27th March, was given by the leader, Mr. J. Shephard, who said that about a dozen members, together with some members of the Microscopical Society, had taken part in the outing, which was favoured by fine weather and a suitable tide. Since the last excursion to the locality the electric tram, which covers part of the distance, had been opened, rendering Beaumaris more easy of access. A number of marine worms, polyclads, and nereids had been obtained, also calcareous sponges, of which details would be published later.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. G. P. Webb, Canterbury-road, Canterbury, was duly elected a member of the Club.

REMARKS ON EXHIBITS.

Mr. H. B. Williamson called attention to a number of specimens of the luminous fungus, *Pleurotus candescens*, collected at Clayton, and exhibited their phosphorescent character by affixing them to the blackboard and then turning off the lights for a short time.

DISCUSSION ON PAPER.

The chairman said that the discussion on Mr. Barnard's paper on Western Australia, postponed from last meeting, would then be taken.

Mr. H. B. Williamson asked for information *re* the Sandalwood, which had not been mentioned in the paper. Mr. Barnard said that he had not met with the tree in the parts he had visited, and believed it had a more northerly habitat. Mr. Anthony asked if there was any reason for the paucity of species of ferns recorded for Western Australia. Mr. Barnard said that he could not understand why ferns were not more numerous in the south-west, seeing that the average rainfall was as large as that of the fern gullies of Victoria. Mr. Best asked if there was any accommodation for travellers between Port Augusta and Kalgoorlie. The author replied that Tarcoola seemed to be the only place where there were other houses than those of the railway *employés*.

PAPER READ.

By Mr. H. B. Williamson, entitled "Notes on the Census of Victorian Plants."

The author remarked that for some time he had been of opinion that a number of plants listed in the "Key to the System of Victorian Plants" had not been collected in Victoria, and said that recently he had been given the opportunity of examining certain species at the National Herbarium, which had convinced him that a number of plants were regarded as Victorian on insufficient data, arising mainly from indefiniteness in recording the locality where found. He furnished lists of about 180 species regarding which he considered further information should be sought, and, if possible, undoubted Victorian specimens collected.

Mr. J. Shephard emphasized the author's remarks regarding the correct naming of specimens exhibited or mentioned in reports of Club excursions.

Mr. E. E. Pescott, F.L.S., said that he thought deletions from the list should be made with great caution.

Mr. F. Pitcher, as a member of the Plant Names Committee, considered that the paper would prove very useful to the

committee, and said that he was not in accord with the author when he suggested that because only one specimen of a plant had been found in Victoria such a plant should not appear in the Victorian list.

Mr. P. R. H. St. John also congratulated the author on his good work. He regarded correctness of records as of the utmost importance. He had on one or two occasions called attention to doubtful records in excursion reports.

Mr. J. Searle would not refuse to recognize a plant as Victorian because it had been found in only one locality, and instanced a case in point.

Owing to the lateness of the hour it was decided to postpone the paper by Mr. A. H. S. Lucas, M.A., entitled "A Week Among the Seaweeds at Portsea," until next meeting.

EXHIBITS.

By Mr. C. F. Cole.—Australian Coleoptera from various localities.

By Miss C. C. Currie.—Flowering specimens of various eucalypts, including *E. pilularis*, which had proved a great attraction to Honey-eaters and other birds recently, from Lardner, Gippsland.

By Miss Amy Fuller.—Botanical specimens (undetermined) from sand plains of South-West Australia.

By Mr. C. J. Gabriel.—Marine shells from South Australia: *Stenochiton cymodocealis*, Ashby, and *S. juloides*, Ad. and Ang., with their host plants, *Cymodocea antarctica* and *Posidonia australis* respectively.

By Miss G. Nethercote.—A young Koala or Native Bear from Wilson's Promontory, kept by permission of the Fisheries and Game Department.

By Miss G. Nokes.—Large specimen of the luminous fungus, *Pleurotus candescens*, from Sandringham.

By Messrs. E. E. Pescott and C. French, jun.—Terrestrial orchids: *Diuris longifolia*, R. Br., collected by Rev. A. J. Maher at Cann River, East Gippsland (these specimens have purplish markings, causing the flowers to resemble those of *D. maculata*, Smith); and *Prasophyllum Archeri*, Hook. f., collected by Mr. J. E. Dixon at Warburton, April, 1919.

By Mr. J. Searle.—Crustaceans and polychæte worms, collected on Portarlington excursion, January, 1919; marine worms, &c., collected on Beaumaris excursion, March, 1919.

By Mr. H. B. Williamson.—Specimens of luminous fungus, *Pleurotus candescens*, collected at Clayton by Miss L. Audsley.

By Mr. F. Wisewould.—Fresh specimens of orchid, *Eriochilus autumnalis*, and Native Heath, *Epacris impressa* (crimson variety), from Pakenham Upper.

After the usual conversazione the meeting terminated.

EXCURSION TO RICHMOND QUARRIES.

THE excursion to Richmond quarries on Saturday, 22nd February, announced for aquatic zoology and geology, was attended by about a dozen members, who were favoured with a pleasant afternoon. It was found that by the cessation of quarrying the holes had become filled with water to a greater depth than usual, and consequently the shallow pools, which were usually so prolific with minute life, had disappeared, and with them the unique alga, *Monostroma expansa*, West, which has been found nowhere else. A very uncommon and interesting phenomenon, known as plastogamy, was seen in the heliozoan *Actinophrys sol*, of which many groups of two, and others up to eight in number, were seen uniting. Diatoms were found in myriads, apparently of about six species, including *Bacillaria paradoxa*, which never fails to excite interest, on account of its extraordinary powers of movement. Among other forms found were the protozoans, *Arcella*, sp., *Astasia tricophora*, *Vorticella*, sp., *Pyxicola*, sp., *Vaginicola*, sp., *Urocentrum turbo*, and *Trachelocera olor*. Among the rotifers were *Floscularia ornata*, *Pterodina patina*, *Rotifer vulgaris*, and *Brachionus*, sp. Entomostraca were conspicuous by their absence. Those who were interested in the geology of the locality were somewhat disappointed to find that on the side nearest the railway quantities of rubbish are being deposited with the view of in time filling up the excavations. The quarries nearer the Yarra are, however, still fruitful of interest to the observer, and an effort should be made rather to beautify them for the sake of the geological features which they possess. To the geologist the basaltic flow exhibits several instructive features, the result of variable cooling, tabular blocks, columns, and concentric masses being easily apparent, whilst on the face of the quarries the weathering effects of atmospheric and chemical agencies are seen in the gradual passage of dense basalt upward to the derived clay or bleached product of disintegration. A pleasing feature of the quarries was the number of aquatic birds in the water, seemingly quite at home. About a dozen Black Swans and a small flock of Australian Coots swam about. Several Black and one or two Black and White Cormorants flew restlessly from place to place. Other birds were a Tippet Grebe and a Little Grebe, ceaselessly diving and reappearing, while a Silver Gull completed the feathered company. The birds seemed by their habits to be unmolested. If the quarries are falling into disuse, as appears to be the case, those adjoining the river, containing a considerable expanse of water, could with advantage be reserved for recreative purposes and as a sanctuary for water birds.—J. STICKLAND, J. WILCOX, and C. DALEY.

A SCIENTIST IN THE ANTARCTIC.

BY DR. GRIFFITH TAYLOR, B.E., B.A., F.G.S., F.R.G.S.,
Physiographer, Commonwealth Bureau of Meteorology.

(*Read before the Field Naturalists' Club of Victoria, 11th Nov., 1918.*)

CAPTAIN Scott's last expedition left New Zealand on the 26th November, 1910. Dr. E. A. Wilson, already known for his Antarctic labours, was chief of the scientific staff, which contained four other scientists from Cambridge. Dr. Simpson, from India, was in charge of the meteorology, while there were three geologists, five biologists, and a physicist in the expedition. Most of the naval officers also took a great interest in the scientific work, and our leader himself was a keen student of the chief features of the Antarctic environment, as his paper on the Ice Barrier (for the Royal Geographical Society) clearly shows.

On the voyage to Cape Evans—which occupied five weeks—the biologists were perhaps the busiest scientists. But the study of the bergs and floe ice, together with the sounding work, gave the geologists much to do. The bergs were driven by the blizzards farther north than the floe ice. They were usually huge tabular sheets torn off from the Great Barrier; but irregular or pinnacled bergs were not uncommon, and these were derived partly from glacier snouts and partly from disintegrated barrier bergs. One of the most interesting was about a mile long, and had originally been tabular. All along the face were enormous vertical joints, broadening into sea-caves below. These had split the berg into columns, so that it was wonderful how it held together; but probably the portion under water had not been eroded by the waves, and still remained fairly solid. At each end was an isolated pillar, a hundred feet away from the main mass, and over a hundred feet high. It exactly resembled the classic geological example of weathering known as "The Old Man of Hoy."

We were imprisoned in pack ice for nearly three weeks, and here made acquaintance with some of the characteristic Antarctic fauna. Snow-Petrels and other sea-birds flew around the rigging, and were occasionally caught by Wilson and Cherry-Garrard in loose snares. Others were shot and retrieved in the dinghy. It was queer work navigating the floes. Many were too slushy to stand on and yet too solid to admit of the boat's passage, so that some of our specimens were perforce abandoned. A few crab-eater seals were shot, and we found it a laborious job to get their heavy, unmanageable carcasses aboard. They live on small crustacea chiefly, and their ferocious-looking fanged teeth act only as sifters to free the shrimps from the water; they are, therefore, in function, akin to the whale's baleen. Wilson set up a "flensing" table

on which to lay the skins and carve off the thick layer of blubber which lies just beneath. The hides were rubbed with salt and rolled up for transport. The skeletons, I believe, were roughly cleaned, then dried, and carried quite satisfactorily until they reached the museums.

Nelson and Lillie were busy getting deep sea temperatures by a very ingenious reversing cylinder. This was sunk at the end of miles of piano-wire, and samples of the bottom were also obtained on these lines. Forams and volcanic lava thus obtained were of interest to the geologist; but our queerest collection was a set of specimens from the gizzard of an Adelie Penguin. There were three rock-types represented in this collector's gallery, and only ten years or so before they would have doubled our knowledge of Antarctic petrology!

Microscopic life swarms in these Polar seas. It is stated that there is almost as much protoplasm per acre of ocean as there is in a well-cultivated land crop. Most of this occurs as diatoms and infusoria, forams, and copepods; indeed, almost every floe in its lower layers is stained yellow from the presence of millions of small diatoms allied to *Corethron*.

Early in the new year of 1911 we cruised along the slopes of Mount Erebus. On shore we could see the rookery of the Emperor Penguins, where Wilson's party nearly lost their lives in midwinter, 1911. It was now nearly empty—for this misguided bird lays its eggs in the middle of the long night. A little to the west was one of the largest Adelie Penguin rookeries. Here the rocks were brown with guano, while the seas teemed with shrimps (*Euphausia*), which formed the food of the innumerable Penguins. Along the edge of their territory prowled the killer whales (*Orca gladiator*). I should think the latter animal is as dominant in the southern seas as man is on the land; and when (as happened on three occasions) there was a tussle between men and Orcas on the floating ice, it was the Orcas who gained a strategic victory!

In the *South Polar Times* this biological cycle was described in verse—which should appeal to naturalists, whatever the poets may think of it!

LIFE'S ROUND IN THE ANTARCTIC.

"Big floes have little floes all around about them,
And all the yellow diatoms couldn't do without them;
Forty million shrimplets feed upon the latter,
And the shrimps make the Penguins and the Weddel Seals much fatter.
Along comes the Orca and kills these down below,
While up above the scientist attacks them on the floe.
A bold explorer tumbles down and staves the mushy pack in;
He's crumpled up between the floes—and so they get *their* whack in.
And there's no doubt he soon becomes a patent fertilizer,
Invigorating diatoms—although they're none the wiser.
So the protoplasm passes on its never-ceasing round,
Like a huge recurring decimal—to which no end is found."

We fixed our headquarters on a low promontory in MacMurdo Sound, now called Cape Evans; and after three weeks of hut-building several parties set out for depot work or exploration. The two western parties—of which I had charge—surveyed in considerable detail the western shores of MacMurdo Sound and the adjacent Ross Sea for a distance of a hundred miles. Here the Great Ice Plateau, of 7,000 feet elevation, reaches within twenty miles of the sea; but it is fringed by a range (rising to 13,300 feet in Mount Lister) which can only be traversed *via* the great outlet glaciers. Although some of these had been roughly charted, none except the Ferrar had been topographically surveyed.

Our chief studies, naturally, were concerned with geology, and especially with the evolution of the land surface. Only in two places did we come across any land flora. On a sunny *débris* slope at the snout of the Ferrar glacier we found a carpet of green moss, about sixty feet long, and in a similar situation in Granite Harbour there were thick clumps of peaty moss between the granite boulders. Save for a few lichens and for some algæ in the small lakes, this is all the vegetation in 78° south latitude.

The animal life along the coast has often been described. Weddel Seals were common, especially at the entrance to the Taylor Glacier. Here was a flock of some thirty individuals, and hereabouts also we found a troop of Emperor Penguins awaiting their moulting time. In the moss I was lucky enough to discover the first living insects—some small aptera, about a millimetre long, which I brushed on to seccotined paper, and so embalmed many thousands! These insects must hold the record for hibernation, for they were frozen in an ice film even in midsummer, until I turned them toward the sun, when they moved slowly among the moss hyphæ.

The stratigraphy of Antarctica in this region is very like that of southern Australia. At the base are contorted schists and gneisses like those of Port Lincoln. Above these come red and grey granites of great thickness, forming cliffs two or three thousand feet high. Highest of all is a sedimentary series of yellow sandstones, called the Beacon sandstones. These are of Palæozoic age. The chief feature, however, is a series of colossal dolerite sills (like those of Tasmania), which penetrate the granite in horizontal layers, often a thousand feet thick. One grand section in the Ferrar valley must be almost unique. Above the gleaming glacier is a thousand feet of talus of a brown tint. This reaches up to the red-grey granite. A little higher comes the lower black dolerite sill; then more red granite; then another black sill, and high above this the yellow pinnacles of the Beacon sandstone some 4,000 feet above the glacier.

At Mount Suess, behind Granite Harbour, Debenham found some small plates in the sandstone. We diligently searched the locality, and found numbers of these plates—some bluish, and burnished almost like beetle elytra. They have been assigned to primitive armour-clad fish, and so determine the Beacon sandstone hereabouts as of Devonian age. Far to the south Wilson discovered well-preserved *Glossopteris* leaves, so that there the sediments and associated coal are akin to our Sydney coal-field. Here, also, Wright found a fine specimen of the primitive Cambrian "coral," *Archeocyathina*, in the Beardmore Moraine—near where Shackleton had also found relics of this fauna. In the far north Priestley also added considerably to the Permian flora of East Antarctica, so that the expedition was very successful in fossil fields.

The problem which interested me most was the evolution of a glacial landscape. Research in the Alps and elsewhere has shown that bygone glaciers have carved out great valleys and impressed many peculiar features on alpine scenery. But many problems are still unanswered. Of these the chief are the origin of the cirque (or "armchair") valleys, and the actual mechanism of glacial erosion. In the great scarp bounding the west of MacMurdo Sound is a series of unrivalled cirques. The Walcott Cirque is twelve miles wide, with a rear wall 10,000 feet high, and a small glacier only a few miles wide occupies this great hollow. A complete series in different stages of evolution were mapped along the coast from Mount Morning to Mount Marston. These examples have led to what is, I believe, a somewhat novel theory of land erosion known as the "Palimpsest theory." I believe that the chief carving of the earth's surface in an Ice Age is done, not by glaciers, but by the action of King Frost. The gradual cooling and gradual warming at the onset and waning of the Ice Age extends through much longer periods than the age of maximum glacier development. In these lengthy periods "sapping" or frost-erosion is paramount. At this time most of the cirque valleys so characteristic of alpine scenery are cut out by a sapping process, too complicated to describe here. As the ice-fields increase and the glaciers pour down into the valleys, they carry ice-erosion deeper into the crust, but they often only partly obliterate the earlier erosion by sapping and frost action. Thus, the earlier landscape shows dimly—much as does the earlier writing in the Greek palimpsest. Most geologists have allowed the later erosion to engage their attention too often at the expense of the earlier and (in my opinion) even more important erosion by sapping.

Many of the less fundamental features of ice erosion are most interesting. When a glacier reaches the sea ice it buckles the

latter (often six feet thick) into great pressure waves up to twenty feet high. In similar fashion has the earth's crust been buckled in the process of mountain-building. All round the coast—long after the sea ice has vanished in summer—extends a long terrace known as the ice-foot. This is frozen spray, &c., attached to the land, and might have been invented to form a sledge-track for the explorer! Every cape has a long snowdrift on its leeward side built by the southern blizzards. This hardens to ice *in situ*, and forms a small glacieret. In summer these often dam back small lakes, and we see in miniature the origin of the famous Glenroy Terraces which so puzzled early Scotch geologists. Only rarely in miles and miles of moraine does one come across the scratched blocks which used to be postulated as the indispensable evidence of a glacial deposit. Finally, I would add that Antarctica is too cold for maximum glacial erosion. Infinitely more work is being done by the ice in New Zealand than in Antarctica.

I will devote the last few paragraphs of this article to a brief account of our life in the hut during the long winter night. Captain Scott early instituted a series of forty lectures. These were given, not only by the scientists on all branches of science, but also by Ponting (our camera artist), and by most of the naval officers, on such subjects as travel, clothing, food, surveying, &c. Much time was spent in writing up records of the past summer's sledging, and also in preparing for the ensuing season; but the vicinity of the hut offered many problems of its own. There were great cones of *débris*, up to thirty feet high, which we found to be due to the complete weathering of huge monoliths of kenyte lava. The biologist kept a pool open in the sea ice right through the winter. Here, protected partly by a six-foot wall of ice from the furious blizzards, he dredged and took temperatures. To prevent the delicate organisms from getting frost-bitten, he used to carry them the mile to the hut in a thermos flask! Nearer the hut we had fishing-holes, in which we sunk a wire fish-trap. Many weary half-hours have I spent hauling this contraption up at temperatures down to eighty below freezing! All the fish were *Notothenia*, about eight inches long. Even forty of these (our greatest catch) did not go far among twenty-five stalwart explorers.

In ice-grottos carved out of the living glacier were stationed the magnetographs and the pendulums. Here Simpson and Wright would engage in a "quick run." At this instant all over the earth similar magnetic records were being taken with a view to correlating them with auroræ, sun-spots, magnetic storms, &c.

Sounding balloons were sent up to chart the upper air. They carried meteorographs, which recorded temperature pressure and humidity, and also a fine silk thread, which, like Penelope's web, was supposed to lead one to the fallen treasure: but either the thread had snapped on an icy pinnacle or else the instrument had drifted over the open water or other accident had supervened. Few of us claimed the chocolate allotted to the successful tracker, but Simpson obtained sufficient records to add greatly to our knowledge of Antarctic aerology.

Lieutenants Evans and Gran spent the spring months in a theodolite survey of the whole vicinity. Debenham and I plane-tabled Cape Evans—one of the coldest jobs I have ever tackled. One could hardly draw accurate lines muffled up as comfort required, and with temperatures of -40° thin gloves soon meant torture.

Through the sleeping hours the night-watchman (*i.e.*, each of the officers in rotation) kept watch in and around the hut. He would cast an eye to the east and see a glow over the crater of Erebus. To the south and east the dancing curtains of the Aurora often flashed across the sky. Usually they were grey or palest green, and were never so vivid as they appear in more northern regions. In foul weather, which occurred five days in the week, it would often be his unpleasant duty to free the pressure-anemometer ("blizzometer") from the blizzard snow. Picture him muffled up and carrying an electric torch round the hut to the base of a frozen ladder. Up this he creeps in the teeth of a gale at seventy miles an hour. Sheets of snow drive past him into the bay, and seem to rock the roof across which he straddles. Here projects the tube of the "blizzometer," and it is his unpleasant duty to excavate the snow therein until the tube is clear and the "blizzometer" registering again. He returns to the shelter of the hut, knowing that it will probably be his lot to repeat the performance before his watch is over.

So passed the long night. Almost all the survivors of the expedition reached England in 1913. The scientific work was put in hand at once, and is being published by the British Museum; but the Great War has naturally prevented any large output to date. However, nearly a dozen quarto memoirs, dealing with marine biology, penguins, whales, algæ, fossils, &c., have already been published: and, now that the war is happily over, science will come again to her own, and the publication of the scientific results of Captain Scott's last expedition will proceed apace.

[The paper was illustrated by a large series of lantern slides.
—*Ed. Vict. Nat.*]

NOTES ON THE CENSUS OF VICTORIAN PLANTS.

BY H. B. WILLIAMSON.

(Read before the Field Naturalists' Club of Victoria, 14th April, 1919)

THE "Key to the System of Victorian Plants," issued by Baron von Mueller in 1888, contained short descriptions of 1,890 species of plants, including 86 ferns and lycopods, which had been recorded as having been found in various parts of Victoria. This list, with supplementary lists published in the *Victorian Naturalist*, was regarded as our census until 1908, when, on the Plant Names Committee being appointed to consider the question of providing vernacular names for our plants, a "Recording Census" was prepared, under the direction of Professor Ewart, D.Sc., Government Botanist, and chairman of the committee, for the purpose of facilitating the work. Prof. Ewart had already, in the *Naturalist* for January, 1908 (xxiv., p. 144), thrown some doubt on certain Victorian plant records; consequently there were some differences in the two lists, to which he referred in the *Naturalist* of April, 1909 (xxv., p. 200).

The "Recording Census," which provided space for inserting various particulars regarding each species, was placed in the hands of all who might be expected to help in the aim referred to. Since then this list has undergone some slight alterations; deletions and additions have been made, as well as some changes in nomenclature, in order to accord more with the rules adopted at a convention of the world's botanists, and to correct errors that had been made in departing from the nomenclature in Bentham's "Flora Australiensis," so that the Census now contains 2,090 species, and, as 30 species given in the "Key" have been dropped, it follows that the number of species added since 1888 amounts to 230.

All but about a dozen have been added on the strength of plants gathered within the State, the actual specimens being now in the National Herbarium. These 12, together with about 188 species named in the "Key," form the subject of this paper, which, perhaps, ought to have been entitled "The Rare Plants of Victoria."

Now and again apparent errors have come under the notice of the Plant Names Committee during its considerations, and some of us have begun to doubt whether all the species named in the Census have really been gathered in our State, especially in view of opinions the compiler of the "Key" had expressed regarding certain plants growing near the boundaries. The inflation, if any, of our Census is certainly due almost entirely to von Mueller—or "the Baron," as we fondly remember him—and he may have made mistakes. If we investigate these

doubtful records we shall not, I am sure, be accused of trying to discredit him either as a botanist, an explorer, or as a careful observer and recorder, for we know that he was all of these in the highest degree. The types of his published species will stand for many years, and, with Bentham's confirmatory initials, will form a lasting monument to the name of Mueller. But it is to his locality notes and indefinite place names on some of his labels that exception may be taken, and it is just possible that this indefiniteness has caused an inflation of our Census. If a plant has been recorded for Victoria, we should find the specimen in the National Herbarium, but many of our recorded plants are not represented in the Herbarium by specimens labelled with a definite Victorian locality.

With the approval of Professor Ewart, and the kind help of the Herbarium assistants, I had the opportunity, during the recent holidays, of looking into some hundreds of species and examining several thousands of labels at the Herbarium, and from my investigations I have compiled lists including about 180 species which appear to be doubtful records for Victoria.

When looking over the specimens I was impressed with the immense amount of work that had been done by the various collectors—in many cases enthusiasts who looked for no monetary return for their labours. Some, we know, received payment from the Baron, who was known to have used his income to obtain specimens for investigation. This was one of his grievances, and no wonder; he should have had, as every Government Botanist should have, one or more paid assistants, who could be detailed at any time to make field researches to supplement and sustain laboratory work.

As to my method of investigation: I, of course, used my own herbarium as a guide. This contains 2,060 Victorian species, 1,300 of which had been collected by myself. Of the remainder, 360 were received in a fresh state from correspondents in different parts of Victoria, so that I had to confine my attention to about 400, more than half of which are represented in my collection by specimens gathered in other States. A copy of the "Australian Census," written up to date, showing the whereabouts of each species, was placed at my disposal, so that it took only a minute or two to obtain the required species. I am grateful for the assistance given to me in the work by Mr. J. R. Tovey, senior Herbarium assistant, of whose thorough knowledge of the institution and good memory for references I took the fullest advantage.

It was to me very interesting work, and I am much indebted to Professor Ewart for the privilege. On looking into the folders and reading the labels I came across interesting type-

specimens (from which the plants were described), and there, also, I saw sprigs gathered in such widely-separated places as Victoria River and Roper River, Northern Territory, King George's Sound, Lord Howe Island, Menindie, Geraldton, Alice Springs, and I was sorely tempted to halt and study the varying forms due to diverse climatic conditions or differences of altitude, but for this there was no time. Accounts of early voyages and inland journeys were recalled by the specimens labelled with the following names as collectors:—Banks and Solander (1770), Robt. Brown (1802), Allan Cunningham (1817), Mitchell (1836), Dr. Leichhardt (1840), F. Mueller (1853–55), and those Victorian collectors of later years—Dallachy, who collected chiefly in the North-West and the Grampians; Dr. A. W. Howitt, Gippsland; and Bauerlen, East Gippsland. Other names occurring frequently on Victorian specimens were Reader (S. and N.W.), Walter (general), Allitt (S.W.), Fullagar (S.), Jephcott (Hume R.), Sullivan (Grampians), Tisdall (Walhalla), Whan (Skipton), French and Stirling (Alps), D'Alton (N.W.), Macmillan (Gippsland), Findlay (Towong), Campbell (Grampians), Wilhelmi (N.W. and S.W.), Bacchus (Ballarat), Adamson (Melbourne), Curdie (Camperdown), Hannaford (Warrnambool), J. B. Wilson (Geelong), Robertson (S.W.), Eckhert (N.W.), Lockhart Morton (N.W.), and that enthusiastic lady collector, Mrs. McCann (Mitta Mitta). Almost all the Victorian specimens before 1890 were collected by those mentioned, Mueller standing first for number of species. Since that year specimens have been sent along by a few collectors, some of whom, in his characteristic original way, the Baron styled his “kind phytographic collaborateurs.”

Two aims have been before me in preparing this paper: to draw attention to certain supposed Victorian species with a view to stimulating botanical workers in their field research work, and to put in a plea on behalf of the National Herbarium, of which Victorians should be proud. With regard to the former, the plants in question may be regarded as non-Victorian as far as the present botanical workers are concerned, so that any discoveries of them in our State can be considered creditable to those who make them. Hence the necessity for publishing a list of them, and which ought to result in a more accurate and complete census. More than half of the 180 in question have probably not been gathered since Mueller obtained them himself during those early journeys in 1853–55 which were so tersely described and mapped out by Mr. F. G. A. Barnard in his interesting paper in the *Naturalist* for June, 1904 (xxi., p. 17).

Many of these plants are labelled “Munyang Mt.,” “Nungatta Mt.,” “Sources of Snowy and Murray,” “Mt. Imlay,” “Lower Murray,” none of which are definite Victorian localities. It

is probable that some of these species were actually collected by Mueller in New South Wales and South Australia, since, from remarks he made, verbally and otherwise, he considered that plants gathered within a day's walk across the border should be credited to Victoria. In his first edition of the "Census of Australian Plants" (1882) he says:—"The geographic columns in these pages indicate simply the occurrence of plants within any of the colonial areas, but have been extended even to such species which merely may pass boundary lines." From this it would appear that in compiling his "Key" he had credited Victoria with those plants which, being near the boundary, might reasonably be expected to be met with on this side of it. In the case of some of them this expectation has been realized, while in many others it has not, no Victorian specimen being found in the Herbarium. In Bentham's "Flora," among Victorian localities are mentioned "Munyang Mt." Under this indefinite and now disused name Mueller, I think, included all those species he gathered on his journey along "the highest summits of the Alps," from the Cobberas (in Victoria) to Kosciusko (N.S.W.) Nungatta Mt., in which the Genoa River takes its rise, is some miles east of the border. Mt. Imlay is in New South Wales, south-west of Twofold Bay. These are, of course, also mentioned as New South Wales localities. "Upper Snowy," "Head of Genoa," are among Victorian localities, though both of these rivers rise in New South Wales. I think that Victoria has also been credited with plants gathered in the Riverina and the "Murray desert" below the South Australian border. Such places as Cudnaka and Lake Victoria are given on the labels of some plants which appear on our Census, of which no other specimens can be found in the parcels. For instance, *Pultenæa densifolia* is labelled "Lower Murray"; this, I feel sure, means South Australia. Mr. D'Alton sent it in later from "across S.A. border."

It must be conceded that in those early days definiteness in place names was not easy to get, and, also, it did not seem so necessary, so that writing "Near Murray," or just "Murray," which occurs on so many labels, seemed the best that could be done, especially considering the difficulties of the wayback collector.

It would appear that no collector has since 1854 travelled along the routes of Mueller in the North-West, and to Cobberas and Kosciusko (Munyang). If he has, he did not record the result. There is a good field for botanists in those two areas alone. Who will undertake them?

Regarding the absence of these recorded species from our Herbarium, several reasons may be advanced. Some may have been lost or mislaid, and thus missed getting into their

parcels. We know that Mueller did a great deal of his systematic work at his private house, but he was very careful with specimens and labels, and I was surprised to see so many of the scraps I sent to him placed in their proper parcels, with correct dates and localities, for I had considered them scarcely worth keeping. Just one exception may be mentioned. A *Pultenaea* I had sent him was labelled "Wannon R., Port Fairy"! The fact that so many that are missing are "boundary" plants seems to me significant. Some of the missing specimens may have been put into what are known as supplement parcels, and may turn up yet. These parcels contain specimens which require further examination to determine the species. Some, of course, I may have missed, but my lists need not be condemned on that account, for I intend them to be considered as merely tentative.

If, on looking over the lists, some collector notes any that he has had determined by an authority, it is hoped that he will communicate with Prof. Ewart. A specimen gathered in Victoria would, however, be required for the species to be recorded; and here I may express the opinion, shared by other workers, that observers and excursionists have had plants recorded in the *Naturalist* on the strength of a passing glance or of hearsay, without any specimens being secured for determination. On looking over accounts of excursions of our Club—valuable and interesting as these outings are—I have come across mention of plants which, I feel sure, cannot have been seen on the occasion, and for which probably some commoner species has been mistaken. And this brings me to a point worthy of the consideration of the committee—the desirability of having accounts of excursions placed before a small committee of botanists before publication, with a view to preventing errors in scientific records occurring in print. Certainly I think that no record of any of the plants in my lists should be allowed unless a specimen has been submitted for determination and for placing in the Herbarium. Our journal is recognized as a scientific one, and it is a pity to see in it these inaccuracies, which stand uncorrected, but for which the hon. editor is in no way responsible. Surely writers would not mind the editor, at the instance of the "censors," deleting or querying any doubtful species name.

As to the claims of the National Herbarium, I consider that if the lists referred to were noted and made use of, two good purposes would be served: correct records would be established, and the Herbarium would be furnished with a supply of fresh specimens, which are always acceptable for replacing those damaged or sent away in exchange. The least collectors should do in exchange for information received is to supply good specimens fresh from the field.

Coming to the matter of revising the Census, it may be asked whether I would advise cutting out all the species not now represented in the Herbarium by Victorian specimens. Since 1888 30 of the species in the "Key" have been dropped, 10 of these because they have been included in another species, while it is probable that several of the remaining 20 have been dropped simply because there is no Victorian specimen. Perhaps it would scarcely be wise to drop out 180, but I think that, in any future edition of the Census, or in a new "Flora of Victoria" (which is eagerly looked for), it would suffice if those plants were marked, say, with an asterisk, to denote "doubtful record for Victoria." It is quite true that to include in any future "Key" a description of these would render such a book more useful, seeing that a Victorian field-worker might reasonably expect to find them near the boundary, and perhaps that was in the Baron's mind when he compiled his "Key."

One disturbing thought regarding these rarely-gathered species is that, owing to the advance of settlement and consequent grazing and prevalence of fires, some of them may now be quite extinct in our State, and even in Australia. In a letter from a fellow-member, Mr. E. H. Lees, of Mallacoota, he deplors this probability, and mentions that some plants, notably *Nephelium leiocarpum*, are almost unknown where a few years ago they were frequent in his district. This thought should stimulate us to investigate the localities where these rare plants may be found before a greater evil comes upon them—their total extinction.

In my investigations I did not need to trouble about the eucalypts or the orchids. Both these have been worked well by specialists, notably Messrs. P. R. H. St. John in the former and Messrs. French, Pescott, and Braine in the latter. So well have they worked that the number of eucalypts has been increased from 36 to 66, and that of the latter from 75 to 119. These increases account for about one-third of the total species added to the "Key," and they are still going strong! With only one exception, I think we know where all these 285 species are to be found—or perhaps I should say *were* to be found, in the case of the orchids. The exception is *Drakea irritabilis*, the interesting "Hammer Orchid." No one knows where, when, or by whom this was found in Victoria, and there are in the National Herbarium only three or four specimens from New South Wales and Queensland; but Mr. C. French, jun., who assisted in the work connected with the compiling of the "Key," tells me that the Baron showed him with delight a specimen of that orchid which he had just received from "East Victoria," but no record of the date, locality, or collector's name can be found, and the specimen itself has disappeared.

The following are the lists referred to, and botanical workers of Victoria in general, and Professor Ewart, Curator of our Herbarium in particular, would esteem it a favour if those in charge of Herbaria in other States who read them, and who have any Victorian specimens of the plants, would forward them to Melbourne for examination and record.

LIST NO. I.

Plants represented in the Herbarium only by specimens labelled with definite N.S.W. and S.A. localities, and no printed record. Those not named in the "Key" marked.*

(A) PLANTS RECORDED FROM NORTH-WESTERN DISTRICT.

- | | |
|-------------------------------------|--|
| Hibiscus Krichauffi, F. v. M. | *Xerotes dura, F. v. M. |
| Euphorbia erythrantha, F. v. M. | *Panicum bicolor, R. Br. |
| Dodonæa lobulata, F. v. M. | P. Mitchelli, Benth. |
| *Gunnia septifraga, F. v. M. | *P. trachyrachis, Benth. |
| Chenopodium auricomum, Lindl. | *P. parviflorum, R. Br. |
| *Didymotheca thesioides, Hk. fil. | Neurachne Munroi, F. v. M. |
| *Didiscus glaucifolius, F. v. M. | Andropogon annulatus, Forst. |
| Podolepis Lessoni, Benth. | A. gryllus, L. |
| *Leptorrhynchus panætioides, Benth. | Aristida leptopoda, Benth. |
| Helipterum strictum, Benth. | Notholæna Brownii, Desv. (Cheilanthes vellea). |
| *H. læve, Benth. | Blennodia Lucæ, F. v. M. |
| Centipeda thespidioides, F. v. M. | Calandrinia brevipedata, F. v. M. (S.W.) |
| Goodenia cycloptera, R. Br. | Scævola crassifolia, Labill. (S.W.) |
| Sarcostemma australe, R. Br. | Augianthus tenellus, Benth. |
| Heliotropium asperrimum, R. Br. | A. pusillus, Benth. |
| Corynotheca lateriflorum, F. v. M. | |
| Crinum flaccidum, Herbert. | |

(B) PLANTS RECORDED FROM EAST GIPPSLAND.

- | | |
|--|--|
| Zieria cytisoides, Smith. | P. oxycoccoides, Sieb. |
| *Dodonæa tenuifolia, Lindl. | Grevillea triternata, R. Br. (N.E.) |
| Desmodium brachypodum, A. Gray. | Vernonia cinerea, Less. |
| Acacia vestita, Edwards. | Cassinia quinquefaria, R. Br. |
| A. glaucescens, Willd. (N.E.) | Ammobium alatum, R. Br. |
| Homoranthus virgatus, A. Cunn. (Darwinia virgata). | Glossogyne tenuifolia, Cass. |
| Melaleuca hypericifolia, Smith. | Prostanthera incisa, R. Br. |
| Pomaderris cinerea, Benth. | P. violacea, R. Br. |
| P. ligustrina, Sieb. | P. saxicola, R. Br. |
| P. obcordata, Fenzl. | Westringia rosmarinifolia, Smith. |
| Daviesia Wyattiana, Bailey. | Myoporum tenuifolium, G. Forst. |
| Cryptandra Scortechinii, F. v. M. | Ehretia acuminata, R. Br. |
| Cissus (Vitis) Baudiniana, Brouss. | Epacris crassifolia, R. Br. |
| Panax Murrayi, F. v. M. | *Smilax glycyphylla, Smith. |
| Xanthosia Atkinsoniana, F. v. M. | Tricoryne simplex, R. Br. |
| Actinotus Helianthi, Lab. | *Drakea irritabilis, G. Reich. |
| A. Gibbonsii, F. v. M. | Andropogon australis, Spreng. |
| Santalum obtusifolium, R. Br. | Lycopodium Carolinianum, L. (L. varium) (N.E.) |
| Notothixos incanus, Oliver. | *Cystopteris fragilis, Bernh. |
| Isopogon anemonifolius, R. Br. | Aspidium tenerum, Spreng. |
| Conospermum taxifolium, Smith. | Hypolepis tenuifolia, Bernh. |
| Persoonia revoluta, Sieb. | Asplenium nidus, L. |
| | A. felix femina, Bernh. |

LIST NO. 2.

No specimens except those labelled "Munyang Mt." (M.), "Sources of Snowy" (S.), "Nungatta Mt." (N.)

- | | |
|---|--------------------------------------|
| Ranunculus Muelleri, Benth. (M.) | Parantennaria uniceps, F. v. M. (M.) |
| R. anemoneus, F. v. M. (M.) | Rutidosia leioplepis, F. v. M. (S.) |
| Blennodia alpestris, F. v. M. (S.) | Abrotanella nivigena, F. v. M. (M.) |
| Colobanthus (Benthamianus) subulatus, Hk. f. (M.) | Plantago stellaris, F. v. M. (M.) |
| Scleranthus mniarioides, F. v. M. (M.) | Veronica densifolia, F. v. M. (M.) |
| Drapetes Tasmanica, Hk. f. (M.) | Euphrasia antarctica, Benth. (M.) |
| Azorella Muelleri, Benth. (M.) | Scutellaria mollis, R. Br. (N.) |
| A. dichopetala, Benth. (M.) | Epacris robusta, Benth. (S.) |
| Seseli algens, F. v. M. (M.) | Agropyrum velutinum, Nees. |
| Oreomyrrhis pulvinifica, F. v. M. (M.) | Lycopodium selago, L. (M.) |
| Persoonia myrtilloides, Sieb. (N.) | Gratiola nana, Benth. (M.) |

LIST NO. 3.

No specimens except those labelled with no more definite locality than "Murray," "Murray desert," "Lower Murray," "Murray and Darling."

A number may have been gathered by Mueller on this side of the river, but some were sent to him by residents of Wentworth and some gathered by Dallachy and others, who collected in both States and along the Darling. All are doubtful records.

- | | |
|--|--|
| Capparis Mitchellii, Lindl. | Cassia desolata, F. v. M. |
| Cardamine eustylis, F. v. M. | Swainsona Greyana, Lindl. |
| Blennodia (Erysimum) curvipes, F. v. M. | Acacia Sentis, F. v. M. |
| Lepidium phlebotetalum, F. v. M. | A. continua, Benth. |
| Drosera Indica, L. | Brachycome melanocarpa, Sond. and F. v. M. |
| Geijera parviflora, Lindl. | B. basaltica, F. v. M. |
| Sida intricata, F. v. M. | *Minuria denticulata, Benth. |
| Poranthera ericoides, Klotsch. | Calotis microcephala, Benth. |
| Phyllanthus Fuernrobrii, F. v. M. | C. plumulifera, F. v. M. |
| P. lacunarius, F. v. M. | Olearia (Aster) subspicata, Benth. |
| P. trachyspermus, F. v. M. | O. Hookeri, Benth. |
| Dodonæa Baueri, Endl. | Podolepis rhytidochlamys, F. v. M. |
| Trichinium (Ptilotus) nobile, Lindl. | Leptorrhynchus ambiguus, Benth. |
| T. alopecuroides, Lindl. | Chthonocephalus pseudevax, Steetz. |
| Amaranthus macrocarpus, Benth. | Elachanthus pusillus, F. v. M. |
| Hemichroa (Polycnemon) diandra, R. Br. | Jasminum lineare, R. Br. |
| Atriplex limbata, Benth. | Marsdenia Leichhardtiana, F. v. M. |
| A. rhagodioides, F. v. M. | Solanum lacunarium, F. v. M. |
| A. spongiosum, F. v. M. | Prostanthera Behriana, Schlecht. |
| A. vesicaria, Heward. | Eremophila polyclada, F. v. M. |
| A. Muelleri, Benth. | E. alternifolia, R. Br. |
| Kochia lanosa, Lindl. | E. scoparia, F. v. M. |
| K. triptera, Benth. | E. oppositifolia, R. Br. |
| K. oppositifolia, F. v. M. | Calostemma purpureum, R. Br. |
| Chenopodium cristatum, F. v. M. | Eriocaulon electrospermum, F. v. M. |
| Bassia tricornis, F. v. M. | Panicum repens, L. |
| B. biflora, F. v. M. | P. cœnocolum, F. v. M. |
| Rhagodia crassifolia, R. Br. | Spinifex paradoxus, Benth. |
| Pachycornia (Salicornia) robusta, Hk. f. | Andropogon bombycinus, R. Br. |
| Mollugo cerviana, Seringe. | A. micranthus, Kunth. |
| Pimblea simplex, F. v. M. | Anthistiria gigantea, Cav. (A. avenacea). |
| Pultenæa densifolia, F. v. M. | Aristida arenaria, Gaud. |
| Psoralea eriantha, F. v. M. | A. calycina, R. Br. |
| | Danthonia bipartita, F. v. M. |

LIST No. 4.

No Victorian specimens other than those recorded from Genoa River, which runs part of its course through New South Wales.

Pittosporum revolutum, Aiton.

Phebalium (*Eriostemon*) *Ralstoni*, Benth.

Lasiopetalum parviflorum, Rudge.

Claoxylon australe, Baill.

Homalanthus Leschenaultianus, F. v. M.

Trema (*cannabina*) *aspera*, G. Forster.

Ficus scabra, G. Forster.

Halorrhagis monosperma, F. v. M.

Pteris longifolia, L. (rep. Snowy River).

In addition to these lists I have compiled one containing 250 species which have been collected very rarely in Victoria—in most cases in one locality only. It indicates localities, and in many cases gives collectors' names and number of specimens in the National Herbarium. This it may be considered advantageous to publish at a later date.

THE LOCH VALLEY.—The extension of the Neerim railway to Noojee, a distance of about thirty miles from Warragul, which was opened on the 30th ult., opens up another interesting district to tourists and nature-lovers. Loch Valley must not be confounded with Loch (township) on the Bass River, between Nyora and Korumburra, many miles south of Warragul. From Noojee it will be possible, in a walk of about eighteen miles—the greater part through interesting forest scenery—to reach that well-known hostelry, M'Veigh's, on the Yarra, about twenty miles above Warburton, and virtually the start of the Baw Baw track. The Noojee station is situated almost on the bank of the Latrobe River, a little below the confluence of the Loch, and about a mile above the junction of the Toorong. All of these streams abound in picturesque scenes, and their gurgling waters are pleasant company as one wanders in their neighbourhood. The Neerim district was once celebrated for its huge trees, but these have disappeared and made way for smiling pastures. The tourist who wants to see big timber must make his way farther north up the Loch Valley to Mount Horsfall and Whitelaw's track, on the divide between the Yarra and Latrobe; here he can see giants upwards of 250 feet to the first branch and of great girth. Near Nayook, a station about eight miles before reaching the terminus, is situated the celebrated Nayook Glen—a magnificent assemblage of ferns and beeches—which has been made accessible to tourists by tracks and a look-out. This is situated on a tributary of the Tarago, another stream which abounds in beauty spots. One of the features of the new railway are the immense trestle bridges spanning some small creeks on their way to the Latrobe. On one of these the rails are 95 feet above the creek below, while the bridge itself is 600 feet long.

These were pictured in the *Leader* of 19th April. There are also some very interesting cuttings through Ordovician formations in which the strata are particularly well marked. The tourist also has the chance of travelling from Nayook up the Latrobe to Powelltown, about 16 miles, whence a steam tram, ten miles in length, connects with the railway at Yarra Junction. A small party of members of the F.N.C. visited the district at Easter, and were very pleased with their outing. Nice falls, or cascades, occur on tributaries of both the Loch and the Toorongu, and can be reached with a little exertion; but without leaving the road tree-ferns, beeches, and giant black-butts, with all their attendant undergrowth, in endless profusion, can be seen, almost untouched by the hand of man.

THE GREEN MOUNTAINS: QUEENSLAND'S NATIONAL PARK.—Under this heading, Mr. A. H. Chisholm, in the *Sydney Mail* for 5th March last, gives an interesting description, illustrated with characteristic scenes, of Queensland's National Park, an area of 47,000 acres, situated in the Macpherson Range, which is practically the boundary between New South Wales and Queensland. The fact of the reservation is largely due to the perseverance and energy of a young resident of the district, Lieut. W. R. Lahey, who, while studying at the Sydney University, spent all his vacations in unravelling the intricacies of the mountains. The vegetation is superb, and, as an elevation of 4,000 feet is attained in some places, there should be considerable variety in it. The Brisbane Field Naturalists' Club spent a week there during the recent summer, but, as little has yet been done to open up the area, they found the difficulties of investigation rather severe. The Park is distant from Brisbane about 70 miles, and from one of its highest points Moreton Bay and Stradbroke Island can easily be made out. Among the trees to be seen there are venerable specimens of the Antarctic Beech, *Fagus Moorei*, cedars, pines, and flame-trees, while the Queensland Waratah, *Embothrium Wickhami* (var. *pinnata*), has recently been recorded for the area. The birds are numerous, and in several instances almost unique. Lyre-birds, Mountain Thrushes, Black-faced Flycatchers, Scrub-Wrens, Pigeons, Parrots of many sizes and colours, Eagles, Cat-birds, Bell-Miners, Dragoon-birds, Rose-breasted Robins, are among those noted, while that rare bird, the Rufous Scrub-bird, *Atrichornis rufescens*, has also been seen there. Though the male of this bird was described by the late Dr. E. P. Ramsay so long ago as 1865, and the nest and eggs were first discovered by Mr. S. W. Jackson on the Bellinger River in 1898, the female bird has not yet been taken. The bird is a wonderful mimic, and in its attitudes greatly resembles the Lyre-bird.

Field Naturalists' Club of Victoria.

* OFFICE-BEARERS, 1918-1919. *

President : MR. A. D. HARDY, F.L.S.

Vice-Presidents :

MR. F. CHAPMAN, A.L.S. MR. J. GABRIEL.

Hon. Treasurer : MR. G. COGHILL, 79 Swanston-street (Tel. Central 2794).

Hon. Librarian : MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist" :

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary :

MR. E. S. ANTHONY, "Risdon," Kelburn-street, Caulfield.

Hon. Assistant Secretary and Librarian : MR. W. GLANCE.

Committee :

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

SATURDAY, 17TH MAY.—Studley Park. Object—**Eucalypts.** Leader—Mr. A. D. Hardy, F.L.S. (President of the Club). The meeting place is at Johnston Street Bridge over Yarra, the terminus of the cable tram. Take red car running along Chapel Street from Balaclava and continuing up Swanston and Lygon Streets. Excursionists should time their arrival at the meeting place not later than 2.30 p.m.

SATURDAY, 31ST MAY.—Geological Museum. Object—**Geology.** This Excursion is under the leadership of Mr. R. A. Keble. Members are requested to meet at the main entrance, Gisborne Street (reached by Collins Street trams), at 2.15 p.m.

MONDAY, 9TH JUNE (King's Birthday).—Evelyn to Montrose. Objects—**Heaths and General.** Leader—Mr. Geo. Coghill. It is proposed to walk *via* Lilydale water race across Olinda Creek to Reservoir and thence to Montrose, where coach will be taken to Croydon. Walking distance, about 6 miles. Lunch should be taken. Tea, sugar, and milk will be provided by leader. Book second class return excursion fare to Evelyn. Meet at Flinders Street Station (opposite Mutual Store) for 8.7 a.m. train.

ANNUAL MEETING—ALTERATION OF DATE.

Owing to the holiday for the King's Birthday falling on the day planned for the Annual Meeting, it has been deemed advisable to change the **date to the 16th June (3rd Monday).**

In connection with the **Exhibition of Natural History Specimens** to be held in conjunction with the Annual Meeting, all members are urged to notify the sectional leaders hereunder as to the nature and extent of their exhibits at the May Monthly Meeting, otherwise insufficient space may be allotted to permit of their display to the best advantage :—

Botany.—Messrs. F. Pitcher and H. B. Williamson.

Conchology.—Mr. J. Gabriel.

Entomology.—Mr. F. G. A. Barnard.

Ethnology.—Mr. E. S. Anthony.

Forestry.—Mr. A. D. Hardy, F.L.S.

General Zoology.—Mr. J. A. Kershaw, F.E.S.

Geology.—Messrs. F. Chapman A.L.S. and C. Daley, F.L.S.

Microscopy.—Mr. J. Searle.

Ornithology.—Messrs. J. A. Kershaw, F.E.S., and G. A. Kearnland.

Physiography.—Dr. Griffith Taylor.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered .. 1 -, 1/6, and 2/-	
INSECT RELAXING BOXES, of zinc, oval shape, corked 1/6, 2/9, and 3/6	
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

ENTOMOLOGICAL PINS (KIRBY BEARD'S), in 10 sizes, 1/3 to 2/6 per box; Mixed, 6d. per packet.
STORE BOXES.—Dovetailed, hinged, corked and papered. Size, 14 x 10 x 3½, 7/- each.
SETTING BOARDS.—Corked and papered. Flat. Length, 14 inches; depth of groove, ¼ inch, 1 and 1½ in. wide, 1/- each; 2 and 2½ in., 1/3; 3 in., 1/6; 4 in., 1/9; 6 in., 2/6.
CORK LINING (Best), Very Light. Size, 13 x 9, 1/-; 18 x 13, 2/-; 26 x 13, 3/6 per sheet.
BUTTERFLY NETS.—Best English folding, 7/6 each. KILLING BOTTLES (CYANIDE), 1/6
CURVED FORCEPS (the Entomologist's most indispensable Tool), 4/-
ZINC RELAXING BOXES, 1/6 to 3/6. * * * * * CABINETS.—From £2 upwards.
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould, 3/6.
POCKET BOXES, 1/- to 2/6. INSECT CEMENT, for repairing antennæ, &c., 1/- per bottle.

Write for our Price List and Sample Sheet of Pins.

VOL. XXXVI.—No. 2.

JUNE, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 5th June, 1919.

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

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

CONTENTS :

	PAGE
THE FIELD NATURALISTS' CLUB OF VICTORIA	21
NOTES OF A VISIT TO WESTERN AUSTRALIA. BY F. G. A. BARNARD	24
NOTE	23

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING.

MONDAY EVENING, 16th JUNE, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBER—	PROPOSER.	SECONDER.
Mr. W. H. Ingram, "Swainton," Clowes St., South Yarra.	Mr. P. R. H. St. John.	Mr. F. Pitcher.
AS COUNTRY MEMBER—		
Mrs. J. Findlay Fraser, Sunnyside, via Drouin.	Mr. A. D. Hardy, F.L.S.	Mr. E. S. Anthony.
AS ASSOCIATE MEMBER—		
Miss Oonah Hardy, Studley Avenue, Kew.	Mr. A. D. Hardy, F.L.S.	Mr. F. G. A. Barnard.

4. General Business.

- (a) Annual Report and Balance Sheet.
- (b) Election of Office-Bearers for 1919-20.

President :—Mr. A. D. Hardy, F.L.S.

Vice-Presidents :—Messrs. F. Chapman, A.L.S., J. Gabriel, J. Searle.

Hon. Treasurer :—Mr. F. Pitcher.

Hon. Librarian :—Mr. P. R. H. St. John.

Hon. Editor :—Mr. F. G. A. Barnard.

Hon. Secretary :—Mr. P. C. Morrison.

Hon. Assistant Secretary and Librarian :—Mr. W. Glance.

Committee :—Messrs. J. W. Audas, F.L.S., J. Booth, M.C.E., B.Sc., G. Coghill, E. Cox, C. Daley, F.L.S., J. A. Kershaw, F.E.S., C. S. Sutton, M.B.B.S., J. Wilcox, H. B. Williamson. (Five to be elected).

The Business Meeting will be held in the upper room of the Hall from 8 to 8.30 p.m. The Exhibition will be open from 7 to 8 p.m., and from 8.30 to 10 p.m. in the lower rooms.

FINANCIAL YEAR.

The Club Year closed on 30th April last. Any unpaid subscriptions should be forwarded to the Hon. Treasurer **at once**. Subscriptions for 1919-20 became due on 1st May, and must be paid on or before 16th June in order to qualify for voting at the Annual Meeting on that date.

The Victorian Naturalist.

VOL. XXXVI.—No. 2.

JUNE 5, 1919.

No. 426.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th May, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

ELECTION OF MEMBER.

On a ballot being taken, Mr. J. G. Thompson, 16 Collins-street, Melbourne, was duly elected a member of the Club.

GENERAL BUSINESS.

Nominations were made for office-bearers for the year 1919-20, and Messrs. F. Keep and F. Wisewould were elected to audit the accounts for 1918-19.

On the motion of Messrs. F. G. A. Barnard and H. B. Williamson it was resolved that a letter be sent to Mr. D. Le Souëf, C.M.Z.S., sympathizing with him in the recent attack made on him by footpads, and expressing the hope of the members that he would have a speedy recovery from his injuries. The president said that, on hearing of the assault, he had at once written in the name of the Club and expressed sympathy with Mr. Le Souëf.

PAPERS READ.

1. By Mr. A. H. S. Lucas, M.A., B.Sc. (hon. member), entitled "A Week Among the Seaweeds at Portsea."

In the absence of the author, who is a resident of Sydney, the paper was read by Mr. F. G. A. Barnard.

The author gave a chatty account of a week's seaweed collecting at Portsea, almost on the extremity of the Nepean Peninsula, and quite close to Port Phillip Heads. Here, with both ocean and bay beaches available, he collected just one hundred species, some of them being new for Victoria. He remarked on the richness of the marine algal flora of Victoria and the good work done by the late Mr. H. T. Tisdall and the late Mr. Bracebridge Wilson, both members of the Club, and urged that further work should be taken up by some members of the Club.

Mr. J. Gabriel said that he considered dredging gave the

best results in searching for seaweeds. He had collected 67 species in one day at Western Port. He offered to give a demonstration on mounting seaweeds for the Herbarium on some suitable occasion, and called attention to his exhibit of a collection made many years ago by the late Mr. H. Watts, one of the original members of the Club.

Mr. C. J. Gabriel said he was pleased to know that the marine plant *Cymodocea antarctica* is to be found in Port Phillip Bay. At the previous meeting he had exhibited some small shells found on the plant, which had been forwarded from South Australia; he would now try if the mollusc occurred here.

2. By Mr. J. Booth, M.C.E., B.Sc., entitled "About 'Pet Peter,' a Flying Phalanger."

The author gave an interesting account of the life of a Lesser Flying Phalanger, *Petaurus breviceps*, Waterhouse, commonly known as the Small Flying Squirrel, which had been kept in captivity for a period of nearly six years, when it apparently died of old age. Being a nocturnal animal, it was, of course, difficult to watch all its movements. It seemed to recognize its usual caretaker, and made sugar and milk-soaked bread its staple diet, though it was fond of an occasional cockroach.

Mr. J. A. Kershaw, F.E.S., remarked on the happy way in which the author had described his pet's peculiarities, and, referring to its food of insects and honey, asked whether it ever ate gum (*Eucalyptus*) leaves.

Mr. A. D. Hardy, F.L.S., said that he had had no experience with the Phalangiers, but he had recently been inquisitive as to the food of a Queensland Koala (Native Bear) kept by a travelling circus, when he was informed that its favourite food was the leaves of the Sugar Gum, *Eucalyptus cladocalyx*. He had tried it with leaves of *E. Delegatensis*, but they had been refused. The animal had never been known to drink during the three years it had been with the circus, apparently obtaining all the moisture it required from the gum-leaves.

Mr. Booth, in reply, said gum-leaves had been offered to "Pet Peter," but he did not appreciate them.

EXHIBITS.

By Miss C. C. Currie.—Fruiting specimen of *Billardiera longiflora*, Lab., Purple Apple-berry, from Loch Valley; fronds and sporocarps of Nardoo, *Marsilea quadrifolia*, L., grown at Lardner.

By Mr. J. Gabriel.—Collection of Victorian seaweeds made by the late Mr. H. Watts (one of the founders of the Club), principally at Warrnambool, 1858-66.

By Mr. C. Daley, F.L.S.—Asbestos, showing gold deposited by precipitation, from South Queensland.

By Mr. J. E. Dixon.—Dried specimens of two rare Victorian plants, *Jasminum lineare*, R. Br., and *Calostemma purpureum*, R. Br., collected by exhibitor near Lake Hattah, Northern Mallee.

By Mr. A. L. Scott.—Rocks and clay containing crystals of gypsum, from Mornington beach, Port Phillip; granite from Mount Eliza, near Frankston.

By Mr. J. Searle.—Slides of the benign tertian malaria parasite, *Trypanosoma evansi*, under the microscope.

After the usual conversazione the meeting terminated.

ADDENDUM TO APRIL REPORT.

By an inadvertence Mr. H. B. Williamson's reply to the criticism on his paper was omitted. It was to the effect that he had not suggested that if only one specimen of a plant had been found in Victoria it should not appear in the Victorian list, neither did he venture the opinion that any of the plants contained in his lists should be omitted from the census.

The Western Australian plants exhibited by Miss Amy Fuller have been determined by Prof. A. J. Ewart, D.Sc., Government Botanist, as follows:—*Banksia Baueri*, R. Br.; *Callitris Roei*, Beath; *Grevillea eriostachya*, Lind.; *Hakea Baxteri*, R. Br. (in the absence of fruit this species is very difficult to distinguish from *H. Brownii*); *H. commutata*, F. v. M., in fruit (this species seems to be rather rare—no fruit specimen in the Herbarium previously); *H. multilineata*, Meissn.; *Helichrysum obtusifolium*, Sond. and F. v. M.; and *Physopsis spicata*, Turcz.

AUSTRALIAN TREES AND SHRUBS.—With the desire of bringing more directly under the notice of those who contemplate beautifying the surroundings of their homes the value of Australian trees and shrubs for that purpose, Mr. E. E. Pescott, F.L.S., F.R.H.S., Government Pomologist, commenced a series of articles in the *Journal of Agriculture, Victoria*, for March last, on "The Australian Flora from an Ornamental Aspect," dealing in the opening article with some of the eucalypts or gum-trees. Seeing that the author is a practical man, and such a lover of Australian vegetation, the articles cannot fail to supply a want which has often been experienced both by public and private persons desiring to plant to the best advantage.

NOTES OF A VISIT TO WESTERN AUSTRALIA.

BY F. G. A. BARNARD.

(Read before the Field Naturalists' Club of Victoria, 10th March, 1919.)

IN August last, having persuaded myself that I needed a holiday, the question arose, Where shall I go? Then, remembering Mr. C. A. Topp's interesting paper, "Impressions of the Wild-Flowers of South-Western Australia," read before this Club just two years ago (*Vict. Nat.*, xxxiv., p. 37, July, 1917), and that the best time of the year for wild-flowers was fast approaching, I determined to try and arrange for a visit to Western Australia. As time was a matter of importance, I decided to make the journey by the recently-opened Trans-Australian railway, having been informed that at that time of the year the trip by rail would be quite pleasant. So, leaving Melbourne on Wednesday afternoon, 28th August, by mid-day on the following Sunday I had traversed some 2,168 miles, and practically crossed the continent from east to west, with nothing to regret in having adopted that route, and having gained a lasting impression of the Nullabor Plain, said by Mr. T. Dunbabin, in an article in the *Argus* of 3rd August last, to be the greatest plain in Australia, covering about 100,000 square miles—an area greater than the State of Victoria.

Some little account of items interesting to the naturalist on the overland journey may be worth while. In Victoria, owing to the shortness of the daylight, little was to be seen. The new lake in the Werribee Valley, near Melton, with its gaunt skeletons of trees standing in fifty or sixty feet of water, had anything but a picturesque appearance. My last glimpse of the vegetation consisted of some golden wattles in full bloom near Rowsley. When daylight broke next morning we had almost traversed the so-called Ninety-Mile Desert, which is really an ordinary piece of Mallee, with stunted gums, Casuarinas, Hakeas, &c., but nothing definite could be recognized. In South Australia, about Mount Barker Junction and right through the Mount Lofty Ranges, golden wattles were everywhere in evidence, and presented a lovely sight; by the way, the South Australian form of *Acacia pycnantha* seems to be more robust both as to flowers and leaves than the specimens we are used to in Victoria. The Native Heath, *Epacris impressa*, both pink and white, was still blooming freely all through the hills, and with the yellow of the wattles made up a picture worth travelling far to see.

On leaving Adelaide for Port Augusta (260 miles) all was new to me. The country was under wheat to so great an extent that little natural vegetation was to be seen. Along the railway line the introduced *Oxalis*, *O. cernuta*, grew in

abundance for miles and miles. At Peterborough (formerly Petersburg), where the line from Broken Hill to Port Pirie crosses the north line, a train-load of zinc tailings on its way to the smelting works at the latter place was seen. A few miles beyond here numbers of native melons were noticed in the railway enclosure. Some very dry, rocky country was entered near Eurelia (1,733 feet above sea-level), where we stopped for tea. Daylight disappeared soon after. At Quorn (234 miles, 961 feet) the Oodnadatta line branches off, and, going north, penetrates 450 miles further towards the heart of Australia. From Quorn to Port Augusta is the most picturesque part of the South Australian portion of the line, now narrow gauge, but this was traversed in the dark. Coming back three weeks later the early morning was just light enough to be able to get an idea of the Pichi Richi Pass, through which the line rises about 1,300 feet in 25 miles. The hills were very abrupt and stony, and only sparsely covered with moderate-sized trees.

Leaving Port Augusta punctually at 10.30 p.m. on the long run of 1,050 miles to Kalgoorlie, nothing was, of course, seen till nearing Tarcoola (257 miles), when, as daylight appeared, it was seen that we were passing through country similar to that of the Ninety-Mile Desert, between Serviceton and Murray Bridge. It is unfortunate that the train on both its east and west-bound journeys passed through the stretch of salt lakes between Wirrappa and Wirraminna (about 80 miles) during darkness, as, though probably unpicturesque, there should be a certain amount of variety in them. However, I managed to get a glimpse of one by moonlight on my return journey. During the short stoppage at Tarcoola I was able to obtain specimens of the travertine limestone, which outcrops along the line, and has been used extensively for ballast. Tarcoola was expected at one time to prove a good goldfield, but the difficulty of procuring water in such dry country has greatly retarded its mining possibilities. Signs of the industry can be seen some two miles away, to the north of the line.

Seeing that the Trans-Australian line is laid down east and west within a few miles of the same parallel of latitude—31° S.—and the range of elevation during the 800 miles between Pimba (113 miles) and Zanthus (921 miles) is only 270 feet, and that not a running stream or even a dry creek-bed is seen in all that distance, much variation in the vegetation cannot be expected; still, at the time of year I crossed (30th, 31st August), which is probably the most favourable for flowers, except on the Nullabor Plain, 300 miles from Ooldea to Nareetha, I was within sight of flowering shrubs nearly all the time. The difficulties of botanizing, or rather of identifying

plants and shrubs when travelling at thirty miles an hour and over, through unfamiliar country, are considerable, more especially as at least a chain on either side of the track has been cleared absolutely of every sign of vegetation, probably on account of the risk of fire. By a chance stoppage of the train for some slight defect of the engine some twenty miles beyond Tarcoola I was able to pick my first flowers—a low-growing White Everlasting, probably *Helipterum floribundum* of our Wimmera and North-Western Plains, as these were growing close to the line. At about 280 miles I saw a scarlet patch on the ground near the edge of the cleared space, which I put down as being Sturt's Desert Pea, and, though I could not pick it up on my return, when at Tarcoola a resident presented the passengers with bunches of the finest flowers of that plant I had ever seen, grown in her garden, I am pretty sure my surmise was right. Some of these I exhibited at the recent wild-flower exhibition, but they had by that time (nine days later) almost lost their beauty. My next identification was a quondong tree bearing fruit. Many other shrubs were in bloom, some of which I took to be Acacias, but later, at Barton, I found I had, owing to the distance, been mistaking a Cassia for an Acacia. Of course, all the trees of any size near the line had long ago been used up by the construction parties for huts and firewood, so that those remaining were very poor specimens of gums, black-oke, and myall. A shrub with red flowers was never near enough for me to make even a guess at. It was probably a *Templetonia*.

About 100 miles beyond Tarcoola we ran into sand-hill country, and at 10.30 a.m. pulled up at Barton, for the east-bound train to pass. This, we learned, would be an hour late, consequently I was able to examine some of the shrubs, &c., near the line, finding several Acacias, a Cassia, quondongs, and many others strange to me. Continuing on among sand-hills, several unfamiliar shrubs were seen. About 2 p.m. we left the sand-hill country and entered on the straight run of 300 miles across the Nullabor Plain—"Nullabor" meaning "no trees." This is often called desert, but it is not so. The plain is covered with low saltbush, with here and there a taller bush; limestone outcrops alongside the track, and requires little excavating for use as ballast. About 8.30 p.m., near Deakin, we entered Western Australia, and when we looked out next morning found we had left the Nullabor Plain behind and had reached Zanthus (921 miles), the most interesting locality we had yet seen. Shrubs of many kinds were plentiful, several being in flower, while here and there were salmon gums and gimlet-wood—the latter a gum with very twisted grain, hence its name. The timber lasts for some miles, then, as

Kalgoorlie is approached, bare plains appear again—whether naturally so or whether the timber has been used for firewood in Kalgoorlie I cannot say, for timber trams run out for fifty or more miles all round that centre. Just before reaching Kalgoorlie the dump-heaps of the mines along the famous “Golden Mile” and a few distant hills are seen. The west-bound passengers generally have about five hours to spend here. Considering that Kalgoorlie is little more than twenty years old, its appearance is wonderful. Fine buildings, trams, electric light, &c., all created by gold and water, for without the latter (provided by the great Mundaring scheme) it would have been impossible to win the former. Like all other mining centres, Kalgoorlie is feeling the effects of worked-out mines, and considerable anxiety about the future is being manifested by those who have made the town their home. A wild-flower excursion train was announced for Menzies, 80 miles to the north, for the following day (Sunday); but, as I was expected by friends in Perth on that day, I had to forego seeing the famous everlasting-covered plains of the Central West.

My description of the country passed through has been very brief. Those who are interested should obtain one of the illustrated folders issued by the Commonwealth Railways from the Tourist Bureau. Further interesting details will be found in a little journal, *The Inlander*, issued by the Home Mission Board of the Presbyterian Church of Australia, dealing with problems of life on Australia's frontiers. In the number for February, 1918, the editor, Rev. John Flynn, in a well-illustrated article entitled “Spanning the Continent,” gives a graphic description of the trials and difficulties of laying down the line in such inhospitable country; while in the *Emu* for January last (vol. xviii., part 3) Captain S. A. White, C.M.B.O.U., gives some account of four ornithological trips to the Nullabor Plains. This article also is illustrated, and from it one can get an idea of the natural history of this previously almost unvisited region. His illustration of the Ooldea Native Well is particularly characteristic of the area. *The Golden West*, an annual published in Perth, for December, 1917, contains further illustrations descriptive of scenes along the line.

About 6.30 p.m. I was once more on the train, bound for Perth. Of course, nothing could be seen of the country till next morning, when at Meenaar, 82 miles from Perth, flowering shrubs—I think Hakeas—were seen near the railway enclosure; but it was not till near Northam that really normal country—trees, hills, and streams—were seen. The Avon here being the first stream since crossing the Para, in South Australia. The green grass-covered hills, with the river meandering

between, were indeed a welcome sight. Soon I began to see flowers along the line. One, a curious rusty-coloured spike, I could not make out; then it suddenly dawned on me—my first Kangaroo Paw! And so it was—*Anigozanthos rufa*, called “Wallaby Paw” on account of its smaller size. As we climbed the Darling Range the timber improved, and more flowers appeared, among them the beautiful *Leschenaultia*, patches of brilliant sky-blue, which simply captured me, and I longed to be able to pick some. Nearing Swan View, the hillsides were covered with masses of a small acacia in full bloom, of a brilliant yellow. Many other flowers of various hues appeared as we passed down the western front of the range towards Midland Junction. Here the country changes, and you get on to the sandy, slightly undulating plain on which Perth is built. My attention was soon attracted by the numerous *Zamias* along the railway enclosure—a group of plants quite absent from Victoria. Then in a garden I caught a glimpse of a coral-tree in bloom.

Friends met me at Perth, and in the afternoon introduced me to Perth's greatest glories—the King's Park and the view of Swan River. The latter, let me tell you, is rather an estuary than a river, for, except during flood-time, there is probably little current in the water near Perth except that created by the tide. Of King's Park I cannot say enough; I approached it *via* Harvest Terrace, in which is situated the Parliament House, in the grounds of which I saw fine bushes of the Geraldton Wax-flower in full bloom. This charming shrub, allied to our *Leptospermum*, is grown in many gardens about Perth; in one I saw it used as a hedge plant. It is not found wild about Perth, being a native of the drier districts further north. Harvest Terrace is lined with fine trees of *Erythrina indica*, known as the Coral-tree; at that time they were bare of leaves, but bearing clusters of large, crimson, pea-shaped flowers. Towards the end of my stay the leaves were appearing and the flowers disappearing. In the Observatory grounds, close at hand, was a mass of native vegetation. On entering King's Park one's attention is soon centred on the fine drives bordered with *Eucalyptus ficifolia*, which, at their flowering time in December and January, bear masses of pink, orange, or scarlet flowers. Unfortunately for me, only an odd flower or two appeared before I left for home. Then came the view down on to the Swan, 200 feet below, with South Perth and its acres of bush land in the distance. A few yards further on my friends introduced me to the Kangaroo Paws, growing in the uncultivated centre of the park—some 800 acres—and with them many other flowers whose relationship I was able to guess at from their likeness to familiar

Victorian forms. A dwarf myrtaceous shrub, *Hypocalymma robusta*, quickly took my fancy on account of its double peach-coloured blossoms; hence it is generally known as "Peach Blossom." A Sowerbæa, a purple liliaceous plant, after the style of our Burchardia, was also prominent. Then there was our friend *Kennedyia prostrata*, but apparently larger than we usually find it, and numerous other pea-flowers. The Kangaroo Paws were in hundreds, and just at their best. The picking of wild-flowers in the park is strictly forbidden, and if detected is followed by heavy fine, so that all who desire can feast their eyes on Nature's handiwork almost within a mile of the centre of the city. Many other strange and beautiful flowers were here, but where were the Epacris and Correa which one would expect to find associated with such heath-loving plants? On looking up my lists afterwards I found both these genera are absent from Western Australia.

We then followed the shore of Melville Water (as the expanded Swan is there called) to Nedlands, and took another tram, passing through a lot of bush country near Karrakatta back to Perth. I made up my mind then to try and get some flowers for the September meeting of the Club, and was advised to try the South-Western (Bunbury) line, between Gosnells and Kelmscott, about 15 miles from Perth. There I went on the following Tuesday, and, keeping within the railway enclosure, was soon bewildered with the many beautiful flowers met with. I did not go to Western Australia to collect, so have nothing to show you to-night; besides which, Mr. Topp has told you better than I can the characteristics of the flora prevailing in the south-western portion of Western Australia. In the moist places along the line were splendid *Droseras* up to three and four feet high, with a greater variety of colouring than we are accustomed to, a magenta *Utricularia*, and quantities of *Leschenaultia* of that delightful sky-blue colour of which one never seems to weary. Then I came upon the green Kangaroo Paws, *Anigozanthos viridis*, and got a fine bunch of them, but there were very few *A. Manglesii*, the crimson and green species. Asking a resident where to get them, I was directed to a drier part of the enclosure, towards Armadale, and in about a mile came upon them in all their glory. It was a great sensation to pick such a striking flower *ad libitum* for the first time. I soon had a nice bunch, and, getting a box at the local store, posted them at once to our secretary, thinking that, as the parcel should arrive in Melbourne on the following Sunday, they would be in time for Monday night's meeting; but as such promptitude in delivery might have established an awkward precedent for the post-office, they were not delivered to our secretary till the Tuesday,

so missed the meeting, and decorated his home instead. I understand they arrived in very good order.

Next day a friend gave up the day to introduce me to the Kalamunda railway line, and I would advise any flower-lover visiting Western Australia in August or September to take one or more trips up this line. I took only two, because I had not time for more. The line leaves the main line at Midland Junction and strikes south-east for the Darling Range, up which it climbs by means of a zig-zag like that formerly in use near Lithgow, in the Blue Mountains of New South Wales. The line was bordered with flowers on either side for miles. Soon after leaving Midland the rusty Kangaroo Paw appears, then *Manglesii*, with a few *viridis*; then *Kennedyia coccinea* climbing over the smaller shrubs and gum saplings, converting them into pillars of brick-red flowers. It is an extremely pretty creeper, and I am glad that plants are now growing in our Botanical Gardens. Then fine patches of *Leschenaultia*, some of deeper blue than others; then the Smoke-bush, *Conospermum* (?), a white, woolly flower, appearing in the distance like so much smoke; and lots of others which I regret I cannot exhibit or tell you the names of. We left the train at Kalamunda (20 miles, and 920 feet above sea-level) and started off through the bush down the range to Midland, a distance of some twelve miles. The country was very rough, granite outcropping over a large portion of it, but the excitement of seeing so many unfamiliar flowers made me forget the roughness of the travelling. I cannot remember now all we saw. Almost our only orchid was *Caladenia flava*, resembling our *C. latifolia*, but of a beautiful lemon colour. I was disappointed in not seeing more acacias around Perth; perhaps I was too late for them, but as Western Australia is such a stronghold of the genus (140 in the extra-tropical portion), it must be that I did not strike their habitats. We saw one that day with extensive flanges to the stems and branches. Two or three *Grevilleas* were met with, and a part of the track bordered with an allied genus, *Petrophila*, was very fine, while *Kennedyia coccinea* was everywhere, so that I returned to town with a nice collection. A large proportion of the plants met with were of a very woody type, and consequently a collector would have considerable trouble in making herbarium specimens of them.

My next excursion was a run by railway to Fremantle. Two plants excited my attention here. The blue Lupin of our gardens grew in many places along the line, and was flowering freely, while the display made by the introduced Cape-weed, *Calostemma calendulacea*, exceeded anything I had seen before. Perhaps the underlying limestone of the land

about Cottesloe suits it. However, the flowers were larger and of a deeper yellow than I had seen elsewhere, and one person said it was quite as fine a sight as the everlastings are at the goldfields.

For the Saturday, a friend of Miss Fuller's, to whom she had written of my coming, kindly invited me to join a few kindred spirits in an outing to Darlington, another locality in the Darling Range. Unfortunately, the day turned out showery, but I collected and saw enough to be able to say to a prospective visitor to Western Australia, "Don't miss Darlington." The *Leschenaultia* here was wonderful in numbers. Western Australia boasts of many *Stylidium*s (Trigger-plants); here they were in numbers and of the most curious and quaint designs.

The next day other friends took me a little further along the same line to the Mundaring Weir, one of the show places of the State. The line, originally built for the timber traffic, traverses a portion of the Darling Range which had been well timbered, but the best has long been cut out. One of the stations, Mahogany Creek, is the only place that I know of where the word "Creek" forms portion of the name of a locality, the words used in Western Australia being "Brook" or "Well"; hence Chidlow's Well, a few miles beyond. The weir is on a branch line having a drop of 450 feet in five miles, and perhaps a few words about it and the reason for its existence may be of interest. Earlier in the paper I spoke of Kalgoorlie and its mines. Well, early in the existence of the Coolgardie goldfield, of which Kalgoorlie is part, it was seen that without water the mines could not exist, as the rainfall (10"), combined with an evaporation of from six to eight feet annually, was too small to provide for local conservation. The nearest permanent water was in the Darling Range, 350 miles away, but the Coolgardie table-land was 1,400 feet above sea-level, while the Helena River, which seemed the most likely to provide a regular supply of water, was less than 500 feet above sea-level. The problem was faced by the late Mr. C. Y. O'Connor, Engineer-in-Chief of the State, who decided that it could be solved by a huge pumping scheme. This was much ridiculed, but the late Sir John Forrest, knowing from his experiences as an explorer that water was everything in a case like this, backed him up, and, being Premier at the time, persuaded Parliament to adopt the proposal. The weir is 100 feet in height, and closes a picturesque gorge, somewhat resembling the Yarra at Studley Park, and backs up the water for about seven miles. The reservoir can contain about 4,600 millions of gallons of water; of this, about $3\frac{1}{2}$ million gallons, weighing about 15,000 tons, are

pumped every day and sent on the long journey to Kalgoorlie, taking about four weeks to accomplish the distance of 350 miles. For this task there are eight pumping stations, situated about fifty miles apart. The main is of the lock-bar type, and can be seen at many places along the line between Northam and Coolgardie. The neighbourhood of the weir is also a good collecting-ground. A beautiful *Hovea* was in full bloom when I was there, and a *Hibiscus* was another conspicuous shrub.

A few words about the Darling Range, which has such an influence upon the vegetation of the Perth district, may help to a better understanding of this peculiar feature of Western Australia. Standing in King's Park and looking east, one can see the range extending for miles from north to south, occupying about the same position as the Dandenongs do to Melbourne. It extends for more than 200 miles, from about Moora, 110 miles north of Perth, almost to Cape Leeuwin, the south-western extremity of the State; but it is not by any means a dividing range such as that traversing Victoria, for it is broken by valleys through which streams find their way from its eastern slopes to the Indian Ocean. Thus the Swan, known in its upper portion as the Avon, rises far to the east of its main ridge and flows into the ocean some thirty miles west of its face. Geologists tell us that the face of the Darling Range presented to Perth is a fault scarp, and that the twenty miles or so of country lying between it and the seaboard consist of recent dune rock overlying Cretaceous and Permo-Carboniferous strata. This stretch of sandy country is apparently saturated with water, and capillary attraction is perhaps accountable for the wealth of vegetation supported in what looks like a dry and unpromising region. That the depth of sand is immense was proved when the bore at the Zoological Gardens, used to supply warm baths, was put down through 1,500 feet of pure sand. Fremantle and some of the other suburbs depend for their water supply on artesian bores. The range consists of granites of several types, but does not rise to any great height, Mount William, about 1,600 feet, near Hamel, being its highest point. We have in the Brisbane Range, to the south of Bacchus Marsh, a very similar geological feature, but on a much smaller scale.

To a visitor from Melbourne interested in geology the surroundings of Perth present little opportunity for the study, the absence of our familiar Silurian and Basaltic formations being at once apparent, the only rocks near Perth being the granite of the Darling Range and a soft limestone between Cottesloe and Fremantle; this is used both for building and road metal, hardening considerably on exposure to the air. For basalt one has to go to Bunbury, 120 miles south, where there is an

exposure close to the sea, while there are few other occurrences in the State.

Western Australia is a State of great distances between important places. A visitor must thus have plenty of time at his disposal if he wishes to see all types of country. Kalgoorlie is about the same distance from Perth as Mildura is from Melbourne, while Day Dawn and Laverton, two other important mining localities, are 525 and 586 miles respectively, the latter being just the same distance as between Melbourne and Sydney. Albany is 340 miles away, almost as far as Mildura, while Katanning, the centre of the agricultural area, is 225 miles, or about as far away as Orbost. For timber one must go south to Karridale, 170 miles—nearly as far as Albury. Geraldton, the home of the Wax-flower and Sturt's Desert Pea, is 300 miles north of Perth, and bear in mind that each of the places mentioned is in a different direction.

As I wanted to see a little more than the immediate surroundings of Perth, I decided to pay a visit to the Yallingup Cave, situated about thirty miles from Busselton, a journey altogether of some 170 miles. Busselton is the terminus of the South-Western line, which also serves Bunbury, several timber lines into the Darling Range, the Collie coal-field, and the sandstone deposit near Donnybrook. The line traverses that twenty-mile strip of sandy country between the Darling Range and the sea, sometimes approaching the range fairly close. I hoped to see some of the famous timber of the South-West, but found that to do so I should have made a trip along one of the branch lines mentioned. At Busselton tourists are met by the Caves motor and conveyed to their destination. The greater part of the road is close to the sea, and passes through a natural avenue of the Weeping Agonis, *Agonis flexuosa*, usually called "Peppermint" in the West. This district is its stronghold, and it certainly is a distinctive feature. Many of the trees were 25 feet in height, with stem diameters of 18 inches or more. Its drooping character gave a particularly pleasant effect to the drive. As we ascended the ridge forming Cape Naturaliste grass-trees and Zamias became more prominent. The country along the line from Perth reminds one very much of the Frankston country. Several good rivers—the Canning, the Murray, the Brunswick, and the Collie—were crossed. Near the Bunbury junction Kangaroo Paws occurred in hundreds, and were a splendid sight. The Cave House at Yallingup is within sight and sound of the Indian Ocean. The fifty miles of limestone country between Capes Naturaliste and Leeuwin are honeycombed with caves, the best being those at the Margaret River, about thirty miles south of Yallingup. I arranged to go on there, and started by motor on a lovely

morning with anticipations of a delightful trip, but disappointment soon came. After travelling about twenty miles through timber country — jarrah and karri principally — improving at every mile, at mid-day the motor struck, and nothing would induce it to move again. With miles to the nearest house, there was nothing to be done but admire the wild-flowers till help came. Just at dusk our chauffeur returned with a farmer's waggon and pair, and we made a start for home, which was safely reached about 9 p.m. So ended my visit to the Margaret River Caves; but during my enforced stay I walked on a couple of miles or so and saw many interesting plants, especially a *Hovea*, a shrub of four feet or so, bearing flowers of the deepest purple—in some cases so abundant as to quite hide the stems and leaves. It was worth while to be able to see it so closely and pick it, which I could not have done had I motored past at twenty miles an hour. Then there were two or three species of *Anigozanthos* (Kangaroo Paws), with smaller flowers and of a tall, branching habit; one of these was flowering in our Botanical Gardens last month. During my rambles around the Cave House I met with several interesting plants—a pink *Pimelea* growing almost within reach of the breakers; a *Thomasia* (Sterculiaceæ) very like one I had seen at Wilson's Promontory, the eastern limit of the genus. A fine leguminaceous flower was *Templetonia retusa*, with crimson flowers an inch or more in length. I was charmed with a very beautiful climber growing sparingly in the scrub near the entrance to the Yallingup Cave, which may have been another *Kennedya*. It would be an acquisition to any garden. Among the rocks here was a fern closely resembling *Lindsaya linearis*, of which I brought home plants. The list of Western Australian ferns is very meagre—only fifteen or sixteen species, only two of which are not found in Victoria. The paucity of ferns is rather remarkable, for there are many localities in the south-west where one would expect ferns to do well.

The Yallingup Cave is entered from a sort of natural shaft on the side of a hill not far from Cave House, and, like most limestone caves, contains a number of beautiful formations bearing names more or less appropriate. At Yallingup the formations are remarkable for their very fine colourings. This is well exemplified in the "Arab's Tent"; but perhaps the most noticeable formation of all is that called the "Folded Shawl." This has been selected by Mr. E. J. Brady for illustration in his great work, "Australia Unlimited." The shawl formations here are said to be the finest in Australia, and why the "Folded Shawl" took its present shape is a mystery. There are about a mile of galleries, stairways, &c., lighted by electricity. The two hours we spent there went all too quickly,

and whetted our appetites for the further beauties we were to see in the Margaret River Caves, which are considered much finer.

Some misconception seems to exist in the minds of Victorians, who are used to big trees, as to the size of the Jarrah and Karri, two of the principal timber trees of the West, which are very restricted in their distribution. Quoting from the late Mr. J. Ednie Brown's report as Conservator of Forests (Western Australian Year-Book, 1900), he says:—"Considerable areas of Jarrah (*Eucalyptus marginata*) forest exist in which many of the trees attain heights of 90 to 120 feet, with good stems 3 to 5 feet in diameter, and 50 or 60 feet to the first branch, but the average size of a good healthy tree would be 90 to 100 feet in height and $2\frac{1}{2}$ to $3\frac{1}{2}$ feet in diameter at the base." Regarding Karri, *E. diversicolor*, he says:—"In its young state it is a very ornamental tree. When mature an average tree may be put down at 200 feet in height, 4 feet in diameter at 3 to 4 feet from the ground, and 120 to 150 feet to the first branch." The finest tree he knew of was 11 feet in circumference at 3 feet from the ground and 160 feet to the first branch, where it was 56 inches in diameter.

Two other excursions near Perth may be worth mentioning. One was to Kelmscott and then up the road to Martin's Hill. This put me very much in mind of the ascent of Mount Dandenong from Croydon. Many Victorian genera occurred along the road, such as *Stackhousia*, *Daviesia*, *Pultenaea*. A very fine *Grevillea* grew abundantly on the top of the hill. The track in many places was over ironstone gravel, which was remarkably heavy, and seemed to contain enough mineral to be of economic value, but on account of the expense iron ore has to be very pure to be worth treatment. In a fruit garden adjacent bananas seemed to be doing very well. This reminds me that the plantain is very common in gardens around Perth, and bears fruit. Another very common tree is a castor oil-tree, but whether the species which supplies the oil of commerce I cannot say. If it is, then an effort should be made to utilize it, for castor oil is in great demand at present as a lubricant. At Kelmscott I saw the Crimson Kangaroo Paws used with good effect as a border to a drive, having somewhat the appearance that clumps of gladioli would have.

The final outing of my trip was another visit to the zig-zag on the Kalamunda line. I slipped out of the train at the summit of the zig-zag (700 feet) and walked back to Midland Junction, collecting flowers nearly all the way. Just at my starting-point were hundreds of the charming *Helipterum* (*Rhodanthe*) *Manglesii*, their pink flowers lasting for a long time as a table decoration. Many other flowers occurred all

along the line as I descended, of which I am unable to give the names. I noticed here, as also in the open scrub land about Victoria Park, a southern suburb, quantities of *Calectasia cyanea*, the Tinsel Lily of our Grampians. The Western Wattle, *Acacia saligna*, was very fine about Applecross, where also that remarkable tree, *Nuytsia floribunda*, known as the Christmas-tree (on account of its being covered with gorgeous orange blossoms about Christmas time) also grows, but I did not come across a specimen. There was also a brilliantly-coloured *Banksia*. Another good place for flowers was the open land close to the tram terminus at Mount Lawley, a northern suburb. Two other places I wanted to visit but could not, on account of the infrequency of the trains, were the Serpentine Falls, beyond Armadale, and Gingin (50 miles), on the Northern (Geraldton) railway, where I would have seen a different class of country. Swan View (Darling Range) is also a good wild-flower locality, but had to be omitted from my itinerary.

A couple of days before I left Perth a wild-flower show for patriotic purposes was held in the Town Hall. Of course, I paid it a visit, but was somewhat disappointed. There were certainly quantities of Kangaroo Paws, *Boronia* (from Albany), Geraldton Wax-flowers, &c., for sale, but little attempt at a botanical display; however, I saw many flowers which I had not met with in my short rambles, such as the red *Leschenaultia* (which, I believe, is somewhat rare), the *Verticordias*, and quite a number of orchids, including the Porcelain Orchid, of which we had specimens at our recent display.

It is possible that some of my listeners have been disappointed in the fact that I did not enter into greater detail than I have done regarding the flora of that part of Western Australia which I visited, but it must be borne in mind that I was a stranger in a strange land, and my visit was far too short in which to gather much detail of such a large subject; and besides, Mr. Topp, in his paper previously referred to, has made so many comparisons between south-western and south-eastern plants that further detail is unnecessary now. For those who contemplate a visit thither I would suggest a study of the articles on the natural history of the State which have appeared in the Year-Book published by the State Government, particularly those in vols. ix.-xiii. (1894-1902). A useful article on the flora, by Mr. J. J. East, with references to previous writers on the subject, was published in the "Cyclopædia of Western Australia," 1912; while the handbook published for use of the British Association meeting in 1914, together with the articles by Mr. J. H. Maiden, I.S.O., F.R.S., in the Federal handbook for the same meeting, contain a vast

amount of information not readily procurable elsewhere. Up to the present no work dealing exclusively with the botany of Western Australia has been published, but I have been informed that Mr. Oswald Sargent, of York, is collecting material for such a publication, which will no doubt be greatly appreciated, for, as Mr. Maiden says regarding Western Australia, "its pre-eminence as a botanist's paradise is without question."

The natural history of Western Australia has attracted the attention of naturalists for more than two hundred years, for had not Vlaming in 1696 visited the Swan River and captured there actual specimens of the fabulous Black Swan of Juvenal, and managed to take three of them alive to Batavia. Three years later William Dampier visited Western Australia for the second time, and, landing at Shark Bay, was disappointed with the barren appearance of the country. He referred to the kangaroo as "a strange creature like a raccoon, which used only its hind legs, and, instead of walking, advanced by great bounds or leaps of twelve or fifteen feet at a time." In 1791 Archibald Menzies, naturalist to Vancouver's expedition, spent some time at King George's Sound making extensive botanical collections. In the following year Mons. Labillardière, naturalist to the French expedition under D'Entrecasteaux, visited the south-western coast, while in 1801 came Matthew Flinders in the *Investigator*, and with him was Robert Brown, the father of Australian botany, who made rich hauls in the neighbourhood of King George's Sound. In 1801-2 another French expedition under Baudin searched the west coast for traces of La Perouse, without success. The botanist to this expedition was Mons. Leschenault, after whom that beautiful member of the Goodeniaceæ was named, and which, so far as I could learn, bears no vernacular name, being always referred to by its scientific appellation.

After my all too short acquaintance with the Swan River flora, I could quite understand the pleasure and curiosity with which early botanical explorers must have wandered about the sandy surroundings of the Swan River and secured for friends in England and elsewhere specimens of its wonderful flora. Probably the man who did most to make Western Australian plants known to the world was James Drummond, who arrived in Western Australia as "agriculturist" with the first Governor, Capt. Stirling, 1829, and was placed in charge of a garden for introducing useful plants into the colony. He devoted a considerable portion of his time to collecting native plants and forwarding specimen plants and seeds to England, where they became quite a rage, and for years New Holland plants, as they were termed, were grown in glass-houses by

wealthy folks. His name has been used as a specific name for some hundreds of Western Australian plants. Another man who spread the fame of New Holland plants was John Lindley, who was Professor of Botany in the University of London in 1829. In 1839 he published in Edwards's "Botanical Register," vol. xxxii., "A Sketch of the Vegetation of the Swan River Colony." This contains coloured figures of eighteen species. A copy can be seen in our Melbourne Public Library, and the faithfulness of the figures remarked. Our own grand old man, the late Baron von Mueller, did a great deal towards the elucidation of the Western Australian flora, and, I believe, showed considerable partiality towards it, which perhaps may be accounted for by the fact that in 1856 he accompanied, as botanist, the A. C. Gregory Exploring Expedition in North-Western and Northern Australia, and in 1867 and 1877 made visits to Western Australia for purposes of botanical research. In this connection it may be mentioned that a society for the study of the native flora—the Mueller Botanic Society—was founded in Perth in 1897, which published eleven parts of its proceedings, dated September, 1899–April, 1903. In April, 1903, it became the Western Australian Natural History Society, publishing proceedings at irregular intervals. On 17th August, 1909, the title of the society was altered to Natural History and Science Society of Western Australia, and it commenced the publication of a quarterly journal. In 1914 the society became the Royal Society of Western Australia. Unfortunately, the set of the society's proceedings in our library is far from complete, but it contains many useful articles. Probably in the early days of the society, a piece of land lying between Leederville and Subiaco, two of the western suburbs of Perth, was dedicated as a public park, under the name of Mueller Park; but as one of the far-reaching effects of the late war I found that this is now shown on the official plan of Perth (October, 1917) as Kitchener Park, the name "Mueller" having been discarded, probably on account of its German flavour.

These notes will hardly be complete without some reference to the Western Australian Museum, which is housed in a fine building a little to the north of the railway station and overlooking Central Perth. It was opened on its present site in 1891, and contains a creditable lot of specimens. Western Australian birds are well represented, but I was very much struck, while glancing at them, with the prevalence of sombre tints in their colourings, even the parrots making a poor show. This, probably, is an indication of the type of country which they inhabit. Among a number of interesting large cases was one containing a group of the common sea and shore birds found

near Perth. The authorities are proud of their mounted whale skeleton, 80 feet long. Fossils, minerals, and the other items of a museum make up a very interesting collection. The ethnological display was not so extensive as I had expected from such a large area as Western Australia, still having a large aboriginal population; but I learned that from want of room many valuable exhibits are unable to be displayed. The Public Library occupies portion of the same building, and the Royal Society has the use of a room there. The monthly meeting of the society took place while I was on my Caves trip, so I unfortunately missed meeting some of the kindred spirits of the West. The Zoological Gardens at South Perth were not seen at their best. The dry season was affecting them, and during the previous winter there had been numerous deaths among the animals and birds; but more serious than all was the falling-off in revenue, and consequently the difficulty of upkeep. This, unfortunately, is the result of a universal monetary depression in Western Australia, of which we have seen evidences in the papers during the past week, mainly due to the falling-off of the gold yield and the agricultural and other industries not being sufficient to fill its place. Perhaps as shipping gets more plentiful there will be a greater inducement to turn to the land, for from the land can be the only certain income.

Western Australia occupies about one-third of the island continent of Australia, and it should be borne in mind that my remarks have referred only to a few localities in that part of the State which, partly for the sake of brevity and partly to revive its first designation, Dr. Griffith Taylor has aptly termed "Swanland" in his exceedingly interesting memoir on "The Australian Environment." Swanland is also a set-off to Gippsland, in the south-eastern corner of the continent, and saves the use of that longer designation, "South-Western Western Australia," which was previously necessary. His eastern boundary of Swanland, which is practically the 10" rainfall line, runs from Shark Bay in the north to Israelite Bay in the south-east, crossing the Eastern railway between Southern Cross and Coolgardie, and the Coolgardie-Norseman line about midway between those two places.

On my return to Adelaide I broke my journey for three days, and filled in my time with friends and by taking two of the Tourist Bureau char-a-banc trips, which are very popular. The first was through Magill and up the road to Norton's Summit, past the Morialta Falls—a spot that is worth anyone's while to visit. The falls are in a magnificent gorge after the character of the Werribee Gorge, and are visible from the road. Then on through Piccadilly to Crafers; here there was

a stoppage of half an hour for afternoon tea. In chatting with a lady and gentleman on the car they said "they would like to take some of the wild-flowers home to their daughter, who belonged to a naturalists' club." I naturally was inquisitive enough to ask, "What club?" when I was informed "The Melbourne one." "Well," I said, "I probably know your daughter, and she is sure to have spoken of me," so I introduced myself. The member referred to is Miss M. Johnson, Miss G. Nethercote's companion on her Baw Baw trip. On leaving Crafers we went up to the summit of Mount Lofty, from whence there is a fine view of the Adelaide plain, and then took the road down to Adelaide through the Glen Osmond valley. A beautiful trip, but the hills were very dry, and few flowers were to be seen, *Pultenaea daphnoides* being the most noticeable. The war has even affected the vegetation of these hills, for, owing to the scarcity of shipping, the Broken Hill mines have not been able to get their regular supplies of Oregon timber from America, so they have had to fall back on local timber, and, as South Australia is very short of forest timber, the Mount Lofty Ranges are being stripped of their gums, and the logs sent to Broken Hill. The face of the range is also being deeply scarred by the extension of the quarries which supply the stone for building and road-making purposes in the city and suburbs. These scars can be seen from a distance of six or eight miles, so they are fairly extensive. The second trip, on the next afternoon, in which Mr. and Mrs. Johnson also joined, was southerly *via* Happy Valley Reservoir to Clarendon, on the Onkaparinga River, returning to Adelaide by the Coromandel Valley and Blackwood—another very picturesque trip, and, had the country not been so dry, would have been more enjoyable. No visitor to Adelaide should fail to take one or more of the Tourist Bureau trips. Most of them touch the Mount Lofty Ranges in one part or another.

My final day was terribly windy and dusty. I visited the Zoo in the morning. The collection of animals and birds is more modest than ours, but everything is very nicely housed and well kept. While there I noticed two or three specimens of the Larger Wanderer Butterfly lazily flying about. All too short visits to the Botanical Gardens, South Australian Museum, and the Public Library filled up a busy day, and left one wishing for a few more days in "The City of the Plain." The ethnological exhibits at the museum are very extensive and particularly interesting, and deserved a much longer time than I had to spare for them. My holiday was nearly over, and I returned to Melbourne next (the thirtieth) day, well pleased with the experiences of my trip, for is not all travel educative.

Field Naturalists' Club of Victoria.

* OFFICE-BEARERS, 1918-1919. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. F. CHAPMAN, A.L.S.

MR. J. GABRIEL.

Hon. Treasurer: MR. G. COGHILL, 79 Swanston-street (Tel. Central 2794).

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. S. ANTHONY, "Risdon," Kelburn-street, Caulfield.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. C. DALEY, F.L.S., J. A. KERSHAW, F.E.S., F. PITCHER,
J. SEARLE, and DR. C. S. SUTTON.

EXCURSIONS.

MONDAY, 9TH JUNE (King's Birthday).—**Evelyn to Montrose.** Objects—**Heaths and General.** Leader—Mr. Geo. Coghill. It is proposed to walk *via* Lilydale water race across Olinda Creek to Reservoir and thence to Montrose, where coach will be taken to Croaydon. Walking distance, about 6 miles. Lunch should be taken. Tea, sugar, and milk will be provided by leader. Book second class return excursion fare to Evelyn. Meet at Flinders Street Station (opposite Mutual Store) for 8.7 a.m. train.

SATURDAY, 21ST JUNE.—**Meteorological Bureau.** Leader—Dr. Griffith Taylor. Meet at entrance, Drummond Street, Carlton (in close proximity to Royal Society's Hall), at 2.15 p.m.

SATURDAY, 12TH JULY.—**National Museum.** Object—**Ethnology.** Under the leadership of Sir Baldwin Spencer, K.C.M.G. Meeting place—Main Entrance to Museum, Russell Street, at 2.15 p.m.

ANNUAL NATURAL HISTORY EXHIBITION.

In conjunction with the Annual Meeting an Exhibition of Natural History Specimens will be held on Monday, June 16th, 1919, in the lower rooms, Royal Society's Hall. The various sections represented will be superintended as under:—

Botany.—Messrs. F. Pitcher and H. B. Williamson.

Conchology.—Mr. J. Gabriel.

Entomology.—Mr. F. G. A. Barnard.

Ethnology.—Mr. E. S. Anthony.

Forestry.—Mr. A. D. Hardy, F.L.S.

General Zoology.—Mr. J. A. Kershaw, F.E.S.

Geology.—Messrs. F. Chapman A.L.S. and C. Daley, F.L.S.

Microscopy.—Mr. J. Searle.

Ornithology.—Messrs. J. A. Kershaw, F.E.S., and G. A. Kearnland,

Physiography.—Dr. Griffith Taylor.

SPECIAL NOTICE.

Suggestions for localities suitable to be visited by Club Excursions, and offers from members to conduct Excursions, should be notified to the Hon. Secretary before 25th June next, when the ensuing year's programme will be under discussion by the Committee.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS	KILLING BOTTLES	
CORK LINING	ZINC RELAXING BOXES	
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES	CABINETS	
CURVED FORCEPS	INSECT CEMENT	
&c., &c., &c.		

Write for our Price List and Sample Sheet of Prices.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 10th July, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	41
ABOUT "PET PETER," A FLYING PHALANGER. BY J. BOOTH, M.C.E., B.Sc.	49
NOTE	52

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST 1/2D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 14th JULY, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—	PROPOSER.	SECONDER.
Mrs. C. Barlow, 55 Raglan Street, St. Kilda.	Mr. E. Cox.	Mr. P. R. H. St. John.
Mrs. M. M. Cochrane, P.O. Murrumbena.	Mr. A. D. Hardy, F.L.S.	Mr. F. G. A. Barnard.
AS COUNTRY MEMBERS—		
Miss K. Currie, Lardner.	Mr. F. G. A. Barnard.	Mr. A. D. Hardy, F.L.S.
Rev. W. W. Watts, "The Manse," Wycheproof.	Mr. H. B. Williamson.	Dr. C. S. Sutton.
AS ASSOCIATE MEMBER—		
Miss Valmai Cochrane, P.O. Murrumbena.	Mr. A. D. Hardy, F.L.S.	Mr. F. G. A. Barnard.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

By Mr. J. Searle: "Gleanings of a City Naturalist." Illustrated by lantern views.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

The Victorian Naturalist.

VOL. XXXVI.—No. 3. JULY 10, 1919.

No. 427.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE thirty-ninth annual meeting was held at the Royal Society's Hall on Monday evening, 16th June, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about 120 members and visitors were present.

CORRESPONDENCE.

From Mr. W. H. D. Le Souëf, C.M.Z.S., thanking the members for their expression of sympathy in his recent assault by foot-pads, and stating that he was almost himself again.

REPORTS.

A report of the excursion to Studley Park on Saturday, 17th May, was given by the leader, Mr. A. D. Hardy, who briefly outlined the extent of the ramble and the objects noted, pointing out what a valuable asset Studley Park is, both for the study of botany, in the shape of metropolitan representatives of some of our forest trees, and for the study of sedimentary rocks. He said that the party, which was a large one, had been kindly invited to afternoon tea by Mr. and Mrs. J. Gabriel, whose residence adjoins the park.

On the motion of Messrs. Barnard and Cox, a hearty vote of thanks was passed to Mr. and Mrs. Gabriel for their hospitality.

A brief report of the visit to the Geological Museum on Saturday, 31st May, was given by Mr. F. G. A. Barnard, who said that there had been a good attendance of members. Mr. R. A. Keble, who was the guide for the afternoon, devoted some time to the mode of occurrence in Victoria of some of the rare minerals, such as wolfram and molybdenum, and pointed out specimens of the different ores. He then dealt with various other economic mineral productions of Victoria, according to their geological age, and made the visitor realize what a wealth of information can be derived from the examination of the specimens in the museum.

A report of the excursion from Evelyn to Montrose, on Monday, 9th June (King's Birthday), was given by the leader, Mr. G. Coghill, who said that there had been a good muster of members, but, unfortunately, the day turned out most unpleasant—at first very windy, afterwards smart showers. From a botanical point of view the excursion had not been the success that he had hoped, for, where the previous season the native heath, *Epacris impressa*, had been in abundance, on this occasion

it was very poor, partly owing to fires during the summer, and partly to the extraordinary autumn just experienced, when both native plants and introduced trees, &c., apparently misjudged the season, and flowered at a time when they should have been resting. He remarked that along part of the route followed, the bank of the Lilydale water-race, numerous seedlings of about a dozen species of ferns were easily obtainable. They were just the size for moving, and their removal was in no way detrimental, for at intervals the race was cleaned out, and most of the young ferns were destroyed. Luncheon was taken at his week-end cottage, where the party arrived just in time to avoid a wetting. During the afternoon a visit was paid to the neighbouring Olinda Reservoir, but the fine view usually obtainable from that elevated spot was marred by rain clouds. The members of the party, however, seemed to enjoy the outing, and returned to Mooroolbark station laden with heath and gum leaves for home decoration.

Mr. J. L. Robertson said that he had brought the excursion under the notice of the officers of H.M.S. *New Zealand*, but he supposed their official duties could not be set aside, for no one responded to the invitation.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. W. H. Ingram, "Swainton," Clowes-street, South Yarra, was duly elected an ordinary member; Mrs. J. Findlay Fraser, Sunnyside, *via* Drouin, as a country member; and Miss Oonah Hardy, Studley-avenue, Kew, as an associate member of the Club.

ANNUAL REPORT.

The hon. secretary, Mr. E. S. Anthony, read the thirty-ninth annual report for the year 1918-19, which was as follows:—

"TO THE MEMBERS OF THE FIELD NATURALISTS' CLUB OF VICTORIA.

"Ladies and Gentlemen,—In presenting the thirty-ninth annual report of the Club, your committee feel that it is a matter for great thankfulness that the year just closed has seen also the conclusion of the greatest conflict in human history. For over four years the nations of the world have been engaged in the deadliest strife, and it is little wonder that, amid the unprecedented events of this period, a Club such as ours should have been content with quiet, unostentatious work rather than with movements of an aggressive nature.

"In reviewing the past year, it is pleasing to record the loyal support your committee and officers have received from members despite the distracting factors alluded to.

“ The Club year had a good send-off at the annual meeting. This usually formal business meeting was made attractive by the addition of a general exhibition of natural history specimens, to the success of which a large number of the members contributed. His Excellency the Governor-General, Sir Ronald Munro Ferguson, K.C.M.G., himself a member of the Club, attended the meeting, and, in addition to unveiling the honour board so generously donated by Messrs. J. Gabriel and P. R. H. St. John, made a close examination of the individual exhibits, and showed genuine interest in this demonstration of the Club's varied operations.

“ Throughout the year, with the exception of the month of February, the monthly meetings have been held regularly, the one omission being due to the Board of Health's restrictions prohibiting public gatherings on account of the prevailing epidemic of influenza.

“ These monthly meetings have maintained the standard so long upheld by the Club in regard to scientific interest, variety of subjects, and popular character. The attendances have averaged between 50 and 60 persons each month. It has always been considered of paramount importance to encourage members at these meetings to place on view specimens of interest, and there has been no lack of exhibits during the past year. Brief explanatory notes have greatly enhanced the value of this part of the programme. Lectures have been delivered and papers read dealing with botany, entomology, geology, meteorology, ornithology, and zoology. Several of these were illustrated by excellent lantern views and diagrams. The authors' names and titles of their lectures and papers are as follows :—Mr. J. Hatch, lecture (illustrated), ‘ The Bird-Life of Macquarie Island ’; Dr. Griffith Taylor, B.E., B.A., F.G.S., lecture (illustrated), ‘ Science in Antarctica ’; Mr. F. Chapman, A.L.S., lecture (illustrated), ‘ Geological History of Australian Plants: Mesozoic Flora.’ Papers.—Mr. Thomas Steele, ‘ Tracks of the Garden Snail ’; Mr. F. P. Dodd, ‘ An Entomologist's Trip to New Guinea ’; Mr. F. E. Wilson, ‘ An Ornithologist's Notes in the Mallee ’; Mr. J. W. Audas, F.L.S., ‘ Nature in the Serra Range ’; Mr. J. Gabriel, ‘ Destruction of Mutton-Birds at Phillip Island ’; Mr. F. G. A. Barnard, ‘ Notes on a Trip to Western Australia ’; Mr. H. B. Williamson, ‘ Notes on the Census of the Victorian Flora ’; Mr. A. H. S. Lucas, M.A., ‘ A Week Among the Seaweeds at Portsea ’; Mr. J. Booth, M.C.E., B.Sc., ‘ About Pet Peter, a Flying Phalanger.’ Your committee expresses its thanks to the contributors named.

“ The Club excursions, always regarded as a special feature of its many activities, still continue their popularity. The

majority of these were half-day visits to localities easily accessible on the Saturday afternoon, but several whole-day outings further afield were also conducted, and a five days' visit to Marysville at Christmas time proved a very successful undertaking. The famous Grampians were visited in September by a party of Club members in conjunction with the excursion arranged by the Tourists' Bureau. The thanks of your committee are extended to those ladies and gentlemen who have acted as leaders and organizers of these field excursions.

"The annual wild-flower exhibition as a public show has become a regular institution. This year it was again held in the Melbourne Town Hall, and the proceeds devoted to the Soldiers' Fund of the Y.M.C.A. The hall was found none too large for the fine display of native flowers generously forwarded by members and friends from all the States of the Commonwealth. The microscopical display, which was a noteworthy feature of the show, was due to the generous assistance of the Microscopical Society and the painstaking labours of Mr. J. Searle. Many lady members and friends gave of their time and work unsparingly, and the ladies' committee, under the capable management of Miss A. Fuller, has your committee's congratulations. Many other workers, both before and at the show, are deserving of more than passing mention for their voluntary assistance in ways too numerous to refer to. The net result of this one-day exhibition was £141 2s. 9d., which must be considered satisfactory, especially having regard to the unpropitious weather.

"In addition to these more prominent operations of the Club, a number of other matters of not less importance have been dealt with.

"Strong support has been given to the department administering the *Fisheries and Game Act*, particularly in relation to the close season for quail and other game.

"In connection with the National Park, during the year the Government received applications to throw open this proclaimed sanctuary for the preservation of the native fauna and flora for purposes of tin mining. A large and influential deputation (on which this Club was strongly represented) waited on the Minister of Mines to oppose this application, and their efforts were partially successful. The Club's support was also requested by the naturalists of South Australia in their endeavours to secure a reserve for the protection of native fauna and flora in that State, and it is understood that the request is likely to receive favourable consideration.

"A good deal of publicity was given to Macquarie Island and the destruction of its bird-life during the period under review, and a representative was selected by this Club (and

afterwards approved of by the Tasmanian Government) to pay a visit of inspection and report to the Club. Owing to the lateness of the season, and other reasons, the visit of this representative was deferred for the time being.

"The Plant Names Committee still pursue their labours, and are at present dealing with the final revision of the vernacular names.

"The Club's monthly journal, the *Victorian Naturalist*, under the able editorship of Mr. F. G. A. Barnard, is a far greater asset to the Club than may be generally known. Besides recording the meetings and excursion reports, the lectures and papers read before the Club are published *in extenso*, and your committee are pleased to report that inquiries from the other States and overseas are frequently made for copies containing certain scientific matter regarded as important. Your committee desire to place on record their appreciation of the untiring devotion to duty of the honorary editor, who has not spared himself in bringing the *Naturalist* to the high standard it has now reached.

"Another officer who has served the Club voluntarily for many years, but who this year seeks retirement, is Mr. George Coghill. As hon. treasurer for 15 years or more, he has controlled the finances of the Club in a very capable manner. His business ability and systematic methods have assisted your committee in no small degree, and they much regret that he feels that he is unable to continue in the office.

"The hon. secretary (Mr. E. S. Anthony) finds it impossible to continue in office, and has reluctantly to retire this year also. To Mr. W. Glance, who has for some years acted as hon. assistant secretary and hon. assistant librarian, your committee express their thanks for his regular attention to the duties of these dual offices.

"Your committee are greatly indebted to Messrs. Coghill and Haughton for the continued free use of their office for the committee meetings each month. These central, well-lighted premises have been of great convenience to the committee.

"The library is still in the capable hands of Mr. P. R. H. St. John, and a recent list of publications regularly received into the library by purchase or exchange should be of advantage to members.

Membership.—The year commenced with a roll of 229 members, and at the close of the year the number was 233, showing an increase for the twelve months of 4, after allowing for resignations and elections. A list of the members was published in the last number of the *Naturalist* for the year (April, 1919).

"Your committee are pleased to welcome back those

members who have been on active service, and trust before very long that all those members who have been so engaged will be back to their homeland once again.

"To those of the members (and they are many) who have during the year been bereaved your committee tender sincerest sympathy.

"The finances of the Club are in a sound position, and, as indicated in the hon. treasurer's statement, despite the increased cost of paper, printing, and postages, there is a credit balance at the close of the year of £58 15s. 9d.

"In conclusion, your committee trust that, with the altered condition of national affairs, members will be enabled to devote their energies more whole-heartedly to the pursuit of natural history, and by so doing assist the incoming officers and committee to promote the best interests of the Field Naturalists' Club.

"On behalf of the Committee,

"A. D. HARDY, *President*.

"28th May, 1919." "E. S. ANTHONY, *Hon. Secretary*.

On the motion of Mr. E. Cox, seconded by Mr. P. R. H. St. John, the report was received and adopted.

FINANCIAL STATEMENT.

The hon. treasurer, Mr. G. Coghill, presented the financial statement for 1918-19, which was as follows:—

RECEIPTS.				
To Balance, 30th April, 1918	...	...	...	£61 8 8
„ Subscriptions—				
Ordinary Members	...	£120 17 6		
Country Members	...	30 16 0		
Associate Members	...	3 12 6		
		—————	£155 6 0*	
„ <i>Victorian Naturalist</i> —				
Subscriptions and Sales		8 1 1		
Advertisements	...	3 15 0		
Reprints	...	1 10 9		
		—————	13 6 10	
„ Sales of Badges	...	...	0 8 0	
„ Special Subscriptions and Donations	...	...	1 10 0	
„ Interest, Savings Bank and War Loan	...	...	1 3 1	
„ Library—Overpaid on Periodicals	...	...	1 18 0	
			—————	173 11 11
„ Wild-flower Exhibition—				
Admissions	...	...	126 0 6	
Sales	...	...	51 11 4	
Refreshments	...	...	4 18 11	
			—————	182 10 9
				£417 11 4

*Subscriptions:—Arrears, £29 5s.; 1918-19, £121 15s.; 1919-20, £4 6s.—total £155 6s.

EXPENDITURE.

By *Victorian Naturalist*—

Printing ...	...	£93	17	9	
Illustrating ...	...	4	19	6	
Free Reprints ...	...	7	0	0	
Reprints charged ...	...	0	11	0	
					£106 8 3

,, *Victorian Naturalist*—

Wrapping and Posting ...	...	15	7	3	
Rooms—Rent and Attendance ...	...	13	15	0	
Library—Books ...	...	2	12	6	
Periodicals ...	...	3	10	6	
Insurance ...	...	0	7	0	
					6 10 0
Hire of Lantern ...	...	2	15	0	
Printing and Stationery ...	...	16	14	6	
Postages, &c. ...	...	8	4	4	
Subscriptions and Donations ...	...	6	10	6	
					176 4 10
Wild-flower Exhibition—					
Rent of Hall, &c. ...	...	20	1	0	
Expenses ...	...	21	7	0	
Cheque to Y.M.C.A. Fund ...	...	141	2	9	
					182 10 9
Balance in Savings Bank ...	...	51	3	1	
„ „ London Bank ...	...	7	12	8	
					58 15 9
					£417 11 4

G. COGHILL, *Hon. Treasurer.*

15th May, 1919.

Audited and found correct.

23rd May, 1919.

F. WISEWOULD, } *Auditors.*
F. KEEP,

The following statement of assets and liabilities was also presented:—

ASSETS.

Balance—Savings Bank and London Bank ...	...	£58	15	9	
War Loan Bond ...	...	20	0	0	
Arrears of Subscriptions (£58), say...	...	40	0	0	
Library and Furniture (Insurance Value) ...	...	150	0	0	
					£268 15 9

LIABILITIES.

Subscriptions paid in advance	£4	6	0	
-----------------------------------	-----	----	---	---	--

On the motion of Mr. G. Coghill, seconded by Mr. P. R. H. St. John, the statement was received and adopted.

A vote of thanks to the officers for the past year was proposed by Mr. E. Cox and seconded by Mr. J. Stickland. The motion was supported by Mr. F. Keep and carried unanimously.

On the motion of Mr. F. G. A. Barnard, seconded by Mr. H. Whitmore, a special vote of thanks was accorded to Mr. G.

Coghill in recognition of his valuable services as hon. treasurer for the past 15 years.

ELECTION OF OFFICE-BEARERS, 1919-20.

The following office-bearers, being the only nominations received, were declared duly elected:—President, Mr. A. D. Hardy, F.L.S.; hon. treasurer, Mr. F. Pitcher; hon. librarian, Mr. P. R. H. St. John; hon. editor, Mr. F. G. A. Barnard; hon. secretary, Mr. P. C. Morrison; and hon. assistant secretary and librarian, Mr. W. Glance.

On a ballot being taken for two vice-presidents, Messrs. J. Gabriel and J. Searle were duly elected,

On a ballot being taken for five members of committee, Messrs. F. Chapman, A.L.S., G. Coghill, C. Daley, F.L.S., J. A. Kershaw, F.E.S., and Dr. C. S. Sutton were duly elected.

DEATH OF A LIFE MEMBER.

The president referred to the recent death, at the ripe age of 91, of Mr. B. R. Patey, one of the early members of the Club, who, in September, 1882, availed himself of a new rule then passed, and became the first life member of the Club. He, however, did not take a very active part in the work of the Club in the succeeding years, and therefore was unknown to most of the present members. It was resolved, on the motion of Messrs. F. Pitcher and C. French, to forward a letter of condolence to his relatives.

EXHIBITS.

With the view of making the annual meeting more than usually attractive, members had been requested to make a special display of interesting exhibits, and the response was seen in the fine exhibition of various natural history objects in the lower hall, while several members exhibited specimens under microscopes in the adjoining room.

The following is a brief list of the principal exhibits:—

By Mr. E. S. Anthony.—Collection of aboriginal stone implements, &c.

By Mr. F. G. A. Barnard.—Growing fern, *Polypodium pustulatum*, Forster (syn. *P. scandens*), from Tidal River, Wilson's Promontory, December, 1914; also Australian bird-skins.

By Mr. D. Best.—Case of Victorian beetles.

By Mr. C. C. Brittlebank, on behalf of Science Branch, Department of Agriculture.—Four cases of pathogenic fungi; 12 spirit specimens of Australian phalloids.

(Exhibits continued in August *Naturalist*.)

After the usual conversazione the meeting terminated.

ABOUT "PET PETER," A FLYING PHALANGER.

BY J. BOOTH, M.C.E., B.Sc.

(Read before the Field Naturalists' Club of Victoria, 12th May, 1919.)

SOME workmen felling gum-trees near Croydon found and secured a small furry animal, which they brought up to the house and gave into the care of the housekeeper. She placed the little creature in a box crowded with fresh gum leaves, and fed it on bread soaked in milk and plastered with sugar. The men were first interested, then experimental, and later somewhat annoying to the little animal; and though it had become very friendly with the housekeeper, on whose shoulder it would perch, and hide in her dress, she decided to send it away from its tormentors, and asked me to take it home with me. This I was very pleased to do, and "Pet Peter" remained with us in Hawthorn till the day of his death.

"Pet Peter" was a phalanger—the Lesser Flying Phalanger—genus *Petaurus*, species *breviceps*, Waterhouse, of the group Phalangeridæ of the order Diprotodontia in the sub-class Metatheria of the Mammalia. Hence our pet was a climbing marsupial, with fore and hind feet prehensile, with an opposable thumb and prehensile tail, and had also "lateral folds of skin extending from fore to hind limbs" which act "as a parachute,"* and with a proper supply of diprotodont teeth.

On arrival home "Pet Peter" was put in a large deal box and provided with plenty of gum leaves; but gum leaves were not very readily obtainable, and seemed to be but little valued by "Pet Peter," and gradually they were discontinued, and a smaller box, with straw and pieces of cloth, substituted to provide warmth, shelter, and retreat. He quite approved, and was fond of both the larger and the interior box. Later he was removed to a wire-net cage or room, 6 x 4 x 10 feet high, overgrown with Virginia and other creepers. Here he lived while life lasted. He is now in the possession of the National Museum, and by the kindness of the Curator, Mr. J. A. Kershaw, F.E.S., he or one of his kind is on the table here this evening.

Being a nocturnal animal, his periods of activity, and so opportunity for observation, did not coincide with ours, and only overlapped by an hour or so in the evening. In these hours he was often introduced to the family, and allowed at large in the house. He rarely left the room in which he was set free, and showed no tendency to abscond. He treated us to very few demonstrations of "flying," although we have seen some fairly long "jumps." But his climbing powers

* Parker and Haswell, "Text Book of Zoology," ii., p. 468.

were astonishing. Not only did mantlepieces, high shelves, picture frames, and even the picture-rail present no more difficulty than floor or table, but picture or blind cords formed perfect surfaces for all the manœuvres of advance, sudden retreat, and active gyration. Human beings neither attracted nor repelled. He had no fear of them; if they happened in his way he ran over them. For him they simply were not. Come for calling? No. Easy to catch? Not much; but if caught it was no trouble at all to "Pet Peter."

When picked up in the evening, or approached in his nest in the day-time, he had no objection to being handled. You could stroke him, curl his tail round your finger, examine his graceful little paws, and he was neither nervous nor complaining; but on one point he was sensitive—very. Try to examine, spread out, or display his "wings," and "Pet Peter" manifested at once the greatest objection. His voice, which was usually a subdued hiss, became a very Liliputian snarl, while he wriggled, backed, and twisted in his most vigorous manner to avoid the desecration.

"Pet Peter" had another characteristic: he was a king of malingerers. To "sham dead" is not uncommon with animals; but "Pet Peter" to all intents and purposes was dead. Pity and interest and thoughts of the museum were the only things that prevented his burial the first time he treated us to an exhibition of his powers in this direction. Limp, eyes staring, and breathless, he exhibited no "response to stimuli," lying flaccid in the hands or on the table for a period of perhaps five or ten minutes; then, with scarcely a sigh of recovery, he would dart to a far corner and continue the romps of the evening. This sham death, which occurred some four or five times, seemed sometimes to be brought on by apparent fright of a cat or dog, but at others without any assignable cause—just a breathing spell in his activities; otherwise, during waking hours, "Pet Peter" took no rest.

He played hide-and-seek well. He was not always ready to be put away into his own apartment when the family were retiring—in fact, it was not always easy to find him, and even finding was not always getting, and so he was often left till the morning. Only once did we fail to get him, and then after an absence of a week he composedly turned up in one of the upper bedrooms; otherwise we never failed to find him eventually, but we had many a long search, and discovered him in strange places. A deep, narrow-necked vase in the centre of the top shelf of an overmantel hid him for a long time the first time he made use of it—I said first time, but I don't think there ever was a second. I am sure there was no third, for "Pet Peter" had no fancy for any particular cranny; but, though

his hiding-places were rarely the same, they were all pretty uniformly good.

At times we brought him out in the day-time, but he was, naturally, very lethargic, and, though we could trick him into running about a bit to show him off to visitors, he seemed very uncomfortable, and tried to burrow at once into the pockets or folds or sleeves of one's clothes. Nevertheless, at any time he was willing enough to wake up sufficiently to take a lump of offered sugar, and eat it in the same pretty manner as he did cockroaches. Yes, our pet was quite fond of sugar. One day we found in a drawer of envelopes and stamps a clean round hole through the papers to a small bag of boiled lollies. The stationery department made a debit of sixpence after patching up as many of the stamps as could be used. Otherwise, in the day-time he preferred quiet, and would be pleased to curl up in the lap for any length of time while sewing or the like was being done. He used occasionally to lick the hands of people with his long, thin tongue; with imagination one might construe it into a caress.

When he was at large, or almost at large, in his wire house, he was only to be caught during dormant hours, his activity in it, even if he ran almost through your hands at times, rendering it impossible when he had once woke up for the night. It was the practice to feed him when in the wire house once a day in the early evening. He would then answer to a call by name with a hiss, and drop on to the shoulder of the one bringing food. This was practically always the same person, and we certainly think that he came in a way to know her. At these feeding times it was curious to watch him drinking, when he did not perch on the shoulder or hand for a square meal. At these times he would suspend himself over the saucer of milk and drink freely, vertically upwards, gravity and its laws notwithstanding.

For diet, "Pet Peter" liked cockroaches. They were treated as delicate morsels. Chitin was of no use to him; after he had had five minutes with a member of the Blattidæ it all remained—but nothing, quite nothing, else. Every limb was removed, every femur emptied, and the dry dissected pile left in a neat patch where the meal was partaken of. It was most interesting to watch him, squirrel-like, holding these creatures in his miniature hands, and performing the dissection with skill and rapidity. He also had a taste for millipedes, and did not always spurn Oniscus. On one occasion a number of millipedes had been gathered for him, and he had been fed with a few, the rest being left in the bottom of a glass tumbler to serve for the next meal. "Pet Peter" took the next meal very shortly, inverting himself in the tumbler to take it, and wiped

the platter clean. We tempted him with various other refec-tion, animal and vegetable. Most he would have nought to do with: now and again he would taste a little fruit, or animals other than cockroaches and "millies," but they were all side-lines with him. His one stock and staple diet was the original milk-soaked bread and sugar, or perhaps we should say sugar and milk-soaked bread, for, though he ate the bread and drank some of the milk, it was the sugar, plenty and thick, that he seemed to regard as the essential.

The small size and perfect build, the curious "wings" and squirrel-like hands, so small and cold and naked, the rich, deep fur and delicate tissue-paper-thick ears, the spherical, prominent, bead-like eyes, the tiny pointed mouth and dainty little tongue, with his friendly but independent character, made him a universally admired pet. He was a cleanly animal, and had no noticeable parasites.

I do not know what toll of years would make a *breviceps* feel aged. But one evening, after some cold, wet weather, "Pet Peter" failed to answer to the call for supper, but took it readily enough when offered to him in his nest. He seemed to be lethargic, and the lethargy increased day by day, and his limbs became stiffer. One day his immediate caretaker reported that he seemed to be ill—had caught a cold, or got some rheumatism. He was brought indoors and given an extra good nest, and was fed attentively. But, though his appetite failed but little, his limbs continued to get stiffer, and on the 7th June last year his *corpus* was transferred to the National Museum.

We had brought him down from Croydon on the 16th November, 1912. He had then been about four months in captivity, making his age nearly six years, in addition to whatever time he had lived in his native bush.

"SCIENCE AND INDUSTRY."—The first number (May, 1919) of this new publication, which is the official journal of the Commonwealth Institute of Science and Industry, is to hand. Its aims, as set out in the "Foreword," are good, and we trust in due time will become accomplished facts. Many diverse subjects are dealt with. In an article, which shows the effect of environment on plants, Dr. J. B. Clelland deals with the terrible "prickly pear" pest in Queensland and northern New South Wales, the illustrations showing the widespread effects of the scourge. Fortunately Victoria is free from this plant as a pest, but the planting of sweetbriar and African boxthorn as hedge plants in this State should be absolutely prohibited, if we are to remain free from a similar menace. The journal is to be published monthly, at one shilling per copy.

Field Naturalists' Club of Victoria.

* OFFICE-BEARERS, 1919-1920 *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. P. C. MORRISON, 174 Punt Road, Prahran (Telephone Windsor 341,
only after 4 p.m.)

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,

J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSION LIST.

The Excursion List for 1919-20 will be finally revised at a Special Committee Meeting on 16th inst. Any further offers of leadership, or suggestions of localities for excursions, will be welcomed.

EXCURSIONS.

SATURDAY, 12TH JULY. — **National Museum.** Object—**Ethnology.** Under guidance of Professor Sir Baldwin Spencer, K.C.M.G. Meet at Main Entrance, Russell Street, at 2.15 p.m.

SATURDAY, 9TH AUGUST. — **Hurst's Bridge.** Object—**Wattles.** Leader—Miss A. Fuller. Meet at Prince's Bridge Station for 1.40 p.m. train. Second Excursion fare, 2/-

NOTICE.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1 6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2 9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8 -; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/8
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS	KILLING BOTTLES	
CORK LINING	ZINC RELAXING BOXES	
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES	CABINETS	
CURVED FORCEPS	INSECT CEMENT	
&c., &c., &c.		

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 7th August, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	53
EXCURSION TO STUDLEY PARK, KEW	58
NOTES	57. 59
A WEEK AMONG THE SEAWEEDS AT PORTSEA. By A. H. S.	
LUCAS, M.A., B.Sc.	60

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(FOR ADDRESSES SEE PAGE 3 OF COVER. IF BY POST ½D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 11th AUGUST, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Member.

AS ORDINARY MEMBER—

Mr. Chas. Lambert,
c/o Bank of New South Wales,
Melbourne.

PROPOSER.

Mr. J. Searle.

SECONDER.

Mr. F. G. A. Barnard.

4. General Business.

5. Remarks by Exhibitors, relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

"The Birds of a Gippsland Garden." By Miss C. C. Currie.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

EXCURSIONS.

SATURDAY, 9TH AUGUST. — **Hurst's Bridge.** Object—**Wattles.** Leader—Miss A. Fuller. Meet at Prince's Bridge Station for 1.40 p.m. train. Second Excursion fare, 2/-.

SATURDAY, 23RD AUGUST.—**Cheltenham.** Object—**Botany.** Leader—Dr. C. S. Sutton. Meet opposite Mutual Store, Flinders Street, to catch 1.45 p.m. train.

SATURDAY, 30TH AUGUST.—**Ringwood.** Object—**Botany.** Leader—Mr. F. G. A. Barnard. Meet at Flinders Street Station (opposite Mutual Store), to catch 1.35 p.m. train.

The Victorian Naturalist.

VOL. XXXVI.—No. 4. AUGUST 7, 1919.

No. 428.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 14th July, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about sixty-five members and friends were present.

REPORTS.

In the absence of the leader, Prof. Sir W. Baldwin Spencer, K.C.M.G., D.Sc., M.A., F.R.S., a report of the visit to the National Museum (Ethnology branch) was given by Mr. A. D. Hardy, F.L.S., who said that about twenty-two members had attended. The Professor first gave an outline of the course he proposed to follow, dealing firstly with the everyday life of the aboriginal, and secondly with their sacred rites. In viewing the exhibits, special interest was shown in the case showing Australian stone implements of different kinds along with exactly parallel examples from different parts of Europe, thus demonstrating in a striking manner the similarity between present-day tribes in Australia and the people of the Eolithic, Palæolithic, and Neolithic periods in the old world before the dawn of history. Canoes, weapons, and samples of native weaving with bark, hair-string, &c., were also sources of attraction to many, and a much longer time could have been profitably spent under the guidance of Sir Baldwin, but another engagement compelled him to curtail his remarks.

ELECTION OF MEMBERS.

On a ballot being taken, Mrs. C. Barlow, 95 Raglan-street, St. Kilda, and Mrs. M. M. Cochrane, P.O., Murrumbeena, were duly elected as ordinary members; Miss K. Currie, Lardner, Mr. J. C. Goudie, Sea Lake, and Rev. W. W. Watts, F.L.S., as country members; and Miss Valmai Cochrane, P.O., Murrumbeena, as an associate member of the Club.

GENERAL BUSINESS.

The president welcomed Dr. (now Major) W. Macgillivray, of Broken Hill, who had just returned from the front. Major Macgillivray, in acknowledging the welcome, gave some interesting particulars of the sea-birds which he had seen on his way to England, notably those around South Africa. He said that Petrels had been seen 1,200 miles from the nearest land. He also mentioned the Terns, of which several species

were seen, the most abundant being *Sterna melanophrys*. Calling at Sierra Leone, he found it full of interest, the streets and parks being gay with gorgeous butterflies. In England he had met Mr. Gregory Mathews, who has, for some ten years past, been making an exhaustive study of Australian birds. He mentioned also that, in his opinion at least, Australian birds compare favourably with those of the old world in the matter of song, in spite of the poetic protestations of English writers. In concluding, he thanked the members for their kind welcome.

Mr. G. A. Kearthland mentioned that a new park was in course of preparation at Preston, near Reservoir station, and that it would be a splendid opportunity for the creation of a bird sanctuary, as game was sure to seek the lake which is now being constructed, and would afford excellent material for study if unmolested. Mr. Kearthland said that he believed that the shire council was favourable to the proposal, and moved that it be urged by the Club to have the park declared a sanctuary.

In seconding the motion, which was carried unanimously, Mr. F. G. A. Barnard mentioned the part the Club had taken in having Wattle Park, near Burwood, declared a sanctuary, as a precedent for action in the present instance.

REMARKS ON EXHIBITS.

Mr. C. L. Plumridge exhibited fronds of a tree-fern, *Dicksonia antarctica*, garden grown, showing abnormal frondage, stating that when planted it was wholly normal, and remained so until its fourth year, when a slight crimping manifested itself on one of the fronds. This crimping has become more pronounced in successive seasons, until now some of the fronds are wholly crimped, while in very few is it wholly absent. From this specimen he hoped to be able to propagate a new tree-fern, wholly crimped. He also showed a tailed spider which had not come under his notice before. It builds a cylindrical nest or shelter, from which it appears never to emerge, but lives therein permanently, with its head just projecting from the front of the shelter. On being disturbed it spins rapidly round, apparently hoping thereby to escape detection. The specimen was identified by Mr. F. Spry as *Arachnura higginsii*, L. Koch.

Mr. G. A. Kearthland called attention to a very old male Grey-backed Goshawk, *Astur clarus*, which had lost the barred markings on the breast. This specimen was difficult to identify on account of this fact, which is not recorded by either Gould or Mathews, but is stated by North.

PAPER READ.

By Mr. J. Searle, entitled "Gleanings of a City Naturalist." The paper, which dealt with the various insects, &c., which

had been noted during several months in a Collins-street office, proved very interesting, more especially as it was illustrated by a series of lantern slides, among which were many excellent micro-photographs of insect anatomy.

The chairman said that the author's remarks were of rather a novel nature, although there was no reason why this should be so, as the work was not only extremely interesting, but also inexpensive, and hence within reach of all. He suggested that other members should make lists of insects, &c., noticed by them at various times in their houses, as he considered that these would make very interesting reading when collected from the different suburbs. He desired to thank the author for the introduction of such an enticing subject.

Messrs. J. L. Robertson and F. G. A. Barnard also expressed their thanks to the author, the latter mentioning that some years ago a specimen of the rather rare beetle, *Schizorrhina Phillipsi*, had been taken in a banking chamber at Kew, and, a year later, another specimen of the same species was found in the same office—a circumstance which he had not heard equalled.

NATURAL HISTORY NOTES.

Mr. A. L. Scott said that he had a hazy idea of what glow-worms were like, and thought that those he had seen were the larva of one of the diptera. He saw one of these lately, and, after what Mr. H. B. Williamson had said on this subject, had taken particular notice of the area to which the glow was confined. This area, he found, was about three-quarters of the length of the back, the anterior and posterior and the whole of the ventral surface not being illuminated. He suggested that the phosphorescence may have been caused by micro-organisms.

Mr. Williamson referred to phosphorescent earthworms, of which he had had specimens at different times. One particularly, when washed and placed on a damp cloth, glowed when stroked, and the finger also glowed when this was done, thus pointing to the explanation which was offered concerning bacterial agency as a cause of the phosphorescence.

The chairman spoke of the firefly of the tropics—a small beetle, perhaps a quarter of an inch in length and a sixteenth of an inch broad. These exhibited phosphorescence only on the ventral surface of the terminal segments of the abdomen, and then only in flashes, and not continuously. The light is of a brilliant electric blue colour, and a number (usually twenty or more) are put together under a tumbler to give a continuous light. In Japan, according to Mr. Robert Hall, this is the only form of illuminant used in the third-class compartments on the Japanese railways. He called attention

to a helpful paper on the subject of phosphorescence, by Miss F. Bage, M.Sc., to be found in the *Victorian Naturalist* for November, 1904 (vol. xxi., p. 93).

Dr. Macgillivray mentioned that he and Mr. Keartland saw numbers of fireflies in North Queensland. Their light was visible for a distance of at least 300 yards. Their flight was slow, and there were many thousands in one swarm which was observed. He also referred to the bacterial phosphorescence so often noticed by voyagers in the tropics, although the phenomenon is by no means confined to the Torrid Zone.

EXHIBITS.

By Mr. G. A. Keartland.—Specimen of an old male Grey-backed Goshawk, *Astur clarus*, which had lost the barred markings on the breast, shot at Kew.

By Miss G. Nokes.—Specimen of branching red coral, *Coralium rubrum* (?).

By Mr. C. L. Plumridge.—Fronds of Valley Tree-fern, *Dicksonia antarctica*, showing abnormal growth, in illustration of note; spider, *Arachnura higginsii*, L. Koch, with shelter, taken at Kew.

By Mr. J. Searle.—Specimens under microscope, in illustration of paper.

EXHIBITS AT JUNE MEETING.

(Continued from p. 48.)

By Mr. J. Carter.—Swan-neck moss and insect preparations (under microscope).

By Mr. J. Cronin.—Growing Victorian ferns in pots, from Melbourne Botanic Gardens, also branches of Lilly-Pilly and leaves of Cabbage Palm for decoration of hall.

By Mr. F. Chapman, A.L.S.—Under microscope, a series of extra large rock sections prepared to show structure, including Oolitic limestone from Clifton, England; contorted gneissose structure from Alaska, &c. Fossils from elevated beach deposits and the tertiaries of Ooldea Well, Trans-Australian railway, collected by Mr. L. Chandler, including representatives of the genera *Arca*, *Venus* (*Chione*), *Pecten*, *Pinna*, *Mytilus*, *Fusus*, and *Bulla*.

By Mr. H. Clinton.—Bird parasites, &c. (under microscope).

By Mr. C. E. Cole.—Australian Coleoptera.

By Mr. C. Daley, M.A.—Minerals found in conjunction with gold in Victoria, also quartz crystals and various varieties of quartz.

By Mr. J. E. Dixon.—Victorian Coleoptera—families Tenebrionidae and Curculionidae.

By Mr. C. French, on behalf of Science Branch, Department of

Agriculture.—Cabinet drawers of Australian coccids (scale insects), including a number of new species from the Mallee, collected by Mr. J. E. Dixon, and elsewhere; cabinet drawer of Australian and British butterflies and moths.

By Mr. J. Gabriel.—Polyzoa, &c., under microscope.

By Mr. C. J. Gabriel.—Victorian marine Mollusca, with their egg-capsules.

By Mr. R. A. Keble.—Morwell brown coal and its distillation products.

By Mr. F. Pitcher.—Mounted specimens of twelve rare Victorian ferns; collection of Victorian mosses; and collection of Victorian marine algæ.

By Mr. C. L. Plumridge.—Growing Victorian ferns—viz., *Adiantum hispidulum*, *Davallia dubia*, and *Lomaria fluviatilis*.

By Mr. A. L. Scott.—Rock sections, plain and polarized, under microscope.

By Mr. J. Searle.—Type specimens of Copepoda, also flower of *Ruppia maritima* (first time exhibited), under microscope.

By Mr. P. R. H. St. John.—Fruit specimens of *Gaultheria hispida*, R. Br.; "Wax-cluster or Snowberry," from Mt. Buffalo, collected by Mrs. J. Lang; also bag made from inner bark of the Red Stringybark, *Eucalyptus macrorhyncha*, by Mrs. F. Walker, of Ringwood.

By Mr. J. Stickland.—Vorticella, &c. (under microscope).

By Dr. Griffith Taylor, F.G.S.—Three new wall maps of Australia, from the Oxford Press, showing (a) vegetation zones, (b) population, (c) political features; geological specimens from South Victoria Land, East Antarctica, obtained during 1910-13 expedition; kenyte lava from Mount Erebus, showing large felspars, weathered out by frost and wind; basalts from Observation Hill, with curved joints; striated dyke rocks from Granite Harbour; weathered beacon sandstone from Mount Svess.

By Mr. L. Thorn.—Victorian butterflies, collected at Wandin and Ferntree Gully.

By Mr. J. Twyford.—Examples of the Brownian movement (under microscope).

By Mr. H. B. Williamson.—Collection of dried plants made by scholars of Hawkesdale school.

By Mr. J. Wilcox.—*Melicerta ringens*, &c. (under microscope).

After the usual conversazione the meeting terminated.

VICTORIAN FISHERIES.—The report by the Royal Commission appointed to inquire into the fishing industry has just been presented to Parliament. One of the principal decisions arrived at is that properly organized biological research must take the place of guesswork in ascertaining the life-histories of our food fishes.

EXCURSION TO STUDLEY PARK, KEW.

QUITE a large party assembled for the outing to Studley Park, Kew, on Saturday, 17th May, and, though listed for the study of eucalypts, the Park, covering rather more than 200 acres, and possessing about four miles of river frontage, offers so many opportunities to the naturalist that it was hard to keep the attention of the twenty-five or so who attended directed to the object of the afternoon. Near the meeting-place at Johnston-street bridge the contorted Ordovician strata exposed along the roadway leading to the pumping station first attracted attention. Ascending to the high ridge overlooking Dight's Falls, the fine view of the city was greatly admired, and attention was called to the fact that, as occasionally chipped stones may be picked up there, at one time the aborigines probably frequented it when on fishing excursions to the neighbouring Yarra, and in support of the fact one of the party secured a characteristic flake. Descending the pathway towards the boat-houses, specimens of *Eucalyptus leucoxylon*, the Yellow Gum, were pointed out encroaching on the territory of the River Red Gum, *E. rostrata*, which delights in river flats with deep soil. Several old Yellow Gums were of exceptional interest, for from the convex side of their bent trunks the bark had been removed scores of years ago by the natives in order to construct canoes. Though the Yellow Gum here is a somewhat crooked, straggling tree, in the Western District, where it has been cultivated by the Forest Department, it provides fine, straight stems, suitable for telegraph poles, &c. We then followed up a little valley, and soon left the riverside vegetation behind, getting among the Manna Gums, *E. viminalis*, the Swamp Gums, *E. ovata*, and the Yellow Box-Gum, *E. melliodora*. Here a little time was spent in noting the differences in the juvenile and adult foliage of the three species. Near the top of the ridge was seen a young Yellow Gum struggling for existence. It had been truncated some years ago at about ten feet from the ground, a few inches above a point where a mistletoe (*Loranthus*) had established itself; this was balanced on the opposite side of the trunk by an equal quantity of branchlets bearing "reversionary" foliage. At the time of our visit this latter had survived and the parasite was quite dead. Not far from this, and nearer to Studley Park-road, there is an old Yellow Box, about four feet in stem diameter and some thirty feet high. This tree forks into rather large limbs at ten feet from the ground, and growing from a cavity in the fork is a healthy specimen of the Lightwood, *Acacia implexa*, now about fifteen feet high, having a stem diameter of about six inches. Evidently a seed of the Lightwood had germinated in a decayed part of the host tree,

where it had lived a more or less parasitic or saprophytic existence until the roots had penetrated to the ground through the decayed heart-wood of its host. Among some planted trees along the northern side of the road it was noticed that the Mahogany Gums, *E. botryoides*, had done well, while the Sugar Gums, *E. cladocalyx*, were a poor lot. The Blue Gums, *E. globulus*, had long lost their vitality, and should be removed, to the benefit of their neighbours, as they form a breeding-ground for timber-destroying insects. At a pool in a disused gravel-pit a White-fronted Heron was undisturbed by our presence when passing close by, and continued its scrutiny of the pool, though separated by only a post and rail fence from a main road bearing much traffic. This portion of the park contains a few Sheokes, *Casuarina suberosa*, and Cherry Ballarts, *Exocarpos cupressiformis*, besides Manna Gums and a number of well-grown exotic trees. We then visited the surroundings of the abandoned fish-hatcheries, and made our way towards Mr. Gabriel's house, Mr. Gabriel pointing out some gum-trees which horses had barked, a somewhat unusual practice. We were then kindly invited by our vice-president to partake of afternoon tea prepared by Mrs. Gabriel and family, which we greatly appreciated, and before separating a vote of thanks was enthusiastically tendered to our entertainers.—A. D. HARDY.

A NEW ISOPOD.—In the report of the excursion to Lake Corangamite, at Easter, 1918 (*Vict. Nat.*, June, 1918), mention is made, on page 27, of the discovery of an isopod, which would probably prove new to science, by Mr. J. Searle, in the shallow water on the western side of the lake. In a recent letter to Mr. Searle from Dr. Chilton, of Christchurch, N.Z., to whom specimens were sent for identification, he says:—"The isopod proved to be of considerable interest. I have made a new genus for it, and in your honour have named it *Haloniscus searlei*, sp. nov." Type specimens of the new crustacean, which closely resembles an ordinary woodlouse, have been deposited in the National Museum, Melbourne.

AUSTRALIAN WATTLES.—Mr. E. E. Pescott, F.L.S., in continuation of his articles in the *Victorian Journal of Agriculture* on "The Australian Flora from an Ornamental Aspect," deals with the wattles in the July journal. He lists about fifty species which are worthy of garden cultivation, mentioning their several features. He also gives some particulars of the pests to which the trees are subject, as well as hints about pruning, which should be undertaken when the trees are in flower, or shortly after.

A WEEK AMONG THE SEAWEEDS AT PORTSEA.

BY A. H. S. LUCAS, M.A., B.Sc. (Hon. Member).

(Read before the Field Naturalists' Club of Victoria, 12th May, 1919.)

FEELING, early in the year, that I would be the better for a change of scene and air and activity, I bethought me of the seaweeds I had gathered 16 years ago in Victoria, and decided to put in a week's collecting at Anglesea, where I had once had good hunting with Mr. H. T. Tisdall. I could not secure a room at Anglesea, however, and so thought I would try ground new for me, at Portsea, not far from Port Phillip Heads, for with ocean and bay shores one ought to be able to see a good many kinds: and had not Mr. Tisdall written in the *Victorian Naturalist* (vol. xiv., pp. 7, 86) enthusiastically on the sea-flora of Sorrento, and had not Mr. Bracebridge Wilson dredged the sea-floors of the whole neighbourhood, with magnificent success? So Portsea it was. On my return to Melbourne I paid a visit to my old friend the editor, and, after he had recognized me, he claimed a paper for the *Naturalist*. As seaweeds are not aggressively botanical, he seemed to think that members would be pleased to hear something of them.

The steamer left Port Melbourne an hour after the usual time, and as I had gone a little early to arrange for the luggage, which included a formidable looking and weighing Sydney Herbarium press, I had time to inspect the sandy beach. Good plants of *Sargassum Gunnianum*, J. Ag., *S. bracteolosum*, J. Ag., and *S. leptopodium*, J. Ag., were being floated in, and with them the two *Cystophoras*, *C. uvifera* (Ag.), J. Ag., and *C. cephalornithos* (Lab.), J. Ag.—the former with spherical and the latter with barleycorn-shaped floats. Small boys with bare legs proved handy, and were interested when they were shown that the floats were not fruits (sea-currants), but served to keep the growing plant erect in the water. I should say that careful gathering on this beach would yield quite a number of *Sargassa*—I got *S. undulatum*, J. Ag., at Sandringham—and *Sargassa* are troublesome plants to collect on the ocean coast; they live in water just too deep as a rule, and too near the rocks to allow of safe dredging.

The trip was a comfortable one, with smooth sea, moderate temperature, and clear air. I could almost see the familiar odour of the onions as we passed Portarlington. I did not notice much floating weed. We called at Queenscliff. The wharf piles were covered above with green and lower with brown alga, as the text-books prescribe. The green—vivid green—streamers of *Ulva latevirens*, Aresch., must have been over two feet long. I was rather surprised to find that Brace-

bridge Wilson did not include it in his "List of Algæ from Port Phillip Heads and Western Port." I suppose it was too near land to engage his sympathy. What the browns were I cannot say, but at Portsea pier we had little green but a great deal of the long trails of *Macrocystis pyrifera* (Turn.), Ag., which there reaches to a dozen feet in length. We circumnavigated to Sorrento, and after many mysterious and hieroglyphical curves we were placed alongside the pier, at the base of which we were crowded (Sargassa and all) into a 'bus which rolled us into Portsea. At the big boarding-house I was provided with a corner of the verandah curtained off, and here and hence for a week I conducted my phycological investigations. My fellow-boarders seemed to take a kindly interest in my proceedings. Some of the boys were eager to present me with specimens, and in this way I obtained a very fine example of *Caulerpa Sonderi*, F. v. M. One little lady assisted me to mount the weeds, and was very proud to float out some by herself and for herself.

The first thing was to learn the topography and the second to find the times of the tides. I first made for the Back Beach—i.e., the one which fronts the ocean. The whole of the peninsula between the Sorrento-Portsea road and the Back Beach is covered with tea-tree scrub of the most uncompromising character. The width is only about a mile and a half, but it would be good going to make your way across the scrub, using the tomahawk freely, in a day. Fortunately, a good narrow road has been made, so that one can reach the Back Beach in half an hour's walk. Where the road has been cut in the sand the sides are held up by tea-tree. I saw very few plants in flower as I passed, but at the point where the road ended on the top of the slope to the sea the bushy Composite, *Calocephalus Brownii*, F. v. M., was full of heads of blossom. A curved track, ending in a broken ladder, led down to the shore, but it was easy enough to go down anywhere, and later on I saw the advantage of the ladder, for some visitors were using parts of it to light a fire for their "billy."

Just in front of the foot of the descent the sands were in contact with a flat reef stretching out for 50 to 100 yards, ending in very ugly-looking rocks over which the seas were breaking, and hollowed out irregularly in shallow and deeper rock-pools. To the east a long sand stretch without reefs, but to the west the reefs grew higher and more numerous, and were interrupted by ridges of the land running out in miniature promontories. The first of these ridges has been hollowed out in a tunnel by the waves, and is accordingly termed "London Bridge." The next is similarly perforated, but I heard no

name for it. Thereafter the Quarantine Ground commences. My Back Beach work, then, was to catch the rock-pools at the lowest tide available, and to hope for a mighty swell to come and pile up the inaccessible treasures growing about the outside reefs in a convenient form for sampling. However, I may say that no swell came, and that all I gathered was by persistent work. I stayed long enough that day to note the run of the tides.

The most charming of the rock-pools were those largely occupied by Caulerpas. I found seven species growing, and picked up two others. Wilson dredged twelve kinds in his limits. *C. scalpelliformis* (R. Br.), Ag., and the rare *C. trifaria*, Haw., were nestling under Sargassum and Cystophora in shallow pools a foot or two deep. There was a beautiful grove of *C. Muellieri*, Sonder, covering the floor of a pool eight or nine feet deep. They looked like fir branches waving, for the tide communicates with most of these deeper pools. *C. cactoides* (Turn.), Ag., sent long rhizomes into rock crannies at an intermediate depth. The others were *C. Brownii*, Endl., *C. sedoides* (R. Br.), Ag., both bright green, and *C. Sonderi*, F. v. M., very much darker in shade. Everyone is struck with these marvellous Siphonææ, plants assuming the forms of cactus, fir, club-moss, stone-crops, plumes, and serrated scalpels, each plant practically one huge all, without subdivisions, and because, though observed in hundreds by botanists all over the world for at least a hundred years, no organs of reproduction have been discovered in any of the seventy-five known species.

Others of the pools were occupied by a brown tenantry. In one small pool I noted *Cystophora spartioides*, J. Ag., with flat stem, the branches coming off the edges; *Hormosira Banksii* (Turn.), Decaisne, with its necklace-like fronds; *Seirococcus axillaris* (R. Br.), Grev., with fruit receptacles growing along the edges of the frond; *Cystophora uvifera* (Ag.), J. Ag.; *Ecklonia radiata* (Turn.), J. Ag., like prickly brown rhubarb; and young *Macrocystis*. I found, thrown up, several plants of *Ecklonia lanciloba*, Sonder, which has a midrib three inches or more broad, and pinnate linear lobes on each side, perhaps a foot long. It has quite a distinct appearance from its congener, but apparently no one has recorded it from Victoria before; Sonder's specimens were from South Australia.

Padina pavonia (L.), Lamx., seemed to prefer to reserve small pools for itself in which to display its wavy iridescent fans. In several pools *Cymodocea antarctica*, Endl. (according to Bentham), was growing, but not, as I saw it, luxuriantly. It is a phanerogam with a wiry stem and stiff, cut-out, green leaves at the summit, and is usually covered with green,

brown, and coralline seaweeds. It is a good rule never to pass a thrown-up plant of *Cymodocea* without looking it over to see what is growing on it; you gain all sorts of treasure trove in this way. Thus, I found *Mychodea pusilla* (Harv.), J. Ag., and *Pollexfenia crispata* (Zan.), Falk., on *Cymodocea*—neither of them recorded by Wilson. At Anglesea the elegant form of *Corallina Cuvieri*, Lamx., predominated on the host, but at Portsea I did not see this form at all, its place being taken by the condensed and hence coarser-looking "*forma β* ." The Stellate Coralline, "*Amphiron stelligera*" of Harvey, was common, but the other two species, *granifera* and *charoides*, did not appear. A plant of *Cymodocea* bearing sprays of this pink coralline is a beautiful object. Tisdall, in his paper in the *Naturalist*, stated that the algæ only attach themselves to the nodes of the *Cymodocea*. While the nodes afford the firmest attachment, the internodes are sufficiently firm, and the smaller algæ attach themselves anywhere along the stem.

Attached to the sides of the big rocks bordering the tidal channels, great fronds of *Sarcophycus potatorum* (Lab.), Kuetz., and *Macrocystis* are tossed to and fro in the advancing and retreating waves. The former has broad (to a foot) leathery-looking fronds, with a thick, solid stipes, and is the stoutest of Australian algæ. In Tasmania, where it attains a much greater size, fishermen will moor their boats to the strong stems. The attachments of these kelp-forming brown weeds are interesting. *Sarcophycus* has a single broad disc. *Macrocystis* is attached by a number of spreading holdfasts, like the adventitious roots of *Ficus*; these branch several times, and each branchlet ends in an adhesive disc. The pattern varies again in *Ecklonia* and *Phyllospora*. These are our chief kelp plants, and from them can be obtained good percentages of potassium chloride and mannitol.

On the surface of the reef, exposed at low water, there was abundance of *Splachnidium rugosum* (L.), Grev., the plants growing gregariously where they get the splash of the waves. The plant looks like a diminutive branched sausage; the branches are but half an inch in diameter, and have a transparent, slimy, jelly-like content, which makes the plant a troublesome one to mount with effect. It grows near Sydney, but I have never seen so fine a specimen as Harvey figures in his "*Phycologia Australica*." The average height is not much more than four inches. Another plant usually growing in such situations is *Laurencia obtusa* (Huds.), Lamx., one of the most puzzling algæ because of its infinite varieties of form.

In the pools, and captured by the tufts of *Hormosera*, one finds, even without the great swell, a number of drifted algæ.

At Portsea the Plocamiums were, as all along the ocean coast, in great evidence, and are the plants most generally admired by amateurs. Their fern-like shape and brilliant crimson colour make them universal favourites. I gathered four species at Portsea. To my surprise, *P. Preissianum*, Sonder, segments in threes, seemed to be the commonest. *P. angustum* (J. Ag.), H. and H., was also abundant. *P. Mertensii* (Grev.), Harv., with serrated segments, was more common than *P. procerum* (J. Ag.), Harv., with entire segments. Probably the two are just forms of the same species. I did not meet with *P. coccineum* (Huds.), Lyngb., which is the common British species, and occurs in most Antarctic dredgings, and is not uncommon off southern Australia and Tasmania. I only saw one fragment of *P. costatum* (J. Ag.), H. and H., though it was plentiful at Anglesea and Barwon Heads. I was very glad to obtain specimens of *Dictyota nigricans*, J. Ag. It seemed to be not uncommon, and I had found it at Barwon Heads. I was also lucky to secure a good plant of *Bellotia eriophorum*, Harv., showing its umbels of feathery, globular tassels.

I made four trips to the Back Beach altogether, but, as I did not expect, made more captures on the shore of the Bay. Just below the fort I struck a small, low breakwater of big stones which served to arrest and divert the incoming algæ. Here I found several algæ of rarity and interest, including *Scinaia furcellata* (Turn.), Bivon., *Pollexfenia crispata* (Zan.), Falk., *Bindera splachnoides*, Harv., with a new *Herposiphonia*. Cymodocea gave abundance of *Dicranema Grevillei*, Sond.—an alga which never grows on anything else—of *Pachydictyon paniculatum*, J. Ag., and *Lobospira bicuspidata*, Aresch. Two or three plants of *Nitophyllum Gunnianum*, Harv., and dozens of *N. affine*, Harv., were thrown up, as also *Champia affinis* (H. and H.), J. Ag., *Wrangelia clavigera*, Harv., *Haloplegma Preissii*, Sonder, *Delisea elegans* (Ag.), Mont., *Crouania australis* (Harv.), J. Ag., and *Muellerena insignis* (Harv.), De Toni. On some rocks exposed at low water grew *Helminthora tumens*, J. Ag., and *Ceramium clavulatum*, Ag. In all, I collected over 100 species at Portsea.

Victoria is singularly well off for algæ. There is good collecting in the Bay at Sandringham and Williamstown, close at hand; and for a holiday in summer, when the algæ are fruiting, the whole coast of Bass Strait is a seaweed paradise. Probably nowhere else in the world are the algæ more numerous in species and individuals. They are beautiful objects. There is some sport in their capture, and the study of them, their structure, and their physiology, throws striking light on the nature of plant life in general. Will not some members of the Club help by taking up the study?

Field Naturalists' Club of Victoria

EXHIBITION OF WILD FLOWERS

MELBOURNE TOWN HALL

Tuesday, 30th September, 1919

OPEN AFTERNOON AND EVENING

Members and friends are requested to make a strong effort to secure Wild Flowers for the Annual Display, to be held as above, in aid of the Anzac House Fund, and Publishing Fund for List of Victorian Plants.

Large quantities of flowers will be required for display and for sale.

It will greatly facilitate handling at the Town Hall, where little time is available for setting out the flowers, if **each species is kept separate** and, if possible, **forwarded in bunches**. The stems should be well wrapped in damp paper or cloths, and enclosed in wooden or tin boxes, lined with paper.

DO NOT SPRINKLE WATER OVER THE BLOOMS.

Consignments from Country friends should be timed to reach **Melbourne** by last trains on Monday, 29th September, addressed—

“Field Naturalists' Club,

“Town Hall,

“Melbourne,

“Cut Flowers—Perishable,”

with name and address of sender marked thereon.

Gummed printed labels will be supplied on application.

Railway freight will be arranged at this end.

Notification should be given to the Secretary, Mr. P. Crosbie Morrison, 174 Punt Road, Prahran, that packages have been despatched.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine	10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-
INSECT COLLECTING BOXES, of deal, corked and papered	1, 1 6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1 6, 2 9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered	14 x 10, 8/-; 16 x 12, 11/-
INSECT-KILLING BOTTLES	1 6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS	KILLING BOTTLES	
CORK LINING	ZINC RELAXING BOXES	
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES	CABINETS	
CURVED FORCEPS	INSECT CEMENT	
&c., &c., &c.		

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 4th September, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	65
ON THE GROWTH, &C., OF THE SEA TASSEL, <i>Ruppia maritima</i> , Linn. By C. S. SUTTON, M.B., B.S.	69
THE GLEANINGS OF A CITY NATURALIST. By J. SEARLE	71

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 8th SEPTEMBER, 1919.

1. Correspondence and Reports.
2. Nominations for Membership.

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

3. General Business.
4. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

5. Reading of Papers and Discussion thereon.

1. By Mr. A. H. S. Lucas, M.A.—“Growing Ferns in the Open.”
2. By Mr. J. C. Goudie.—“Notes on the Coleoptera of North-Western Victoria. Part VII.”

6. Reading of Natural History Notes.

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

7. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

EXCURSIONS.

SATURDAY, 13TH SEPTEMBER (Railway Picnic). — **Bendigo.** Objects—**General.** Leaders—Messrs. D. J. Paton and C. Daley, F.L.S. Meet at corner of Bourke and Spencer Streets, at 6.30 a.m. **sharp.** Fare, 5/6 or 7/6, available for one week. Lunch to be taken. On arrival at Bendigo, tram to Back Creek, bush walk to One-Tree Hill, lunch, thence to Diamond Hill, and return *via* Spring Gully to train terminus. Distance, about 6 miles. Return train to Melbourne about 7 p.m. For members staying over till Monday a drive to the Whipstick Scrub will be arranged. Fare extra. Train leaves Bendigo early Monday morning, reaching Melbourne about 9.30 a.m. Intending Excursionists should notify leader at September meeting, and state if accommodation is desired. Tickets must be procured not later than Friday, 12th inst. (see posters).

SATURDAY, 20TH SEPTEMBER.—**Alphington.** Object—**Pond Life.** Leader—Mr. J. Scarle. Meet at Prince's Bridge Station for 2.10 p.m. train.

20TH-27TH SEPTEMBER.—**Gramplains.** Object—**Wild Flowers.** Particulars at Government Tourist Bureau, Swanston Street, Melbourne.

SATURDAY, 27TH SEPTEMBER.—**Emerald to Beaconsfield.** Object—**Botany.** Leader—Mr. J. W. Audas, F.L.S. Meet at Prince's Bridge Station for 8.50 a.m. train. Week-end Tickets to Emerald, 3/2, available from Beaconsfield on return. Walking distance about 12 miles.

SATURDAY, 11TH OCTOBER.—**Werribee Gorge** (*via* Bacchus Marsh). Object—**Geology.** Leader—Mr. F. Chapman. Meet at Spencer Street Station to catch 7.40 a.m. train. Further particulars later.

The Victorian Naturalist.

VOL. XXXVI.—No. 5. SEPTEMBER 4, 1919.

No. 429.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting was held at the Royal Society's Hall on Monday evening, 11th August, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about 35 members and visitors were present, the curtailment of train and tramway services, owing to the seamen's strike, being doubtless responsible for the small attendance.

CORRESPONDENCE.

From the Town Clerk, Preston, stating that the Club's suggestion that Edwardes Park should be proclaimed a bird sanctuary had been adopted, and the necessary steps initiated. The president remarked that in the course of a few years the park would probably make a good excursion locality.

REPORT.

A report of the excursion to Hurst Bridge on Saturday, 9th August, was, in the absence of the leader (Miss A. Fuller), given by Mr. F. G. A. Barnard, who said that there had been a good attendance of members, but that, owing to the lateness of the wattle season, the excursion was at least a fortnight too early, as hardly a Silver Wattle was fully in blossom. The party had rambled up the picturesque Arthur's Creek valley for a mile or so, and enjoyed the outing very much. Very few other plants were found in bloom except the lowly, sweet-scented *Drosera Whittakeri*. The Cootamundra Wattle, *Acacia Baileyana*, was, however, making a fine show in private gardens.

The chairman said that it might be better in future years to defer fixing the date of the "wattle excursion" until it was seen at what date the Cootamundra Wattle blossomed, as this species was generally two or three weeks earlier than the Silver Wattle. Mr. C. C. Plante supported this idea. Mr. F. Pitcher said that at Belgrave (Dandenong Ranges) the Silver Wattle would not be in full bloom before the end of the month.

WELCOME.

The chairman took the opportunity of welcoming back to Victoria one of the Club's members, Mr. F. A. Cudmore, after three years' service in the British Army during the Great War.

ELECTION OF MEMBER.

On a ballot being taken, Mr. Chas. Lambert, Bank of New

South Wales, Melbourne, was duly elected a member of the Club.

EXHIBITION OF WILD-FLOWERS.

The chairman drew attention to the forthcoming annual exhibition of wild-flowers to be held in the Melbourne Town Hall on Tuesday, 30th September. It had been decided to divide this year's profits between the Anzac House Fund and a fund for publishing the common names of Victorian plants as determined by the Plant Names Committee. Owing to pressure of work Miss A. Fuller had been unable to again act as convener of the ladies' committee to undertake the sale of flowers, &c., and Mesdames Coghill and Edmondson had kindly consented to act instead. Owing to the uncertainty of the season, he urged members to use every effort to secure flowers from country friends, and so ensure the success of the exhibition.

EXCURSION LIST.

Mr. E. Cox drew attention to the omission of pond-life from the objects of the excursion to Cheltenham on Saturday, 23rd inst. Mr. C. Daley, M.A., said that the Railway Department's excursion to the Grampians would start on the 20th September, not the 22nd, as printed in the list.

REMARKS ON EXHIBITS.

Mr. H. B. Williamson called attention to his exhibit of fossil marine shells obtained from a bore at Croydon, near Adelaide, South Australia, over 400 feet from the surface. They were of great interest from the fact that the bed is of Upper Pliocene age, and about 150 feet in thickness in that locality.

PAPER.

By Miss C. C. Currie, entitled "The Birds of a Gippsland Garden."

In the absence of Miss Currie, the paper was read by Mr. F. G. A. Barnard. It gave an interesting account of the various birds which visited from time to time a well-sheltered garden situated in the Lardner district, about five miles south of Drouin. Miss Currie's remarks caused considerable discussion.

Mr. F. E. Wilson thought that there must be some mistake about the Bell Miner being heard as far as three miles from the main colony, as it was very unusual to find these birds more than a few hundred yards from their nests. He also had never heard of Mountain Thrushes partaking of a vegetable diet such as acacia seeds, and suggested that they may have been searching for insect life on the trees.

Mr. C. Daley and Mr. J. A. Kershaw supported Mr. Wilson's remarks about the Bell Miners. Mr. Kershaw said that he did

not think the parent Swallows threw the young out of the nest to avoid the heat, being of opinion that the young birds throw themselves out in their efforts to escape the heat of an adjacent roof.

Mr. H. B. Williamson desired to congratulate Miss Currie on her paper, and suggested that, in view of the great variety of birds to be met with in the district, an excursion be arranged for the locality.

Mr. F. Keep asked whether the statements made from time to time about the cruelty of the Kookaburra were true.

Mr. P. R. H. St. John, in reply, said the Kookaburra fully deserved all the hard things said of it. He had not heard before of the Brush Wattle-bird mimicking other birds.

Mr. J. Gabriel said that he had recently seen numbers of Zosterops at his grape-vines, but, as they continued visiting the vines long after all the grapes had been picked, he concluded they were searching for insects. He remarked that he had recently seen a Brush Wattle-bird in the Botanic Gardens, where they had become very tame, taking sugar from one of the tables near the tea-house.

Mr. E. E. Pescott said that the Kookaburra was of considerable service to gardeners on account of its practice of killing Miners, &c. ; at the same time he had to admit that it is a very destructive bird among the smaller native birds.

Mr. J. Gabriel mentioned the rather unusual case of a White-fronted Heron making its home in Studley Park.

Mr. J. Searle considered this was due to the Heron having found a pond well stocked with tadpoles and yabbies (fresh-water crayfish), and mentioned the peculiar habit these birds have of disembowelling tadpoles before eating them.

Mr. St. John remarked on some unusual bird visitors to the Botanic Gardens, and said that he had recently shot a fine Darter on the lake. Only the second time this bird had been seen in the vicinity.

In reply to a question by the president as to the difference between the Bell-bird and the Bell Miner, Mr. F. E. Wilson said that the Bell-bird is never seen in Gippsland, its habitat being the north-western parts of the State. He imitated the notes of the two birds, showing the difference between them, and said that the common Starling was an excellent mimic, and its powers are such that if Starlings are known in the locality no ornithologist should record a bird on hearing the note only, as it may only be a Starling amusing itself, and he was inclined to think that the Bell Miners mentioned by Miss Currie as visiting her garden, being very shy birds, were recorded by the note alone, which was probably produced by a Starling.

The president considered the discussion which had ensued on the reading of the paper a most instructive one, and regretted that Miss Currie was not present to support her remarks.

NATURAL HISTORY NOTES.

The president said that a returned soldier who had taken part in the Palestine campaign had told him that in Egypt mosquitoes had been seen twelve miles from the nearest water, and asked if this did not clash with the present ideas regarding these insects, as the average flight is considered to be less than a mile.

Mr. J. Searle said that there was probably some small pool of water somewhere in the vicinity, and remarked that in the case of the mosquito pest at Panama it had been found that the water collected in hoof marks or a broken bottle was sufficient to provide a breeding-place for them.

EXHIBITS.

By Mr. A. S. Blake.—Specimens of *Eucalyptus melliodora*, bearing peculiar galls.

By Miss C. C. Currie.—Specimens of giant club-moss, *Lycopodium densum*, from Lardner, Gippsland.

By Mr. F. Cudmore.—Clams and triton (sp.) from Suva, Fiji; lava and hat-bands made of shells (*Pecten*, sp.) sewn together, from Hawaii; serviette rings made of bamboo and plant fibres interwoven, from Hawaii.

By Mr. J. Searle.—The new crustacean, *Haloniscus searlei*, Chilton (genus and species new), from Lake Corangamite, taken by exhibitor, April, 1918; 53 lantern slides, about 30 micro. preparations, and also mounted specimens of various insects, in illustration of paper.

By Mr. L. Thorn.—Top and lower jaws, showing teeth, of the Bull-dog Shark, *Cestracion phillipi*, commonly known as Pig-fish, caught in Port Phillip Bay, off Aspendale. The egg cases of this shark are common objects on the beach, being leathery, spirally-twisted structures.

By Mr. H. B. Williamson.—Fossil shells from bore at Croydon, near Adelaide, S.A., and dried specimen of *Pimelea Williamsonii*, J. M. Black, new species, collected by exhibitor at Murrayville, N.W. Victoria, December, 1916.

After the usual conversazione the meeting terminated.

A SIGN OF SPRING.—A freshly emerged specimen of the Australian Admiral Butterfly was seen flying at Kew on 13th August.—F. G. A. B.

ON THE GROWTH, &c., OF THE SEA TASSEL, *RUPPIA*
MARITIMA, LINN.

BY C. S. SUTTON, M.B., B.S.

AT Easter, 1914, some dry mud was brought from Phillip Island for examination for crustacean life and placed by Mr. J. Searle in a bottle with water on a shelf at his business premises. Two years later a plant with slender, filiform stems and leaves, which had been noticed growing from the mud, showed signs of flowering. Developments were carefully observed and noted by Mr. Searle until the completion of the seasonal cycle of the plant when he concluded it was *Ruppia maritima*, or Sea Tassel, belonging to the Naiadaceæ, or Fluviales, an inhabitant of brackish and salt water in temperate and sub-tropical regions throughout the world. Although urged to do so, Mr. Searle would not directly communicate his most interesting notes, but handed them to me, suggesting I should give them instead. Thinking this might be better done after I had myself continuously observed the plant under more favourable conditions, Mr. Searle gave me a portion, which I planted in sand in a flat glass tank filled with fresh water.

The following description of the interesting performances of the *Ruppia*, is then, really a relation of what Mr. Searle previously noted and what I have confirmed by my own observations. The stems of the plant arise from a creeping rhizome, and are slender, filiform, finely-grooved, and very long, lying at length on the surface of the water, but not projecting above it. At the beginning of October, about six weeks earlier than in the previous season (perhaps on account of the more favourable conditions as to light and heat), flower-spikes were noticed developing apparently within the thickness of the stems, which were dilated just above certain of the nodes. These spikes, as they increased in size, separated the leaves nearest to the nodes, showing them to be axillary, transparent sheaths from base of leaf and stem remaining, through which the spikes and their commencing stalks could be now more plainly seen. (Fig. 1.) The stalks or peduncles quickly lengthened, eventually somewhat abruptly bringing the spikes to the surface, or even projecting them some distance above it, where they finally lay. The spike appeared to consist of two flowers, each of four anthers or pollen sacs in superimposed pairs, with the carpels clustered on one side of the rhachis between the four lower and on the opposite side between the four upper anthers. The latter were kidney-shaped and of a brownish-green, with light green bands. Viewed from the side, the spikes appeared to consist of four superimposed cassock-shaped

masses. The female elements were dark green, sessile, and very inconspicuous, but seemed to be six in number in each flower. No perianths were noticed. A couple of days after their appearance on the surface the pollen sacs were found detached and broken, apparently along the outer surfaces, and masses of creamy pollen were lying on the water, some being in contact with the spikes. The pollen grains are about four times as long as broad, more or less angular and rounded, slightly dilated and refractile at the ends and at the knees of the angles. In a day or two after the shedding of the pollen—sometimes before this occurred—the lower parts of the peduncles became convoluted into tangles, eventually drawing the spikes below the surface. (Fig. 2.) (In the “*Flora Australiensis*” it is stated that the spirally-coiled peduncles bring the spikes to the surface, but from our observations the convolutions do not occur until some time afterwards.) The day after the flower-heads have been drawn under they become inverted by the bending of the straight parts of the peduncles, and one was seen actually to suddenly and quickly swing through an arc of about 45° , and soon after through a lesser angle, until it pointed almost vertically downwards at about the level from which it originated. (Fig. 3.) All this time one or more of the carpels from each cluster were growing on lengthening stalks, the others remaining aborted, and in nine days or so had attained the length of about an inch. The carpels are ovoid, brownish, and slightly beaked, and as the stalks lengthened spread out and became separated one from another by an inch or more. Ultimately, about three weeks after fertilization, the stalked fruits, measuring in one instance just on two inches in length (fig. 4), separated and fell, with their stalks, head downwards, into the mud and remained upright. Probably the motion of the water swaying the stalks enables the fruits to penetrate the mud so far that after germination the young plants can effectively root themselves. At a later date it was noticed that the upright stems began to bend and throw out roots from the upper nodes; these roots finally reached the mud, and ultimately drew the stems to a horizontal position some little distance above it. (Figs. 5 and 6.) I am indebted to Mr. J. Searle for photographs of the plant in different stages.

EXPLANATION OF PLATE.

- | | |
|------------------------------------|--|
| 1. Ascending bud. | 4. Ripe fruits. |
| 2. Stem contracted and convoluted. | 5 and 6. Stalk being drawn down by adventitious roots. |
| 3. Fruit, with head inverted. | |

PLATE I.

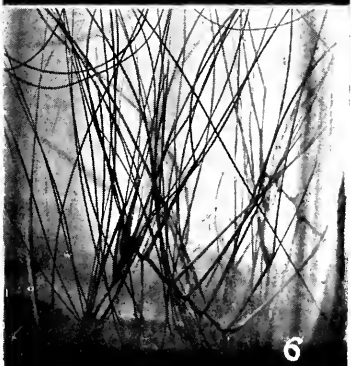
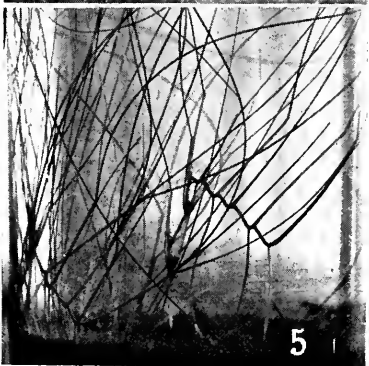
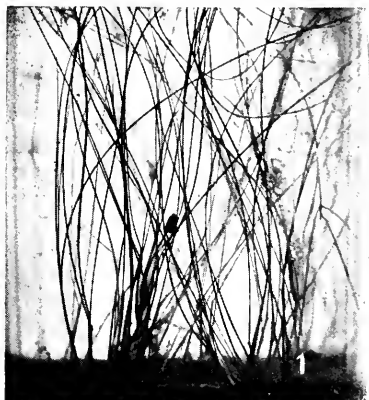


Photo. by J. SEARLE.

STAGES IN THE GROWTH OF THE SEA TASSEL.
RUPPIA MARITIMA, LINN.

THE GLEANINGS OF A CITY NATURALIST.

BY J. SEARLE.

(Read before the Field Naturalists' Club of Victoria, 14th July, 1919.)

WHEN advocating the claims of natural history as a desirable hobby, one often receives an answer something like this:—"Oh, yes; it must be a delightful pastime for those who can get out into the country and collect specimens for study, but I am in the office all day, and have no opportunity to engage in such an interesting pursuit." The object of this paper is to show such a city dweller how he may indulge a taste for natural history even if he is "cribb'd, cabin'd, and confin'd" in a city office.

The building in which these notes were written is in the busiest part of Collins-street. My office, on the third floor, is 15 feet by 12 feet, and has two windows facing the north, and overlooking the surrounding roofs and chimneys—as unlikely a collecting-place for nature study specimens as could be imagined; yet quite a lot of material for study is to be found there from time to time. I have frequently thought of making a list of the various insects, &c., that visit this office in the course of the year, but for some cause or other the project was never carried out in its entirety. But in January of last year I placed a bottle containing spirits of wine on the bench, and specimens of the various objects presently to be described have been captured and placed therein. They consist of Diptera, Coleoptera, Hemiptera, Lepidoptera, Hymenoptera, Arachnidæ, and—would you have thought it possible?—Crustacea.

Lepidoptera.—The most common specimens of lepidopterous insects that visit a city office are the Tineæ, or clothes moths—a pale yellow coloured species, with burnished scales, at times being rather a nuisance through the havoc its larvæ makes of the baize covering the bases of some instruments, the lining of jewel cases, &c. A frequent visitor is the Bogong Moth, *Agrotis spina*, a sombre-coloured insect with beautiful antennæ. It is a strong flier, but shows very little judgment, dashing into every obstacle to its headlong flight. They hide in dark corners during the day, coming out to enjoy their nocturnal flight as evening advances. At times they invade the city in great numbers. The "Old Lady" Moth, *Dasyphora selenophora*, is occasionally seen resting on the ceiling, and the beautiful little *Cosmodes elegans*, most appropriately named, has been taken. In the months of November and December of last year the city was invaded by swarms of the handsome brown butterfly, *Heteronympha merope*. Numbers of them perished by being trampled on by pedestrians along Collins-

street. The sexes differ so in size and colouring in this insect that by many they were regarded as different species; the larger insect with black markings on the wings is the female. *Pyramcis kershawi*, the "Painted Lady," is another butterfly to be found in the city streets, and occasionally visits the office by way of the open window. The wings and bodies of all moths and butterflies are covered with minute scales, generally placed in rows, and lapping over each other like the slates on a roof; each scale has a short stalk, and they are inserted into little holes or cups in the membrane of the wings. It is these scales that give the wonderful colouring to these beautiful insects. The scales vary in size and shape with the position they occupy on the wings or body of the insect. Some of these scales are ruled with lines of such fineness that at one time they were used by microscopists as test objects in trying the quality of their lenses.

Permanent mounts of the wings and scales may be made in various ways. A small piece of the wing may be placed in a cell and mounted as an opaque object, or samples of the scales may be brushed off various parts of the insect on to a slide; over these a cover glass is placed and the edge cemented with gold size. Another easy and effective mount can be made by placing the wing on a smooth surface and pressing the finger, with a rocking motion, over the selected part of the wing and then repeating the movement on the centre of a 3 x 1 slip. If carefully done the transferred scales will retain their natural position, and may be viewed either as an opaque or transparent object. If the entire head of a small moth be detached from the thorax and mounted on an opaque disc in a deep cell and examined under a low power it will be found to be an object of great beauty. The hemispherical compound eyes of some species have a brilliant metallic lustre, the numerous facets of which they are composed shining like gems. Some of these small moths have feathery antennæ, like beautiful plumes; others just a plain filament. The proboscis of the lepidoptera is an organ of wonderful construction, than which nothing better could be imagined for the purpose for which it is used—extracting honey from the nectaries of flowers. It is composed of two maxillæ, and strengthened by muscular bands. They are convex on the outer side and concave on the inner, and when joined together form a tube through which the nectar is conveyed to the mouth of the insect. When not in use the proboscis is coiled up like the hair-spring of a watch, and hidden between a pair of palps beneath the head.

Coleoptera.—With regard to Coleoptera, the Ptinidæ seem to have a home in our building. They are nocturnal in their

habits. One or two specimens of three or four species are frequently found in the wash-basin of a morning, having fallen in during the night, and, being unable to climb the smooth sides of the basin, remaining captives. Another beetle, *Mezium affine*, is also trapped in the wash-basin; it has a globular body, of a blood-red colour, perfectly smooth and polished. It has no trace of wings. The thorax, head, legs, and antennæ and the ventral surface of the abdomen are thickly clothed with flattened hairs or scales. The commonest of the Ptinidæ is, I believe, a wood-borer; it has a slightly flattened oval body, and is covered with long, stout hairs, some straight, others curved. Its legs and beaded antennæ are also hairy. The elytra are fused together, and there are no under wings.

The visitors noted for the year were an occasional elater, or click-beetle, two or three small brown chafer, one large cockchafer, a longicorn, Phoracantha, and others listed at the end of this paper. All of these are worthy of careful study, either as whole insects or the examination of their parts, many of which make fine permanent mounts for microscopical study, such as the antennæ, head and mouth parts, spiracles, eyes, &c. The eye of a beetle is a favourite mount for showing multiple images of objects placed between the mount and the source of light—generally below the iris diaphragm. The larva of one beetle, *Anthrenus* or *Trosoderma*, is frequently found in dark corners of drawers. It is an object of special hatred to most entomologists, owing to the havoc it plays if it gets into a collection of insects. It will devour animal matter of any description, even whalebone and tortoiseshell. It is a soft, fat grub about three-sixteenths of an inch in length; each segment is furnished with a ring of hairs, those on the last two segments being very long and brush-like, and capable of erection "like the quills of the fretful porcupine" when the insect is disturbed. These hairs vary in shape, and are very beautiful objects for the microscope, one form in particular being barbed on the shaft and tipped with an ornament somewhat resembling a closed umbrella. These "umbrella" hairs were a puzzle to naturalists for a considerable time. They were put up as slides by London mounters and labelled "Hairs of Dermestes Beetle," on no species of which beetle could they be found when sought for. Figures of these hairs with their false title are still occasionally seen in books on popular science.

Diptera.—The most numerous of the insects found in a city office belong to the order Diptera, or two-winged flies, and, contrary to what might be expected—notwithstanding the fact (or, perhaps, owing to it), that there is a *café* on the ground floor of the building—*Musca domestica*, the common

house-fly, is only a very occasional visitor. The common yellow blow-fly, *Calliphora villosa*, is far more numerous, and the dark blue one, *C. erythrocephala*, a frequent visitor. When attempt is made to capture these annoying insects, the yellow fly, after buzzing excitedly around the office, attempts to escape through the window-pane, on which it is easily captured and exterminated; but the slower-flying blue insect, *C. erythrocephala*, will invariably fly to some dark corner near the floor or behind some object, and immediately rest there until it thinks the danger is past, when it will again emerge, only to repeat these tactics if again pursued. It may be of interest to note the change in the breeding habits of some of these flies. Formerly they deposited their eggs or larvæ on some dead animal, the "higher" and more "gamey" the better, though not averse at times to a fresh joint of butcher's meat or poultry; but of late years they have developed into a great pest, since they acquired the habit of breeding in the thick greasy fleece of living sheep. Enormous sums of money have been spent, and is still being expended, in trying to eradicate this pest.

When *Musca domestica* visits the office it flies directly to the window, and appears to be as anxious to again leave as I am for it to go. Smaller diptera of elegant forms—many, perhaps, undescribed—are to be seen occasionally on these same windows, and on two occasions immense clouds of very minute flies invaded the city and filled every office. On one occasion, I remember, a building had been newly painted when an invasion of these tiny flies occurred, and in a short time the front of the building was ornamented with millions of these insects, which had stuck to the fresh paint. Mosquitoes and *Chironomus* are found occasionally, and two or three crane-flies were captured.

The structure of a dipterous insect is very remarkable, and the material collected in my office was sufficient to keep a naturalist busy for many months examining their micro-anatomy. As an example of what the city naturalist may find to interest him in a dipterous insect, we will glance briefly at the anatomy of one of the commonest—the house-fly. In examining a fly we notice at once that it is divided into three parts—the head, thorax, and the abdomen. The head contains the eyes and mouth parts, the thorax the organs of locomotion, and the abdomen the digestive system and the reproductive organs. The head is connected with the thorax by a slender neck that permits it to undergo semi-rotation. We observe that its greater part consists of a pair of hemispherical compound eyes, made up of a number of small facets—over 4,000 have been counted; each facet consists of a

lens at the end of a cone, which is lined with a dark pigment and ends in a tiny nervelet. All these unite into one large nerve, connected with the ganglia or brain. In addition to these compound eyes the fly has three small ocelli, or simple eyes, placed in a triangle on the top of the head. The width of the space on the top of the head between the eyes is greater in the female than in the male. In the front of the head is placed the antennæ, which are the principal means of classifying flies; they are composed of four joints, the third of which is very much enlarged. That these are sense organs there can be no doubt, though whether of touch, hearing, or smell it is not possible to definitely say. The first three joints fit into a recess, and are generally out of sight, only the plumose end, the arista, being visible. Microscopic examination of the enlarged third joint reveals the fact that it is covered all over with little sacs or cells closed by a membranous covering. At the base of the joint are a few larger apertures which lead into cavities furnished at the bottom with hairs. Now, it is quite clear that these latter structures have to do with some sort of sensation, since each cavity is connected with the brain by a fine nerve. From their general analogy to the ear of higher animals, and by comparing their form in different kinds of insects, it has been inferred that they are organs of hearing; probably they are endowed with a special sense of which we mortals know not. Situated on the under side of the head is the extensible proboscis. It is adapted for the absorption of fluid food. It tapers slightly from above downwards, and consists of three parts. First, a truncated, cone-shaped portion, called the rostrum, attached to the under side of the head; to the front of the rostrum is attached a pair of palps. The second and lower half of the proboscis, which is called the transtellum or proboscis proper, is narrower. On the front of this portion is hinged a narrow triangular appendage called the labium-epipharynx; it covers a groove in which a hollow, stylet-like tongue or hypo-pharynx lies. The proboscis is terminated by the oral disc, or sucker, which consists of a pair of lobes or labella, which, when distended, form an oval structure, the two halves being united by a bead and groove joint. The surface of each labella is traversed by about 36 small canals, the channels of which are kept open by small, incomplete rings. Between these canals, which are called pseudo-tracheæ, on account of their ringed appearance, there are a number of nipple-like openings, which are probably gustatory sense-organs. The pseudo-tracheæ converge into a small oral pit. When a fly alights, say, on a lump of sugar, you will see the proboscis protruded, when the tip will unfold into two broad, fan-like leaflets. A small portion of the sugar

is grated off by the teeth and dissolved by a salival fluid which the fly pours upon it from its salivary ducts, and then the sweet solution is sucked back again. When the food is first swallowed it passes into a crop or sucking stomach. But it does not remain there very long. It is soon brought back again and is swallowed once more. This time it goes down the alimentary tube proper, and flows on till it arrives at the spherical-shaped proventriculus, which has sometimes been described as a gizzard. The proventriculus is capable of being closed during the early part of a meal, in order that the food may not enter the intestine, but pass into the crop. It also opens when it is necessary to allow material to pass into the intestines. These observations, made by Graham-Smith, seem to indicate that the proventriculus acts as a valve, and not, as stated by Lowne, "a gizzard and nothing more." The long vessel called the ventriculus is the true digesting stomach. This tapers off into a coiled intestine, and ending in the rectum, or receptacle for waste material.

In the second of the chief divisions—the thorax—we find ourselves able to gain a better conception of the shape of these smaller segments, joints, or rings which are the final subdivisions of the bodies of insects. If the middle part of the thorax be examined there will plainly be seen all the parts of which an insect segment can consist. On the upper surface is the dorsal plate, at the sides two lateral plates, and underneath the ventral plate. The openings at the top show where the wings are attached, while beneath are the attachments of one pair of legs. The wings are made up of a double membrane, and are, in fact, a kind of flattened bag or sac, which is strengthened at places by folds called veins or nervures, and the areas between are called cells. The main veins run longitudinally from base to the top of the wing, but there are some cross veins. The differences in the arrangement of the veins afford ready means of distinguishing *M. domestica* from other flies often found in houses. On the hind margin of the wing, near the base, there is a more or less free lobe called the alula. Internal to the posterior lobule of the wing are placed smaller membranous plates known as squama and antisquama. The squama is thicker than the rest of the wing, and is attached posteriorly to the wing-root. Possibly these facilitate the opening and closing of the wings. Behind the wings the pair of halteres—commonly called balancers or poisers—is placed, the most characteristic of all dipterous structures. They are believed to be the homologues of the hind pair of wings, though their exact functions are far from clear. Each consists of a conical base provided with a number of sense organs; on this base is mounted a slender rod; at the

end a small hemispherical knob is attached. They are provided with muscles at the base, and can, like the wings, execute most rapid vibrations. The squama covers the halter like a hood. A typical insect has three pairs of legs, which are attached to the thorax. Each leg consists of five parts—the coxa, trochanter, femur, tibia, and tarsus or foot. In the case of the fly this foot is subdivided into five joints. It is furnished with a pair of formidable claws, and between them a pair of membranous pads or pulvilli. The pulvilli are covered on their ventral surfaces with innumerable closely-set secretory hairs, from which a sticky fluid is given out, and this enables the foot to adhere to any slippery surface over which the fly is walking. By means of the claws the insect is enabled to cling to the little irregularities of the ceiling when walking upside down. As may be expected from the attachment of the wings and legs, we, of course, find within the thorax a highly-developed set of rapidly contracting muscles. The resulting movements have this further significance: that they help in the respiratory exchange of gases and in the circulation of the blood.

The respiratory or tracheal system of the fly is very highly developed. Altogether, it occupies more space in the body of the fly than any other set of organs. It consists of three parts: the spiracles, or breathing pores, situated at the sides of the body; air-sacs, and air-tubes (or tracheæ). A large pair of spiracles is situated on the bases of the first pair of legs. Above and behind the bases of the last pair of legs is another pair of spiracles, and, in addition to these thoracic there are a number of pairs of spiracles at the sides of the abdominal segments. All these spiracles communicate with tracheæ which ramify among the various organs of the fly's anatomy. The abdomen or hindermost division of the body is composed of several segments—eight in the male and nine in the female. The segments succeeding the fifth are greatly reduced in the male, and in the female form the tubular ovipositor, which, in repose, is telescoped within the abdomen. The blood system of the fly is simple. The body cavity forms a blood cavity, so that all the organs and muscles are bathed in the blood fluid, which is colourless, and contains fatty corpuscles. There is a muscular tube, a heart, lying in a cavity immediately under the dorsal side of the abdomen. It extends from the posterior end to the anterior end of the abdomen, and is divided into four chambers, each having a pair of openings into which the blood is sucked, so to speak, from the pericardial cavity. If it is in the warmer months of the year that we are making our dissection, and the fly happens to be a female one, the abdomen will be found practically filled

with white cylindrical eggs, closely packed together in two large bundles. Each of these bundles, which are the enlarged ovaries, contains about 70 strings of eggs in various stages of development, and the ovaries open into two ducts which join together to form a central oviduct opening into the telescopic ovipositor.

The mosquito also is worthy of minute examination. The wings, covered with handsome scales, the halteres, legs, and tarsi display their structure wonderfully well, while a well-mounted head and mouth parts is worthy of a place in any cabinet of slides. In the mosquito—as is sometimes the case with a higher order of animals—it is the female that is the cause of all the trouble. It is she that has developed the habit of sucking blood from living animals, the male contenting himself with a vegetable diet, from which, some naturalists say, he never departs. I am sorry to throw doubt on such a good reputation, but truth compels me to state that I have undoubted proof of a male mosquito of the genus *Stegomyia* sucking human blood. If the head of a female mosquito is placed in dilute liquor potassa for an hour or two, then washed in warm water until all the potash is removed, it can be placed on a glass slip, and with a couple of needles mounted in handles the mouth parts can be drawn from their sheath and carefully displayed on the slip. It is then covered with another slip, taking care not to disarrange the parts, and dehydrated in alcohol, cleared in clove oil or cajaput, and mounted in balsam. The largest of the mouth parts is the labrum or tongue. Slightly smaller than the labrum is the labium, which forms a sheath for the maxillæ and mandibles, four in number. Two of them are sharp-pointed and are used for piercing; the other two are armed with fine serrations, which are used, probably, to enlarge the wound made by the lancets. At either side of the tongue are the maxillary palps, and outside these are the antennæ. The rest of the head is taken up with the two hemispherical compound eyes. The same mouth parts, but less highly developed, are found in the male, but his antennæ are most beautifully plumose. It has been stated that the use of these beautiful appendages is to guide him to the female. Experiment has proved that when a high note is sounded, of the same pitch as that produced by the female mosquito, the setæ on the antennæ of the male, pointing in the direction of the sound, vibrate in unison with it. It is asserted that the buzzing of the female mosquito causes certain of the setæ on the antennæ of the male to vibrate. The male then flies in the direction from whence the vibrations come, and is so led to the presence of the female.

Hymenoptera.—The Hymenoptera is represented by two

specimens each of wasps and ichneumon flies. The usual habitat of one of the wasps—blue in colour and of sturdy build—is a sandy paddock or heathy patch. What spirit of adventure led him to visit the top floor of a city building it is impossible to say; but, like many another who left rural delights for the lure of the city, alcohol and the bottle ended his career. Attention may be drawn to two objects in Vespian structure. When the insect is at rest, the wings, of which there are four, lie horizontally upon the body. If we examine the hinder wings we will see a row of small hooks on the upper or outer edge of the wing. We will also notice a fold along the inner edge of the fore wing. The use of these structures is at once apparent when the insect raises its wings for flight. As the fore wings pass over the posterior ones the hooks on the latter engage with the fold on the fore wing, securely locking the two together and adding to their efficiency as an organ of flight. The sting may be regarded as a modified form of ovipositor. The piercing lancets are encased in a sheath, which seems to act as a director and also to keep the fine lancets from bending when the powerful muscles with which they are furnished are applied to drive them into the object attacked. A duct conveys poison from the gland to the lancets, and is by them deposited in the wound they inflict. Unlike the bee, the wasp does not lose its weapon of defence.

Arachnidæ.—Spiders of various species are frequently found in the city offices. The small money-spider appears to be a life tenant, and is to be found in all sorts of places—in boxes and drawers, and even in the steel safe. What it finds in the way of food I cannot tell. It will suddenly appear from nowhere, race across the bench or desk, taking cover from every object it comes in contact with, and finally disappear again as mysteriously as it made its appearance. The slight web of another species is sometimes found between the wall and a nest of drawers, should the latter be shifted. The other spiders are simply “strays,” but all make interesting objects for study. The cephalothorax of the money-spiders varies in a remarkable manner, and takes on all sorts of peculiar shapes. Most spiders are furnished with eight eyes, generally arranged in two rows across the cephalothorax. Systematists make use of the eyes of spiders in determining species. The number may be reduced to six, four, or even two only. They vary in colour and shape as well as number. The feet, with their claws and combs, falces or jaws, the spinnerettes, are all of interest, but the most remarkable organ is, perhaps, the lung-book, which seems to point to the relationship between the spiders and the crustaceans. We saw, when examining some of the insects, that they breathe by means of spiracles opening

directly into tracheæ which ramify through the insect's body. The respiratory organ of a spider is different, inasmuch as the pulmonary stigma leads into cavities which are practically filled with plates attached at the front and sides, but having their posterior edges free. These plates are the leaves of the so-called lung-book. Each leaf is hollow, and its cavity is continuous with the blood sinus, into which the blood from various parts of the spider's body is poured. There are similar gill-books in the king crab, *Limulus*, into which the blood enters, while, externally, the water carrying oxygen in solution circulates between the leaves.

Crustacea.—When I mentioned crustacea as a visitor to a city office, some of you, perhaps, had visions of a "cray and chips" supper; but the crustacean I captured was a living Isopod—one of the wood-lice, or slaters. I cannot account for its presence otherwise than from the fact that my neighbour uses pot plants for decorative purposes, and the stray Isopod, thus, perhaps, introduced into the building, wandered into my office.

These notes might have been extended to a much greater length, but as they are I think they are sufficient to show that even in a city office there is plenty of material to engage the attention of anyone with a love for natural history if they care to use their eyes, and there is nothing to deter the city dweller from taking up this delightful and intellectual recreation and enjoying the pleasure to be derived from it.

In putting these notes together free use has been made of "House-Flies," by C. G. Hewitt, D.Sc.; "Flies in Relation to Disease," by G. S. Graham-Smith, M.D.; "The Cambridge Natural History," &c., but the facts stated therein have been checked wherever possible by observation and dissection.

The dissections so made, and from which the photomicrographs illustrating the paper have been made, are on exhibition under the microscope this evening.

The following is a list of the insects noted during the last six months:—

Lepidoptera: *Heteronympha merope*, *Pyrameis kershawi*, *Dasypodia selenophora*, *Agrotis spina*, *A. infusa*, *Cosmodes elegans*, *Tineus* (sp.)
 Coleoptera: *Anoplognathus velutinus*, *Phoracantha* (sp.), *Tenebrio molitor*, *Elater* (sp.), *Mezium affine*, *Trosoderma froggatti*, *Quodius fulgidus*, *Attagenus pallens*, *Doretaphrus bakewelli*, *Ptinus fur*, *Silodrepa paniceum*.
 Diptera: *Calliphora villosa*, *C. erythrocephala*, *Pollenia stygia*, *Unastello-rhina dorsalis*, *Pycnosoma rubifacies*, *Limnophila* (sp.), *Trimacra* (sp.), *Chironomus* (sp.), *Stegonica* (sp.), *Culex* (sp.)
 Hymenoptera: *Camp-someris anthracina*, *Ichneuminida* (sp.)
 Hemiptera: *Nasius vestitis*; with others not identified.

Field Naturalists' Club of Victoria

EXHIBITION OF WILD FLOWERS

MELBOURNE TOWN HALL

Tuesday, 30th September, 1919

OPEN AFTERNOON AND EVENING

Members and friends are requested to make a strong effort to secure Wild Flowers for the Annual Display, to be held as above, in aid of the Anzac House Fund, and Publishing Fund for List of Victorian Plants.

Large quantities of flowers will be required for display and for sale.

It will greatly facilitate handling at the Town Hall, where little time is available for setting out the flowers, if **each species is kept separate** and, if possible, **forwarded in bunches**. The stems should be well wrapped in damp paper or cloths, and enclosed in wooden or tin boxes, lined with paper.

DO NOT SPRINKLE WATER OVER THE BLOOMS.

Consignments from Country friends should be timed to **reach Melbourne** by last trains on Monday, 29th September, addressed—

“Field Naturalists' Club,

“Town Hall,

“Melbourne,

“Cut Flowers—Perishable,”

with name and address of sender marked thereon.

Gummed printed labels will be supplied on application.

Railway freight will be arranged at this end.

It will greatly facilitate the arrangements if notification be given to the Secretary, Mr. P. Crosbie Morrison, 174 Punt Road, Prahran, a few days before, that packages will be despatched, and also amount of space required

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1 -, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/8
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS	KILLING BOTTLES	
CORK LINING	ZINC RELAXING BOXES	
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES	CABINETS	
CURVED FORCEPS	INSECT CEMENT	
&c., &c., &c.		

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 9th October, 1919.

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

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

CONTENTS :

PAGE

THE FIELD NATURALISTS' CLUB OF VICTORIA	81
BIRDS OF A GIPPSLAND GARDEN. BY (MISS) C. C. CURRIE, LARDNER	85
FERNS GROWN IN THE OPEN. BY A. H. S. LUCAS, M.A., B.Sc.	89
NOTES	88, 96

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 13th OCTOBER, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. General Business.

4. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

5. Reading of Papers and Discussion thereon.

1. By Miss G. Nethercote.—“A Week at the National Park (Wilson's Promontory).” Illustrated with Lantern Views.
2. By Mr. C. Daley, F.L.S.—“At Wartook (Grampians).”

6. Reading of Natural History Notes.

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

7. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICES.

The Hon. Treasurer will be glad to have returns of Wild Flower Exhibition tickets, also any overdue Subscriptions, as early as possible.

Members changing their addresses will oblige by notifying the Hon. Secretary.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXVI.—No. 6. OCTOBER 9, 1919.

No. 430.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th September, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

CORRESPONDENCE.

From the "R. M. Johnston Memorial Fund" Committee, Hobart, soliciting subscriptions to the fund being raised to commemorate the memory of the late Mr. R. M. Johnston, I.S.O., F.L.S., Government Geologist of Tasmania, and one of the foremost workers for natural science in that State. Subscriptions will be gladly received by the hon. sec., Mr. Clive Lord, Tasmanian Museum, Hobart.

REPORTS.

A report of the excursion to Cheltenham on Saturday, 23rd August, was given by the leader, Dr. C. S. Sutton, who said that there had been a good attendance of members, who were favoured by a bright afternoon. The party visited the area in the neighbourhood of "The Springs," but found few flowers of note, owing to the fact that the scrub had been burned some months before, and the new growth had not become sufficiently established to provide the floral wealth for which the district is celebrated; but later in the season it would doubtless be worth visiting. Owing to the absence of Mr. J. Searle, the pond-life results of the excursion were not commented on. Dr. Sutton and others deplored the rapid extension of building in the Cheltenham and Sandringham districts and the consequent extinction of the most prolific and interesting flora near Melbourne, and regretted that no public park had been set aside so that future generations might have some idea of what our heath lands had been. In this connection mention was made of the recent gift by Mr. Theodore Napier, of "Magdala," North Essendon, of a considerable area of well-wooded land to the Essendon City Council for the purposes of a public park, on condition that none of the original trees be disturbed. On the motion of Messrs. F. G. A. Barnard and F. Keep, it was resolved to forward a letter to Mr. Napier, informing him of the Club's appreciation of his action.

A report of the excursion to Ringwood on Saturday, 30th August, was given by the leader, Mr. F. G. A. Barnard, who said that the large party was favoured by a delightful afternoon. Taking a different route than usual, the Dandenong Creek was reached by way of the Wantirna-road in about two

miles. Some uncultivated ground was traversed on the way, where many of the usual spring flowers were noticed, *Acacia myrtifolia* being particularly fine. A few early orchids, such as *Caladenia carnea* and *Diuris maculata*, were fairly common. At the creek were some nice young trees of the Silver Wattle, *Acacia dealbata*, well covered with blossoms. The return journey was made mostly through uncleared paddocks, where numerous other flowers were added to the collections. The best find of the day was a plant of *Hovea heterophylla* bearing white flowers instead of the usual lilac, this reversion to albinism on the part of *H. heterophylla* being of very unusual occurrence. Some discussion followed on the subject of albinism and reversion from type in flowers, the chairman mentioning that he had recently had sent to him a flower of Early Nancy, *Wurmbea dioica*, which was of a purple colour instead of the usual white. Mr. J. Booth suggested that the alteration in colour might be due to the presence of iron in the soil. Mr. Hardy said that this was perhaps the reason, for the ground where the flower had been picked was littered with disused portions of machinery, all of which were encrusted with rust. Mr. H. B. Williamson mentioned that a white specimen of the Common Centaury, *Erythræa australis*, had recently been forwarded to him, which he considered very unusual. Mr. P. C. Morrison said that last spring he found a cream-coloured Spider Orchid at Ringwood. In this case he considered the lack of colour was due to the situation in which the plant was growing being deficient in sunlight.

GENERAL BUSINESS.

Mr. C. L. Barrett, C.M.Z.S., referred to the intention to devote portion of the proceeds of the forthcoming exhibition of wild-flowers to the publication of a list of common names for Victorian plants, and asked whether the idea was a bare list or something in the way of an informative booklet giving hints for the recognition of the flowers.

Dr. Sutton said that details of the proposed publication had not yet been worked out by the Plant Names Committee. In any case it would be impossible to bring out a book whereby anyone not acquainted with botany could accurately ascertain the species of any wild-flower he might come across.

Mr. F. Keep suggested that at any rate a column giving the usual colour of the flower might be included.

Mr. Barrett said that something popular was badly needed, and that a botany along the lines of Dr. Leach's "Australian Bird Book" would pay for itself many times over if introduced into the schools.

Mr. C. C. Plante concurred with Mr. Barrett's remarks, saying that at present, unless one were a botanist, or devoted the whole of his spare time to plant study, it was impossible to recognize

with any certainty even a very few native flowers, owing to the want of a non-technical guide on the subject.

Mr. F. G. A. Barnard pointed out that there could be no comparison between a bird book and a botany, as the whole list of Australian birds numbered only some 400 species, while a botany for Victoria alone would enumerate over 2,000 species, and for Australia over 8,000. The latter would be too great a task for any one society to undertake. He saw great difficulties in the way of simple, brief descriptions, because so many of our genera comprised species of greatly diverse characters.

Mr. H. B. Williamson supported Mr. Barnard, and pointed out the impossibility of the determination of some species, and even genera, in the field, or by the tyro, taking for example the *Dillwynias*, *Pultenæas*, and *Daviesias*, which require dissection and microscopical examination to definitely distinguish between them.

Mr. J. A. Kershaw said that illustrations were of primary importance if the list was to be of any service.

Mr. F. Pitcher suggested that the matter be left in the hands of the Plant Names Committee for consideration at its next meeting, and moved to that effect. He mentioned that, with regard to illustrations, Mr. E. E. Pescott's work, "*The Native Flowers of Victoria*," contained a large number of illustrations, and seemed to him to be suitable for the purpose.

Mr. Barnard asked to be allowed to speak again, and said that, as the originator of the suggestion of common names for our plants, which he had made in a paper read before the Club some ten or twelve years before (see *Victorian Naturalist*, vol. xxiii., p. 136), he then had no idea of naming more than the more prominent species to be found in certain areas; but the committee had thought it desirable to include every Victorian species.

The chairman said that whatever was done should be done quickly, for if any other work of a similar nature should come out before that of the Club the chance of making the publication a success would be greatly lessened.

On being put to the meeting, Mr. Pitcher's motion was carried unanimously.

PAPER.

By Mr. A. H. S. Lucas, M.A., B.Sc. (hon. member), entitled "*Ferns Grown in the Open*."

The paper was read by Mr. F. G. A. Barnard, and detailed the methods adopted by the author, who is a resident of Gordon, one of the northern suburbs of Sydney, to grow his favourites in as nearly as possible natural conditions, unsheltered by covering of any description. He found that, while some species suffered to some extent during the summer, though copiously watered, nearly all recovered when cooler weather came, while

many species, so long as the watering was not forgotten, seemed to revel in the conditions provided.

Mr. F. Pitcher, in congratulating the author on the interest of his notes, expressed surprise that more had not been done in the way described. He could name twenty Victorian ferns which are quite easily cultivated in the open so long as they are sheltered from the north winds. Regarding tree ferns, he advised the use of the *Alsophila* in preference to the *Dicksonia* for outdoor situations, and said that in most gardens tall tree-ferns are out of place—that rather ones with stems not more than two feet high should be selected.

Mr. J. Gabriel complained of the destruction of tree-ferns in the Dandenong Ranges, Perrin's Gully, which was the show place of the district, being now a mere wreck of what it was.

Mr. J. Stickland considered the paper an excellent one, but would have liked to hear how the author dealt with the slug pest. He said the best growth he had had of a tree-fern was from a piece about two feet long sawn from the top of a tall specimen.

Mr. F. G. A. Barnard said the paper was a most interesting one. He had been surprised at the large number of ferns mentioned. He could not understand the difficulty the author met with in growing the King Fern, *Todea barbara*, for here it was readily grown as a pot plant.

Mr. A. D. Hardy said that, sheltered from the hot north wind, he had grown several species in the open very successfully.

2. By Mr. J. C. Goudie, entitled "Notes on the Coleoptera of North-Western Victoria," Part VII.

In this part the author recorded about sixty species belonging to the families Cucujidæ, Cryptophagidæ, Lathrididæ, Dermestidæ, Byrrhidæ, Heteroceridæ, Lucanidæ, Scarabæidæ, and sub-family Cetonides, many of which are found only in that portion of Victoria.

Owing to the lateness of the hour, the paper was taken as read.

EXHIBITS.

By Mr. F. Keep.—Flowering specimens of *Acacia cardiophylla* and *A. buxifolia*, grown at Camberwell; also dried specimens of *Hovea heterophylla*, and white variety collected at Ringwood excursion by Miss Carter.

By Miss M. T. Johnson.—Seeds of Mahogany Bean, *Afzelia Africana*, from South Africa.

By Miss G. Nethercote.—Flowering specimens of *Boronia anemonifolia*, A. Cunn., from Bendigo.

[Several other members exhibited specimens, but omitted to hand in particulars.]

After the usual conversazione the meeting terminated.

THE BIRDS OF A GIPPSLAND GARDEN.

BY (MISS) C. C. CURRIE, Lardner.

(Read before the Field Naturalists' Club of Victoria, 11th Aug., 1919.)

NESTLED close in the shelter of the tall timber and original bush, this garden is crowded with English and native trees, shrubs, and tree-ferns, which makes it a perfect shelter for many kinds of birds.

With a well-stocked larder beside it, a young Boobook Owl, *Ninox boobook*, sits in the shadiest part until its parents return in the evening. Of Honey-eaters we have not a few. The Spinebills, *Acanthorhynchus tenuirostris*, rarely leave the garden. They are old favourites, and depend upon us to help them in the continual feud with the Wattle-birds, who question their right to the garden.

The flowering eucalypts are doubtless responsible for so many Honey-eaters. The Wattle-birds, *Acanthochæra carunculata*, had their nest in a Western Australian *E. calophylla*, over a gate, so they are not shy. The Tawny-crowned Honey-eater, *Glyciphila melanops*, lives amongst some banksia trees about a mile away, and visits us from time to time. The Brush Wattle-bird, *Anellobia chrysoptera*, is a particularly noisy visitor, mimicking a great many birds, and is known in many parts as the "Mocking-bird." Another visitor, the White-eared Honey-eater, *Ptilotis leucotis*, is particularly quiet, though not at all shy, and flits gracefully through the plum-tree at the door, his taste for plums fully equalling his taste for flowers.

To-day I hear a Bell-Miner, *Manorhina melanophrys*. There is a colony of these birds about three miles away, and occasionally we hear one in the tall timber near the house, and hope he will stay. A very great favourite is the White-shafted Flycatcher, or Fantail, *Rhipidura albiscapa*. It often flies in at the house door catching flies, regardless of our presence. A pair have their nest in a tea shrub, *Thea sinensis*, in the flower garden, where three young were reared in the tiny nest, while the incomparable nest of the Black-and-White Fantail, *R. motacilloides*, is in a gum-tree just outside the garden fence, and in the same tree, a few feet above it, is a Mud-Lark's (*Grallina picata*) nest. Near by there are several more Mud-Larks' nests. The birds are great friends since one season we shot a Magpie which had destroyed six nests, one after the other, as the Mud-Larks built them, throwing the eggs out. The Grallinas used to shriek each time, but we were always too late to save the nest.

Welcome Swallows, *Chelidon neoxena*, are here all the year round. They nest in the barn, and it is interesting to note

that on very hot days they throw their young out of the nests when the iron roof gets too hot. Fortunately for them, we know of this action, and in the evening look for the birds and replace them, or the cat would account for them.

The Mountain Thrush, *Oreocincla lunulata*, is very shy as it runs about quickly in the garden in its search for acacia seeds, slipping out of sight on the approach of footsteps. One feels anxious for the bird when cats are about. The Harmonious Thrush or Grey Shrike-Thrush, *Colluricincla harmonica*, delights in the scraps we give him, and which he takes away to a splintery log to hold them while he picks them to pieces.

In the bush, not a minute's walk from the house, are the Spotted Ground-Bird, *Cinclosoma punctatum*, and the Whip-bird, *Psophodes crepitans*. The latter are to be seen to great advantage on an evening after rain has been falling and all the bush is damp. One evening four were to be seen; the hen bird scolded me while her mate was cracking his whip, while two smaller ones were hopping along the path before me. Then she finished up his "crack" in fine style, but I think he manages it alone sometimes.

That dear little favourite, the Superb Warbler or Blue Wren, *Malurus cyaneochlamys*, marshals his family around the garden, and it is very ridiculous to see a pair respond to the shrieks of a great lazy Bronze-Cuckoo, *Chalcococcyx plagosus*, which they have reared in the garden. The Fantail Cuckoo, *Cacomantis rufulus*, was seen for a few days only; we suspected the Spine-bills were responsible for its rearing. The Pallid Cuckoo, *Cuculus inornatus*, can be heard uttering its plaintive notes a little further afield.

With the Wrens there sometimes comes quite a flock of small birds to the garden, such as the Shrike-Robin, *Eopsaltria australis*, Fire-tailed Finch, *Egintha temporalis*, and the Little Tit-Warbler, *Acanthiza nana*. Out in the fields in front the White-fronted Chats, *Ephthianura albifrons*, have their nest amongst a patch of bracken, and a little away is the Goldfinches' first nest of the season, the second being in an apple-tree in the garden.

Lovely to watch is the Nankeen Kestrel, *Cerchneis cenchroides*, circling round over the grassy fields during the high east wind. The Pipit, *Anthus australis*, which runs among the grass, and a brace or two of Quail, *Synoicus australis*, are in danger from the destructive desires of this inhabitant of the air. The Little Falcon, *Falco lunulatus*, keeps the Rosella Parrots, *Platycercus eximius*, active in their efforts to keep out of the way, while a pair of Allied Harriers or Swamp Hawks, *Circus gouldi*, work over the swamp, and go home to where they nest, about six miles away, every evening.

That handsome bird, the Crimson Parrot, *Platycercus elegans*, known also as Pennant's Parrakeet and Red Lory, sits upon the wheat-stack all day long, one now and again falling a victim to the cat. The red-plumaged (adult) birds are far more wary than the younger green-plumaged ones, and fly across in numbers. In the garden the Gang-Gang Cockatoos, *Callocephalon galeatum*, come and search for acacia seeds and bright berries, and later in the year share with the Spotted Bower-Birds, *Chlamydera maculata*, the holly berries.

A flock of White-eyes, *Zosterops cærulescens*, remember us while the mulberries and sweet plums are ripening. White-browed Wood-Swallows, *Artamus superciliosus*, or Summer-birds, are at home round a small spinney, and Starlings attend to the grasshopper pest, while Crows occasionally fly over at this season. A Rufous Flycatcher, *Rhipidura rufifrons*, paid us a visit also, but was very shy.

While the flax is being loaded a Kookaburra, *Dacelo gigas*, or Great Brown Kingfisher, balances himself on an extra fork handle, and swoops down from time to time when he sees a mouse, never failing to secure it. In the bush alongside Thickheads, *Pachycephala rufiventris*, and Tree-creepers, *Climacteris picumna* (brown) and *C. scandens* (White-throated), are to be seen, sometimes even on the posts supporting the barn.

The Bronzewing Pigeon, *Phaps chalcoptera*, is also (though rarely) a visitor to the garden, where it searches for wattle seeds. We know its haunt, which is on our way to the swamp, not more than ten minutes' walk away, where there is a colony of Emu-Wrens, *Stipiturus malachurus*, numbering about twenty—such dear little birds, with such ridiculously long tail feathers. From there we go on to see the White-fronted Heron, otherwise Blue Crane, *Notophoxyx novæ-hollandiæ*, of which, during last February and March, there were ten to be seen.

We have been delighted to have all these birds about us at one time. Soon some will leave us, while others—the Robins, the Bower-birds, and the Gang-Gangs—will come and steal the holly berries; but all are sure of a welcome and protection in this sanctuary of a Gippsland bush garden.

Miss C. C. Currie, being a country member of the Club, and unable to be present at many ordinary meetings, was afforded the opportunity of replying to the criticism on her paper as recorded on pages 66-67 of the September *Naturalist*. She writes:—

“I would like to say, in reply to the criticism on my paper

in the last *Naturalist*, that all the birds mentioned in my paper were seen during February and March of the present year. There is no mistake as to the presence of the Bell-Miner. On a previous occasion we had observed them at a distance of not more than twelve feet, and had passed the field-glasses back and forth from one to the other while doing so. Furthermore, we have been used to these birds all our lives. Though they did leave the district when the swamps were cleared, they returned some years ago from the timber further back. As regards the Mountain-Thrush, Mr. Wilson is correct; I don't know how I made such a silly mistake as to write 'acacia seeds' for 'insects.' I must have been thinking of something else at the time. Lovers of nature, spending their lives among birds which come around them, have a great advantage over students of ornithology who make occasional visits to localities where birds are plentiful to study their habits, which generally ends in shooting the birds to make skins for their collections, or to make sure of its identity by counting its feathers. Thus, with the Bell-Miner, if we had shot the prospector we would never have had a colony established here as we desired. With reference to the mimicry by the Brush Wattle-bird, we fully expected to see a Starling when we went to look whence the bird-notes came, because the Starling's note was among those heard. Others were the Black-faced Cuckoo-Shrike, the Grallina, and a Parrot. There was no doubt as to which was the guilty bird, for he was perched on the top of a lemon-scented gum in full view of our field-glasses, and was in no wise disturbed by my sister calling me to see him. Many differences of opinion regarding birds depend on the nature of the observer, and only persons who live their lives among birds, and take particular notice of their ways, get the opportunities to record remarkable facts. For instance, the Grallina never adds mud to its nest after 10 o'clock each morning, no matter how fine the day is. How does the bird know when it is ten o'clock? Though we would be delighted to have a visit from a party of bird-lovers, we fear the distance is rather too much for one day. Besides, we do not like the birds disturbed, and, of course, could not allow any collecting."

CORRECTION.—In the report of the August meeting in the September *Naturalist* the locality of the fossil marine shells exhibited by Mr. H. B. Williamson is wrongly given on pages 66 and 68 as "Croydon"; it should be "the Abattoirs," a new locality for this deposit, and about five miles north-easterly from the Croydon bore.

FERNS GROWN IN THE OPEN.

BY A. H. S. LUCAS, M.A., B.Sc. (Hon. Member).

(Read before the Field Naturalists' Club of Victoria, 8th Sept., 1919.)

THE monsoonal rains are now falling, and the long drought and scorching days are over; so we can take stock of the damage and see how our ferns have stood the long time of severe trial.

Probably many members of the Club have grown ferns under the friendly shade of the bush-house, and by ordinary care have brought their favourites safely through the summer. They may be interested in the experiment of growing these plants out in the open and a few degrees nearer the equator.

The situation of my house is at Gordon, on the line between Milson's Point and Hornsby, about 8 miles from the first-named station, and 380 feet above sea-level. During 1918 I converted a part of my ground still occupied by gum-trees and native bushes into an open-air fernery. The plot is well sheltered, especially from the westerly winds—with us sometimes red-hot in summer and icy cold in winter. It is practically untouched by frosts, and shaded by trees from the morning sun, but fully exposed to its mid-day rays.

It was divided up into a number of *quasi*-rockeries. Stone is abundant in the heads of the gullies near the house. The ground of each was worked up, a guard wall of large stones built around it, and the space filled up nearly to the level of the stones with leaf-mould, light earth, charcoal, and small bits of sandstone and a little manure. On this, a foot or so within the outer wall, another similar wall of smaller radius was built, and the ground formed as before. Mostly I stopped here, but the largest and most central bed—a circular one—had three concentric zones around the central elevated circle. The topmost bed of this was occupied by a large Bird's Nest Fern. One of the zones was filled up entirely with Maiden Hair Fern, *Adiantum æthiopicum*, which grows wild in our neighbourhood. The other zones and all the other beds were filled rather closely with ferns, with a few mosses and liverworts in between them. Visits to Illawarra, the Kurrajong, and the Blue Mountains provided most of the plants, and no place knew that it had been robbed. A hose was available for watering, and this was necessary most evenings in the hot, dry summer.

Very few indeed of the ferns have died right down, though a good many began to look brown in patches. Among the tenderest seemed to be the Lindsayas. *L. microphylla*, the most beautiful, is very hard to keep, though sheltered among

stones and protected by a bark roof over its nook. It grows in deep, extremely sandy, loose soil under or at the foot of big rocks in our sandstone gullies, where it does not seem to get much nutriment, but is kept moist by its situation. It is not easy to devise means to provide for it sufficient moisture and shade away from the seepage of the gully sides. One group of plants has survived, but the other has disappeared. It can be grown well in a glass frame. *L. trichomanoides*, growing in good soil in deep gullies, also seems to resent the excess of light of the lowlands. We are here about 400 feet above sea level, but I obtained it growing wild in the Kurrajong at 2,000 feet. Even *L. linearis*, common in swampy heaths, is a little difficult. It has long, thin rhizomes, which must be very carefully transferred. The plants, however, after foxing in the summer, are now coming on well.

The *Adiantums* have done splendidly. *A. æthiopicum* always withers off the old fronds in the summer, but young ones replace them, and the plants now make a bright green girdle round the throne of the Birds' Nest. *A. formosum* never turned a hair, but has grown so fast and so big as to threaten its neighbours; it runs rapidly. *A. affine* is much more tricky; has just held its own, without much more to boast of. *A. hispidulum* is more delicate, but, planted in sheltered nooks, is bright and green, as is also its ally, *A. neo-caledonicum*, obtained in the markets. It is a more dwarf and bushy fern, and does not need so much shelter. Both large-segmented forms of *A. capillus-veneris* and small-segmented forms of other imported species surprised me by flourishing much better in the open than they had done in the bush-house. They all seem to revel in the freedom allowed to their rhizomes.

Doodia aspera and *D. caudata*, both common in this district, just rioted in the good water supply. They go off in the bush in a drought, but with plenty of water defy heat or wind. Growing with these two we sometimes find a form which seems to be identical with the *D. connexa* of Kunze. It resembles *D. aspera* in the size and shape of the frond and pinnæ, but most of these are detached, as in *D. caudata*, and the sori are more like those of *D. caudata*. As the two species grow in company with this form, it may be a hybrid between them. It is as hardy as they. Under the shelter of the big Crow's Nest in the central bed grows a plant of *D. Atkinsoniæ*, which is usually considered a variety of *D. caudata*. The fronds are exceedingly variable, taking all shapes in the lower part, but nearly all end in tails, which may reach a foot or more in length. It is a descendant—or rather derivative—of a plant gathered in the Kurrajong, on the spot where Miss Atkinson noted it. It is so rare that, if a variety, it must have been a

"sport." It has maintained its characters with me for about nine years.

Blechnum cartilagineum is a local fern, and naturally very hardy, but in the bush it always shows the effect of the summer, and many of its fronds wilt. It makes up for this by the delicate reddish-purple of the young fronds. My plants, though not in special soil, fared better than those in the bush. *B. serrulatum* is a swamp plant, with creeping underground rhizome; it has responded well to the good soil and good water supply. It is a little slow in starting after it is shifted, but once it takes hold it goes ahead consistently. *B. lævigatum* is referred to below.

The allies of *Blechnum*, the *Lomarias*—(N.B.—I have not employed Christensen's classification, because I thought that the old names as given by Bentham would be more familiar to fern-growers)—have been very unequal in their heat-resisting powers. *L. Patersoni*, growing wild by creeks in deep gullies, came off rather badly, losing most fronds completely and having the residue half-withered. The plants show signs now of recovery. It is very tender in the matter of shifting, likely looking young plants with a bole of earth enclosing their roots going back for a time without any apparent reason. They seem to be very shy of new soil. *L. lanceolata* is quite hardy, even fairly large plants soon recovering after transplanting. The young plants, put in a year ago, have formed large green rosettes without any throw-back. One is now sending up its first fertile fronds. The rachis does not become black until the plants are quite old. I discovered *L. alpina* last Easter in the highest part of the Blue Mountains. We regarded it as a Kosciusko or Mount Wellington plant, and had not looked for it so far north. The plants settled down at once in their new beds at the low altitude, and have spread more rapidly than any other of my ferns. When exposed to an exceptionally full hot sun they wilted and browned, but have quite recovered. Others, in the shade, never went off. *L. capensis*, usually growing near or in water, found things trying, but was not killed out. I had been rather sceptical as to the validity of *Blechnum lævigatum* as a species, thinking it a form of *L. capensis*. Hooker regarded it as "a very distinct species," but Baron von Mueller admits that it can hardly be known from the *Lomaria* in the fruiting stage. The young plants are certainly different in appearance; the *Blechnum* is always green and smooth, with short, rounded pinnæ, while the *Lomaria* is red and scaly, the fronds less erect, and terminating in a long, flat segment.

Asplenium nidus is the king of the fernery, seated on its central throne. With plenty of water it has developed fresh

whorls of perfect fronds and withstood the heat proudly. Beneath it flourished *A. flabellifolium*, as green and graceful as ever. It is so placed that it can droop over freely. *A. falcatum* and *A. furcatum* are generally met with on the sides or crown of rocks on the borders of stream-traversed gullies, where they have but little soil, but receive a steady drainage from the rocks. The latter is much the rarer, and a more northern species, but it has taken to the new conditions much more readily than the former. Neither have succumbed, however, nor has another rare species, *A. attenuatum*, of which I have several plants and have lost none. *A. bulbiferum*, with and without proliferations, is quite green, and has continued to put out new fronds. *A. flaccidum* was too tender; it attracted the attention of some pest, which cut off the fronds, and disappeared even before the hottest weather came. It is happy only on a tree-fern trunk in the drip of a waterfall.

Of young tree-ferns I have only three kinds—all species of *Alsophila*. As might be expected, *A. australis* stands hard times best of them all, and soon sends out bold fronds. *A. Leichhardtiana* is a slender fern, with very prickly rachides. During the hot term it lost about as many fronds as it produced, but is coming on now that it is freed from the torment. *A. Cooperi*, a soft, hairy species, survived the ill-treatment, but suffered more even than *A. Leichhardtiana*. In all, the young fronds now unfolding are stouter than those which preceded them, so that the roots have been gaining in strength all the time.

I have not had much success with Film Ferns, only saving a frond or two of the one I grew, *Hymenophyllum javanicum*. It is very hard to reproduce a good imitation of the natural habitat, though these plants grow well enough under glass. *Todea Fraseri* is very like the Film Ferns in this respect. The young fronds have the same delicate structure. It is a fern I tried hard to grow, as it is a charming plant, but in the open I have only left two or three starveling specimens. *Todea barbara* is not one of the easiest ferns to grow; it requires nursing—at all events in the young stages.

Young Staghorn Ferns nailed to a big old stump grew rapidly, and showed no ill effects of the heat. It is, of course, generally grown out of doors. On this stump I grew several orchids—*Cymbidium suave*, *Sarcophilus olivaceus*, *Bulbophyllum Shepherdii*, and *B. exiguum*, and *Liparis reflexa*. The first has been growing on the stump for about ten years, and flowers regularly every season. I have never seen a seedling, though the pods ripen each year and scatter the seeds over the broad top of the stump, where one would think they ought to germinate.

Pteris is perhaps the hardiest genus of them all. Native

and imported species have alike thriven with a minimum of wilting. One rarely meets with seedlings of *P. aquilina* in the bush. I came across several at Clarence, about the highest point on the Blue Mountains. The young fronds were so delicate and finely divided, and of so pale a green, that I was doubtful whether the plants were really young bracken. However, I brought one home and planted it in a favoured situation, and it soon threw out thick rhizomes, and had to be removed or it would have trampled over its more delicate neighbours. Now it is a typical bracken fern. *P. tremula*, "the Australian Bracken," as it appears to be called by British nurserymen, does not run like *P. aquilina*, but grows very speedily into a tall bush with copious fronds, and is useful in sheltering more tender ferns. I have a number of plants, and they have all put out fertile fronds. In the bush-house it propagates profusely from spores, which easily germinate in the original or in adjacent pots. Out of doors the ground is too much disturbed, as a rule, for the spores to germinate. *P. falcata* is a ground-runner, and soon spreads. It has never required any special attention, but forms effective clumps in the lower-lying beds. I have two or three plants of the variety *nana*. These have so far (for a year) maintained their dwarf habit. Some plants which I grew formerly in a box in the bush-house did gradually in the course of three or four years revert into the larger form of the type. There are several plants of *P. paradoxa*, from seedlings (I believe), with one simple frond to full-grown ferns with creeping rhizome and several pinnate leaves. The neatly cut, shapely fronds are of a deep green, and the ferns look well massed. Not one seemed to feel the heat adversely, but they were well shaded. *P. incisa* rather resented moving, but, once established, grew rapidly, with stout rhizomes and large fronds. These feel the heat. At the end of the summer plants growing in the wild state in the crannies of the rocks in railway cuttings or similar situations show a good many withered fronds. Now that the rains are falling the plants appear to be in the best of health, and are growing out vigorously. The fronds are of a particularly refreshing green, and are large enough to give shelter to other ferns. *P. umbrosa* grows along the banks of running creeks in good soil. It grows slowly at first when transplanted, but finally becomes very tall and strong. It takes several years to produce spores; in fact, I have never myself found fertile fronds in my hunting. My oldest plant, grown by me for three years, was scorched badly by the sun, so that I do not expect to see fertile fronds this year. We must be patient. *P. quadriaurita* was sensitive, and, curiously, more so than the *argyrea* variety sold by the florists. This white-striped variety

sent out some altogether green fronds, but is now growing true and very strongly. *P. cretica*, another species much sold by the florists, with several varieties, came on famously, and was far more at home in the open than in a pot in the bush-house. *P. straminea*, *P. flabellata*, and other exotic species maintained the good character of the genus.

Cheilanthes tenuifolia, which, like the bracken, is found all over Australia, is naturally an easy fern to grow. In the earlier stages, while sterile, it is very green and graceful—an elegant Parsley Fern. The fertile fronds, erect and rigid, grow usually to a height too great for the top weight, and then cling together or fall prone, so that when faded and dried the plants look very forlorn in the bush. *Notolæna distans* is always found growing amongst rocks, often in much-exposed places on dry hills, and sends its roots far down into crannies and cracks. It is accordingly difficult to shift. In nature, like the previous species, in high summer it assumes the form of withered tufts, and my cultivation could not prevent it from doing the same with me. It is alive, all the same, and is starting again with a new growth.

Aspidium, as recognized by Bentham, contains ferns very different in habit. Those which grow in rosettes, with short rhizomes, are useful plants, as they are easy to arrange. The Prickly Shield Fern, *A. aculeatum*, an old friend of mine in England, has had its ups and downs this summer. It prefers the colder climates, as of Britain and Kosciusko, but came through quite alive and not much the worse for the loss of fronds. A plant which Mr. Whitelegge identified as *A. aristatum*, from the Grafton district, quite died down, and I had given it up as lost, but now it has sent out rhizomes, and from these healthy new fronds are springing; these are of a bright glossy green. *A. acuminatum* grows in clumps, a form very near to *A. decompositum*, but not recorded by Bentham. The plants were obtained from the banks of a running creek, and have just managed to live through the time of trial, but are now promising a strong fresh growth. *A. molle* has a handsome rosette of tall fronds, and has not lost many of them. Its congener, *A. unitum*, a swamp fern growing not far from the sea, has running rhizomes, and sends up also tall fronds, which are near together, and so form clumps, and which are stiff and harsh in contrast to the soft, hairy fronds of *A. molle*. I have several plants, and all have grown on steadily during the hot weather. I have not admitted *A. exaltatum* to the fernery, but have it growing under the lee of my front garden fence. The lower half of the fence is of substantial stone, and behind this (the south) the ferns have multiplied exceedingly, and form a high and thick hedge which is sufficiently ornamental.

It spreads with great rapidity. I have only one plant of *A. capense*, which has grown well in a zone of the central eminence. In nature it grows on rocks or stumps, and as long as the roots obtain the moisture they need the fronds will stand any amount of exposure, as the hairy rhizomes are well equipped to withstand drought.

Another Hare's Foot Fern, *Davallia pyxidata*, does extremely well in the open, spreading quickly as its rhizomes creep over the rockery. *D. dubia*, common everywhere on the hillsides, stands exposure as far as the roots are concerned, but it soon looks shabby after heat and drought. It is at its best in the spring.

The Polypodiums have had varying fortunes. *P. australe* died out early. *P. pustulatum* settled down slowly. Then some insect or other pest took to cutting through the petioles of one of the plants, which was thriving, and bright green fronds lay on the ground thus cruelly amputated. The plant has recovered, but I am afraid of the same secret enemy, whom I have not yet unmasked. Another plant, among much stone (my supplied rocks), is quite vigorous. *P. scandens* is alive, but suffered badly. *P. repens* has been just holding its own in a shaded place, but has made no progress in the summer. *P. tenellum* is just alive, and no more can be said about it. All the above are forest plants growing often on rocks, and they do not readily accept the new surroundings, though I have tried to reproduce as many of the natural conditions as possible. *P. punctatum* and the giant form separated as a distinct species by Labillardière, *P. rugosulum* (*sic*), on the other hand, have simply ramped; the two keep their characters and habit, and are easily distinguished.

I had two plants of *Schizaea bifida* very well established. It grows in this district. One plant has disappeared entirely, and the other has but two undivided green fronds left. *S. rupestris* went right off when the summer came. *Gleichenia circinata* requires special care. Very young plants moved in the autumn will expand and thrive. The heat is very trying to them, but I have preserved at least one plant. On the other hand, I have had perfect success with *G. flabellata*. It has increased laterally and vertically, growing consistently throughout the summer.

I grew a few of the British ferns for the sake of "Auld Lang Syne." The Royal Fern, *Osmunda regalis*, has produced fertile fronds freely at a height of not much more than a foot. The Hart's Tongue, *Scolopendrium vulgare*, burned at first, but has quite recovered. The fronds, a tasselled variety, are of rather a paler green than I remember in the English fern. The Lady Fern, *Athyrium filix-femina*, has most tender and delicate

fronds, but I managed to keep it by growing in the same bed plants of *Isotoma axillaris* (from seed). These spread with a light but abundant foliage over the ferns, which they eclipsed for a while, and replaced them with a profusion of large flowers—to my surprise, quite white. I suppose the shade and unexpected good ground are responsible for this.

The mosses and liverworts, in general, survived. Each day they shrivelled up, and each evening, after watering, they were fresh and green again. Amongst them were *Dawsonia* and *Hypnodendron* and several whose names I am ignorant of. *Marchantia* made beautiful little carpets in the spring and early summer, showing all the organs of reproduction, in some cases gemmæ and the male and female umbrellas all appearing together on the same plant. The summer has withered off the connections and left centres of live thallia for this year's growth. *Fimbriana* is now forming healthy green carpets.

Summing up, it seems that almost all the terrestrial ferns can survive a severe summer if they are carefully supplied with water and are sheltered from hot winds. The rhizomes, at least, carry on in spite of the heat and dry atmosphere. The ferns which live in water spray, or clamber by thin, not woolly, rhizomes on the face of rocks which are constantly wet, are exceedingly difficult to preserve in health. I think some sort of fountain might serve to give the continual drip, but the plants would have to be kept entirely in the shade.

“IN AUSTRALIAN WILDS.”—Such is the title of a new volume of natural history gleanings by Mr. Charles Barrett, C.M.Z.S., for which nature-lovers will be glad to find a place on their bookshelves. In it the author tells his experiences when searching for nature notes in out-of-the-way places throughout Australia, and, though relating principally to birds, there are enough references to other branches of natural history to hold the interest of the general reader. The chapters deal with various types of country, such as the wooded Olinda Valley, near Lilydale (Vic.), the Mallee, the dry area of Eyre's Peninsula (S.A.), the palm scrubs of the Richmond River (N.S.W.), the coral islands of the Queensland coast, &c., so that the great variety of Australian life is well contrasted. The letterpress is not burdened with scientific names, but it is well supplied with illustrations—more than 100 in all—most of them from photographs by the author, several having been taken at a considerable expenditure of time and patience—witness the successful snapping of the Coachwhip-Bird after three hours' waiting. The volume is well printed, and is a credit to all concerned in its production.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1919-1920. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. P. C. MORRISON, 174 Punt Road, Prahran (Telephone Windsor 341,
only after 4 p.m.)

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,
J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

NOTE. — The excursion announced for **Saturday, 11th October, to Werribee Gorge, will not take place.**

SATURDAY, 18TH OCTOBER.—St. Helena, via Eltham. Object—**Ornithology.** Leader—Mr. E. S. Anthony. Meet at Prince's Bridge Station for 1.40 p.m. train. Second return fare to Eltham, 1/5. As a number of nests have been located, there will be scope for the use of cameras. Should excursionists desire refreshments, such must be taken, but tea, milk and sugar will be provided.

SATURDAY, 25TH OCTOBER.—Evelyn. Object—**General.** Leader—Mr. W. T. C. Kelly. Meet at Flinders Street Station (opposite Mutual Store) for 11.55 train. Second week-end fare, 2/8.

SATURDAY, 1st NOVEMBER.—Mont Albert. Objects—**Physiography, Geology, and Pond Life.** Leaders—Messrs. F. Chapman, A.L.S., and J. Searle. Meet at Flinders Street Station (opposite Mutual Store) for 1.55 p.m. train. Single tickets may be taken and return by electric tram. The physiographic features of the district will be pointed out from Reservoir Hill, the Surrey Dive, and the Tram terminus. The interesting rock occurrence in Mr. Maling's grounds will, by kind permission, be visited to see the anticlinal folding of the bedrock. A large water-hole here contains plants and pond life. Cameras should be taken, also hammers and pond life apparatus.

TUESDAY, 4TH NOVEMBER (CUP DAY).—Emerald. Object—**General.** Leader—Mr. E. E. Pescott, F.L.S. Meet at Prince's Bridge Station for 8.50 a.m. train. Second excursion fare, 3/2. It is proposed to visit Messrs. Nobelius's nursery to see exotic trees, &c. Lunch, &c., to be taken. Leader will join train at Camberwell.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/8 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS		KILLING BOTTLES
CORK LINING		ZINC RELAXING BOXES
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES		CABINETS
CURVED FORCEPS		INSECT CEMENT
&c., &c., &c.		

Write for our Price List and Sample Sheet of Pins.

VOL. XXXVI.—No. 7.

NOVEMBER, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 6th November, 1919.

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

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

CONTENTS :

PAGE

FIELD NATURALISTS' CLUB OF VICTORIA	.. .. .	97
EXCURSION TO BENDIGO	.. .. .	100
EXHIBITION OF WILD-FLOWERS	.. .. .	105
NOTES	.. .. .	108

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 10th NOVEMBER, 1919.

1. Correspondence and Reports.
2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Mr. Harvey Cheeseman,
244 North Road,
Brighton.

Mr. Colin Allen,
374 Auburn Road,
Hawthorn.

Mr. John Harper,
Metropolitan Gas Co.,
Flinders Street,
Melbourne.

PROPOSER.

Mr. H. Hughes.

Mr. G. Coghill.

Dr. C. S. Sutton.

SECONDER.

Mr. C. Daley.

Mr. A. D. Hardy.

Mr. P. R. H. St. John

AS COUNTRY MEMBER—

Mr. Henry Edwin James,
Henty Street,
Casterton.

PROPOSER.

Mr. P. Morrison.

SECONDER.

Mr. F. G. A. Barnard.

4. General Business.
5. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

By Mr. C. Daley, F.L.S.—“At Wartook (Grampians).”

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow members.

NOTICES.

The Hon. Treasurer will be glad to have returns of Wild Flower Exhibition tickets, also any overdue Subscriptions, as early as possible.

Members changing their addresses will oblige by notifying the Hon. Secretary.

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

The Victorian Naturalist.

VOL. XXXVI.—No. 7. NOVEMBER 6, 1919.

No. 431.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 13th October, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about sixty members and visitors were present.

The chairman said that members would be grieved to learn that during the previous week their hon. treasurer, Mr. F. Pitcher, had suffered another sudden bereavement by the death of his only daughter. She had been an active worker at the recent exhibition of wild-flowers, which made the shock all the more severe. He moved that the sympathy of the meeting be conveyed to Mr. and Mrs. Pitcher in their sorrow.

REPORTS.

A report of the excursion to Bendigo on Saturday, 13th September, was furnished by Mr. D. J. Paton, of Bendigo, one of the leaders, and read by Mr. C. Daley, M.A., his co-leader. The excursion, from a botanical point of view, had been a great success, but, owing to unpropitious weather, some inconvenience was experienced, and changes had to be made in the programme. About a dozen members and friends left town by the early trains, reaching Bendigo soon after mid-day. The neighbourhood of One-Tree Hill and the Spring Gully Reservoir was visited in the afternoon, and next day a visit was made to the country north-west of Eaglehawk, where the pretty little shrub, *Cryptandra amara*, was found in full bloom, accompanied by *Boronia anemonifolia*, another charming species. A few insects had been taken by the entomologist of the party, but the weather was against that branch of natural history. The chairman remarked that the original forest of the Bendigo district had practically disappeared, the whole of the trees seen being secondary growth. As the result of Mr. F. E. Wilson's description and illustration at the previous meeting, he had been able to recognize the notes of several Bell-Miners during the outing.

A report of the excursion to Alphington on Saturday, 20th September, was given by the leader, Mr. J. Searle, who reported a fair attendance of members. The afternoon was devoted to pond life, which was found to be very abundant in the pools visited. The species obtained, however, did not reveal any unusual occurrence.

A report of the excursion from Emerald to Beaconsfield was forwarded by the leader, Mr. J. W. Audas, F.L.S., who reported

a small attendance of members. During the walk of about twelve miles a large number of plants, shrubs, and trees in bloom were met with, many of them being of brilliant appearance. No less than twenty-one species of orchids were noted, among them being *Caladenia congesta*, *C. Menziesii*, *Pterostylis barbata*, *Thelymitra carnea*, and *Prasophyllum australe*. The Butterfly Iris, *Diplarrhena Moraea*, was abundant in places. Among other flowers seen were *Euphrasia collina*, *Tecoma australis*, *Plagianthus pulchellus*, *Epacris microphylla*, *Comeosperma ericinum*, and *Bauera rubioides*.

Mr. C. Daley, F.L.S., said that four members of the Club were included in the Tourist Bureau's party which visited the Grampians during the last week of September. The flowers around Hall's Gap, the most accessible portion of the Grampians, were perhaps rather fewer than in other years, but in the more remote parts were as fine as ever. He had been pleased to notice that a large number of the tourists visited the Club's exhibition of wild-flowers on the 30th ult.

The chairman said that quite a number of Club members took advantage of the invitation given to members of the Canterbury Horticultural Society and friends to visit Mr. J. M. Watson's garden at Balwyn on Saturday, 4th inst., for the purpose of viewing the many Australian shrubs and trees which that gentleman has under cultivation, and which, in most cases, are doing extremely well.

GENERAL BUSINESS.

The chairman said that, owing to the hon. treasurer's absence in consequence of his bereavement, nothing could be said as to the financial results of the recent wild-flower exhibition. The admissions had amounted to about £130, and the sales of flowers to about £50; but he had no estimate of the expenses or the receipts from the sales of tickets. He hoped that a final announcement would be made at the next meeting.

Some suggestions for future exhibitions were made by several members. Mr. J. Gabriel had expected that seeds of native plants would have been on sale this year, as announced some time ago, and trusted this would be attempted another year. Mr. E. E. Pescott thought too much was being made of the sales of flowers, which really detracted from the object of the exhibition—viz., the display of our native flowers. Mr. E. S. Anthony thought that the committee deserved the best thanks of the members for the way in which the exhibition was organized, and moved to that effect. The motion was carried unanimously. Mr. H. B. Williamson said that the exhibition was an excellent medium for recording new localities for flowers, as well as new species, and stated that a specimen sent

by Mr. T. S. Hart, M.A., of Bairnsdale, would probably prove to be new for Victoria.

The chairman mentioned that His Excellency the Governor-General had, without announcement, paid a brief visit in the afternoon to the exhibition.

PAPER READ.

By Miss G. Nethercote, entitled "A Week at the National Park (Wilson's Promontory)."

In this the author gave an interesting account of a week spent by a party of eight girls in exploring some of the beauty spots at the National Park during January last.

The paper was illustrated by lantern views, enabling those who have not yet visited the Park to gain some idea of its characteristics; while a young koala, or native bear, *Phascolarctus cinereus*, which, by permission of the trustees, she had been allowed to bring home, indicated its presence at the meeting by an occasional grunt of satisfaction at hearing the voice of its mistress.

Several members referred to visits they had made to the Park, and Mr. J. A. Kershaw, F.E.S., the hon. secretary to the trustees, said that most of the introduced indigenous animals and birds were doing so well that all anxiety as to their welfare had ceased.

Owing to the lateness of the hour, Mr. C. Daley's paper, "At Wartook (Grampians)," was postponed to a future meeting.

EXHIBITS.

By Mr. F. G. A. Barnard.—Plant in bloom of epiphytal orchid, *Sarcochilus falcatus*, R. Br., from East Gippsland.

By Mr. F. Chapman, A.L.S.—Rock specimen from Griqualand, South Africa, showing transition from asbestos (blue) through limonite to crocidolite (brilliant yellow).

By Miss R. Chisholm.—Photographs of the F.N.C. excursion party at King Island, Bass Strait, November, 1887.

By Miss K. Currie.—Native flowers grown at Lardner—*Boronia pinnata*, *Passiflora cinnabarina*, *Kennedyia rubicunda*, and *Plagianthus pulchellus*; also dried specimen of Scotch heather, *Erica vulgaris*, from Scotland.

By Mr. H. W. Davey, F.E.S.—Tadpoles retarded in metamorphosis.

By Miss A. Fuller.—Botanical specimens from near Trans-Australian railway line; *Verticordia*, sp., from Geraldton, W.A.

By Miss G. Nethercote.—Flowers of *Lasiopetalum Baueri*, *Bauera sessiliflora*, and *Utricularia dichotoma*, from Grampians; and flower-spike of *Banksia serrata*, from Wilson's Promontory.

By Mr. C. A. Nethercote.—Flowers of *Calythrix Sullivani* and

Prostanthera nivea, grown at Hawthorn; orchids from Silvan (Wandin South).

By Messrs. E. E. Pescott, F.L.S., and C. French, jun.—Eighteen species of terrestrial orchids from Ringwood and Frankston, including several species of *Thelymitra*, *Diuris*, *Prasophyllum*, &c.; also an albino specimen of *Caladenia dilatata*, and herbarium specimens of *Chiloglottis trapeziforme*, Fitz., from Paynesville, collected by Mr. T. S. Hart, M.A., new for South-Eastern Victoria; and *Thelymitra grandiflora*, Fitz., from Ringwood (new locality).

After the usual conversazione the meeting terminated.

EXCURSION TO BENDIGO.

AGAIN taking advantage of the Railways excursion special trains, the Club's second visit to Bendigo was made on Saturday, 13th September, 1919. Unfortunately, unfavourable weather conditions were experienced, and portion of the arranged programme had to be altered; still, all seemed pleased with the outing, and no bad results were reported from the inclemency of the elements. A party of twelve, under the leadership of Mr. C. Daley, F.L.S., journeyed to Bendigo by the early trains, and were met at the station by the local party of three, which, with a visitor from Ballarat, made up a party of sixteen in all. It was now past mid-day, and after the visitors had been settled in their temporary abodes the whole party re-assembled, and proceeded by tram to the Cemetery terminus; then, crossing Back Creek, the bush was entered near Cr. Curnow's residence. The season being a late one, many of the acacias were still at their best, *Acacia pycnantha*, *A. armata*, and *A. leprosa* making the bush glorious. With them were *A. diffusa*, the Fairy Wax-flower, *Eriostemon obovalis*, *Bursaria spinosa*, and *Daviesia ulicina*. Crossing a hill and descending into a valley beyond, we found *Hovea heterophylla*, *Tetralthea ciliata*, and the orchids *Diuris maculata* (common) and *D. pedunculata*. Here we boiled the billy and had lunch, of which some of us stood much in need. As we were about to resume our walk a light shower—the first of many that afternoon—occurred. Besides the plants mentioned the following were seen in the vicinity of our lunching place:—*Pterostylis nutans*, *Anguillaria dioica*, *Hypoxis glabella*, *Geranium dissectum*, and three of the everlastings—*Helichrysum lucidum*, *H. semipapposum*, and *H. obcordatum*. The *Helichrysums*, however, were only in bud. As we ascended the next hill we found the vegetation greatly improved. Fine Wax-flower was here, also *Grevillea lanigera* (both white and red varieties), *Acrotriche serrulata*, *Brachyloma daphnoides* (in bud), *Melichrus*

(*Styphelia*) *urceolatus*, *Acacia acinacea*, *A. aspera*, *Pimelea glauca*, and *Dillwynia ericifolia*. The orchids *Caladenia carnea* and *C. cœrulea* were here fairly common, and *Drosera Menziesii* and *D. auriculata* were found in flower, whilst, on crossing the race and entering an area which had been devastated by fire and axe some time previously, *Drosera peltata* was found, together with a single premature specimen of *Burchardia umbellata*. Leaving this unpromising locality we soon struck the road from Grassy Flat to One-Tree Hill, near the top of a hill from whence a good view of the city is obtained. On this hill grows *Veronica perfoliata*, but it was too early for flowers. *Kennedyia monophylla* (locally called "Sarsaparilla") was seen here. From this point the road was followed to the top of One-Tree Hill. On the way a profusion of Wax-flower, *Grevillea*, *Tetratheca*, *Acacia aspera*, *A. pycnantha*, *Daviesia ulicina*, &c., greeted the eye at every turn. At the last turn before the top of One-Tree Hill is reached some of the party made a detour into a deep gully, where, among the rocks, we found a fine patch of *Pterostylis curta*, together with the ferns *Cheilanthes tenuifolia*, *Asplenium flabellifolium*, and *Grammitis rutifolia*. Several trees of *Acacia implexa* and some stunted *Indigofera australis* occur here, whilst the whole gully is clothed with a luxuriant growth of *Helichrysum semipapposum*, resembling from a distance tufts of ferns. Reaching the top of the hill, the party ascended "Abbott's Tower," a wooden structure recently erected by Mr. R. H. Abbott, a former mayor of Bendigo. It is about 40 feet high, and from the top an extensive view can be obtained, the chief points in view being indicated on a dial placed there. The lowering clouds, especially to the south and west, greatly limited our view; nevertheless, an excellent view of the city and its environs was seen. Leaving the tower, the party descended the hill by the road on the Spring Gully side. On the descent specimens of *Pterostylis nana*, *P. nutans*, and *P. longifolia* were seen. Near Spring Gully road *Persoonia rigida* (fruit) and *Acacia vomeriformis* occur. On reaching Spring Gully road we made across country in a south-westerly direction towards the "Boronia patch." Here we found the vegetation similar to that on One-Tree Hill, but more profuse in flower. Fine Wax-flower, *Hardenbergia*, *Tetratheca*, and *Grevillea* were collected. A patch of *Pterostylis barbata* was visited, but, though the plants were up, no flowers had yet appeared. Woodmen had been at work in this part of the forest, and the sucker foliage of many of the gums was unusually fine. Reaching the Diamond Hill-Mandurang road, we soon came to the turn-off, where, after crossing a hill, the Boronia came into view. This extensive yet isolated area of *B. anemonifolia* made a glorious

display of pink and white. In the vicinity a slightly different flora prevails. *Acacia Oswaldii* (just going off, and showing young pods), *Dillwynia floribunda* (a glorious mass of brown and orange), *Grevillea aquifolium*, *Marianthus procumbens*, and *Gompholobium pedunculare* (not yet flowering), are all found here. *Daviesia corymbosa* and *Correa speciosa* (var. *normalis*) were also seen. Much as we wished to linger, time pressed, and we had to hurry homewards. We took the track leading to Spring Gully Reservoir, but had not gone far when the rain, which had been long threatening, commenced in earnest, and continued to fall steadily throughout our homeward journey. Reaching the reservoir, we made straight for Spring Gully road. Tramping along in the rain and increasing dusk, our position was not very enjoyable, and long before we reached the tram we were completely soaked. As the weather continued unfavourable throughout Saturday evening, it was reluctantly decided to abandon the Whipstick excursion arranged for Sunday. It was decided to visit instead, after lunch, an interesting locality beyond Eaglehawk, where *Boronia anemonifolia* and *Cryptandra amara* grow profusely. Some of the party spent the morning viewing Bendigo and its surroundings, whilst a party of enthusiasts, under Miss M'Kenzie, set out on foot for the appointed place before lunch. The main party followed in the afternoon, taking tram to Eaglehawk, walking thence to Sailor's Gully. From here the party entered the scrub, passing the Moon group of mines. *Juncus communis* was here seen to have established itself firmly on the sand-heaps in the vicinity of old mine-workings. The profusion of *Acacia pycnantha* and *A. leprosa* (?) was the most notable feature of the bush. The Mallee Gum, *Eucalyptus viridis*, also occurred here, with *E. sideroxylon*, *E. hemiphloia*, and *E. leucoxylon*. Passing through the bush towards the Sydney Flat road, little was seen beyond *Daviesia ulicina* and *Acacia acinacea*. Near the road *Pterostylis nana* was found. *Cassinia arcuata* was common. Reaching the road near the old Australian Hotel, and crossing to the other side, we entered the area which was the object of our excursion, about two miles from Eaglehawk. We found here a complete change in the vegetation. *E. viridis* was the dominant eucalypt, with its unwelcome guest, *Cassyltha melantha*. *Melaleuca decussata* was also abundant. Amongst the flowering shrubs which now met our gaze one of the most notable was *Cryptandra amara*—very effective, with its white blossoms, becoming tinted with pink as the season advances. The violet of *Prostanthera hirtula*, the gold of *Hibbertia acicularis*, *H. densiflora*, and *Acacia acinacea*, the snowy flower-heads of *Olearia teretifolia*, but, above all, the rose-pink tints of *Boronia anemonifolia*, make a

glorious assemblage of colour. The last-named was first favourite, and the main object of our visit. It is here, as near Diamond Hill, gregarious, but the patch is of greater extent, the plants are stouter, and the flowers of a deeper hue. Here we met the others, had afternoon tea, and tarried gathering bunches of *Boronia*. The orchids *Pterostylis mutica*, *Caladenia cærulea*, *C. carnea*, *Glossodia major*, and *Diuris maculata* were found. Other plants noted were *Eriostemon obovalis*, *Hybanthus floribundus*, *Drosera Menziesii*, *Correa speciosa*, *Acacia vomeriformis*, *Daviesia genistifolia*, *Loudonia Behrii* (buds), *Hakea rugosa*, *Grevillea lanigera*, *Pimelea glauca*, *Craspedia Richea*, *Leptomeria aphylla* (fruit), *Hedichrysum obcordatum*, *Astroloma humifusum* and *Leucopogon rufus* (fruits), *Dianella revoluta*, and *Thysanotus Patersoni*. After being photographed by Miss Hardy the party commenced the homeward march, this time keeping to the road. A smart hail-shower threatened us during our walk back, but we were fortunately able to find shelter until it had passed. From Eaglehawk we returned by tram to Bendigo, thus ending a very enjoyable outing. Most of the party returned to Melbourne by the early train on Monday morning. Mr. L. Thorn, who devoted himself to entomology, reports that, owing to the unfavourable weather, insects were scarce and difficult to capture. Among the lepidoptera collected the most noticeable were the pretty little *Zygænid*, *Procris viridipulverulenta*, a small bark-frequenting member of the *Gelechiadæ*, and three rather handsome species of the genus *Philobota*. The beetles captured consisted of about half a dozen species of not very great interest.

The list of plants observed during the excursion includes the following, all of which were seen in flower except those marked *o*, without flowers or buds; *b*, in bud only; and *ft*, in fruit only:—

RANUNCULACEÆ—

Ranunculus lappaceus.

DILLENIACEÆ—

Hibbertia acicularis.
densiflora.

LAUREACEÆ—

ft *Cassytha glabella*.
melantha.

VIOLACEÆ—

Hybanthus floribundus.

PITTOSPOREÆ—

Bursaria spinosa.
Marianthus procumbens.

DROSERACEÆ—

Drosera Whittakeri.
auriculata.
peltata.
Menziesii.

TREMANDREÆ—

Tetradthea ciliata.

RUTACEÆ—

Boronia anemonifolia.
Eriostemon obovalis.
ft *Correa speciosa*, var. *normalis*.

GERANIACEÆ—

- o* *Geranium dissectum*.
o *Pelargonium* Rodney-
 anum.

LEGUMINOSÆ—

- o* *Gompholobium* pedun-
 culare.
Daviesia ulicina.
b *corymbosa*.
b *genistifolia*.
Dillwynia ericifolia.
floribunda.
Hovea heterophylla.
Indigofera australis.
Kennedya monophylla.
Acacia diffusa.
aspera.
armata.
vomeriformis.
acinacea.
pycnantha.
leprosa (?)
Oswaldii.
o *implexa*.
o *mollissima*.

HALORAGÆ—

- b* *Loudonia Behrii*.

MYRTACEÆ—

- o* *Calythrix tetragona*.
o *Melaleuca decussata*.
ft *Eucalyptus* macror-
 rhyncha.
leucoxylon.
sideroxylon.
o *melliodora*.
o *hemiphloia*.
ft *clæophora*.
o *rostrata*.
viridis.

RHAMNACEÆ—

- Cryptandra amara*.

UMBELLIFERÆ—

- o* *Hydrocotyle laxiflora*.

SANTALACEÆ—

- ft* *Leptomeria aphylla*.
ft *Exocarpus cupressiformis*.

PROTEACEÆ—

- ft* *Persoonia rigida*.
Grevillea lanigera.
aquifolium.
Hakea rigida.

THYMELEACEÆ—

- Pimelea glauca*.

COMPOSITÆ—

- Olearia teretifolia*.
b *Helichrysum* semipap-
 posum.
b *Helichrysum* lucidum
 (bracteatum).
b *Helichrysum obcordatum*.
o *Cassinia arcuata*.
Craspedia Richea.
Millotia tenuifolia.
Erechtites quadridentata.
Microseris Forsteri.

SCROPHULARINÆ—

- o* *Veronica perfoliata*.

LABIATÆ—

- Prostanthera hirtula*.

EPACRIDÆ—

- Astroloma humifusum*.
Melichrus urceolatus.
ft *Leucopogon rufus*.
Acrotriche serrulata.
o *Brachyloma daphnoides*.

ORCHIDÆE—

- Diuris maculata*.
pedunculata.
Pterostylis curta.
nutans.
nana.
b *barbata*.
mutica.
longifolia.
Caladenia carnea.
cærulca.
Glossodia major.

AMARYLLIDÆE—

- Hypoxis glabella*.

LILIACEÆ—

- b* *Dianella revoluta*.
Anguillaria dioica.
Burchardia umbellata.
Thysanotus Patersoni.

JUNCACEÆ—

- Juncus communis* (?)

FILICES—

- Cheilanthes tenuifolia*.
Asplenium flabellifolium.
Grammitis rutæfolia.

EXHIBITION OF WILD-FLOWERS.

ONCE again the Melbourne Town Hall was selected for the exhibition of wild-flowers, which has become an annual fixture of the Field Naturalists' Club of Victoria. The date chosen was Tuesday, 30th September, and again there was a large attendance of the general public, indicating thereby that the efforts of the Club and its friends are appreciated. Following the custom of recent years, the proceeds were announced to be divided between the Anzac House Fund appeal and a fund for publishing a list of common names for Victorian plants. It is too soon yet to say to what extent these funds will benefit, but it is expected that the profit will amount to about £150.

The exhibition, which was under the patronage of Her Excellency Lady Helen Ferguson, G.B.E., was opened in the afternoon, by the State Commandant, Brigadier-General Brand, C.B., V.D., who compared Australian wild-flowers to Australian "diggers" (soldiers), saying that they get on best without too much attention and too much coddling—all they want is a square deal. He thanked the Club for selecting the Anzac House as the object of its help, and said that, while Australian wild-flowers were reputed to be the hardiest in the world, the same could be said of the Australian soldiers and the Australian horses. All through the trying Palestine campaign the latter had proved themselves harder than those from elsewhere, while the "diggers" had endured the withering heat of Egypt and the mud and cold of Flanders with less wastage from sickness than any other corps. The Anzac House would be a great boon to returned men, and he could assure them that it would be run on strictly temperance principles.

The president, Mr. A. D. Hardy, F.L.S., in thanking General Brand for honouring the exhibition with his presence, said that the Field Naturalists' Club, as part of its endeavour to popularize the native flowers, proposed, if the result of the exhibition allowed, it, to publish something in the way of a list of adopted popular names for Victorian plants, which he felt sure would be welcomed by enthusiasts.

Among the visitors during the afternoon was His Excellency the Governor-General, who, unanticipated, spent a short time in viewing the exhibits, with which he expressed himself very pleased.

The display of flowers was finer than had been expected, for, the winter and early spring having been very dry, the committee had become somewhat anxious; however, everybody was satisfied that the exhibition was quite equal to previous efforts. All the Australian States were represented by col-

lections, mainly from the Botanical Gardens of the capital cities. The flowers from the Melbourne Botanic Gardens were given the pride of place near the platform, and the director, Mr. J. Cronin, F.R.H.S., was greatly complimented on the brilliance and variety of the species shown. He also contributed palm leaves and other greenery for decorative purposes.

The principal inter-State exhibitors were:—New South Wales.—Mr. J. H. Maiden, I.S.O., Botanic Gardens, Sydney; Mr. E. Cheel, Botanic Gardens, Sydney; and Mr. W. Bass, Chard-road, Brookvale, *via* Manly. Queensland.—The Director, Botanic Gardens, Brisbane. South Australia.—The Director, Botanic Gardens, Adelaide. Tasmania.—Mr. J. Wardman, Botanic Gardens, Hobart. Western Australia.—Mr. Fisher, St. George's-terrace, Perth; Mrs. Bourke, Perth; and Mr. J. D. Gloster, Kelmscott.

Among the Victorian exhibits the principal was that from the Grampians, for which Miss G. Nethercote, Mrs. Kimberley (Wartook), Miss Craig (Fyans Creek S.S.), Messrs. C. Daley, C. D'Alton, F. D'Alton, C. J. Gabriel, H. Hughes, — Nalder (Pomonal), and other friends were responsible. The exhibit included fine specimens of the Native Heath, *Epacris impressa*, *Thryptomene*, *Sprengelia incarnata*, *Pultenæa rosca*, *Bauera sessiliflora*, *Lhotzkya genctylloides*, *Grevillea alpina*, *Conospermum Mitchelli*, *Boronia pinnata*, *B. pilosa*, *Glossodia major*, &c.

The other exhibits represented a wide range of localities throughout Victoria. The following are the names of the exhibitors as indicated on the parcels:—North-West.—Kiata, Misses A. and A. Brooks; Mokepilly, *via* Stawell, Mrs. A. Cragg; Wedderburn, E. D. Gray; Stawell, Rev. — Henderson; Stawell, J. Hill; Kiata, R. Oldfield; Kaniva, N. Sherwin; Tresco, Miss M. Newton. South-West.—Casterton, H. C. James. North.—Maldon, F. B. Brooks; Bendigo, Girton College, D. J. Paton, J. Semens, R. J. Warren; Mandurang, — Halliday; Longlea, J. Taylor; Heathcote, F. Rankine; Rushworth, F. Rich. South.—Rhyll, Phillip Island, Miss J. Abery, Miss R. M'Phee; Belgrave, F. G. A. Barnard, F. Pitcher; Bunyip, Mrs. A'Beckett; Longwarry, Mrs. E. Wallace; Beaconsfield, Mrs. Drake, Rev. J. Wilson; Pakenham, F. Wisewould; Narre Warren East, Mrs. Haysey; Ferntree Gully, A. N. Burns; Millgrove, B. Glass, W. B. Overall; Yarra Junction, J. Grainger; Evelyn, W. H. English; Toolangi, Mrs. Smedley; Panton Hill, Miss Hollinger; Greensborough, — Ford; Blackburn, Miss Coleman; Brighton, Miss Fisher; Sandringham, Miss G. Nokes, Miss F. Hand; Mentone, Master Tovey; Emerald and Beaconsfield, J. W. Audas; Moorabbin, A. Hand. North-East.—Lima East, Mrs. M. Evans. East.—Heyfield, Mrs. E. Best; Paynes-

ville, Mrs. F. W. Burton; Briagolong, J. Firth; Nowa Nowa, — M'Lachlan; Traralgon, G. Mason; Bairnsdale, T. S. Hart. Flowers were also received from Miss Chisholm, Windsor; Mr. F. Chapman, Balwyn; Mr. J. E. Dixon, Richmond; Mr. J. Fraser, Camberwell; and Mr. H. B. Williamson, Clayton.

Garden-grown Australian flowers were contributed by Mr. J. M. Watson, "Maranoa," Balwyn; Mr. F. Chapman, Balwyn; Mr. Geo. Coghill and Mr. E. Teele, Canterbury.

With flowers from so many widespread localities there were doubtless many species which should be recorded, but the time available for the purpose is so limited that little in that direction can be done. Among Victorian rarities, or flowers not usually exhibited, were *Thryptomene Miqueliana*, *Clematis glycinoides*, *Eriostemon trachyphyllus*, and *Pomaderris betulina*, from Mr. T. S. Hart, M.A., Bairnsdale; *Pleurandropsis phebaliioides*, *Trymalium D'Altoni*, *Epacris lanuginosa*, and *Epacris impressa* (double red), from the Grampians; *Phebalium obcordatum* and *Cryptandra amara*, from Mr. D. J. Paton, Bendigo; *Cassia australis*, from Gippsland; and *Pomaderris lanigera*, locality ?.

The display of orchids made by Messrs. E. E. Pescott, F.L.S., and C. French, jun., was of great interest to many people. It included about forty-three species and varieties, among them being fine spikes of the large terrestrial orchids *Phaius grandifolius* and *P. Bernaysii*, from Queensland. Several baskets of orchids beautifully arranged by Mrs. Coleman, of Blackburn, were a feature of the display. Among the more uncommon species exhibited were *Thelymitra epipactoides*, *Prasophyllum album*, *Pterostylis barbata*, *Acianthus exsertus*, and *Chiloglottis trapeziforme*. Two fine plants of *Sarcochilus falcatus*, and one of *Dendrobium striolatum*, in bloom, attracted much attention.

The usual difficulty—want of time—was experienced in arranging a table showing the systematic classification of representative species, and again as regards naming. Though Dr. Sutton, Mr. H. B. Williamson, and others managed to get through a large number of exhibits, many remained unlabelled for want of time.

The Ormond Plant Farm (Mr. J. Robinson) had an exhibit of Australian flowering plants (in pots for sale), including *Boronia elatior*, *Leschenaultia biloba*, &c., which found ready sale.

A ladies' committee undertook the sales of flowers, and by that means over £50 was raised, Waratahs from New South Wales and Kangaroo Paws from Western Australia finding ready buyers at good prices. Mr. D. J. Paton forwarded quantities of *Boronia* from Bendigo, which also proved a good seller, while the Grampian flowers were in great demand.

The refreshments were in charge of a party of Red Cross ladies, and a ladies' string orchestra provided agreeable music at intervals.

Miss Amy Fuller's water-colour drawings of South African, Western Australian, New South Wales, and Victorian flowers were greatly admired by a large number of visitors.

The Club was indebted to the *Age* proprietary for paper for covering the tables, and to the Canterbury Horticultural Society for the use of specimen glasses, &c.

The thanks of the Club are due to those members, headed by Messrs. F. Pitcher and J. Gabriel, who gave up so much of their time in carrying out the details of the exhibition.

THE FISH-REMAINS OF NEW ZEALAND.—The Geological Survey branch of the New Zealand Department of Mines has recently issued an interesting bulletin (No. 7) entitled "The Cretaceous and Tertiary Fish-Remains of New Zealand." The report is the work of Mr. Frederick Chapman, A.L.S., palæontologist, National Museum, Melbourne. It is based on the examination of some 550 specimens of fossils forwarded to Melbourne by the N.Z. Geological Survey and the Canterbury Museum. Some thirty years ago a number of similar fossils were examined by Mr. J. W. Davis, F.G.S., and the results published in the *Transactions of the Royal Dublin Society*. Mr. Chapman has revised the previous work on the subject, and has had to make a large number of alterations in naming, reasons for which are fully set out in the bulletin. The specimens were principally sharks' teeth, and many of them occur in Victoria, as well as in other parts of the world.

THE MELBOURNE ZOO.—The story of how we got our "Zoo" is told by Mr. A. W. Greig in the *Argus* of Saturday, 4th October. It is interesting to learn that so long ago as October, 1857, a meeting was held in Melbourne for the purpose of forming an Ornithological Society: but it was not, as its title might imply, to study ornithology—it was intended more for improving the breeds of poultry. However, out of that proposal developed our Zoo, one of the leading institutions of its kind in any land, and a monument to the energy of the Le Souëf family, two of whom have transferred their activities to other States, to the latter's great advantage. Mr. Greig, who is the hon. secretary of the Historical Society of Victoria, is an authority on the histories of the many local societies, institutions, &c., which, taken together, serve to make life pleasanter in these days of feverish haste.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1919-1920. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. P. C. MORRISON, 174 Punt Road, Prahran (Telephone Windsor 341,
only after 4 p.m.)

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,

J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 15th NOVEMBER.—**Frankston.** Object—**Forestry.** Leader—Mr. J. Johnstone. Meet at Flinders Street Station (opposite Mutual Store) for 12.20 p.m. train. Second excursion fare, 2/6. Excursionists desiring afternoon tea should take eatables. Tea can be arranged for. Members taking part are requested to inform Mr. A. D. Hardy at monthly meeting.

SATURDAY, 29th November.—**Fitzroy Gardens.** Object—**Pond Life.** Leader—Mr. J. Stickland. Meet at Clarke Statue, Spring Street, at 2 p.m.

SATURDAY, 6th DECEMBER.—**Belgrave.** Object—**Ferns.** Leader—Mr. F. Pitcher. Meet at Flinders Street Station (opposite Mutual Store) for 8.50 a.m. train. Second excursion fare, 2/4. Members taking part are requested to inform leader not later than 1st prox.

CHRISTMAS EXCURSION.—Loch Valley, via Neerim and Noojee. Objects—**General.** Leader—Mr. F. G. A. Barnard. Owing to the infrequency of the trains on this line (which, however, may be altered by date of excursion) it is proposed to leave town by 7.50 a.m. Warragul train on WEDNESDAY, 24th DECEMBER; returning from Noojee by 3 p.m. train on MONDAY, 29th. Second excursion fare, 13/6. The party will be limited to eight, and unless six signify their intention of taking part by WEDNESDAY, 12th NOVEMBER, the excursion will not take place. Total cost should not exceed £3 5/-.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	8/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES SETTING BOARDS ENTOMOLOGICAL PINS
BUTTERFLY NETS KILLING BOTTLES
CORK LINING ZINC RELAXING BOXES
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould
POCKET BOXES CABINETS
CURVED FORCEPS INSECT CEMENT
&c., &c., &c.

Write for our Price List and Sample Sheet of Pins.

VOL. XXXVI.—No. 8.

DECEMBER, 1919.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 4th December, 1919.

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

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

CONTENTS :

	PAGE
FIELD NATURALISTS' CLUB OF VICTORIA	109
EXCURSION TO ELTHAM AND ST. HELENA	114
EXCURSION TO MONT ALBERT AND BALWYN	116
NOTES ON THE COLEOPTERA OF NORTH-WESTERN VICTORIA.	
PART VII. BY J. C. GOUDIE.. ..	117

✠ PRICE SIXPENCE. ✠

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.

1919.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 8th DECEMBER, 1919.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Members.

AS ORDINARY MEMBERS—

Miss Dorothy Best,
211 Brunswick St.,
Fitzroy.

PROPOSER.

Mr. D. Best.

SECONDER.

Mr. J. E. Dixon.

Dr. Chas. Albercione,
Box 599, G.P.O.,
Melbourne.

Mr. J. H. King.

Mr. G. Coghill.

Rev. Ernest Davies,
90 Liddiard St.,
Hawthorn.

Mr. G. Coghill.

Mr. P. C. Morrison.

Mr Stanley A. Lawrence,
" Miya," Alma Rd.,
East St. Kilda.

Mr. G. Coghill.

Mr. P. C. Morrison.

AS COUNTRY MEMBER—

Mr. C. G. L. Gooding,
Myrtle Vale,
Moe.

PROPOSER.

Mr. G. Lyell.

SECONDER.

Mr. F. G. A. Barnard.

4. General Business.

5. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

By Messrs. G. Weindorfer and G. Francis (communicated by Dr. C. S. Sutton).—
" Wild Life in Tasmania."

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow-members.

NOTICES.

The Hon. Treasurer will be glad to have returns of Wild Flower Exhibition tickets, also any overdue Subscriptions, as early as possible.

Members changing their addresses will oblige by notifying the Hon. Secretary.

Resignation of Hon. Secretary.—Acting under doctor's advice, Mr. P. C. Morrison has been compelled to resign his position as Hon. Secretary of the Club. The Committee will, therefore, be pleased to have the name of any member (lady or gentleman) who will be willing to act as Hon. Secretary until the next annual meeting.

The Victorian Naturalist.

VOL. XXXVI.—No. 8. DECEMBER 4, 1919.

No. 432.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 10th November, 1919.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

REPORTS.

A report of the excursion to Eltham and St. Helena on Saturday, 18th October, was given by the leader, Mr. E. S. Anthony, who reported a large attendance of members. The afternoon was spent in viewing *in situ* a number of nests of various birds, to which the party was kindly guided by Mr. W. Tonge, a resident of the district. Among these was that of the Tawny Frogmouth, and it was hard for visitors to believe that they were looking at a bird on its nest rather than a projecting broken branch, so well was the deception carried out.

On the motion of Messrs. Barnard and Robertson, a hearty vote of thanks was passed to Mr. and Mrs. Tonge for their kindness on the occasion.

A report of the excursion to Evelyn on Saturday, 25th October, was given by the leader, Mr. W. T. C. Kelly, who said that a fair party took part in the visit to his country home near Evelyn, of the natural surroundings of which he at present knew but little. He hoped, however, at a later date to be in a position to make such a visit more interesting and instructive than the recent one.

Mr. F. Keep said that Mr. Kelly's home garden was an interesting study in itself, and that the party was very much indebted to Mr. and Miss Kelly for their hospitality on the occasion.

A report of the excursion to Mont Albert and Balwyn on Saturday, 1st November, was, in the absence of the leaders, Messrs. Chapman and Searle, given by Mr. F. G. A. Barnard, who said that, probably owing to an unpleasant day, the attendance of members was smaller than the interest of the district warranted.

A report of the excursion to Emerald on Tuesday, 4th November (Cup Day), was given by the leader, Mr. E. E. Pescott, F.L.S., who said that about twenty members and friends took part in the outing, which had been arranged for the purpose of visiting the famous tree nursery of Messrs. C. A. Nobelius and Sons. Here were found many beautiful exotic trees and shrubs, together with much native vegetation in the fern gullies on the estate. An opportunity to see the process of manufacture of New Zealand flax fibre from plants grown on the adjacent hillsides was availed of, and great

interest displayed in the method of preparation. On leaving the nursery, Mr. W. Scott, a member of the Club, now residing at Emerald, invited the party to afternoon tea at his home-
stead, after which he led the way to the tourist track along Menzies Creek, which was followed up-stream to Paradise station, from whence the return journey to town was commenced.

Mr. Pescott moved that a letter of thanks be forwarded to Mr. Nobelius for his kindness in allowing the party to ramble over the nursery and to inspect the operations of the flax mill. This was seconded by Mr. Barnard and carried unanimously.

In reply to the chairman, Mr. Pescott said that he saw only one *Cyathea* in the fern gully. It is a very fine specimen, with fronds at least fifteen feet long and about four feet wide. Mr. Hardy said that a number of these rare ferns had been planted in the gully some years ago, but they had been carried off by plant thieves.

GENERAL BUSINESS.

The chairman stated that an announcement had recently been made of the death, near Sydney, of Mrs. Lucas, wife of Mr. A. H. S. Lucas, M.A., an hon. member of the Club, and who had lately shown his continued interest in the Club by contributing papers to its proceedings. He moved that a letter conveying the sympathy of the members be forwarded to Mr. Lucas. This was carried in silence.

The hon. treasurer, Mr. F. Pitcher, reported that all the tickets issued in connection with the recent exhibition of wild-flowers were not yet accounted for. The credit balance at present stood at £165 10s. 5d. He hoped to add a few pounds to that amount when all the returns are to hand.

Mr. E. E. Pescott, F.L.S., made further suggestions as to future exhibitions. He said that systematic classification should not be sacrificed to anything whatsoever; that trade exhibits should be encouraged, as the nurserymen can do much to inculcate a love for Australian flowers, and, if encouraged, it will be to their advantage to do so; that pot plants and seeds should be on sale: and that the doors should be open continuously from 12 noon till closing time, so that persons engaged in business could have an opportunity of viewing the exhibition during luncheon or tea hours.

Mr. Coghill thought it might be advisable to hold the exhibition later in the week, so as to give more time for the receipt of inter-State parcels. He also urged the securing of the hall as far ahead as possible, so as to prevent disappointment. As it was possible there would be no Railways excursion to the Grampians next year, some way of obtaining flowers from there would have to be thought out.

Mr. J. A. Kershaw, F.E.S., referred to the approaching

retirement of Professor Sir Baldwin Spencer, K.C.M.G., from the Chair of Biology at the University, which he had held for a period of thirty-three years. A committee of his co-workers, friends, and students, past and present, had been formed with the view of perpetuating the memory of his work in some way. Professor Spencer, he said, had always been a good friend of the Club, had been its president in 1891-3, and again in 1895-7. He had also filled the offices of vice-president and committeeman. To him was largely due the success of the effort to secure Wilson's Promontory as a National Park. He urged members to favourably consider the matter of subscribing to the fund.

The chairman spoke in eulogistic terms of Professor Spencer's many spheres of work. Mr. F. Pitcher thought that it would not be out of place for the Club to become a subscriber to the fund, and moved that one guinea be donated. Mr. D. Best considered that the idea of the Club's appreciation of Professor Spencer's work could not be adequately expressed by such a sum, and moved as an amendment that five guineas be donated. This was seconded by Mr. G. Coghill. Mr. E. E. Pescott, in seconding Mr. Pitcher's motion, remarked that the goodwill of the Club was not to be expressed in measure of money, and that the state of the finances had to be borne in mind. On being put to the meeting the motion was carried. Mr. Kershaw undertook to receive any subscriptions members might be willing to give towards the fund.

ELECTION OF MEMBERS.

On a ballot being taken, Mr. Harvey Cheeseman, 244 North-road, Brighton; Mr. Colin Allen, 374 Auburn-road, Hawthorn; and Mr. John Harper, Metropolitan Gas Co., Flinders-street, Melbourne, were duly elected ordinary members; and Mr. Henry E. James, Henty-street, Casterton, as a country member of the Club.

PAPER READ.

By Mr. C. Daley, B.A., F.L.S., entitled "At Wartook (Grampians)."

During a recent visit to Hall's Gap, at the Grampians, the author, accompanied by three other members of the Club and some visitors at "Bellfield," varied the usual excursions made by engaging on the longer trip to the Wartook Reservoir, distant about twelve miles. The route lay along the Mount Difficult Range, above the course of the Stony Creek, and was at times very steep and rugged. On reaching the crest of the range the Mackenzie watershed was entered, which, being on the western slope, was much easier to travel. All the way flowers of numerous species were abundant, and large collections were made for the purposes of the recent exhibition of the Club. The Wartook Reservoir was found to be most picturesquely situated, and some three miles below the reservoir are the

Mackenzie Falls, where the stream makes a drop of 'about 90 feet amid very wild surroundings. The night was spent at Wartook, and the return journey made the next day. The author voiced the fear that the popularity of the Grampians is gradually leading to the depletion of favourite plants in localities where they were once plentiful, and future visitors will have to go further afield to see the floral beauties of the district.

The paper was illustrated by photographs of the district and dried specimens of some of the more uncommon flowers.

NATURAL HISTORY NOTES.

Mr. F. Cudmore called attention to photographs of localities in South Australia which he had recently visited. The cliffs on the Lower Murray River and the hard limestone of the Nullabor Plain at Ooldea (East-West railway) are of Janjukian age, while the glacial conglomerate and glaciated pavement rock (Grey Spur and "Selwyn's Rock") of the Inman Valley are of Cambrian age. Two fossil sharks' teeth, *Hemipristis serra*, Agassiz, and *Pristis*, sp., were found on the Murray—the former being a new record for Australia, and the latter one for the Australian Janjukian beds.

Mr. T. S. Hart, M.A., forwarded a note in explanation of his exhibit of natural seedlings of the Large Dodder-Laurel, *Cassytha melantha*. These were found growing in light sandy soil with a litter of dried leaves, &c., from a tree of *Eucalyptus amygdalina*, near var. *nitida* (Howitt's *E. amygdalina*, C.), on which the parent *Cassytha* was parasitic, at Moormurng, seven miles south-west of Bairnsdale, on 10th October. The seedlings root at first in the soil, but quickly become parasitic, after which the root-connection dies off, there never being much root development. Similar stages in cultivation were recently figured by Prof. Ewart in the *Proceedings of the Royal Society* (vol. xxxi., part 2), and it was his notes which suggested the search and indicated the season. The seedlings also agree with information kindly supplied by Mr. C. C. Brittlebank.

EXHIBITS.

By Mr. E. S. Anthony.—Photographs of Robin's nest, with young birds, taken at Eltham, 7th October, 1917; photographs of nest and eggs of Chough, also Tawny Frogmouth, taken at Eltham.

By Mr. F. Cudmore.—Photographs taken during September and October of geological features at Ooldea, on the East-West railway, Victor Harbour, Murray River, and Inman Valley, South Australia.

By Miss C. C. Currie.—Fungus, *Polyporus mylittæ*, known as Native Bread, from Lardner, Gippsland; piece of petrified wood

from same neighbourhood; also pupa of wood-boring beetle, *Phoracantha*, sp., rare in the pupal form, but common in fire-wood in the larval state.

By Mr. C. Daley, B.A., F.L.S.—Dried specimens of *Calectasia cyanea*, Blue Tinsel Lily; *Sprengelia incarnata*, white variety of Pink Swamp-Heath; *Epacris lanuginosa*, Woolly Epacris; *Hovea longifolia*, Long-leaved Hovea, &c., from Wartook, Grampians; photographs of Wartook Reservoir and Mackenzie Falls, in illustration of paper.

By Mr. A. D. Hardy, F.L.S.—Enlarged photographs of Mackenzie River Falls, near Wartook, in illustration of Mr. C. Daley's paper.

By Mr. T. S. Hart, M.A.—Natural seedlings of Large Dodder-Laurel—(a) seed just sprouting, and plant not long free from seed; (b) coiling on a dry stick; (c) rooted in ground and attached to Hibbertia.

By Mr. F. Keep.—Flowering branch of *Leptospermum scoparium*, a New Zealand variety, with white petals and pink centre, grown at Canterbury (bush about twelve feet high).

By Mr. P. C. Morrison.—A pseudo-scorpion, *Chelifer*, sp., found on a blotting pad at Prahran.

By Miss G. Nethercote.—Flowering specimens of *Leptospermum scoparium*, var. *Nicholli*, also ordinary form, grown at Hawthorn; fern fronds collected at Emerald, 4th November; also *Brunonia australis*, Blue Pincushion, and orchids, collected at Kilmore Junction.

By Mr. C. Oke.—Coleoptera, also land shells, *Paraphanta atramentaria* (black) and *Helicarrion Cuvieri* (brown), collected on Emerald excursion.

By Mr. E. E. Pescott, F.L.S.—Flowers of orchids, *Diuris punctata*, *Caleya major*, *Prasophyllum album*, *Microtis porrifolia*, *M. atrata*, *Chiloglottis Muelleri*, *Pterostylis nutans*, and *Caladenia dilatata*, from various localities: flowering specimens of *Leptospermum myrsinoides* (pink and white forms), *L. scoparium*, *Drosera pygmaea*, *Utricularia dichotoma*, *Melaleuca squarrosa*, and *Casuarina paludosa*; also the introduced grass, *Bromus Madritensis*; samples of green and dry flax fibre from *Phormium tenax*, in illustration of remarks on visit to Emerald Nursery.

By Mr. H. B. Williamson.—Specimen of Early Nancy, *Anguillaria dioica*, R. Br., from Mitta Mitta, exceptionally tall (15 inches) and robust, collected by Mr. H. Clinton.

After the usual conversazione the meeting terminated.

OMISSION.—The following exhibit should have been recorded in last *Naturalist* for October meeting:—

By Mr. H. B. Williamson.—Specimens of *Thryptomene Miqueliana*, F. v. M., collected at Payneville by Mr. T. S. Hart, M.A., new for Victoria (recorded for New South Wales and South Australia).

EXCURSION TO ELTHAM AND ST. HELENA.

THE day appointed for this excursion (Saturday, 18th October, 1919) proved to be ideal as regards weather conditions, and it was not surprising, therefore, to find, on assembling at Eltham, that our party numbered thirty-four members and friends. We were met by Mr. W. Tonge, a local resident and enthusiastic ornithologist, who kindly gave up the afternoon in order to point out the nesting-places of a number of birds which he had located. After crossing the Diamond Creek, Mr. Tonge guided the excursionists along its banks, the descent being made on the steep western side. The picturesque nooks and bends of this tortuous stream were much admired. Silver wattles grew abundantly, and several varieties of eucalypts were noticed, whilst buttercups and maiden-hair ferns were observed growing in profusion. Several specimens of the spider orchid were obtained. The afternoon of a decidedly warm summer day is perhaps the least favourable time to see much bird-life, but signs and sounds of numerous species were nevertheless noted. The ubiquitous Kookaburra, the dainty Blue Wren, the Rufous-breasted Whistler, and the Harmonious Shrike-Thrush were mostly in evidence. Under Mr. Tonge's guidance several nests in occupation were pointed out, the first being that of the Derwent Jackass or Butcher-bird, *Cracticus destructor*. This was situated in a stringybark-tree about twenty-five or more feet above the ground, and is a nest made of small twigs and lined evenly with grasses. Perhaps the most interesting event of the afternoon's excursion was the next nest, located in the horizontal fork of a stringybark-tree, some twenty-five feet from the ground. This was a flimsy apology for a nest—just a few twigs and leaves thrown together—and on this the hen bird of the Tawny Frogmouth, *Podargus strigoides*, was sitting, apparently asleep. It was difficult for the uninitiated at first to believe it was the upper part of a bird which we were looking at, there being at least no sign of a beak. The resemblance to a short, bark-covered, broken branch was very marked, and it was not until the bird was disturbed by throwing sticks towards it that this evidence of animal mimicry was clearly illustrated. The bird, evidently resenting the intrusion, changed from its stretched-out sleeping posture to an attitude of alertness and attention, slowly turning its head from side to side looking for the cause of the disturbance. Much regret was expressed that no one had brought a camera, as it was felt a unique opportunity was lost. Considerable interest was shown in several nests of the White-winged Chough, *Corcorax melanorhamphus*, of which excellent views were obtained. Made of mud strengthened with shredded stringybark and lined with the same material, and set high up on lateral branches of stringybark-trees, these bowl-

like nests, so symmetrically formed, were much admired. Sometimes the same nest is used for several years. A deserted home of the Harmonious Shrike-Thrush, *Colluricincla harmonica*, was next visited, and, as it was perched only about six feet high, an interior as well as exterior inspection was made. The creek bank and flats were then left for higher ground, and a Magpie's (White-backed, *Gymnorhina leuconota*) nest was pointed out. This was specially interesting from the fact that a pair of Yellow-tailed Tomtits, *Acanthiza chrysorrhoa*, had built in the under portion a home for themselves. Thus, two grades of bird society were represented in quite modern fashion—the Tomtits in the lower and the Magpies in the upper flat of this domicile. An adjournment was then made for afternoon tea, which had been thoughtfully provided by Mrs. Tonge at her home close by, and while partaking of "the cup that cheers" the visitors were able also to enjoy the extensive view across the Yarra valley to the Dandenong Ranges. Thanks were expressed to Mr. and Mrs. Tonge for their hospitality by the leader and Mr. F. G. A. Barnard, and were suitably acknowledged by Mr. Tonge. The party at this stage divided forces, some wishing to catch the early train back to Melbourne, the majority, however, deciding to complete the afternoon's programme by journeying to St. Helena. A walk of about a mile through some interesting scrub country brought the excursionists to the desired haven, which was found to be a quaint little church hidden in the bush, built in the old English style, and surrounded by a churchyard planted with cypress and other trees. The visitors were delighted with the beauty of this secluded place of worship, with its mural tablets and stained glass windows and its touch of the old world. Though not quite in the study of natural history, the ancient tombstones, bearing dates of 1790 and onwards, were carefully scanned, one remarkable epitaph recording the resting-place of the last of a family descended in one unbroken line from father to son for 779 years. A pleasant walk of about two miles to Greensborough, where the home train was caught, completed the outing. About eight or nine of the party elected to miss St. Helena, and remained with Mr. Tonge, who delighted them by showing his fine collection of eggs, containing many rarities, and a number of nests displayed in their original positions in the tree branches, also in his collection. Notable among these were those of the Olive-backed Oriole, *Oriolus viridis*, the Orange-winged Tree-runner, *Sittella chrysoptera*, the Yellow-breasted Shrike-Robin, *Eopsaltria australis*, and the White-shafted Fantail, *Rhipidura albiscapa*. In his own grounds the nest of the Striated Tit, *Acanthiza lineata*, in a red box sapling, was also viewed, and in a clump of mistletoe a nest of the Yellow-tailed Tit, *A. chrysorrhoa*, both in occupation this season. The

nests of the Striated Tits of this district are usually built of shredded stringybark and cobwebs and lined internally with feathers. The lesson of the excursion was that even so close to the city—sixteen miles—there is still scope for the study of ornithology, and if residents in localities accessible for a day's or half-day's visit could be induced to provide a similar outing, very much more impetus would be given to this interesting branch of natural history by city dwellers and lovers of our native fauna.—E. S. ANTHONY.

EXCURSION TO MONT ALBERT AND BALWYN.

A PARTY of about eighteen, including several members of the Microscopical Society, met at Mont Albert station on Saturday afternoon, 1st November, for a ramble round the district. After examining the Tertiary outliers of Kalimnan sands on the Reservoir Hill (420 feet), and securing samples of the sand for washing out heavy minerals, we descended Elgar-road towards the Surrey Dive, noting the conduit for surface and subterranean water from the heights, which keeps the ponds and brick-pit water-hole continuously supplied. Pond-hunters were soon busy. The first dip of the net showed that that variable species of Cladocera, *Daphnia carinata*, was present in great numbers, and, as is commonly the case when ponds are contaminated with sewage, nearly every specimen was densely covered with a parasitic growth—probably an algæ—carapace, antennæ, and limbs all being covered with the parasite. The other Cladocera noted were *Bosmina* and *Alona*. The Copepods, *Bæckella oblonga* and *Cyclops albidus*, also occurred. The only Ostracod noted was *Cypridopsis minna*. Some beautiful Stentors were seen, also numerous Diatoms. The deep, clear water in the Surrey Dive was a pleasant contrast to the pond we had just left, and we found its water swarming with that elegant little Copepod, *Brunella ampulla*, first described by one of the leaders from the Yan Yean Reservoir. Less numerous was a Rotifer, *Pedalion*, sp., while near the banks of the Dive *Cypridopsis minna* was in evidence. Leaving the Surrey Dive and crossing the Box Hill railway line, we descended to the White Horse-road and began our walk towards the Mont Albert tram terminus, noting on the way the great basin of the Koonung Creek and the higher and shallower valleys of the W. Creek, divided by the watershed at Union-road. Steps were then turned westward to Mr. Maling's ground, where, at the sides of a large pond in an old quarry, the aquatic-life students were again busy. Here we found *Ottelia ovalifolia* and an introduced *Nymphaea* growing in patches at intervals around the pool. Owing to the steepness of the banks at the place where the latter grew, its large, round leaves were out

of reach, much to our disappointment, as the under side of these are likely resting-places for many sedentary forms of micro-organisms. The patches of *Ottelia* were found to be literally covered with a large pond snail, *Limnæa*, sp. The quaint little Entomostracean, *Bosmina*, was present in immense swarms, and the Rotifers *Synchota* and *Euclanus* were also noted. During the examination of the collected material it was noted that the cercaria of the liver-fluke was being given off freely from many of the snails, while the dissection of some of the snails in search of the rediæ of the fluke showed that every snail opened contained specimens of the curious worm *Chætogaster*. The rocks here were seen to be folded into an anticline, and the quartz and mudstone intimately associated. Some of this hardened rock contains small cubical cavities, indicating the former presence of pyrites crystals, which had been subsequently dissolved out.—F. CHAPMAN, J. SEARLE.

NOTES ON THE COLEOPTERA OF NORTH-WESTERN VICTORIA.

PART VII.*

BY J. C. GOUDIE.

(Read before the Field Naturalists' Club of Victoria, 8th Sept., 1919.)

A CONSIDERABLE time has elapsed since the last paper on this subject appeared in the *Naturalist*. The delay, however, has been more advantageous than otherwise, since a fair number of additional species has been obtained during the interval. Moreover, several valuable memoirs on Australian Coleoptera have been published by various authors, and this has enabled me to identify with certainty many species that would otherwise have been excluded from the list.

CUCUJIDÆ.

The Cucujidæ are represented in this district by very few species, all of small size and comparatively rare. They are greatly depressed or flattened and more or less parallel in form, with four-jointed tarsi and short antennæ, and are found generally under the bark of trees or in ants' nests.

Mr. Lea states that the genus *Nepharis* "has been transferred from the Colydiidæ to the Silvanides of the Cucujidæ by Mr. Grouvelle (*Ann. Soc. Ent. Fr.*, 1912, p. 320), who also proposed a new genus (*Nepharinus*) for *N. goudiei*."

1841.†*Ipsaphes mærosus*, Pasc.

* Previous parts of this paper appeared in the *Victorian Naturalist*, vol. xxvi., p. 39; xxvii., p. 153; xxviii., p. 117; xxix., p. 72; xxx., p. 189; and xxxi., p. 138.

† The numbers refer to Masters's Catalogue and Supplement.

7976. *Læmophlæus pusillus*, Schon.

An introduced species.

Cryptamorpha villosa, Grouvelle.

On the ground, under dead leaves.

1873. *Silvanus castaneus*, MacL. (?)

1826. *Nepharis alata*, Cast.

1827. *N. costata*, King.

Nepharinus goudiei, Lea, Proc. Roy. Soc. Vic., xvii. (new series), part 2, p. 377, plate xxvii., figs. 3-9.

The small beetles belonging to the genus *Nepharis* are very remarkable in appearance and habits. The head is produced, rostrum-like, in front, with very short antennæ. *N. alata* has the sides of prothorax produced into flattened, wing-like lobes. In *N. costata* and *Nepharinus* the sides of prothorax are strongly serrated. The antennæ of the latter, really many-jointed, appear as if composed of a single joint, while its eyes are so small as to be almost invisible. A new species (*Nepharis serraticollis*, Lea) was discovered at Geelong by Mr. H. W. Davey, while another (*N. doddi*, Lea) comes from Cairns, Queensland. All the species occur as guests in the nests of ants, *Iridomyrmex nitidus* apparently being the one most favoured, although *Nepharinus* has so far only been found with *Crematogaster leviceps*.

CRYPTOPHAGIDÆ.

7996. *Atomaria australis*, Blackb.

LATHRIDIDÆ.

8005. *Lathridius costatipennis*, Blackb.

DERMESTIDÆ.

1887. *Dermestes cadaverinus*, Fab.

1891. *D. vulpinus*, Fab.

8053. *Anthrenus varius*, Fab.

Introduced pests, which are only too well known for their ravages amongst skins and hides, also museum specimens.

BYRRHIDÆ.

1911. *Microchaetes scoparius*, Er.

This curious tufted, pellet-like little beetle has been found by several collectors to associate with ants.

HETEROCERIDÆ.

8061. *Heterocerus indistinctus*, Blackb.

A small, mottled greyish insect, met with on the margins of pools and amongst the froth and *débris* of flooded creeks.

LUCANIDÆ.

The comparatively dry climate of the Mallee regions seems to be a barrier to the members of this family, with the excep-

tion of two species, which are found under logs, both common and widely distributed, viz. :—

1974. *Figulus lilliputanns*, Westw.

1976. *F. regularis*, Westw.

The handsome "Golden Beetle" (*Lamprima rutilans*, Er.), common from the Dividing Range to the coast, I have taken at the northern end of the Grampians, which is probably about the limit of its north-westerly range in Victoria.

SCARABÆIDÆ.

Of this large and important family, the headquarters of which is in the moist and cool forests south of the Dividing Range, the Mallee district has not many genera or species. A few rare ones are met with occasionally, while the small, brown, hairy beetles belonging to the genus *Liparetrus* sometimes swarm in thousands in the early summer, stripping the tops of the eucalypts of their foliage, the noise of their wings resembling that of a swarm of bees.

Onthophagus pontilis, Blackb.

O. victoriensis, Blackb.

A small black "burying beetle" with striate elytra. The male has two curved horns springing from the hind margin of the head.

2033. *O. cuniculus*, Macl.

In this species the elytra are shining black, with rows of large punctures. The head and prothorax are of a metallic coppery green. My specimens are from Mildura.

2085. *Aphodius granarius*, Linn. Introduced species.

2087. *A. lividus*, Oliv.

Bolboceras chelyum, Blackb.

2107. *B. cornigerum*, Macl.

B. sloanei, Blackb.

B. taurus, Blackb.

These interesting beetles are very distinctive in appearance. The males have the head, or both head and prothorax, armed with horn-like appendages. They are strongly built, convex, with rounded, striate elytra, and of a reddish-brown colour. Where fences are being erected these and other insects are often trapped in the post-holes left open during the night, and many are taken in flood-waters.

2131. *Trox australasiæ*, Er.

T. velutinus, Blackb., var.

2150. *Liparochnus geminatus*, Westw.

2176. *Phyllotocus macleayi*, Fischer.

Mæchidius crenaticollis, Blackb.

Psammodius zietzi, Blackb.

Liparetrus bituberculatus, Macl.

2277. *L. iridipennis*, Germ.
 2287. *L. phœnicopterus*, Germ.
 L. squamiger, MacL.
 L. villosicollis, MacL.
 L. laticulus, Blackb.
 Haplonycha amœna, Blackb.
 H. firma, Blackb.
 H. laminata, Blackb.
 Pachygastra tasmanica, Germ.
 Othnionius batesi, Oll.

A rare species. In February, 1904, near Morton Plains, I took several specimens feeding (during the day) on a species of *Helichrysum* (?). It is three-quarters of an inch in length: the head, prothorax, and scutellum black, elytra castaneous, with two conspicuous costæ on each.

2317. *Scitala rorida*, Burm.
 Pentodon australis, Bl.
 Isodon pecuarius, Beiche.
 Cheiroplatys accedens, Bl.
 2476. *C. mælius*, Er.
 Neocaronus bidens, Blackb.
 N. niger, Blackb.
 2505. *Cryptodus caviceps*, Westw.
 2519. *C. piceus*, Germ.

The species of *Cryptodus* are moderate-sized, dark brown, somewhat flattened beetles, with costate elytra. They have the mouth parts ingeniously protected. It is probable that all frequent the nests of ants. Mr. Lea mentions having taken a pair of *C. caviceps* on a nest of the "Meat Ant," *Leptomymex detectus*. On digging up three small nests of this ant I obtained ten examples of *C. caviceps*. Some were in the wide galleries near the surface, others deep down in the nests. They fly by night, often coming indoors, attracted by the light.

- Semanopterus concentricus*, Blackb.
 S. distributus, Blackb.
 S. rectangulus, Blackb.

Several species of the genus *Heteronyx* occur here, but, as these are very difficult to identify with certainty, and I understand Mr. A. M. Lea is engaged on a "revision" of the genus, it will be best not to deal with them at present.

CORRECTIONS.—On page 97 of last *Naturalist* "Bell-Miners" should read "Bell-birds." On page 104, "*Hakea rigida*" should read "*H. rugosa*" (see text, page 103). On page 107, the name of Mr. F. Keep, Canterbury, should have been included among those who contributed garden-grown Australian flowers.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS, 1919-1920. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. P. C. MORRISON, 174 Punt Road, Prahran (Telephone Windsor 341,
only after 4 p.m.)

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. E. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,
J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 6th DECEMBER.—**Belgrave.** Object—**Ferns.** Leader—Mr. F. Pitcher. Meet at Flinders Street Station (opposite Mutual Store) for 8.50 a.m. train. Second excursion fare, 2/4. Members taking part are requested to inform leader not later than 1st prox.

CHRISTMAS EXCURSION.—Loch Valley, via Neerim and Noojee. Objects—**General.** Leader—Mr. F. G. A. Barnard. Owing to the infrequency of the trains on this line (which, however, may be altered by date of excursion) it is proposed to leave town by 7.50 a.m. Warragul train on WEDNESDAY, 24th DECEMBER; returning from Noojee by 3 p.m. train on MONDAY, 29th. Second excursion fare, 13/6. The party will be limited to eight, and unless six signify their intention of taking part by WEDNESDAY, 12th NOVEMBER, the excursion will not take place. Total cost should not exceed £3 5/-. [NOTE.—Six members have handed in names; two more can be received.]

SATURDAY, 17th JANUARY.—**Sydenham.** Object—**Geology.** Leader—Mr. A. L. Scott. The "Organ Pipes" near Sydenham is one of the most striking geological features near Melbourne, but, being situated some distance from the railway station, is easier visited by specially engaged conveyance. It is proposed that if twenty-five members and friends will hand in their names (with 5/- each) at the December meeting to engage a char-a-banc to leave St. Paul's corner at 1.30 p.m. The return journey will be broken at Keilor for tea.

SATURDAY, 24th, TO MONDAY, 26th JANUARY (Foundation Day).—**Powelltown, via Yarra Junction.** Object—**Forestry.** Leader—Mr. A. D. Hardy, F.L.S. Meet at Flinders Street Station for 7.50 a.m. Warburton train. Second excursion fare to Yarra Junction, 5/6. Total cost, about 27/6. As accommodation will have to be arranged for, names of those intending to take part must be handed to leader at the January meeting.

WATSON'S REQUISITES FOR FIELD NATURALISTS.

JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks	30/-
CORKED GLASS COLLECTING TUBES, from	1/6 doz.
FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps	5/6
BUTTERFLY NET, with folding ring, 4 joints	6/-
INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-	
INSECT COLLECTING BOXES, of deal, corked and papered	1/-, 1/6, and 2/-
INSECT RELAXING BOXES, of zinc, oval shape, corked	1/6, 2/9, and 3/6
GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-	
INSECT-KILLING BOTTLES	1/6 and 2/-
ENTOMOLOGICAL PINS, assorted	per box of 1 oz., 2/-
INSECT FORCEPS, with broad gauze jaws	3/6
SETTING FORCEPS, finest nickelled steel	2/-
GEOLOGICAL HAMMERS	3/- and 4/6
POCKET ACID BOTTLE, in boxwood case	1/6
THREE-POWER POCKET MAGNIFIER	4/6

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,
And at Ocean House, Moore St., Sydney.

ENTOMOLOGICAL APPARATUS.

CHERRY & SONS PTY. LTD.,
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES	SETTING BOARDS	ENTOMOLOGICAL PINS
BUTTERFLY NETS		KILLING BOTTLES
CORK LINING		ZINC RELAXING BOXES
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould		
POCKET BOXES		CABINETS
CURVED FORCEPS		INSECT CEMENT
&c., &c., &c.		

Write for our Price List and Sample Sheet of Pins.



The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 8th January, 1920.

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

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

CONTENTS :

	PAGE
FIELD NATURALISTS' CLUB OF VICTORIA	121
EXCURSION TO NOBELIUS'S NURSERY, EMERALD	124
A GIRLS' CAMP AT THE NATIONAL PARK (WILSON'S PROMONTORY). BY (MISS) G. NETHERCOTE	126
NOTES	132

* PRICE SIXPENCE. *

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.

(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.
1920.

Field Naturalists' Club of Victoria.

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

BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 12th JANUARY, 1920.

~~~~~

### 1. Correspondence and Reports.

### 2. Nominations for Membership.

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

### 3. General Business.

### 4. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

### 5. Reading of Papers and Discussion thereon.

By Messrs. G. Weindorfer and G. Francis (communicated by Dr. C. S. Sutton).—  
"Wild Life in Tasmania." (Continued.)

### 6. Reading of Natural History Notes.

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

### 7. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow-members.

---

## NOTICES.

The Hon. Treasurer will be glad to have returns of Wild Flower Exhibition tickets, also any overdue Subscriptions, as early as possible.

Members changing their addresses will oblige by notifying the Hon. Secretary.

~~~~~

Resignation of Hon. Secretary.—Acting under doctor's advice, Mr. P. C. Morrison has been compelled to resign his position as Hon. Secretary of the Club. The Committee will, therefore, be pleased to have the name of any member (lady or gentleman) who will be willing to act as Hon. Secretary until the next annual meeting.

The Victorian Naturalist.

VOL. XXXVI.—No. 9. JANUARY 8, 1920.

No. 433.

FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th December, 1919.

Mr. J. Gabriel, one of the vice-presidents, occupied the chair, and about sixty members and visitors were present.

REPORTS.

A brief report of the excursion to Frankston on Saturday, 15th November, was given by Mr. C. Daley, F.L.S., who kindly acted as leader in the absence of the leader, Mr. J. Johnstone, owing to a sudden family bereavement. The forest plantation, which consists chiefly of various species of pines, was the object of the excursion, and after this had been inspected a general ramble over the heath ground took place, but nothing of particular interest was noted.

A report of the excursion to the Fitzroy Gardens, East Melbourne, on Saturday, 29th November, was given by the leader, Mr. J. Stickland, who said that there had been a fair attendance of members interested in pond life, the object of the excursion. Specimens of many kinds were very numerous, and a quantity of material was secured for home examination.

A report of the excursion to Belgrave on Saturday, 6th December, was given by the leader, Mr. F. Pitcher, who said that there had been a good attendance of members, who enjoyed the outing very much, the weather being extremely pleasant. The excursion had been arranged for the study of ferns, for which the neighbourhood is well suited. Some twenty species were noted, but none were of particular rarity. Delightful views were obtained in many parts, particularly over the district known as "The Patch," and across to the Warburton Ranges. One member who devoted himself to entomology did very well in micro-coleoptera, while the ornithologists were gratified by hearing the Lyre-birds more than once.

ELECTION OF MEMBERS.

On a ballot being taken, Miss Dorothy Best, 211 Brunswick-street, Fitzroy; Dr. Chas. Albercione, Box 599, G.P.O., Melbourne; Rev. Ernest Davies, 90 Liddiard-street, Hawthorn; and Mr. Stanley A. Lawrence, "Miya," Alma-road, East St. Kilda, were duly elected as ordinary members, and Mr. C. G. L. Gooding, "Myrtle Vale," Moe, as a country member of the Club.

GENERAL BUSINESS.

Mr. Chas. Barrett expressed dissatisfaction at the amount

of time occupied at the monthly meetings by the presentation of excursion reports, often to the exclusion of more interesting matter. He considered the papers read were not of sufficient scientific interest, and thought the committee should arrange for papers on more important subjects.

Mr. E. E. Pescott, F.L.S., said that there was something in what Mr. Barrett had put forward, and suggested further consideration at another meeting. Messrs. E. Cox, F. E. Wilson, and H. B. Williamson also spoke, the latter urging members to specialize more.

The chairman said the committee would be only too glad if members would come forward with papers on subjects other than botany.

REMARKS ON EXHIBITS.

Mr. E. E. Pescott, F.L.S., called attention to a series of plant exhibits sent by Miss C. C. Currie from Lardner, including flowering specimens of *Drosera binata* and several orchids. These had been obtained from a patch of ground burnt over some time ago, and now intended to be put under cultivation. The orchids were particularly interesting, and included some rare species.

PAPER READ.

By Messrs. G. Weindorfer and G. Francis (communicated by Dr. C. S. Sutton), entitled "Wild Life in Tasmania."

The authors dealt with some of the larger forms of life met with in the Cradle Mountain district, such as kangaroos, wallabies, wombats, &c., and mentioned several interesting facts regarding them.

Owing to the lateness of the hour, the conclusion of the paper was deferred to another meeting.

Mr. F. Wisewould took exception to the statement that kangaroos are generally separate, his experience of Victorian kangaroos being that they are always to be found associated in groups.

Mr. G. A. Kearnland said that when the Club excursion party was at King Island in 1887 the Short-tailed Wallaby was found in droves, while the Black-tailed species in Victoria was always found singly.

NATURAL HISTORY NOTES.

Mr. G. A. Kearnland said the White-browed Wood-Swallows were very common at present, and he took it as an indication of a warm season.

Mr. J. Gabriel instanced the case of a Swallow which had built a nest on a cricket ball on a shelf.

Mr. E. E. Pescott related a case in which Swallows had brought out a clutch of young birds from a nest built in a nail

box on a carpenter's bench, though the bench was constantly in use.

EXHIBITS.

By Mr. F. G. A. Barnard.—Flowering specimens of Potato Orchid, *Gastrodia sesamoides*, from Tourist Track, near Menzies Creek, Dandenong Ranges.

By Mr. Chas. Barrett.—Caddis-fly cases built of different aquatic plants; photographs of axolotl, water-bug, &c., by Mr. H. M. Hale, South Australian Museum.

By Miss C. C. Currie.—Collection of peat-loving plants from Lardner, Gippsland, including *Utricularia dichotoma* and *U. lateriflora*, *Drosera binata*, *D. pygmaea*, the orchids *Prasophyllum intricatum*, *P. album*, *P. australe*, *Microtis porrifolia*, and *Burnettia cuneata* (in fruit); also the ferns *Schizaea bifida* and *Gleichenia circinata*.

By Mr. F. Cudmore.—Ribbon slate (Lower Cambrian) from Tapley Hill quarry, near Adelaide, S.A.; glacial conglomerate (Lower Cambrian) from Grey Spur, Inman Valley, about nine miles from Victor Harbour. The Grey Spur rocks form a scarp 150 feet high, resting unconformably on Pre-Cambrian rocks on the eastern side of the valley. This valley was subjected to glaciation in Permo-Carboniferous times, when Selwyn's Rock was striated.

By Mr. J. E. Dixon.—Fifty-two species of coleoptera from Lake Hattah district, N.W. Victoria.

By Miss M. T. Johnson.—Flowering specimens of *Blandfordia flammea*, Christmas Bells, and *Ceratopetalum gummiferum*, Christmas Bush, from Sydney, N.S.W.

By Mr. F. Keep.—Flowering branches of *Leptospermum scoparium*, variety with weeping habit, and flowering in summer; also flowers of *Eucalyptus pyriformis*, the Pear-fruited Gum of Western Australia—both grown at Canterbury.

By Mr. C. Oke.—Micro-coleoptera collected at Belgrave excursion, including three specimens of two species of Chlamydopsis—the beetles belonging to this genus inhabit ants' nests and are extremely rare and difficult to secure.

By Mr. E. E. Pescott, F.L.S.—Christmas Bells, *Blandfordia grandiflora*, from Port Stephen, N.S.W.

By Dr. C. S. Sutton.—Skins of opossums, *Trichosurus vulpecula* and *T. fuliginosus*, from Cradle Mountain, Tasmania, in illustration of paper by Messrs. Weindorfer and Francis.

By Mr. J. Stickland.—Leaves of Maidenhair Tree (Ginkgo), from Fitzroy Gardens.

By Mr. L. Thorn.—Marine shells, *Cynatium spengleri* and *Haliotis nevosa*, also seaweeds, from Phillip Island and Flinders; larvæ in various stages of the Wood White Butterfly, *Delias aganippe*, Don, with pupæ and perfect insect.

By Mr. H. B. Williamson.—Specimen of *Isohogon anemonifolius*, R. Br., "Tall Cone-bush," collected by Mr. T. S. Hart, M.A., near Bairnsdale, previously doubtfully recorded for Victoria.

After the usual conversazione the meeting terminated.

EXCURSION TO NOBELIUS'S NURSERY, EMERALD.

ABOUT twenty members and friends took advantage of the Cup Day holiday on Tuesday, 4th November, to visit the famous tree-nursery of Messrs. C. A. Nobelius and Sons at Emerald. Near Belgrave station the clumps of the introduced Tree Heath, *Erica arborea*, were noticed growing very strongly. All along the line the beauty of the red—and in some places scarlet—of the young foliage of the gums was very noticeable. The party was met at the station by our fellow-member, Mr. W. Scott, who now lives at Emerald, and by Mr. Barnard, who had walked up that morning from Belgrave. The natural fern gully in the nursery is still as beautiful as ever: and among the ferns and native trees Mr. Nobelius has planted Hydrangeas, Maples, Japanese Iris, Rhododendrons, and Azaleas, all of which are growing finely. In the lower parts of the gully and along the creeks the English Buttercup, *Ranunculus repens*, has become naturalized, and the golden flowers were very abundant. Near the top of one of the tree-ferns, which was fully fifteen feet in height, a considerable clump of the Green Bird Orchid, *Chiloglottis Muelleri*, Fitz., was discovered. A small boy, cousin of Miss Nethercote, climbed the tree-fern, and so collected specimens for the party. The exotic trees in the nursery were probably at their best, owing to the spring growth being so fine, and also to the fact that a recent rain had brightened everything up. The trees which were more admired than any others were the Purple and Copper Beeches, of which there were many nursery rows. The glorious tints which these young trees presented, ranging from a rich copper-red, almost crimson, down to a deep purplish-black, combined with the dainty pendulous habit of the young growths, were the admiration of the whole party. In one small unoccupied portion of the nursery grounds a profusion of growth of *Tetralthea ericifolia* and *Bauera rubioides* was abundantly in bloom, the latter being particularly fine. The feature of the nursery, however, was the establishment of the flax industry, many acres of land being devoted to the culture of the New Zealand Flax, *Phormium tenax*. Mr. Nobelius is to be congratulated on his enterprise, and it is to be hoped that the industry will rapidly extend in the Commonwealth, and that it will be a profitable one to the originator.

A flax mill has been installed, and the manager was most courteous to our party, showing and explaining every operation. The flax plants are ready to cut at three years old, and subsequently every three years for an indefinite period. The leaves are graded according to length by an ingenious and yet simple method. A bundle of the leaves is dropped into a cask sunk into the ground. The longest leaves are bunched out first as grade 1, then the second longest are taken out for grade 2, leaving the balance for grade 3. The grades are passed into the scutching machine, which, in the space of about a second, very cleverly and forcibly removes both upper and under surfaces of the leaves, reducing these surfaces to a coarse powder, leaving the leaves on the floor a heap of green fibre. This fibre is passed between revolving rollers under water, which process washes out the gum-like sap. It is then dried and bleached for three weeks by laying it out on grass. The fibre is then ready for baling and for despatch to the rope mills. The powdery leaf surfaces are washed into a drain, the sediment being cleared out from time to time for use as a medium for raising young flax seedlings and for manure in the nurseries. Millions of young flax seedlings, looking just like young seedlings of grass, are being raised at the present time in the nursery for planting out so as to increase the area of flax. It was very interesting to be told by the manager that while it took from eight to ten tons of leaves to produce a ton of fibre in New Zealand, the same amount of fibre was being produced here from seven tons of leaves; that in New Zealand the best flax grew in swamps, while all of Mr. Nobelius's was hill-grown; and that every sample of local flax fibre was graded at the rope mills as "special." Leaving the nursery at about 4 p.m., the party was entertained at afternoon tea, in his mountain home, by Mr. Scott. Our old and esteemed member has succeeded in establishing in his garden paddock quite a number of terrestrial orchids, including *Thelymitra longifolia*, *Prasophyllum brevifolium*, *Microtis porrifolia*, *Dipodium punctatum*, and others, and these were much admired by the party. Leaving Mr. Scott's home we walked to the tourist track along the Menzies Creek, finding our way ultimately to the Paradise station, along the tourist track. In some of the glades the great clumps of the Silver Wattle were very fine, and in full seed. At flowering time the sight must have been gorgeous. The creek scenery, the tree-ferns, the musks, clematis, asters, and other beauties were greatly admired, the time being all too short to allow us to spend much time there. From the creek to the station at Paradise is a fairly stiff hill climb, being about 300 feet. Two entomologists were among the party, who made some very interesting captures.—E. E. PEScott.

A GIRLS' CAMP AT THE NATIONAL PARK (WILSON'S PROMONTORY).

BY (MISS) G. NETHERCOTE.

(Read before the Field Naturalists' Club of Victoria, 13th Oct., 1919.)

DESPITE foreshadowings of sand-flies, snakes, and sharks, Saturday, 18th January, 1919, saw our party of eleven bound for a ten days' camp at the National Park. Leaving town by the 7.40 a.m. train for Bennison (113 miles), a little town on the Franklin River, our journey so far was uneventful. Our tents, bedding, and provisions accompanied us, with the exception of bread, which was picked up at Foster *en route*. A formidable pile it looked, packed in sacks and piled on a trolley; but eleven hungry people, without the chance of replenishing their larder for ten days, required a substantial supply.

Here I'll pause for a moment and side-track on provisions. Our biggest problem was bread. Meat, milk, vegetables, and fruit could be taken tinned or in dried form. Would our bread keep? Of course, it would be stale long before ten days had passed; but, worst of all, would it become blue-mouldy? We had it packed in new flour-bags, except one lot, which was unfortunately put into a previously-used bag. On arrival at camp these were placed on waterproof material, so that no moisture should be drawn into the bags from the ground, and covered with similar material, so as not to dry too quickly. Although dry at the end, it all kept well except the lot in the previously-used bag, which, somewhat early, decorated itself with blue.

At Bennison, three miles beyond Foster, we left the train, and were told an hour was at our disposal before the tram left for Port Franklin. The day was hot and sultry, and the country flat and treeless. A store some little distance from the station was visited. A wee damsel in charge informed us, "Father charges 3d. for limejuice if you have water in it." The limejuice lasted three glasses, then gave out. As the price of water was not known, it was not passed round. We returned to the station to find our luggage piled on a large trolley, with sides like a hay-waggon; this, to our surprise, we found was the Port Franklin tram. However, it proved a novel and convenient conveyance, and, drawn by a pair of horses, we soon covered the mile and a half to the Franklin River landing. A wide stream confronted us here, which, we soon learned, was to our disadvantage, as one must leave on low tide and reach the Park on the full, otherwise the boat cannot get alongside the landing-stage. Sitting on the wharf with fishing-lines, we saw the wide stream gradually shrink to a tiny silver ribbon running through wide mud-flats swarming

with thin, red, spidery crabs, *Helæcius cordiformis*. Port Franklin is a small fishing village, but our only catch was a rusty jam-tin. A strong south wind now rose, and our boatmen promised us a cold, wet crossing, or, as an alternative, the use of the ranger's cottage (put at our disposal by the ranger) for the night. The latter was accepted, and an early start made the following morning. The launch was capable of holding thirty-two, so eleven and luggage were easily stowed on board. Soon we were sliding down between the flat mud-banks of the Franklin River. The surrounding mangrove swamps and mud ridges form a perfect paradise for water-birds of every description, which were there in hundreds. Leaving the river, a south-westerly course was set across Corner Inlet, passing quite close to Doughboy Island. Mount Singapore, the scene of the prospecting for tin at present being carried on, was visible to the south-east.

By noon we were at the Park, landing at the south-west corner of the Inlet, where we found the ranger, Mr. Cripps (who proved our best friend throughout the trip), awaiting us with buggy and horses to convey us to the Darby River, where we intended making our camp. Here is situated the first rest-house, a two-roomed galvanized iron structure. The track to the Darby River follows the easiest route, and is sometimes outside the Park. At first we followed the sandy track inside the high vermin-proof Park fence. The country was unusual; gum-trees were scarce, Banksias or honeysuckles and grass-trees forming the main features of the vegetation. Parallel with our track on the left was the Vereker Range, boasting of good timber and fine fern gullies. Presently the heavy sandy track passed through No. 1 gate, amidst low, scrubby country. Descending into a hollow before re-entering the Park, we saw in front of us a number of half-dead gums. Imagine our delight on getting nearer to find them tenanted with native bears, or koalas—not one, but many.

It was from this spot our camp mascot, soon known as a Dincombe Teddy bear, with fuzzy-wuzzy ears, was taken. He was a small grey beastie with a white shirt-front. At first he was fed on condensed milk with a teaspoon, a serviette being tied round his neck to catch the half that did not go into his mouth. Later we found he was old enough to eat gum leaves, and, although it was a couple of miles to the nearest trees from the camp, he was never found wanting his leaves.

Re-entering the Park by No. 2 gate, we found a few of the beautiful white Butterfly Iris, or Tangil Lily, *Diplarrhena Moraea*, in flower. From here the Vereker Range presented a fine view. Again passing out of the Park by No. 3 gate and rounding a hill, we saw below us the Darby River, and our

luggage awaiting us. On the lee side of some tall tea-tree on the north side of the Darby our three tents were soon erected—two sleeping and one dining tent, in which the provisions were also stored. But the majority of the time, owing to ideal weather, our morning and evening meals were eaten under the shade of some fine Silver Honeysuckle trees, *Banksia marginata*. A low, rude table was constructed, and a white table-cloth made it look homely. Each one produced her own table requirements—two plates, two knives, forks and spoons, and one mug. The provisions were opened up; bread, butter, honey, and jam made their appearance, and were placed on the table, while the billy boiled, and thus the first of our many happy camp meals was made.

Across the river could be seen the other rest-house, the trustees' cottage, and the ranger's house. A fine bridge connected us with the Park, and a few minutes' walk or swim took us to the mouth of the Darby River. The south bank ends in a granite headland, but the northern is soft dune rock, fast crumbling away and helping to make the sand-bar at the mouth of the stream. North of this is a long, uninterrupted beach, over which vehicles can be driven at low tide, to eventually pick up a road to Fish Creek, on the railway. Directly back from this beach are endless kitchen middens, the feasting-places of the aborigines in days gone by. What countless numbers of our fast-diminishing natives must have frequented this spot to leave such high mounds of broken shells! Some of our time was spent here, and a number of axes, tomahawks, needles, spear-heads, &c., found. Two Pearly Nautilus shells were also found in the neighbourhood.

From the Darby River a track runs behind the ranger's cottage to Tongue Point, where some successful fishing was done from the granite boulders.

During the week it was decided to visit some of the fern gullies further south, and, if possible, Sealers' Cove. This necessitated taking a tent, bedding, and provisions for three days: so one of the Park horses was commandeered. The narrow sandy track led round the foothills and over the Darby Saddle—the first heavily-timbered country (Messmate and White Ironbark) we had passed through. Fine coastal views were obtained in places. Whisky Creek was our first water. The track then led through heathy country—a splendid botanical collecting-ground earlier in the season. A few plants, such as *Correa alba*, *Hibbertia*, sp., *Gompholobium Huegelii*, *Epacris impressa*, *Convolvulus crubescens*, were found in flower. At about seven miles we left the main track and turned east into Lilly-pilly Gully. After the country just passed through, this was a surprise. The tree-ferns were very fine, and few of us had

seen Lilly-pillies, *Eugenia Smithii*, growing so freely before. The fallen tree-trunks, also the stems of the tree-ferns, were festooned with climbing ferns, principally *Polypodium pustulatum*, syn. *P. scandens*. Here also Blackwoods, *Acacia melanoxylon*, Sassafras, *Atherosperma moschata*, Hazel, *Pomaderris apicala*, and Blanket-trees, *Bedfordia* (*Senecio*) *Bedfordi*, abounded. Rejoining the main track, we continued on, crossing the Tidal River, with Bishop Rock on our left—an unusual formation, the rocks appearing to have water running over them—and formed our camp on the Titania Creek, at the foot of the Telegraph saddle, amid fern-trees and other luxuriant vegetation.

The next day Sealers' Cove, seven miles distant, was visited. Ascending the Telegraph saddle, a cleared track runs east along the side of the range. Several rocks, forming an arch, were early passed under. At one point a fine view, with portions of the east and west coasts of the Promontory in sight at the same time, was obtained. The track ran above and through fine fern gullies—the principal tree-fern being the graceful *Cyathea Cunninghami*, with its thin, black stems, sometimes 40 or 50 feet in height—finally picking up an old sawmill tram-line, and crossing Sealers' Creek amid a wealth of Lilly-pillies and other trees, ends at the beach, where some of the old sawmill jetty still remains. Shells were picked up on the beach, among them a Paper Nautilus. Pockets were filled with tiny pointed shells, which later, round the camp-fire, were threaded in strings as mementoes. One of our party, Mrs. Hamilton, had some twenty years before been on board a steamer bound for Sydney which had been compelled by stress of weather to take refuge in Sealers' Cove, and great was her delight at revisiting the spot under much pleasanter circumstances.

A tired but satisfied party reached Titania Creek camp that evening, and turned in early. Next morning found us early astir. The rolling of bedding and tents ready for the horse was quickly accomplished, and soon we turned our backs on Titania Creek and its fern glades for the last time. It was interesting to note that many of the ferns here possessed tufted fronds. The main object of the day was to reach the west coast and follow it as far as possible in a northerly direction, then to pick up the Darby track and so regain our original camp. Leaving the track, we pushed through the tea-tree scrub, and, passing Mount Oberon, reached the shore of Oberon Bay, with its north and south headlands of solid granite. Winding over the northern headland, a steep track leads to Norman Bay, with its fine, wide, sandy beach, at the northern end of which the Tidal River enters the ocean. The sand here was heavily marked with tracks of emus, kangaroos, and wallabies. A

swim was enjoyed here by most of the party. The sand teemed with myriads of tiny red crabs, which hurriedly entered their holes on our approach.

Cutting off the northern end of Norman Bay, we approached Leonard Bay, and on the headland found the Angular Pigface, *Mesembryanthemum æquilaterale*, the large red fruit of which we found most palatable. Leaving Leonard Bay, we made inland to the main track, and so back to the Darby River camp, to find a tea of rock-cod, caught and prepared for us by the two who had elected to remain at home. Some thirty odd people gathered round the camp-fire that evening. Old camp songs were sung and stories old and new told while the billies boiled and the larder was ransacked for delicacies. A vote of thanks was passed to the ranger, Mr. Cripps, who had done so much to make the camp a success.

Next morning our last swim down the Darby, our last surf in the ocean, was taken. The camp was dismantled, and in the afternoon eleven happy, sunburnt people, hugging treasures too precious to go in the buggy as general luggage, were to be seen tracking across to the shore of Corner Inlet, there to find our boat in full sail awaiting us on the evening tide, though it was the next tide before we started for home, with "Teddy Dincombe," a wee ball of grey, entering on his first sea voyage.

Teddy Dincombe Fuzzy Wuzzy, now a year old, resides at Hawthorn, permitted to do so by a permit issued by the Fisheries and Game Department. He has doubled in size since we captured him. He has his full freedom, which sometimes he abuses: but who can blame him when a hundred or more gum-trees nod and wave their heads to him and invite him over to their side of the fence? Those who see him in the daytime or during his evening meal would get a surprise to see him racing up and down the trees and jumping from bough to bough. Sometimes he walks "Blondin" on a paling fence for a couple of hundred feet or so, then, jumping off, will gallop across an open space of several hundred feet to the nearest tree, into which he digs his claws and races up. You may go after him and call and call, but Teddy Dincombe will come down when it suits him. It may be soon, with a quick run, a few sharp snorts, and a jump, and he is on to you: or it may be a day or two later, when, tired of solitude, he will come creeping down, put his cold kid nose on to your neck, his fore-paws on your shoulder, and drop into your arms. He is fond of company, and likes being nursed. In the evening he will wander round the house until he finds someone who is sitting still: then he will climb up and go to sleep.

As regards food, he has very strong likes and dislikes.

Although he lived up a sugar gum for the first few months of his Hawthorn life, he refused to touch it—even the tender young tops—and every evening would come down and eat his full-grown gum-leaves gathered from trees along Gardiner's Creek and the Yarra. Peppermint and messmate are also his aversion, while he enjoys white gum, apple box, and stringybark, and (in moderation) blue gum.

I cannot say that this is the rule with all native bears, for a friend told me of one that refused any other variety than sugar gum, while another lived for three years on peppermint; but the fact remains that with Dincombe you can mix the varieties and he will carefully go over them, and eat the same kinds each time; or, if you give him nothing but sugar gum and peppermint, you will find them untouched, and a sulky Dincombe will look at you from the fork of a tree above, or he may run down and dig his two front teeth into your shoulder to announce the fact that he is hungry, and that the gum-leaves in the tin are suitable only for table decoration—as food they aren't fit for bears. Since leaving the Promontory he has lived entirely on gum-leaves, and has never taken any fluid.

The toes on the hind feet differ from those on the fore feet, which have five toes, with a claw on each. The hind feet have the same number of toes, but the fourth is double, with two claws, the fifth toe having no claw.

When first caught he had the curious sharp yap of a baby bear, but during the last couple of months the grown-up grunt has been developing, usually in a drowsy condition after a good meal, when he will point his nose skywards and begin like a subdued snore; it becomes louder and louder until, as someone said, it rumbles from the very soles of his boots.

Koalas are not such senseless little animals as they are supposed to be. He is quick in picking out direction and alteration, while back will go his ears and up the tree he will go like a shot at the sound of a strange voice, while a call from us will bring him trundling down. There is quite a lot one could tell about his funny ways. Ah! here he is, climbing up the back of my chair on to my shoulder. I must go and get him some tea, else the busybody poke-nose of his will be in the ink.

[The paper was illustrated by a large series of lantern views. It may be useful for reference to record here previous articles in the *Naturalist* on Wilson's Promontory:—April, 1905, xxi., p. 128 (history); April, 1906, xxii., p. 191 (camp-out, with illustrations); Feb., 1909, xxv., p. 142 (with map); Jan., 1910, xxvi., p. 129; Jan., 1911, xxvii., p. 178; March, 1911, xxvii., p. 208; May, 1913, xxix., p. 163 (with illustrations); and Feb., 1915, xxxi., p. 143.—ED. [*ict. Nat.*]

"THE GUM TREE."—The December issue of this journal contains the first portion of an illustrated article on "The Pines of Tasmania," by Mr. G. Weindorfer, of Cradle Mountain, which gives some interesting particulars of the life-history of the King William Pine, *Arthrotaxis selaginoides*, Don, which, on account of its slow growth, seems to be doomed to extinction at no distant date. Articles on forestry in Western Australia, the kiln seasoning of timber, and forestry in Portugal, with references to the destruction of forests in France by the recent Great War, help to make up a very interesting number of this publication.

COMMONWEALTH MILITARY SURVEY.—Another map of the Victorian series has recently been issued. It is entitled "Corangamite, Beecac, Cobden, and Colac," and is on the smaller scale of $\frac{1}{2}$ -inch to 1 mile, which is quite sufficient for such comparatively flat country. It embraces the towns of Winchelsea, Birregurra, Cressy, and Camperdown, as well as those named in the title, and, in addition to the huge Lake Corangamite, shows some twenty-five other lakes of varying sizes. The parts visited by the Club excursion of Easter, 1918, are, of course, included, but the omission of the name of the well-known hill near Alvie, known as "Red Rock," must be regarded as a distinct oversight. The southern portion of the map, by the tortuous contour lines, indicates the nearness of the Otway Ranges. It is issued at the same price as those of the larger scale—viz., one shilling.

GEELONG FIELD NATURALISTS' CLUB.—This Club, which, under many disadvantages, has made a strong fight to keep natural history before the citizens of Geelong for a number of years, held its first exhibition of wild-flowers at the Gordon Technical College on Saturday, the 4th of October last. The exhibition was enthusiastically supported by the public, and proved a great success. In addition to representatives of the district flora, flowers were received from the Grampians and Gippsland, most of which were displayed with both scientific and vernacular names. The president, Dr. McCallum, in opening the exhibition in the afternoon, expressed the society's thanks to Melbourne friends for help in the venture, and in the evening the mayor, Mr. H. Hitchcock, who is an enthusiastic horticulturist, said that the beginning now made should result in a greater interest in Australian plants suitable for cultivation in our gardens.

Field Naturalists' Club of Victoria.

.....

* OFFICE-BEARERS. 1919-1920. *

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frecheneourt," Pant Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,
J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

* OBJECTS. *

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

EXCURSIONS.

SATURDAY, 17TH JANUARY.—**Sydenham.** Object—**Geology.** Leader—Mr. A. L. Scott. The "Organ Pipes" near Sydenham is one of the most striking geological features near Melbourne, but, being situated some distance from the railway station, is easier visited by specially engaged conveyance. A few seats are still available in char-a-banc to leave St. Paul's corner at 1.30 p.m. The return journey will be broken at Keilor for tea. Fare, 5/-.

SATURDAY, 24TH, TO MONDAY, 26TH JANUARY (Foundation Day).—**Powelltown, via Yarra Junction.** Object—**Forestry.** Leader—Mr. A. D. Hardy, F.L.S. Meet at Flinders Street Station for 7.50 a.m. Warburton train. Second excursion fare to Yarra Junction, 5/6. Total cost, about 27/6. As accommodation will have to be arranged for, names of those intending to take part must be handed to leader at the January meeting.

SATURDAY, 31ST JANUARY.—**Beaumaris.** Object—**Marine Zoology.** Leader—Mr. J. Shephard. Particulars will be announced at January meeting.

SATURDAY, 14TH FEBRUARY.—**Zoological Gardens—Social Gathering.** Particulars in February *Naturalist*.

~~~~~  
The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

## WATSON'S REQUISITES FOR FIELD NATURALISTS.

|                                                                                                                 |                   |
|-----------------------------------------------------------------------------------------------------------------|-------------------|
| JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring,<br>spoon and cutting hooks .. .. . | 30/-              |
| CORKED GLASS COLLECTING TUBES, from .. .. .                                                                     | 1/6 doz.          |
| FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper,<br>and straps .. .. .                      | 5/6               |
| BUTTERFLY NET, with folding ring, 4 joints .. .. .                                                              | 6/-               |
| INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-                                 |                   |
| INSECT COLLECTING BOXES, of deal, corked and papered .. .. .                                                    | 1/-, 1/6, and 2/- |
| INSECT RELAXING BOXES, of zinc, oval shape, corked .. .. .                                                      | 1/6, 2/9, and 3/6 |
| GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-                                       |                   |
| INSECT-KILLING BOTTLES .. .. .                                                                                  | 1/6 and 2/-       |
| ENTOMOLOGICAL PINS, assorted .. .. . per box of 1 oz.,                                                          | 2/-               |
| INSECT FORCEPS, with broad gauze jaws .. .. .                                                                   | 3/6               |
| SETTING FORCEPS, finest nickelled steel .. .. .                                                                 | 2/-               |
| GEOLOGICAL HAMMERS .. .. .                                                                                      | 3/- and 4/6       |
| POCKET ACID BOTTLE, in boxwood case .. .. .                                                                     | 1/6               |
| THREE-POWER POCKET MAGNIFIER .. .. .                                                                            | 4/6               |

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,  
And at Ocean House, Moore St., Sydney.

## ENTOMOLOGICAL APPARATUS.

**CHERRY & SONS PTY. LTD.,**  
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

|                                                                    |                     |                    |
|--------------------------------------------------------------------|---------------------|--------------------|
| STORE BOXES                                                        | SETTING BOARDS      | ENTOMOLOGICAL PINS |
| BUTTERFLY NETS                                                     | KILLING BOTTLES     |                    |
| CORK LINING                                                        | ZINC RELAXING BOXES |                    |
| NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould |                     |                    |
| POCKET BOXES                                                       | CABINETS            |                    |
| CURVED FORCEPS                                                     | INSECT CEMENT       |                    |
| &c., &c., &c.                                                      |                     |                    |

Write for our Price List and Sample Sheet of Pins.





# The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 5th February, 1920.

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

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

| CONTENTS :                                          |       | PAGE     |
|-----------------------------------------------------|-------|----------|
| FIELD NATURALISTS' CLUB OF VICTORIA                 | .. .. | 133      |
| EXHIBITION OF WILD FLOWERS                          | .. .. | 136      |
| EXCURSION TO FITZROY GARDENS                        | .. .. | 136      |
| EXCURSION TO BELGRAVE                               | .. .. | 138      |
| AT WARTOOK (GRAMPIANS). BY CHAS. DALY, B.A., F.L.S. | ..    | 141      |
| NOTES                                               | .. .. | 147, 148 |

\* PRICE SIXPENCE. \*

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.  
(IF BY POST 1d. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.  
1920.

# Field Naturalists' Club of Victoria.

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

## BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 9th FEBRUARY, 1920.

1. Correspondence and Reports.

2. Nominations for Membership.

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

3. Election of Member.

AS ORDINARY MEMBER—

Mr. Alfred J. Tadgell,  
430 Bourke St.,  
Melbourne.

PROPOSER.

Mr. E. E. Pescott, F.L.S.

SECONDER.

Mr. C. French, jun.

4. General Business.

5. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

6. Reading of Papers and Discussion thereon.

No papers will be presented at this meeting; instead, members who spent holiday vacations at the seaside or in the country are asked to give brief accounts of their experiences.

7. Reading of Natural History Notes.

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

8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow-members.

---

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

# The Victorian Naturalist.

VOL. XXXVI.—No. 10. FEBRUARY 5, 1920. No. 434.

## FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 12th January, 1920.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

### REPORTS.

A report of the Christmas excursion (24th–29th December) to Loch Valley was given by the leader, Mr. F. G. A. Barnard, who said that, notwithstanding some wet weather, the party had enjoyed the outing very much. They had got as far as Mount Horsfall, and seen the wonderful trees of the district, which, it is expected, will within twelve months be in the grip of the sawmiller. They had also visited Nayook Glen, a beauty spot worth anyone's while to see.

Mr J. L. Robertson, M.A., said that, as a member of the party, he wished to thank the leader for the trouble he had taken in arranging the details of the outing. The fine trees at Mount Horsfall had been a revelation to him. Some rough measurements he had made gave heights of 120 to 180 feet to the first branch. He asked if anyone could give any information as to the effect of electricity on the growth of trees.

Mr. D. Best said that the report appeared to him to be an account of a mere pleasure jaunt. Little natural history collecting or observation could be done when distances of ten and twelve miles, as mentioned, were covered in one day. He would like to know if any *Bursaria* was found in bloom, and whether any beetles were collected.

Mr. F. Wisewould thought the report a very interesting one, and formed an excellent groundwork for future visits to the district.

Mr. A. E. Keep, as a member of the party, said that he did not consider natural history had been neglected. His experience was that the leader took every pains to name and explain any object submitted to him.

Mr. J. H. Harvey considered the report a very informative one, and just what was wanted for a new district.

The chairman said that he understood the excursion to be a sort of pioneering one, and the authorities at the Tourist Bureau were waiting to hear the experiences of the party.

Mr. Barnard, in answer to Mr. Best, said that the *Bursaria* along the Loch Valley was just coming into bloom, but on

account of the showery weather no beetles seemed to be frequenting it. He intended to give a little more detail when printing the report, though the country traversed differed but little from Warburton or the Dandenong Ranges.

#### GENERAL BUSINESS.

Mr. A. E. Keep asked whether the Club was doing anything in support of the movement to make Macquarie Island a sanctuary for sea elephants, seals, penguins, &c.

Mr. J. A. Kershaw, F.E.S., said that the matter is in the hands of the Commonwealth Government, and that at present negotiations were in progress with the Tasmanian Government for the transfer of the island.

Mr. F. E. Wilson said that Mr. J. Hatch, the lessee of the island from the Tasmanian Government, is working hard to secure his rights.

On the motion of Messrs. C. L. Barrett and J. Gabriel, a resolution was carried expressing the opinion of the Club that Macquarie Island should be set aside as a sanctuary for birds, &c., and that no license to obtain penguin oil should be allowed.

The chairman announced that Mr. E. E. Pescott, F.L.S., had offered to act as hon. secretary until the next annual meeting.

#### PAPER READ.

Dr. C. Sutton read the conclusion of Messrs. G. Weindorfer and G. Francis's paper on "Wild Life in Tasmania," which had been held over from the previous meeting.

This portion of the paper gave interesting accounts of the Ring-tailed Opossum, Tasmanian Brush Opossum, Tiger Cat, and Common Native Cat; also some notes about the Sooty Crow-Shrike or Black Jay.

#### NATURAL HISTORY NOTES.

Mr. F. Wisewould asked what had become of the Starlings this season. In his district (Pakenham Upper), where they usually caused much destruction of fruit, the fruit had not been touched.

Mr. J. Gabriel said that Starlings will not touch fruit if they can get caterpillars, which have been very plentiful lately.

Messrs. G. A. Keartland and F. Chapman said that in their districts (Preston and Balwyn) the Starlings were as destructive to fruit as usual.

Mr. F. G. A. Barnard said he was exhibiting a live specimen of the large native Black Snail, found during the Loch Valley excursion, and asked if any member could suggest a food plant for it. He had tried thistles and lettuce leaves, but neither

seemed to be appreciated. He wished the introduced snail, *Helix aspera*, were as abstemious in its habits. Mr. C. Oke said he had seen one eat the leaves of the common Arum.

## EXHIBITS.

By Mr. Chas. Barrett.—Specimens of a land shell, *Helix*, sp., from excavations close to the Pyramid of Cheops, Egypt.

By Mr. F. G. A. Barnard.—Live Black Snail, *Paraphanta atramentaria*, from Noojee; coarse-grained granite from Nayook Glen; also maps and photographs illustrating Loch Valley excursion.

By Mr. F. Chapman.—Electrotype cast of "Dudley Locust" (Calymene), a trilobite long mistaken for an insect, illustrating the fact that electrotypes can be made direct from fossils.

By Mr. T. S. Hart, M.A.—Flowers and mature fruits of previous season on same branch of *Acacia implexa*, from Wheeler's Hill; also larvæ of the Apple-tree Hanging Moth, *Charagia lignivora*, ringbarking stems of *Leptospermum scoparium* and *Acacia verticillata*, from Scoresby. The larvæ work under a protecting cover of web and sawdust while making tunnels in the stems of the shrubs.

By Mr. C. A. Nethercote.—Bunch of Spotted Orchids, *Dipodium punctatum*, from Silvan (South Wandin).

By Mr. E. E. Pescott, F.L.S.—Specimens of Long-leaved Tongue Orchid, *Cryptostylis longifolia*, R. Br., from Ferntree Gully.

By Mr. J. Searle.—Specimens of a parasitic Isopod belonging to the family Cymothoidæ of the sub-order Flabellifera, found in the intestine of a parrot-fish. The young of this family, when hatched from the egg, are free swimmers, and all the individuals are at this stage males. They fix on to and fertilize the adult parasites. Subsequently these become parasitic and develop into female, and are in their turn fertilized by the larvæ derived from a previous generation (*vide* "Cambridge Natural History").

By Mr. L. Thorn.—Larvæ of the Cup Moth, *Limacodes longerans* (*Doratifera oxleyi*), White, in various stages, also the pupa and perfect insect; six species of Victorian Cicadas—*Cyclochila australasiæ*, Don., *Psaltoda niocreus*, Ger., *Melampsalte denisoni*, Dis., *M. abdominalis*, Dis., *M. murrayensis*, Dis., and *Pauropsalta encaustica*, Dis.

By Mr. J. Wilcox.—Flowering branches of New South Wales Christmas Bush, *Cerapetalum gummiferum*, grown at Camberwell.

By Mr. F. Wisewould.—Flowers of *Lomatia ilicifolia*, *Dianella tasmanica* (fruits), *Dipodium punctatum*, and *Xanthorrhæa minor*, from Pakenham Upper.

After the usual conversazione the meeting terminated.

## EXHIBITION OF WILD-FLOWERS.

MEMBERS will be pleased to learn that the exhibition of wild-flowers, held on 30th September last, resulted in a profit of £163 14s. 11d., being £22 12s. 2d. more than that of the previous one. The receipts were made up as follows:—Admissions, £160 3s. 2d., and sales of flowers, &c., £55 4s. 1d., while the expenses amounted to £52 2s. 4d. As intended, the profit was divided by handing £81 17s. 6d. to the Victorian branch of the Returned Sailors and Soldiers' Imperial League of Australia for the Anzac House Fund, and depositing £81 17s. 5d. in the Savings Bank as a fund for publishing a list of popular names for Victorian plants.

In acknowledging the receipt of the amount above named, the secretary of the League says:—"It is indeed gratifying to know that your Club is displaying so keen an interest in the welfare of our returned soldiers, which fact is in itself proof conclusive that you are a representative body of loyal citizens who are striving by every possible means to reward those who made sacrifices for the whole of the Empire."

The best means of carrying out the intention of publishing the popular names of Victorian plants is now under consideration by the Plant Names Committee of the Club, who will be pleased to have suggestions in writing from those interested as to the form such a list should take, and the details which might be embraced in it.

## EXCURSION TO FITZROY GARDENS.

ON Saturday afternoon, 29th November, a party of members visited the Fitzroy Gardens, for the first time as a Club excursion, for the purpose of seeing what life the various fountain-ponds and other pools would afford. The Curator of the Gardens had kindly arranged that Mr. Reeves, the foreman, should accompany the party round the Gardens and enable the members to secure what specimens they desired. A fountain-pond near Clarendon-street, which had apparently been undisturbed for some time, was first visited. Here we found quite an extraordinary quantity of the beautiful polyzoan, *Plumatella repens*, occurring on the under surface of the *Nymphaea* leaves. All the older leaves examined bore fine dendriform colonies, in some cases practically overspreading the whole surface of the leaf. On examination under the microscope numerous statoblasts (reproductive bodies) were found to be present. In the material collected at this pool Mr. J. Wilcox was fortunate enough to find the elegant and decidedly uncommon rotifer, *Stephanoceros cichhornii*. It is somewhat remarkable that of the four localities where this rotifer has been found by us three have been ornamental ponds

in public gardens—viz., the Botanic Gardens, the Horticultural Gardens, and now Fitzroy Gardens. We next visited the lake on the western side of the Gardens, finding there Duckweed, *Lemna minor*, in considerable quantities. This plant is a favoured habitat of the Vorticellidæ, and the present occasion provided no exception to the rule. As the afternoon was decidedly warm, we gladly accepted Mr. Reeves's invitation to afternoon tea at his lodge. While there we were able to see a fine dining table made by our host from red gum trees cut down in the Gardens, which exhibited the great beauty of the wood, and its suitability for such purposes. The excellent results obtained during the afternoon make one wish that those in charge of our public reserves could be induced to set aside portions of the pools contained in most of them, wherein the vegetation could be allowed to remain undisturbed, and thus provide sanctuaries for the microscopic fauna and flora of the Melbourne district, the natural lagoons near the metropolis having in many cases been drained and thus lost as collecting-places for the microscopist. In connection with the examination of the infusorian, *Ophryoglena atra*, under the microscope, a rather interesting occurrence may be mentioned. In order to quieten the too great activity of the creature, Epsom salts was introduced into the water, apparently in too great an amount, for a profuse discharge of the trichocysts with which this protozoan is armed took place, when the creature's appearance put one in mind of the "fretful porcupine" with quills erect.

The following are the forms noted:—

ALGÆ.—Bacillariæ.—The genera *Cymbella*, *Gomphonema*, *Cocconema*, *Synedra*, *Navicula*, *Surirella*, and others were represented. Desmidiæ.—*Closterium lunula*, *C. setaceum* (?), *Cosmarium*, sp., *Pleurotænium*, sp. Other algæ noted were *Spirogyra*, sp., *Pediastrum boryanum*, *P. duplex*, and *Scenedesmus quadricauda*.

PROTOZOA.—Rhizopoda.—*Amœba* (sp. ?), *Arcella vulgaris*, *A. dentata*, *Diffugia acuminata*, *D. sp.*, *Centropyxis aculeata*, *C. eornis*. Heliozoa.—*Clathrulina elegans*. Flagellata.—*Trachelomonas hispida*, *T. armata*, *Phacus longicaudus*, *P. triqueter*, *Euglena viridis*, *Gymnodinium fuscum*, *Anthophysa vegetans*, *Volvox*, sp., *Astasia tricophora*, *Dinobryon sertularia*. Infusoria.—*Platycola longicollis* (?), *Ophryoglena atra*, *Paramecium aurelia*, *Euplotes*, sp., *Urocentrum turbo*, *Coleps hirtus*, *Stichotricha*, sp., *Vaginicola*, sp., *Spirostomum ambiguum*, *Stentor*, sp., and others.

VERMES.—Rotifera.—*Stephanoceros eichhornii*, *Actinurus neptunius*, *Furcularia longiseta*, *Brachionus bakeri*, *Melicerta ringens*, *Limnias ceratophylli*. Polyzoa.—*Plumatella repens*. Gastrotricha.—*Chaetonotus*, sp.

CÆLENTERATA.—*Hydra oligactis*.

ARTHIPODA.—*Macrobiotus*, sp.—J. STICKLAND.

## EXCURSION TO BELGRAVE.

QUITE a large party of members took part in the excursion to Belgrave (Dandenong Ranges) on Saturday, 6th December, and, favoured by a beautiful day, thoroughly enjoyed the outing. The welcome rain earlier in the week had freshened up the vegetation, and as we journeyed along by the morning train everything seemed at its best. Between Bayswater and Ferntree Gully numerous patches of the Golden Spray, *Viminaria denudata*, an almost leafless shrub or small tree belonging to the Leguminosæ, were seen to be in full bloom, reminding one of the graceful golden showers seen in fireworks displays. The Common Cottonwood, *Cassinia aculeata*, and the Shrubby Everlasting, *Helichrysum ferrugineum*, with their headlets of small white flowers, also made a fine show. Two Senecios, *S. vagus* and *S. australis*, bearing brilliant yellow flowers, and the Trigger Plant, *Stylidium (Candollea) graminifolium* (pink), added colour to the scene. The young eucalypts displayed a wealth of colour in their new growths, and were greatly admired as we gradually increased our elevation. Near Belgrave the first bushes of the Christmas-tree, *Prostanthera lasianthos*, were just coming into bloom. Belgrave, 750 feet above sea-level, is a centre from which many interesting trips can be made. We had decided on this occasion to try Hardy's Creek, situated in the State forest, about a mile from the township. This creek, by the way, is named after the late Mr. Jno. Hardy, father of our president, who made the original survey of the Dandenong Ranges in 1867. It joins the Monbulk Creek near the crescent railway bridge between Belgrave and Selby. As we walked along the line, fine growths of Blackwood, Sassafras, Silver Wattle, Native Hazel, and Christmas-tree were to be seen in the valley of the Monbulk Creek, while in the grounds of Belgrave House, close by, and in Mr. Lipscombe's garden beyond, many fine introduced European and American trees added interest to the scene. At the bridge we found a well-worn track leading to the site of a former sawmill. It had been our intention to follow up the eastern branch of Hardy's Creek, as offering the best opportunities for the study of the object of the excursion—ferns; but in the multiplicity of tracks spreading out from the sawmill we happened to choose one which eventually led us away from the creek up into the higher part of the forest. Before going further it was decided to have lunch, and in the vicinity of our resting-place luxuriant growths of many of our commoner ferns were observed, including the Batwing Fern, *Pteris incisa*, and the Leathery Shield-fern, *Aspidium coriaceum*. Our track was well defined, and, though it led away from the creek, we continued on, expecting it to strike the creek again, but



it did not, and eventually, after a walk of about two miles, reached the South Sassafras-Aura road, not far from the place marked on the tourist map as "Fine Panoramic View." On the way we had passed numerous large trees of the Giant Mountain Ash, *Eucalyptus regnans*, and many other plants and shrubs found in such localities, including the Native Elderberry, *Sambucus gaudichaudiana*, with its beautiful white blooms, which later will be succeeded by clear white fruits resembling white currants. An invitation to see the view from the garden of Mr. Drury was availed of, and was a great surprise to most of us. Some hundreds of feet below lay the district known as "The Patch"—a number of small orchards and market gardens—the various shades of green in the different crops making a delightful picture. The fine panorama included the Healesville and Warburton mountains, and, further round, the Labertouche and Beenak hills. Having missed Hardy's Creek, we decided to follow the "Patch" road to South Sassafras and visit Clematis Gully. This proved an exceedingly picturesque walk. The distant callings of a Lyrebird were heard as we passed along the northern edge of the forest near the source of the western branch of Hardy's Creek. Reaching Clematis Gully about 4 o'clock, we decided to boil the billy and have afternoon tea. While the other members of the party were enjoying their first glimpses of the fern groves here, I took the opportunity of making a tour through the upper part of the gully, and was delighted by seeing some of the finest and largest growths of the Shady Spleenwort, *Asplenium umbrosum*, and the Mother Spleenwort, *A. bulbiferum*, I have ever come across. Other ferns were most luxuriant here, as well as mosses of several species, and, as the spot is so easily accessible to public roads, fern-lovers can see here with little trouble quite a number of our mountain ferns, but they must not be disturbed, being strictly preserved. It was while searching in this gully that I had the finest view I have ever obtained of a full-grown male Lyrebird. It was only about three yards off when I noticed it. It seemed very tame, and was quite unconcerned about me so long as I did not move. I whistled, in the hope of its uttering some notes, but without success. After watching its scratching movements within an area of about a square yard for nearly ten minutes, I moved, when it at once disappeared down the gully among the ferns and undergrowth. Many other of our mountain shrubs and trees, in addition to Blackwoods and Sassafras, occur in this gully, such as the Long-leaved Lomatia, *Lomatia longifolia*, Austral Mulberry, *Hedycarya angustifolia*, Blanketwood, *Bedfordia salicina*, and the Banyalla, *Pittosporum bicolor*, so that, with the climbers *Tecoma australis* and *Clematis aristata*,

the locality presents a delightful variety of vegetation to the eye of the tourist. The Banyalla is frequently found in this district making a host of the tree-fern trunks, on which it grows into rather large bushes. Most of the Dicksonia tree-ferns were unrolling from twenty to thirty new fronds above those of the previous season, while many of their trunks were covered with masses of the Spotted Polopody. A very fine mass of the Batwing fern was observed on the upper side of Clematis-avenue. A number of the plants were found densely crowded together, with erect parallel growths, many of the fronds being from three to five feet in height. Three of the party who were stopping overnight at Belgrave continued on to Sherbrooke Falls, and thence to the township. The rest returned to the Monbulk road, and enjoyed the sight of the picturesque vegetation along the western side of the road as they made their way stationwards.

The record of ferns for the day was twenty-one, and, as it is possible two or three of the smaller species were overlooked, the extent of the fern flora of the district may be set down at twenty-five, or about one-third of the Victorian list. This estimate would probably hold good also for the Dandenong Ranges as a whole.

I am indebted to Mr. Chas. Oke for the following notes about the entomology—or rather coleoptera—of the trip. He says:—"Insects were less numerous than is usual at Belgrave in early December; but, as last summer bush-fires had swept over the greater part of the ground traversed, this was only to be expected. Careful scrutiny of every likely and unlikely spot revealed over eighty species of coleoptera, mostly common species, but a few rare ones were secured. The greatest rarities were three specimens of two species of *Chlamydopsis*, which were obtained only after very carefully examining numerous ants' nests. One specimen is an undescribed species, the others are the third and fourth specimens to be taken of *C. pygidialis*, Blackburn. I think I may safely say this is the first record of these interesting beetles being taken on a Club excursion. Other myrmecophilous beetles taken were a *Colydiid*, a *Tenebrionid* with remarkable antennæ, a *Chrysomelid*, and a *Brenthid*. As few flowering shrubs were met with, none of the flower-haunting species were collected."

The party returned to town by the evening train, well pleased with their outing.—F. PITCHER.

## AT WARTOOK (GRAMPIANS).

BY CHAS. DALEY, B.A., F.L.S.

*(Read before the Field Naturalists' Club of Victoria, 10th Nov., 1919.)*

ON the pleasant, breezy morning of Thursday, 26th September, the Club members of the Grampians party, comprising Messrs. C. Gabriel and H. Hughes, Miss Nethercote, three lady friends, and the writer, keeping in view the supply of as varied and plentiful a collection of wild-flowers as could be obtained, and also being desirous of a change from the ordinary excursions arranged for tourists, set out from "Bellfield" with the object of visiting Wartook Reservoir, twelve miles distant. The route is down the main road to the pretty picnic ground at the foot of Mackay Peak, where the appropriately-named Stony Creek issues brawling from the rocky and picturesque gorge, Chautauqua Peak and Mount Difficult forming its northern and north-western slopes. Using the services of a pack-horse, the party was relieved of the necessity of carrying impedimenta such as rugs, coats, and provisions.

The track winds along the slope of Mount Difficult at a varying height and distance above the creek, musically splashing amid boulders and over cascades at the foot of the weathered western slope of the range. Along this track the vegetation is very luxuriant, many characteristic plants occurring, including the Snow Myrtle, *Lhotzkya genetylloides*, just bursting into bloom, the Grampians Fringe Myrtle, *Calythrix Sullivani*, *Thryptomene Mitchelliana*, the delightfully soft-blooming *Acacia longifolia*, var. *mucronata*, with the aggressive Spike Acacia, *A. oxycedrus*, *A. armata*, *A. diffusa*, *A. stricta*, and the fragrant *A. myrtifolia* in flower. Many other leguminous plants in flower or bud are noticeable—*Daviesias*, *Dillwynias*, *Pultenæas*, and *Flat Peas*, with the *Golden Goodia* and *Indigofera australis* in full bloom. *Tetralthea ciliata* shows on every side, whilst the Beard Heaths, the Twisted, *Leucopogon glacialis*, Snow, *L. virgatus*, and Ruddy, *L. rufus*, are exceptionally fine. *Bauera sessiliflora* occasionally displays a wealth of colour amid a tangle of scrub plants on each side of the track, the Epacrids being especially numerous. Orchids were scarce, the season being late. Even *Glossodia major* was absent. The Greenhoods, *Pterostylis longifolia*, *P. concinna*, *P. reflexa*, with *Diuris longifolia* and *D. maculata*, and a single specimen of *Caladenia Patersoni*, were obtained.

Crossing Epacris Creek about a hundred yards above the diverging track to Splitters' Falls (whose waters we can plainly hear far below), a narrow and steep bridle-track uphill turns almost abruptly at right angles to the road. This is the way to Wartook. Taking the ascent in easy stages over the loose

stones on the track, we pass through a veritable garden of flowers, in which *Epacris impressa* in all its shades, just past its best, the brilliant *Grevillea alpina*, the Purple Coral Pea, *Hardenbergia monophylla*, the Gorse Bitter Pea, *Daviesia ulicina*, several Rice-flowers, *Pimelea linifolia*, *P. flava*, *P. curviflora*, *P. axiflora*, just opening, the variable Hovea, the Dusty Miller, *Spyridium parvifolium*, dainty clumps of Eye-bright, *Euphrasia collina*, the Golden Heath, *Styphelia adscendens*, freely shedding its flowers, the three *Astrolomas*, the Truncate Phebalium, with its white flowers, and Golden Hibbertias or Guinea-flowers, &c., made a varied display beneath *Acacias*, *Leptospermums*, and *Eucalypts*.

Passing over a moss-covered face of rock, we see on its surface a profusion of glittering Sundews or *Droseras*, amid which is an occasional Buttercup and many fairy-like Rock Pansies, *Utricularia dichotoma*. The ever-welcome Bushy Heath-Myrtle, *Thryptomene Mitchelliana*, the glory of the Grampians, is in fine flower. *Acacia Mitchellii* is bearing pods in place of flowers. The *Pultenæas* are mostly in bud. A few plants of *Conospermum Mitchellii*, attractive buds and large white flowers of Woolly Tea-tree, *Leptospermum myrsinoides*, the Prickly Grevillea, *G. aquifolium*, and the Horny Cone-bush, *Isopogon ceratophyllus*, lend variety amid the more showy plants. The Everlastings and *Olearias* were hardly as yet in bud.

Surmounting this spur, our course is easier to the north-west, and we descend gradually to a creek almost hidden in the tangle of ferns, tea-trees, and rushes, where we gladly lunch and rest after our fairly arduous climb. Resuming the track, which again ascends, we pass through patches of Spike *Acacia*, with *A. longifolia* and *A. myrtifolia* in less profusion. Occasionally, *Hakea rugosa*, *Banksia marginata* (dwarfed in size), the Cypress Pine, *Callitris cupressiformis*, and *Casuarina stricta* are seen, and also single specimens of the Geebung, *Persoonia rigida*, the Leafless Currant Bush, *Leptomeria aphylla*, in fruit, and the Scarlet Bottlebrush, *Callistemon coccineus*. The *eucalypts* are mainly *Messmate*, *E. obliqua*, Red Stringybark, *E. macrorrhyncha*, with occasionally a Narrow-leaved Peppermint, *E. amygdalina*, whilst the Grampians Gum, *E. alpina*, occurs on the ridges.

From our camping-place there was a fairly steep ascent. At the same place where it grew last year we found the Turquoise Berry, *Drymophila cyanocarpa*, rather a rare plant in the Grampians. Near it also, but not flowering, was the handsome climber, *Clematis aristata*. Another climber noticed was the Solid Apple Berry, *Billardiera scandens*, whilst the graceful blue Love Creeper, *Comesperma volubile*, enriched

some less showy plants with its twining bloom. Quite close to the track we flushed a Yellow Robin from its nest with two eggs. Passing on, we obtained a partial view of the Victoria Valley, to the south-west.

Before reaching the crest we passed through a thicket of somewhat stunted Hickory Wattle, *A. penninervis*, in appearance like the Golden Wattle, but stiffer, less verdant in leaf, and less prolific and graceful in flowers, which lack the rich golden appearance of *Acacia pycnantha*. *Correa speciosa*, both green and red in hue, was frequently seen. In a swampy patch the Pink Swamp Heath, *Sprengelia incarnata*, was conspicuous in relief amid a profusion of Beard Heaths, reeds, rushes, and spear-grass. The Nodding Blue Lily, *Stylpandra glauca*, also adorned the more rocky places.

The character of the country alters beyond this ridge, for the massive, thick-bedded sandstones of which the Grampians mainly consists, now definitely ascribed by Mr. F. Chapman, A.L.S., on palæontological evidence to the Lower Carboniferous series, have a westerly dip at rather low angles, thus giving an easy gradient in that direction, whilst eastwards the beds culminate in the bold, vertical, and lofty cliff-faces abruptly marking the disintegrating summits of the parallel ranges. Thus, from the Mount Difficult Range—in strong contrast to the rugged eastern slopes—the surface westward is seldom much broken by outstanding rock-masses unless in some bold gorge carved out by water action, such as that of the Mackenzie River, where a very rapid and precipitous descent occurs in the river bed. After crossing the Divide a very gradual slope, intersected by runnels of clear water beset with rushes and tea-trees, with vigorous specimens of the Flat Cord Rush, *Restio complanatus*, is met with, the water providing welcome and periodic refreshment to thirsty travellers, as well as to our pack-horse, whose regulation pace of two miles per hour we had sometimes to accelerate. *Sprengelia* grew freely, and fine specimens of the Leafless Bitter Pea, *Daviesia brevifolia*, with unusually deep red flowers. The Brown Spurge, *Amperea spartioides*, was growing well, also the Bulbous Fringe Lily, *Thysanotus tuberosus*. At one point a patch of considerable extent was visible, covered solely with the Grass-tree, *Xanthorrhæa australis*. It was noticed that *Acacia verticillata* and *A. juniperina* have here a tendency to assume a dwarfish habit, a circumstance previously mentioned by Mr. J. W. Audas in a paper read to the Club. Occasionally a splash of bright red colouring on some of the younger eucalypts was, on examination, found to be caused by fasciation, and on Acacias by the prevalence of bunches of imitative galls.

A first view of the lake is obtained from a distance of about

three miles. Last year, diverging from the track, we obtained from an isolated craggy hill an excellent view, reminding us, with the outspread water and mountainous surroundings, of Scott's lines on Loch Lomond, which

"In all her length far winding lay,  
With promontory, creek, and bay."

The last mile or so had been swept by fire last year, and was rather sombre-looking. Approaching the lake, the Spreading Grevillea, *G. repens*, grew luxuriantly along the ground, whilst moisture-loving plants, such as the Grass Daisy, *Brachycome graminea*, the two Yellow Stars, *Hypoxis*, the *Stackhousia linearifolia*, with creamy flower-spikes, the Murrnyong Yam, *Microseris Forsteri*, Milkmaids, *Burchardia umbellata*, in bud, and *Craspedia Richei*, were numerous. Amid the ordinary Early Nancy flowers, *Anguillaria dioica*, occurred quite a patch which had purplish petals—an unusual circumstance, concerning which inquiry was made at our September Club meeting.

On arrival at the reservoir we went along the retaining bank, which is about a mile in length, and near the other end (by the courtesy of Mrs. Kimberley) we camped at the caretaker's house, where we had arranged to stay for the night. After tea the pony was turned into a paddock, and we repaired to the swampy ground below the reservoir in quest of the lovely sprays of *Sprengelia* which grow in great profusion in so suitable a habitat. One plant was found with pure white flowers. We were also fortunate enough to obtain some specimens from a few scattered plants of the Woolly Heath, *Epacris lanuginosa*, another moisture-loving plant, whose white flowers I had only once before seen in the Grampians. We also found a few fine sprays of the Mealy Honey-Myrtle, *Melaleuca squamea*, with its pink flowers. One of the most striking features of this swamp vegetation is the prolific growth of the attractive Tassel Cord-rush, *Restio tetraphyllus*, a highly decorative plant with fine glossy-green foliage, growing from four to eight feet in height. Another interesting plant which Mrs. Kimberley brought under our notice was a variety of *Daviesia corymbosa*, the Narrow-leaved Bitter Pea, the leaves of which are somewhat similar in appearance to those of a phyllodinous Acacia, and make the term "narrow-leaved" appear a misnomer. The variety is *Daviesia corymbosa (mimosoides)*. It grows to a height of three to five feet. The tonic bitter principle is very evident in the leaves of this variety.

We splashed about the swamp until darkness and a threatening storm compelled us reluctantly to withdraw, each laden with huge bunches or armfuls of the handsome Swamp Heath, which ultimately was so much admired and in such great demand at the recent wild-flower exhibition.

We were early afoot next morning, and in the bush below the house found the Blue Tinsel Lily, *Calectasia cyanea*, and the Fringed Heath-Myrtle, *Micromyrtus microphylla*, as well as some fine Hovea showing marked heterophylly in its leaves. The flowers of the Purple Violet, *Viola betonicifolia*, were unusually deep in hue.

After breakfast we started through the bush for the falls, about three miles distant, on the Mackenzie River, which has cut for its current a deep and precipitous gorge, into which the volume of water falls about 90 feet, forming a beautiful sight—the finest of its kind in the Grampians. Just below the falls we were much gratified to find in full bloom several handsome shrubs of *Hovea longifolia*, forming, with its abundant lilac-coloured flowers and dark green foliage, a charming picture. These shrubs were two or three inches in diameter at the base and from seven to ten feet in height. Unfortunately, the bloom was too far advanced to remain on the specimens gathered. Masses of Umbrella and Coral Ferns, *Gleichenia flabellata* and *G. circinata*, in the gorge were very fine. Returning, we viewed an interesting and extensive series of sparkling falls or cascades called the Scattered Falls, which are also very beautiful, and well worthy of a visit. The valley of the Mackenzie should be fruitful in result for botanical research. We returned to the reservoir in time to pack up and have lunch.

Wartook Reservoir is a fine sheet of water, 3 miles 50 chains long and 1 mile 20 chains wide. The maximum depth is 29 feet. The containing bank, about a mile in length, conserves the drainage from the lofty watershed of the Mackenzie River and tributaries. The situation has been well chosen, the approximate area of the lake being 2,556 acres, impounding 6,560 millions of gallons of water, or 160 millions of gallons more than the Yan Yean Reservoir, whose area is 1,360 acres. The comparison serves to give an idea of the extent as well as the potential value of the conservation. Below the high bank the surplus water, or regulated flow, as well as the drainage outside of the reservoir area, merges into the Mackenzie River, which, besides having the most imposing falls in the Grampians, has fine pools where English perch and trout may be caught. About ten miles distant the water is diverted into channels, which carry the precious fluid northwards, and, in conjunction with the Lake Lonsdale scheme on the eastern side of the Grampians, supply the dry plains as far north as the towns of Rainbow and Warracknabeal. This should be of increasing benefit and utility to the dwellers in the arid areas. A project has been mooted to utilize the water-power at Wartook for lighting the towns of Horsham and Stawell, as well as Hall's Gap, with electricity. A pleasing feature at

early morning and sunset is the varying effect of the lights and shadows on the lake, which enhances the charm and beauty of the scene. Wartook is easily reached by road from Horsham, about 24 miles distant.

About 1 p.m. we loaded up our pony with packs much increased in size by our floral gatherings, and, bidding good-bye to Mrs. Kimberley, with many thanks for her kindness and assistance in procuring flowers, we started the return journey. The weather was all that could be desired, and the trip interesting and enjoyable. Wartook can be confidently recommended for a F.N.C. camp.

On a previous visit we had startled a flock of seven Emus, but, excepting birds, which, contrary to general opinion, are numerous, the fauna was not conspicuous, although kangaroos, wallabies, and deer frequent the watershed of the lake. Among some of the birds seen or heard were the White Cockatoo, Black Cockatoo, Harmonious Shrike-Thrush, Bell-bird, Flame-breasted and Yellow-breasted Robins, Welcome Swallow, Yellow-rumped Tit, Magpie, Kookaburra, Bronzewing Pigeon, Strepera, Blue Wren, Grey-crowned Babbler, Red-tipped Diamond-bird, several species of Parrots, Pallid Cuckoo, Mopoke, and the White-breasted Thickhead. Above the lake a magnificent specimen of the Eaglehawks, poising high

"Overhead,

"Motionless as though suspended by a viewless thread."

attracted our attention. The resemblance to a far-distant aeroplane was very real. Aquatic birds were conspicuous by their absence.

On the homeward journey a second Yellow-breasted Robin's nest, with eggs, was found. Our return from Wartook was uneventful, and we arrived at "Bellfield" in time and in excellent trim for tea.

Next day we departed homewards with the Bureau party, leaving behind Miss Nethercote and Mr. C. Gabriel, without whose effective services in finally rounding up and enlisting the residents of Hall's Gap for active assistance in gathering flowers at the week-end for transmission on the Monday, the Grampians display would not keep pride of place at the show.

With twenty years' experience of the Grampians and its delightful flora, I may be permitted to say a word of warning as to the probability of a steady and accelerated depletion in its wild-flowers as a result of the growing popularity of the place and the wholesale gathering, not only of the flowers, but also of the young plants. This is specially observable during the last two years, places formerly noted for flowers becoming deprived of their floral treasures, and some plants once easily obtainable in these places becoming scarce or no longer procurable. The more pleasing the bloom the greater



the demand for it—e.g., *Thryptomene*, *Grevillea*; *Lhotzkya*, *Sprengelia*, and *Boronias*. Recently in the "Nature Notes" of the *Argus* it was mentioned that on a children's excursion from northwards to the Grampians 400 packets of *Thryptomene* had been sent away. It is not uncommon in spring to see bunch after bunch of the fragrant Hairy *Boronia*, *B. pilosa*, in which every spray has been pulled up by the root, not perhaps intentionally, but, as the species only grows in moist, loose soil, the plant is readily detachable on being plucked. Large quantities of flowers are daily picked, to be as idly cast aside.

It would be a great pity if, as is not improbable, some of the distinctive plants of this great garden of Nature's floral bounty should in course of time, through the thoughtlessness of those to whose pleasure they minister, become extinct or unattainable in the accessible areas of the district.

[The paper was illustrated by a large series of dried specimens, photographs, &c.—ED. *Vict. Nat.*]

---

"AUSTRAL AVIAN RECORD."—The December number of this journal (vol. iii., No. 7) is devoted to biographical notes, with portraits, of three well-known Australian ornithologists, viz., Samuel Albert White (S.A.), Thomas Carter (W.A.), and William David Kerr Macgillivray (Vict. and N.S.W.) The first-named, Captain White, has been an ardent worker in Australian ornithology, principally in the drier parts of the continent, and his writings in *The Emu* and other publications have always been of the greatest interest. Mr. Thomas Carter, who for a time was a member of the F.N.C., has been associated with the bird life of the country round North-West Cape, W.A., another dry part of the continent. He contributed one paper to the *Victorian Naturalist*, but most of his work has appeared in the *Yorkshire Naturalist* (his native county) and *The Emu*. The third of the trio, Dr. W. Macgillivray, of Broken Hill, is known to many members of the F.N.C., and was present at a recent meeting on his return from the Great War. Like the others, he came of a family known as lovers of natural history. He first displayed his bent in the "Gulf country" of Queensland. During his school days in Melbourne he did a considerable amount of collecting, and in June, 1887, became a member of the F.N.C., to which he has remained faithful ever since. He has been a resident of Broken Hill for the last twenty years, and has done good work in that district. In 1913, accompanied by Mr. J. A. Kershaw, F.E.S., he made an extended visit to North Queensland, the results of which were published in the *Naturalist* by Mr. Kershaw (vol. xxi., December, 1914). He has contributed articles both to the *Naturalist* and *The Emu*, but owing to his busy life has not been able to put many of his accumulated notes into print.

ABNORMAL TADPOLES.—The tadpoles exhibited to-night were hatched from spawn brought from Cheltenham early in September, 1918, for the purpose of providing food for Japanese and English newts. A number of tadpoles always get missed by the newts, and these soon grow to a size that makes them immune from attack. Larvæ thus missed often remain as tadpoles through the winter months. This retarded metamorphosis is in itself remarkable, especially as the majority of these over-wintered larvæ grow to a larger size than those living under purely natural conditions. It can easily be seen on inspection that these two-season larvæ differ considerably in appearance from the normal specimen exhibited. There is an interesting specimen in the jar having a large external respiratory siphon that reminds one of the mollusca, and, in addition, has a hooked process growing midway on its tail. Others, again, are very small in the head and body but have extremely long tails. The conditions under which these tadpoles live appear to be excellent, the water being sweet and clear, as it must be, otherwise the newts would not keep in such perfect condition and breed so freely. The food supply for tadpoles is also abundant, as boxes and pots of *Vallisneria spiralis* and other aquatics are used for oxygenating the water. From the appearance of the bodies of some of these larvæ, one is inclined to think that the contraction of the abdomen may be due to the shortening of the intestinal canal owing to the external metamorphosis being long overdue, while the internal change is going on to fit them for a carnivorous diet in place of their present herbivorous one. Possibly some member of the Club may be able to throw some light on these phenomena of retarded metamorphosis, which, although a puzzle to me, has been going on for years with tadpoles used in connection with the feeding of newts. The larval condition of these tadpoles will persist until late in autumn, and occasionally two or three will remain in the larval condition over the second winter.—H. W. DAVEY, F.E.S.

[This note in explanation of Mr. Davey's exhibit at the October meeting of the Club (*Vict. Nat.*, xxxvi., Nov., 1919, p. 99) has unfortunately been overlooked.—ED. *Vict. Nat.*]

"SYDNEY MAIL" NATURE NOTES.—In its enlarged form the *Sydney Mail* devotes two pages weekly to "Outdoor Australia"—a series of notes and queries by various writers, in which many remarkable happenings are chronicled, some, of course, with a tinge of doubt attached to them. The pages are well illustrated, and should give an impetus to nature observation in the mother State.

# Field Naturalists' Club of Victoria.

\*\*\*\*\*  
\* OFFICE-BEARERS, 1919-1920 \*

President: MR. A. D. HARDY, F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. E. PESCONT, F.L.S., Seymour Grove, Camberwell.

Hon. Assistant Secretary and Librarian: MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,  
J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

---

## \* OBJECTS. \*

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

---

## EXCURSIONS.

SATURDAY, 14TH FEBRUARY.—**Zoological Gardens.** Meet at Main Gates at 2.30 p.m. The President and Committee invite members to meet them at a **Social Gathering** as above.

Non-Members wishing to take part in the Excursion may obtain tickets entitling them to join the party, and partake of light refreshments, at a cost of 1/-, upon application to the Hon. Secretary at the monthly meeting, or during the afternoon.

SATURDAY, 21ST FEBRUARY.—**Weather Bureau.** Object—**Meteorology.** Leader—Dr. Griffith Taylor, F.G.S. Meet at Weather Bureau, corner Victoria and Drummond Streets, Carlton, at 2.30 p.m.

SATURDAY, 6TH MARCH.—**Melton.** Objects—**Physiography and General.** Leader—Mr. F. G. A. Barnard. Meet at Spencer Street Station for 7.40 a.m. (Ballarat) train. Second excursion fare, 2/- It is proposed to visit the valley of the Djerriwarrah Creek (4 miles each way), and, if time permit, the patch of Mallee about a mile beyond. Lunch should be taken.

SATURDAY, 20TH MARCH.—**Botanical Gardens.**

## EASTER EXCURSION.

GOOD FRIDAY, 2ND APRIL, TO TUESDAY, 6TH APRIL.—**Rosebud via Dromana.** Leaders—Messrs. J. Gabriel and C. Daly, F.L.S. Objects—**General.** It is intended to camp at "Parkmore," at the foot of Arthur's Seat, close to the beach. Tents are erected on lawns protected by pine trees. Dining-rooms and kitchens (with separate stoves); also good drinking water and fuel provided. Cutlery, table and bed linen must be taken. Provisions, &c., are obtainable at local stores. Charge for tent accommodation—Adults, 7/6 each.

Members intending to go must notify the leaders *at once*, and pay the charge for tent (7/6) not later than 16th February, in order that definite arrangements may be made.

## WATSON'S REQUISITES FOR FIELD NATURALISTS.

|                                                                                                                 |                       |
|-----------------------------------------------------------------------------------------------------------------|-----------------------|
| JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring,<br>spoon and cutting hooks .. .. . | 30/-                  |
| CORKED GLASS COLLECTING TUBES, from .. .. .                                                                     | 1/6 doz.              |
| FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper,<br>and straps .. .. .                      | 5/6                   |
| BUTTERFLY NET, with folding ring, 4 joints .. .. .                                                              | 6/-                   |
| INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-                                 |                       |
| INSECT COLLECTING BOXES, of deal, corked and papered .. .. .                                                    | 1 -, 1/6, and 2/-     |
| INSECT RELAXING BOXES, of zinc, oval shape, corked .. .. .                                                      | 1/6, 2/9, and 3/6     |
| GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-                                       |                       |
| INSECT-KILLING BOTTLES .. .. .                                                                                  | 1/6 and 2/-           |
| ENTOMOLOGICAL PINS, assorted .. .. .                                                                            | per box of 1 oz., 2/- |
| INSECT FORCEPS, with broad gauze jaws .. .. .                                                                   | 3/6                   |
| SETTING FORCEPS, finest nickelled steel .. .. .                                                                 | 2/-                   |
| GEOLOGICAL HAMMERS .. .. .                                                                                      | 3/- and 4/6           |
| POCKET ACID BOTTLE, in boxwood case .. .. .                                                                     | 1/6                   |
| THREE-POWER POCKET MAGNIFIER .. .. .                                                                            | 4/6                   |

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,  
And at Ocean House, Moore St., Sydney.

## ENTOMOLOGICAL APPARATUS.

**CHERRY & SONS PTY. LTD.,**  
**GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.**

STORE BOXES      SETTING BOARDS      ENTOMOLOGICAL PINS  
BUTTERFLY NETS      KILLING BOTTLES  
CORK LINING      ZINC RELAXING BOXES  
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould  
POCKET BOXES      CABINETS  
CURVED FORCEPS      INSECT CEMENT  
&c., &c., &c.

Write for our Price List and Sample Sheet of Pins.



# The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

Published 4th March, 1920.

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

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

## CONTENTS :

|                                                        | PAGE |
|--------------------------------------------------------|------|
| FIELD NATURALISTS' CLUB OF VICTORIA .. ..              | 149  |
| EXCURSION TO LOCH VALLEY .. ..                         | 153  |
| WILD LIFE IN TASMANIA. BY G. WEINDORFER AND G. FRANCIS | 157  |
| NOTES .. ..                                            | 160  |

\* PRICE SIXPENCE. \*

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.  
(IF BY POST 1D. EXTRA.)

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.  
1920.

# Field Naturalists' Club of Victoria.

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

## BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 8th MARCH, 1920.

### 1. Correspondence and Reports.

### 2. Nominations for Membership.

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

### 3. Election of Members.

AS ORDINARY MEMBERS—

PROPOSER.

SECONDER.

Miss L. Jones,  
Eye and Ear Hospital,  
East Melbourne.

Mr. F. Keep.

Miss R. P. Carter.

Mr. Owen Jones,  
Forest Commission,  
Melbourne.

Mr. A. D. Hardy, F.L.S. Mr. P. R. H. St. John.

### 4. General Business.

### 5. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

### 6. Reading of Papers and Discussion thereon.

- (1). By Mr. A. J. Shearsby, F.R.M.S. (communicated by F. Chapman, A.L.S.)—  
"Notes on the occurrence of Recent Travertin Formations near Yass, N.S.W."
- (2). By Mr. J. W. Audas, F.L.S.—"Through the Murra Murra Country (Western Gramplians)."

### 7. Reading of Natural History Notes.

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

### 8. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow-members.

---

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

# The Victorian Naturalist.

VOL. XXXVI.—No. 11. MARCH 4, 1920.

No. 435.

## FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 9th February, 1920.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about fifty members and visitors were present.

### CORRESPONDENCE.

From Mr. Allan MacCaskill, jun., Coleraine, forwarding for the Club's library a copy of Webster's "British Orchids." It was decided, on the motion of Mr. St. John, seconded by Mr. Keep, that a letter of thanks be forwarded to Mr. MacCaskill.

### REPORTS.

A report of the excursion to the "Organ Pipes," Sydenham, on Saturday, 17th January, was given by the leader, Mr. A. L. Scott, who said that there had been a good attendance of members. The day was very pleasant, and the party journeyed by char-a-banc *via* Bulla and Holden. At his request, Mr. R. E. Luher, B.A., who had made a special study of the district recently, kindly consented to act as "demonstrator," and at different points gave an outline of the geological history of the surroundings, special attention being drawn to the lava flows and the resulting physiography, and to the kaolin occurrence near Bulla. Photographs were taken by several members of the many interesting features met with.

[Accounts of previous excursions, with illustrations, will be found in the *Naturalist* for November, 1900, vol. xvii., p. 120, and July, 1911, vol. xxviii., p. 51.—ED. *Vict. Nat.*]

Mr. Barnard suggested that the district should be visited in spring, when the appearance of the hills and valleys would be so totally different to the middle of summer that few would recognize it as the same place.

The president reported that, owing to unforeseen circumstances, the excursion to Powelltown had not been carried out.

A report of the excursion to Beaumaris on Saturday, 31st January, was, in the absence of the leader, Mr. J. Shephard, given by Mr. J. Stickland, who said that, though the tide was favourable, owing to an unfortunate change of wind just before the party reached the scene of operations, the use of the tow-net could not be attempted, and the members had to content themselves with what they could collect along the shore. The results reported revealed nothing but ordinary occurrences, but a gathering of foraminifera has yet to be worked out.

## ELECTION OF MEMBERS.

On a ballot being taken, Mr. Alfred J. Tadgell, 430 Bourke-street, Melbourne, was elected as an ordinary member of the Club.

## GENERAL BUSINESS.

Mr. F. Chapman, A.L.S., drew attention to a clerical error in a report in the last *Naturalist*. The editor remarked that it was sometimes difficult to read authors' manuscript, especially where scientific names were concerned.

Mr. F. Keep referred to the very interesting paper that had been read by Dr. C. S. Sutton at the last two meetings of the Club on "Wild Life in Tasmania," contributed by Messrs. Weindorfer and Francis, and moved that a letter of thanks be sent to the authors. The motion was seconded by Mr. D. Best, and carried.

Referring to the monthly meetings, Mr. H. B. Williamson suggested that some endeavour should be made to make the Club's meetings more attractive, suggesting that the lantern be used more frequently. Messrs. Chapman, Barrett, and Searle supported these remarks, adding that similar action in other societies had led to better attendance and an increase in membership. Mr. C. C. Plante urged that something be done to make the meetings more popular and more valuable to the ordinary unscientific member, especially on two or three nights of each year. He added that the fact that the hall was some way out of the city was more or less of a detriment to good attendance. Miss C. C. Currie, as a country member, supported these remarks, urging that more help might be given to country members, especially in the naming of specimens. The secretary supported the remarks of Mr. Plante, urging especially that some scheme be arranged whereby regular popular evenings be established.

Several members having spoken, it was resolved, on the motion of Mr. J. L. Robertson, M.A., seconded by Mr. C. Barrett, that the Club advertise its meetings in the daily papers. It was suggested during the discussion that a publicity campaign be entered upon; and in this respect Mr. C. Barrett offered to interview the editors of the Melbourne papers.

## PAPERS.

The committee having decided that the evening should be devoted to "Notes on Holiday Rambles," several members spoke or read short papers on their recent holiday experiences.

Dr. C. S. Sutton reported a visit to Mud Island, near Port Phillip Heads, describing the locality as being really three small islands separated by fordable passages. He described the bird-life, and also listed fourteen species of plants growing on the island.



Mr. F. Pitcher detailed a visit to Loch Valley, referring principally to the fern life of the district, and to the destruction of the tree-fern flora owing to the removal of the timber trees. He stated that Mrs. Prescott, of Loch Valley, *via* Neerim North, was prepared to receive a limited number of visitors who wished to explore the district.

Some notes were read from Miss G. Nethercote, who had visited East Gippsland and Mallacoota.

Mr. F. G. A. Barnard mentioned that during a one-day trip to Britannia Creek, commencing about  $2\frac{1}{2}$  miles from Yarra Junction, he had seen wonderfully fine fern scenery, and also much fine timber. Seedling ferns of many kinds abounded in the tramway cuttings, and he had noticed a seedling of the Leather Fern, *Aspidium coriaceum*, as being somewhat unusual in such a position. Seedling beeches were also plentiful.

Mr. C. Daley, B.A., reported on a tour from Alexandra through Taggerty and Marysville to Healesville. Bird-life was stated to be abundant, and grasshoppers very prevalent. Six Wedge-tailed Eagles were seen, and the boundary-line of locality between the Black-backed and the White-backed Magpies was noted.

Mr. F. Chapman, A.L.S., gave an account of a recent holiday in the Dromana district, which he said should prove interesting to the Easter excursion party.

Mr. H. B. Williamson gave an account of his visit to Mallacoota, recording the more uncommon flora. He also exhibited samples of grass-tree resin from *Xanthorrhoea hastilis*, and fruits from a banana grown in the garden at Doran's Hotel. The "singing sands" of Mallacoota were described and discussed, specimens being exhibited.

Mr. F. Chapman said that the phenomenon of these "singing," "shrieking," or "musical" sands had been studied in England and reported in the *Geological Magazine* in 1902 (see also *Victorian Naturalist* for February, 1903, vol. xix., p. 135). Mr. F. G. A. Barnard said that Dr. T. S. Hall had read a short paper on the question before the Club some years ago, recording his experiences at Phillip Island (see *Victorian Naturalist* for June, 1892, vol. ix., p. 39).

#### NATURAL HISTORY NOTE.

Mr. F. G. A. Barnard said on the previous day he had visited Malleeson's Glen (the head of the Don River), between Healesville and Launching Place, and had been surprised to find that *Selaginella stolonifera*, the ordinary *Selaginella* of our green-houses, a native of the West Indies, had established itself there in such quantities that it might fairly be considered an introduced plant. It had probably originated by wind-borne spores from the well-known garden of Mr. A. Agnew, not far away.

## EXHIBITS.

By Mr. F. G. A. Barnard.—Specimens of *Sclaginella stolonifera*, from Malleson's Glen, Don River.

By Mr. D. Best.—Three undescribed longicorn beetles from Australian Alps.

By Mr. F. Chapman, A.L.S.—Photographs of Dromana and Rosebud, *apropos* of the proposed excursion to the district at Easter.

By Miss Currie.—Flowering specimens of the orchids *Cryptostylis longifolia* and *Orthoceras strictum*; galls on eucalyptus leaves; and flowering spikes of bulrush, *Typha angustifolia*.

By Mr. H. F. Clinton.—Photograph of chain lightning, taken at Melbourne on 26th January last.

By Mrs. C. H. Edmondson.—Specimen of a *Lobelia*, picked in Western Australia on 5th January last, the flowers of which have continued to open though it has received no nourishment of any kind since that date.

By Miss A. Fuller.—Specimen of *Trichinium* (*Philotis*), sp., N. O. Amarantacea, from Western Australia.

By Mr. C. Lambert.—Photographs of "Organ Pipes;" Kaolin Quarry, Bulla; and Maribyrnong River, near Bulla, taken during Sydenham excursion.

By Mr. A. L. Scott.—Photographs of "Organ Pipes," Sydenham, taken some years ago; also of basalt columns on Merri Creek, near Pentridge Stockade.

By Dr. C. S. Sutton.—Photographs of rookery of White-faced Storm-Petrel, also of Little Tern, with nest and eggs; photographs of vegetation, *Calocephalus Brownii* and *Scirpus nodosus*, all taken at Mud Island, Port Phillip.

By Mr. L. Thorn.—Flowering head and leaves of a garden Sunflower, standing 10 feet 6 inches high, the head of flowers being 13 inches across and the leaves 20 inches across.

By Mr. H. B. Williamson.—Specimens of *Goodenia stelligera*, from Cann River; *Loranthus mirabilis* on *Angophora intermedia*, and orchid, *Dendrobium speciosum*, from Genoa River; *Persoonia lanceolata*, *P. arborea*, resin from *Xanthorrhoea hastilis*, Spear Grass-tree, also flowers and fruit of banana, grown at Mallacoota—all from Mallacoota.

After the usual conversazione the meeting terminated.

CORRECTIONS.—In February *Naturalist*, in notice of Mr. Chapman's exhibit on page 135, delete words "long mistaken for an insect." On page 42, in line 21, for "*myrsinoides*" read "*lanigerum*"

## EXCURSION TO LOCH VALLEY.

ENCOURAGED by the reports of members of the Club who had spent last Easter at Loch Valley, the committee selected it for the Christmas excursion of the present list. The locality is somewhat off the beaten track, and requires a little explanation. This, however, can be given as I proceed. Owing to the difficulty of securing accommodation, the party was limited to eight, seven finally joining in the trip. Melbourne was left by the first train to Warragul on 24th December. The morning had every appearance of being hot and uncomfortable, but by the time Warragul (61 miles) was reached a decided change had taken place, and rain clouds were gradually coming up. Changing trains here for the Neerim line, new country for the majority of the party was entered on. Some rather picturesque scenes—the Shrubby *Helichrysum* making a fine show—were passed on the way to Neerim South, where about an hour was occupied in re-making the train, &c. On leaving Neerim South the train winds up the valley of Red Hill Creek, amidst the remains of a blackwood forest, passing a stone-crushing plant which is at work on the Older Basalt, converting it into ballast. More extensive views are obtainable as it approaches Neerim, when the Tarago valley and the Laber-touche Hills—the part visited from Longwarry for *Boronia pinnata* some twelve months ago—come into view on the left. Nayook, the next station, is the highest on the line (1,412 feet), and we get a glimpse of the situation of Nayook Glen, a visit to which is on our programme for the trip. On leaving Nayook the line, hitherto running northerly, turns easterly and descends into the valley of the Latrobe, dropping 700 feet in the six miles to Noojee, the terminus, and our destination. This six miles is one of the finest bits of railway scenery in Victoria. There is hardly a straight hundred yards; at least half a dozen huge timber viaducts occur, one of which is 95 feet high and 300 feet long. Several deep cuttings in contorted Silurian are passed through, while fern and gum scenes abound, and in the distance the Yarra divide stands up against the northern sky. About a quarter of a mile from the station the Latrobe was crossed, rushing from the Warburton Hills to end its career near Sale in Lake Wellington. It had been raining ever since we left Neerim South, and the road to our boarding-house was rather soft; however, a twenty-minutes' walk put us under shelter. The house had a delightful outlook, a tree-fern-covered hill standing up across the river, and in the varying lights and shades affording many pretty pictures. Here, at Easter, we had heard Lyre-birds, but this time the scrub was generally too wet to get near their haunts. More rain fell during the night, and, though Christmas morning broke fairly fine, everything was so wet that we were

late in making a start. It was decided that the highest country would probably be the driest and cleanest, so we made our way up the hill at the back of the house towards the Ridge road—a road that keeps along the summit of the range separating the Loch from the Tooronga valley. The hillside in spring would doubtless be gay with *Tetratheca*, *Epacris*, and other flowers: now the most prominent flower was the creamy Holly-leaved *Lomatia*, *Lomatia ilicifolia*, with here and there the deep blue of *Lobelia simplicifolia*. The Cork-screw Fern, *Lindsaya linearis*, was growing well in many places. Getting on to the road, we came across a shrubby plant, apparently an *Eriostemon*. The road, as we expected, was fairly dry, and bordered with vegetation of all kinds. The grade was not excessive, so we wandered on, forgetting that we had not brought lunch with us. At last the time came that we must either turn back or go without lunch. Four decided that the way was too interesting to turn back, and continued on for another three miles till the valley of Camp Creek, leading to the Tooronga, came in sight. Beeches, Sassafras, and *Acacia penninervis* occurred in quantity. We had had many glimpses of homesteads in the Tooronga valley, several hundred feet below us, and could hear the distant roar of the waters of the falls on the other side of the valley. Just here the timber greatly improved, but to get to the really fine timber we should have gone three or four miles further, to where paling-splitting is going on. We left that for the next visit. Returning for about three miles, we met a settler, who offered to show us a bridle-track over the ridge down into the Loch valley, and, as this would be new country and save us several miles, we gladly accepted his offer, after partaking of a cup of tea at his bush home. Many attractive pictures of trees, ferns, &c., met our eyes as we made our way down the steep hillside, and by six o'clock we were once more under the hospitable roof of "Braeside." For Boxing Day arrangements had been made for a vehicle and pair to take provisions and bedding up to the top of the Yarra divide, so that we could devote two days to the main object of the excursion—the visit to the magnificent trees on Mount Horsfall. After about five miles up the Loch valley the road takes to a spur and winds round the basin of Skerry's Creek, affording fine views across the Neerim country to the Strezleckies in the distance. The usual vegetation bordered the road, while below were many beautiful fern gullies. At about 2,000 feet some fine timber was passed, and we reached an undulating table-land. Here a Flame-breasted Robin was good enough to allow us to examine him through the field-glass. A solitary *Papilio macleayanus* flitted from flower to flower of the golden-hued *Senecios*. Soon we crossed the head of Skerry's Creek, and were welcomed at the homestead of the Messrs. Litaze, the

only settlers remaining at this high altitude (about 2,500 feet). Lunch was spread under a fine apple-tree, and keen appetites soon made havoc amongst the good things. About 1.30 p.m. Mr. Camille Litaze undertook to act as our guide to Mount Horsfall, some four miles easterly along the divide. Fifty years before, Whitelaw's track had been cut from Berwick to Wood's Point, along the summit of the range, and we were still able to discern the blazes, but scrub, principally *Helichrysum*, and fallen timber made it difficult to follow, and after getting within about a mile of the top of Mount Horsfall we had to abandon the attempt, but we had been rewarded, for we had seen and passed through some of the finest milling timber in Victoria, the trees, *Eucalyptus regnans*, known as Mountain Ash, standing almost as close as they could stand, and running up 150 feet or more without a branch. Near one of the heads of Alderman's Creek (flowing to the Yarra) were found a number of plants of an orchid, *Chiloglottis*, but they were past the flowering stage. Fine bushes of the Balm Mint-bush, *Prostanthera mellissifolia*, were occasionally seen, but few of the delicate lavender flowers remained. From a height of about 3,500 feet on Mount Horsfall there was a fine view of the Yarra valley and its enclosing hills, while far away, slightly to the east of north, was a very prominent mountain, which I took to be Mount Buller, near Mansfield. We scrambled back the way we had come, and reached Litaze's again about 7.30 p.m. By 9 p.m. we had despatched tea under the apple-tree, and then prepared to make ourselves comfortable for the night, which, thanks to the hospitality of the Messrs. Litaze, was easily accomplished. Next morning was dull and windy, and, though Mr. Litaze said it would not rain till the afternoon, one member was persistent in the opinion that it would rain before 11 a.m. Mr. Charles Litaze offered to guide us down through Petschak's abandoned selection on to the Loch valley road, and we gladly accepted his offer, for it took us round the other side of the Skerry's Creek basin. By 10.30 a.m. rain was falling, and our prophetess was right. Many delightful scenes had to be hurriedly passed as we descended the range, but at Skerry's Creek we decided to stop a while for lunch, and under the shelter of a fine beech hardly noticed the rain. The ground was strewn with the fallen beech leaves, which made the track, at a distance, resemble a gravelled path. We were still about eight miles from home, and, as the rain was gradually increasing, we had to hurry along, and had little time to admire the magnificent vegetation along the road, which, from its beauty, is known as Callaghan's Avenue—after a settler who hewed a home out of the forest alongside the road. The track crossed the Loch two or three times, and finally joined the main road at the foot of the hill we had turned up the previous morning,

making a round trip of about twelve miles of as fine scenery as one could wish to see. We reached "Braeside" about 4 p.m. like the proverbial drowned rats; however, as each had a change of clothing available, no one seemed to suffer, and, though uncomfortable, the rain was perhaps better than the blazing hot day which one might expect at that time of year. It took all our attention to get boots and clothes dry for use on Sunday, which was again showery; however, three ventured out in the afternoon and visited the Latrobe valley, getting about three miles up-stream from the bridge. A timber tram is now being constructed from Noojee, which will reach within about eight miles of Powelltown, so that when completed Noojee can be reached *via* Yarra Junction in about seventy miles as against ninety miles *via* Warragul. Led by an adventurous spirit, we tried to keep close to the Latrobe on our return, but the ground was too swampy, and we had to keep to the tram. Fine King Ferns and the Strap Fern, *Lomaria Patersoni*, grew in this part, and some nice seedlings were secured. Our visit to Loch Valley was nearly over, and by half-past eight on Monday morning we had started on the return journey. The train did not leave till 3 p.m., but, by starting early, we were able to walk along the line over the great viaducts as far as Nayook, and then across to the Glen, about a mile distant, spend a couple of hours there, and catch the train at Nayook at 4 p.m. The Glen is almost unique. From our flying visit it seems to be about half a mile long and a couple of hundred yards wide, little larger than the Sherbrooke Falls glen, but deeper. It is crammed full of tree-ferns, beeches, sassafras, *Hedycarya*, &c., and is a truly lovely spot. My fear is that, as the surrounding hillsides become cleared, the hot winds will get into it, and the vegetation will gradually lose its vitality. Two plants attracted our attention here—the rare climber, *Fieldia australis*, N.O. Gesneraceæ (the order to which the garden *Gloxinia* belongs)—unfortunately, it was out of bloom, but we found a large white fruit; and the fern *Davallia pyxidata*. The latter was quite new to me. The Glen is a public reserve, and paths have been made through it, while a shelter pavilion, look-out, and fire-places have been provided. Of course, no one is allowed to touch the vegetation, but it is a great pity the reserve does not contain fifty acres instead of only five. The home journey was made under good conditions, and we separated, trusting that ere long Loch Valley would see us again. One of the party, who devoted himself to trout fishing when the weather permitted, reported favourably on the Loch as a trout stream.—F. G. A. BARNARD.

## WILD LIFE IN TASMANIA.

BY G. WEINDORFER AND G. FRANCIS.

(Communicated by Dr. C. S. SUTTON.)

(Read before the Field Naturalists' Club of Victoria, 8th Dec, 1919.)

THE following notes on Tasmanian wild life are the result of observations made by us during periods of nine and fifty years respectively in Middlesex Plains and Cradle Mountain districts. The locality is a remote and picturesque one, and very diversified. Within it are wide, grassy plains or sub-alpine meadows, high wind-swept plateaus verging on an elevation of 4,000 feet, deep river gorges, secluded lakes and pools, cascades and waterfalls, and gloomy forests, into some of the recesses of which no one has ever yet penetrated. In all of these situations, at all times of the day and night, in all weathers and in every season of the year, our information has been picked up, mostly in an accidental way, and in the night time largely by the aid of an acetylene lamp fixed above the rim of the hat by a metal spring band.

We do not pretend that our records are exhaustive, and, indeed, have refrained as far as possible from setting down such facts as are well known or can be observed in the animals when kept in captivity, but nevertheless hope that they may be of interest to members of the Club. The subjects to be dealt with are as follow:—

*Phascolomys ursinus*, var. *tasmaniensis*.

*Macropus ruficollis*, var. *bennetti*.

*Macropus billardieri*.

*Pseudochirus cooki*.

*Trichosurus vulpecula*, var. *fuliginosus*.

*Dasyurus maculatus*.

*Dasyurus viverrimus*.

*Strepera fuliginosa*.

### LOCALITY AND CLIMATE.

The Middlesex Plains and Cradle Mountain districts are situated between 30 and 40 miles due south of the port of Burnie, on the north-west coast. The territory includes the head waters of the Wilmot, Dove, Macintosh, and Fury Rivers and their tributaries, and is, at Middlesex, situated about 2,600 feet above sea-level, rising towards the south-west, where it culminates in the Cradle Mount with 5,069 feet. Interspersed with grassy plains, deep river-gullies, and high plateaus, it is, in its lower parts, covered with extensive eucalyptus and beech forests, which ascend to an altitude of about 4,000 feet. With the exception of the Van Diemen's Land Company's cattle station and one or two minor runs, it is practically un-

occupied Crown land, the writers of this paper being the only permanent inhabitants.

The climatic conditions vary according to altitude, and from a meteorological point of view the locality falls within the area of Tasmania's West Coast. The rainfall is copious, the record for 1918 at Middlesex being 71.26 inches during 202 days, that for Cradle Valley (3,000 feet above sea-level) totalling 98.14 inches in 219 wet days, the bulk of the precipitation in both cases having been in the winter and spring months. Thermometer readings only began at Cradle Valley on 1st January, 1919, and the monthly results of the first year's observations are as under:—

| Month.   | Dry Mean. | Wet Mean. | Abs. Maxim. | Abs. Minim. | Mean Max. | Mean Minim. | Grand Mean. | Humidity. | Rainfall. |
|----------|-----------|-----------|-------------|-------------|-----------|-------------|-------------|-----------|-----------|
| January  | 45.40     | 43.30     | 77.00       | 29.00       | 57.58     | 39.74       | 48.66       | 85.00     | 570       |
| February | 52.62     | 51.23     | 77.00       | 40.00       | 64.90     | 47.20       | 56.00       | 90.57     | 254       |
| March .. | 44.48     | 43.75     | 68.00       | 30.00       | 53.70     | 40.70       | 43.97       | 94.00     | 733       |
| April .. | 44.03     | 43.08     | 63.00       | 30.00       | 54.93     | 39.33       | 47.13       | 92.00     | 535       |
| May ..   | 41.58     | 40.00     | 60.00       | 26.00       | 48.38     | 34.84       | 41.61       | 87.00     | 830       |
| June ..  | 36.66     | 36.23     | 49.00       | 23.00       | 43.16     | 33.16       | 38.16       | 96.00     | 1870      |
| July ..  | 35.53     | 34.87     | 49.00       | 21.00       | 42.03     | 29.16       | 35.59       | 94.00     | 1081      |
| August.. | 37.06     | 36.33     | 58.00       | 18.00       | 44.54     | 29.64       | 37.09       | 94.00     | 815       |
| Sept. .. | 40.70     | 39.36     | 60.00       | 22.00       | 49.30     | 32.56       | 40.93       | 89.00     | 1203      |
| October  | 46.59     | 43.19     | 80.00       | 26.00       | 57.45     | 36.38       | 46.91       | 76.00     | 835       |
| Nov. ..  | 53.95     | 48.15     | 79.00       | 27.00       | 65.33     | 37.50       | 51.41       | 65.00     | 420       |
| Dec. ..  | 54.48     | 50.79     | 79.00       | 29.00       | 65.58     | 40.29       | 52.93       | 77.00     | 465       |
| Year ..  | 44.42     | 42.52     | 80.00       | 18.00       | 53.90     | 36.71       | 45.31       | 86.00     | 9611      |

Readings taken at 9 a.m.

Snowfalls during the winter months are of frequent occurrence, and vary from a few inches to four feet (in July, 1919). However, the landscape is rarely covered with it for longer than a few days, subsequent warm rains generally disposing of the greater part of it in relatively short time. Light falls of snow may occur at any time during the year—six inches even towards the end of last January.

#### PHASCOLOMYS URSINUS, VAR. TASMANIENSIS, LORD.

The Tasmanian wombat, commonly but erroneously called "Badger," is the most stupid of all the animals of the bush. Before the advent of man and his dogs the full-grown animal probably did not possess any enemies, with the possible exception of the marsupial wolf, which, however, does not now, and very likely never did, frequent the comparatively open bush land of these higher elevations. Under the circum-



stances, the wombat's existence must indeed have been a happy one, for, apart from the very light cares of its young, it could have had no worries, and Nature had bountifully provided it with every requirement. Never having had to exercise its wits to make a living, it has come about that its body has developed rather at the expense of its brains. In years gone by it was the prominent feature of the landscape, grazing and gambolling in broad daylight on the open grassy plains, and taking little notice of the occasional human. With the growth of settlement, however, it has become more wary, and its numbers have much diminished. Though still in comparatively large numbers in areas where the kangaroo trapper is unknown, its constant destruction in game country must lead to further lessening of its numbers.

The wombat's skin is at present commercially valueless; but, seeing that it makes a very admirable mat, it seems strange enough that no market for it yet exists. Thousands of these animals are destroyed every year by the trapper of kangaroo and wallaby—not in wantonness, but because of their interference with his snares. A snarer once declared that the best protector of the kangaroo is the wombat, because a wire snare set only about six inches above the ground will frequently be walked into by this animal, with the result that in the endeavour to free itself the snare is rendered useless. For this reason the luckless animal, if caught, is knocked on the head, and where it is numerous the snares are set at least one foot high. These, in most cases, the wombat clears, for in walking along its nose is usually nearer the ground. A snare so set will, however, give the kangaroo a chance to escape.

The wombat is sometimes so little alive to the approach of danger that he has been known not to budge from his position even when the passer-by has gently reminded him by the toe of his boot that he was in the way, and has continued unconcernedly grazing in spite of the insult. Though none of its senses are acute, its sense of hearing seems to be stronger than that of smell, for it will be aware of one's approach long before it realizes the direction in which one is coming. In such cases it assumes an attitude of expectation—its body will be rigid, the head slightly raised above the ground, with the little ears pricked. When it realizes the nearness of danger it makes a bolt in any direction, cantering much after the fashion of a pig, and should it be attacked by dogs will always seek to escape into the nearest hole, even if this should only afford cover for its head. It is in such places, where its body does not entirely disappear from view underground, or as in a hollow log, that new chums amongst dogs and men alike find, to their sorrow, that the animal's means of defence lie

in its back. To illustrate the way the wombat defends itself, no better example can be mentioned than that of a young man whose first acquaintance with a wombat cost him the entire skin of the upper part of his right hand. Desiring to capture the animal, he inserted his hand in the comfortable-looking opening above the animal's back, with the object of getting hold of and extricating it from its hiding-place. To his surprise and consternation the comfortable opening closed with lightning rapidity—the wombat having risen on its hind legs—and with a lateral to-and-fro motion of the hind quarters the young man's hand received a severe mauling against the sharp rock. Needless to say, the advice to insert the other hand below the animal and thus cause it to reverse its tactics was promptly acted upon, and the quick, simultaneous withdrawal of both hands left the wombat master of the situation, and saved further damage to the hand.

A wombat worried by dogs in an opening sufficiently big to cover its armpits will always make good its escape, for, while its hindquarters are busy with defence, its front legs are not idle. In an incredibly short space of time a quantity of earth is dug up and passed under its body by the front legs, and delivered outside by the hind ones with such force as sends the material flying for yards, and very much discourages the attentions of the dogs. Its efforts are accompanied by a growling not unlike that preceding a dog-fight, and the strenuous proceeding is continued until the body of the harassed animal quite disappears under the surface. When this occurs it becomes impracticable for it any longer to throw the soil out with its hind legs, and the material is pushed behind with the aid of its whole body, and the entrance closed.

*(To be continued.)*

NATIONAL PARKS.—A movement is on foot for the permanent reservation of sufficient land surrounding Mallacoota Inlet to make it both a scenic reserve and a game sanctuary, and as a means of furthering interest in the movement a free public lecture night will be held at the Melbourne Town Hall (reception room), on Friday evening, 26th March, when illustrated lectures will be given by Sir James Barrett, K.C.M.G., on Mallacoota; Mr. J. A. Kershaw, F.E.S., on Wilson's Promontory; and Dr. J. A. Leach, on the Fauna and Flora of Victoria. Members of the Field Naturalists' Club of Victoria are specially urged to attend and support the resolutions which will be submitted to the meeting, with the view of strengthening the hands of the National Parks Section of the Town Planning Association in the effort.

# Field Naturalists' Club of Victoria.

.....

## \* OFFICE-BEARERS, 1919-1920. \*

**President :** MR. A. D. HARDY, F.L.S.

### **Vice-Presidents :**

MR. J. GABRIEL.

MR. J. SEARLE.

**Hon. Treasurer :** MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

**Hon. Librarian :** MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

### **Hon. Editor of the "Victorian Naturalist" :**

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

### **Hon. Secretary :**

MR. E. E. PEScott, F.L.S., Seymour Grove, Camberwell.

**Hon. Assistant Secretary and Librarian :** MR. W. GLANCE.

### **Committee :**

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,

J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

---

## \* OBJECTS. \*

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

---

## EXCURSIONS.

SATURDAY, 6TH MARCH. — **Melton.** Objects — **Physiography and General.** Leader—Mr. F. G. A. Barnard. Meet at Spencer Street Station for 7.40 a.m. (Ballarat) train. Second excursion fare, 2/- It is proposed to visit the valley of the Djerriwarrh Creek (4 miles each way), and, if time permit, the patch of Mallee about a mile beyond. Lunch should be taken.

SATURDAY, 20TH MARCH. — **Botanical Gardens, South Yarra.** Object — **Horticulture.** Mr. J. Cronin, F.R.H.S., Director. Meet at office entrance (gate       ), at 2.30 p.m.

## EASTER EXCURSION.

GOOD FRIDAY, 2ND APRIL, TO TUESDAY, 6TH APRIL. — **Rosebud via Dromana.** Leaders—Messrs. J. Gabriel and C. Daly, F.L.S. Objects—**General.** It is intended to camp at "Parkmore," at the foot of Arthur's Seat, close to the beach. Tents are erected on lawns protected by pine trees. Dining-rooms and kitchens (with separate stoves); also good drinking water and fuel provided. Cutlery, table and bed linen must be taken. Provisions, &c., are obtainable at local stores. Charge for tent accommodation—Adults, 7/6 each.

Members will proceed by p.s. *Hygeia*, to Dromana (fare, 3/6), on 2nd April (see daily papers for hour of departure), thence by conveyance to Rosebud. Vacancies for two or three members available.

SATURDAY, 10TH APRIL.—**Ripponlea.**

## WATSON'S REQUISITES FOR FIELD NATURALISTS.

|                                                                                                              |                       |
|--------------------------------------------------------------------------------------------------------------|-----------------------|
| JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks .. .. . | 30/-                  |
| CORKED GLASS COLLECTING TUBES, from .. .. .                                                                  | 1/6 doz.              |
| FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps .. .. .                      | 5/6                   |
| BUTTERFLY NET, with folding ring, 4 joints .. .. .                                                           | 6/-                   |
| INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17½ x 12, 11/-                              |                       |
| INSECT COLLECTING BOXES, of deal, corked and papered .. .. .                                                 | 1/-, 1/6, and 2/-     |
| INSECT RELAXING BOXES, of zinc, oval shape, corked .. .. .                                                   | 1/6, 2/9, and 3/6     |
| GLASS FRONT SHOW BOXES, corked and papered .. 14 x 10, 8/-; 16 x 12, 11/-                                    |                       |
| INSECT-KILLING BOTTLES .. .. .                                                                               | 1/6 and 2/-           |
| ENTOMOLOGICAL PINS, assorted .. .. .                                                                         | per box of 1 oz., 2/- |
| INSECT FORCEPS, with broad gauze jaws .. .. .                                                                | 3/6                   |
| SETTING FORCEPS, finest nickelled steel .. .. .                                                              | 2/-                   |
| GEOLOGICAL HAMMERS .. .. .                                                                                   | 3/- and 4/6           |
| POCKET ACID BOTTLE, in boxwood case .. .. .                                                                  | 1/6                   |
| THREE-POWER POCKET MAGNIFIER .. .. .                                                                         | 4/6                   |

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,  
And at Ocean House, Moore St., Sydney.

## ENTOMOLOGICAL APPARATUS.

### CHERRY & SONS PTY. LTD.,

GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

|                                                                    |                     |                    |
|--------------------------------------------------------------------|---------------------|--------------------|
| STORE BOXES                                                        | SETTING BOARDS      | ENTOMOLOGICAL PINS |
| BUTTERFLY NETS                                                     | KILLING BOTTLES     |                    |
| CORK LINING                                                        | ZINC RELAXING BOXES |                    |
| NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould |                     |                    |
| POCKET BOXES                                                       | CABINETS            |                    |
| CURVED FORCEPS                                                     | INSECT CEMENT       |                    |
| &c., &c., &c.                                                      |                     |                    |

Write for our Price List and Sample Sheet of Pins.



# The Victorian Naturalist:

THE JOURNAL AND MAGAZINE

— OF —

The Field Naturalists' Club of Victoria.

---

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

---

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

---

| CONTENTS :                                                                             |  | PAGE     |
|----------------------------------------------------------------------------------------|--|----------|
| FIELD NATURALISTS' CLUB OF VICTORIA .. ..                                              |  | 161      |
| WILD LIFE IN TASMANIA ( <i>continued</i> ). BY G. WEINDORFER AND<br>G. FRANCIS .. .. . |  | 165      |
| NOTES .. .. .                                                                          |  | 164, 168 |

---

\* PRICE SIXPENCE. \*

Obtainable from—Hon. Treasurer, Hon. Secretary, or Hon. Editor.  
(IF BY POST 1D. EXTRA.)

---

Agents for Europe :

DULAU & CO., 37 Soho Square, London.

---

Melbourne :

WALKER, MAY & CO., PRINTERS, 429-431 BOURKE ST.  
1920.

# Field Naturalists' Club of Victoria.

---

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

---

## BUSINESS PAPER FOR ORDINARY MEETING

MONDAY EVENING, 12th APRIL, 1920.

---

### 1. Correspondence and Reports.

### 2. Nominations for Membership.

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

### 3. General Business.

### 4. Remarks by Exhibitors relative to their Specimens.

Ten minutes' adjournment for examination of Exhibits.

### 5. Reading of Papers and Discussion thereon.

- (1) By Mr. J. C. Goudie—"Notes on the Coleoptera of North-Western Victoria, Part VIII. (*Buprestidae*).
- (2) Messrs. F. Chapman and C. Lambert will, with the aid of lantern slides, explain certain geological features near Melbourne.
- (3) By Mr. H. B. Williamson—"Notes of a Recent Visit to Mallacoota." Illustrated with lantern slides.

### 6. Reading of Natural History Notes.

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

### 7. Exhibition of Specimens and Conversazione.

Members are invited to exhibit objects of interest, and to furnish the Hon. Secretary with written particulars for record in Minutes and *Naturalist*. Brief descriptions should accompany the exhibits for the benefit of fellow-members.

---

## NOTICES.

As the Club year ends on 30th April, the Hon. Treasurer will be glad to have any overdue Subscriptions as early as possible.

Members changing their addresses will oblige by notifying the Hon. Secretary.

---

The Hon. Librarian attends at the Club Room, Royal Society's Hall, on the 4th Monday Evening of each month for the purpose of receiving and issuing books.

# The Victorian Naturalist.

VOL. XXXVI.—No. 12.

APRIL 8, 1920.

No. 436.

## FIELD NATURALISTS' CLUB OF VICTORIA.

THE ordinary monthly meeting of the Club was held at the Royal Society's Hall on Monday evening, 8th March, 1920.

The president, Mr. A. D. Hardy, F.L.S., occupied the chair, and about sixty members and visitors were present.

### CORRESPONDENCE.

From the Tasmanian Field Naturalists' Club, announcing a camp-out at Port Arthur for Easter.

From the National Park section of the Town Planning Association, announcing a series of lecturettes on 26th March.

### REPORTS.

A report of a visit to the Zoological Gardens on Saturday, 14th February, was given by the chairman, who said that there had been a good attendance of members, who were favoured by a beautiful day. The director, Mr. D. Le Souëf, C.M.Z.S., and Mr. A. Wilkie had acted as guides, and had given to members a great deal of interesting information about the various animals, birds, &c. Many improvements had been noted, and the flower borders were especially brilliant. One of the newest additions, a platypus, was, unfortunately, in hiding, and could not be seen.

A report of the excursion to Melton on Saturday, 6th March, was given by the leader, Mr. F. G. A. Barnard, who said that the weather had turned out very trying, the wind and dust being most uncomfortable. The party found the country towards the Djerriwarrh Creek thoroughly parched, and little of interest was observed. A few trees of *Melaleuca parviflora* were struggling to bloom. At the creek some time was spent in a search for graptolites, but without success. A feature of the creek is the immense quantities of various-coloured pebbles to be found in its bed, many of which are traversed by thin bands of quartz. Attention was called to the patches of Mallee, *Eucalyptus Behriana*, F. v. M., seen in several places, and to the weathering of the basalt in the road-cuttings. The party walked on to Bacchus Marsh, and had an opportunity of seeing the method of irrigating the lucerne fields.

### ELECTION OF MEMBERS.

On a ballot being taken, Mr. Owen Jones, chairman of the Forestry Board, Melbourne, and Miss L. Jones, O.B.E., Eye and Ear Hospital, Melbourne, were elected as ordinary members.

## GENERAL BUSINESS.

Mr. J. Gabriel referred to the action which he had initiated some time ago towards getting rid of foxes on Phillip Island. The foxes, for which the Fisheries and Game Department and the Shire Council had each offered ten shillings per head, were again destroying large numbers of Mutton-birds. Notwithstanding the premium and the value of the skins, he understood that only ten foxes had been paid for.

Mr. C. J. Gabriel stated that not only Mutton-birds, but Black Swans and Ducks, were now being attacked. The two punctures on the heads of the dead birds were always present, and these denoted the teeth marks of the fox. Local hunters do not think the amount paid, plus the amount received for the skins, sufficient recompense for the trouble and expense involved, and suggestions have been made to ask for an increase of the amount. He moved that the Club ask the Fisheries Department to give a greater bonus for killing the foxes.

Mr. D. Best asked if any diminution in the number of arrivals of birds was noticed on arrival day.

Mr. J. Gabriel replied that the arrivals were very much diminished in the last few years, and that birds were not found in half the holes. He seconded the motion, which was then carried.

## REMARKS ON EXHIBITS.

Mr. H. B. Williamson exhibited a specimen of the plant, the Woolly Water Lily, *Philhydrium lanuginosum*, Banks, collected by Mr. T. S. Hart, M.A., at Bairnsdale. This was reported as a new locality, the plant having been previously collected in Victoria only at the Grampians.

Mr. E. Cox referred to his exhibit of diseased "fry," collected at Lake Nagambie. He read a letter from the Fisheries and Game Department, which showed that each nodule in the dead fish contained an egg, which was, possibly, that of a parasitic worm. All the fish affected belonged to one species, probably a *Galaxias*. Small specimens of Cod and Perch showed no sign of infection.

Mr. C. Gabriel showed a collection of twenty species of Chiton shells, recently collected at Portland, remarking that that district was extremely rich in the genus.

Mr. C. Daly, B.A., referred to his exhibit of Agates from Anthony's Lagoon, Northern Territory, the locality where Sir Ross Smith was compelled to land with his aeroplane.

## PAPERS READ.

By Mr. A. J. Shearsby, F.R.M.S. (communicated by Mr. F. Chapman, A.L.S.), entitled "Notes on the Occurrence of Recent Travertin Formations near Yass, N.S.W."



The author referred to this formation as being very rapid in 1919, owing to the light rainfall and the abnormal evaporation. The springs are, as a result, highly charged with lime, and, the water flowing over a mass of moss, roots, and other plants, is quickly evaporated, leaving the organic matter coated and cemented with the porous limestone.

By Mr. J. W. Audas, F.L.S., entitled "Through the Murra Murra Country (Western Grampians)."

The author described a visit to the Western Grampians in company with Mr. C. D'Alton. The bird and animal life were mentioned as very abundant and the flowers in profusion. Fine forests of Red Gum, Messmate, and Stringybark were traversed, the beauty of the scenery being emphasized. Fifty-one additional plants had been added to the list of the Grampians flora by his various trips in the district.

#### NATURAL HISTORY NOTES.

Mr. J. A. Kershaw, F.E.S., asked, in reference to an inquiry from the Western District, whether Black Swans had ever been found destructive to grass in the vicinity of lakes and watercourses.

Mr. C. Daley, B.A., remembered that at Sale complaints were made that the Swans did such damage on the shores of Lake Wellington.

The president referred to a Bald-Coot in the Botanic Gardens holding biscuits in its toes and eating them as a Cockatoo would do.

Mr. P. R. H. St. John confirmed the occurrence.

Mr. J. Gabriel remarked that the birds at the Botanic Gardens were different to any other birds in the world. There, also, the Black Ducks were seen walking among the visitors, and Brush Wattle-birds were noticed taking sugar out of the sugar-basins on the tea-house tables. He was not surprised at anything unusual in the ways of the birds at the Gardens.

#### EXHIBITS.

By Mr. F. G. A. Barnard.—Various types of pebbles from Djerriwarrh Creek, Melton, collected at excursion on 6th March.

By Mr. F. Chapman, A.L.S.—Specimens of travertine encrusting mint, water-cress, sheoke, and eucalyptus leaves, from Oaky and Ravenswood Creeks, near Yass, New South Wales, collected by Mr. A. J. Shearsby, F.R.M.S., in illustration of paper; also nest of Ring-tailed Possum, *Pseudochirus peregrinus*, Badd., found on cutting down a Sugar Gum at Balwyn.

By Mr. C. Cox.—Fry of *Galaxias* (?), apparently diseased, from Lake Nagambie.

By Mr. C. Daley, B.A., F.L.S.—Agates from Anthony's Lagoon, Northern Territory.

By Mr. C. J. Gabriel.—Collection of Chitons from Portland, including *Acanthochites granostriatus*, Pils., *Ischnochiton resplendens*, Bednall and Matthews: also a series of English marine shells, *Chlamys opercularis*, Linn.

By Mr. F. Pitcher.—Dried ferns and lycopods from Southern Otago, New Zealand, including twelve species which are also found in Victoria.

By Mr. A. L. Scott.—Microscopic section of basalt under polarized light, illustrating structure of basalt, met with on recent excursions.

By Mr. L. Thorn.—Live larvæ and pupæ of Imperial Blue Butterfly, *Ialmenus evagorus*, and Moonlight Blue Butterfly, *Miletus delicia*, also the perfect insects. The larvæ and pupæ of both these species are attended by small black ants.

By Mr. H. B. Williamson.—Specimens of *Alisma plantago*, L., Greater Water Plantain; *Damasonium australe*, Salisb., Star-fruit; *Goodenia paniculata*, Sm., Panicked Goodenia; *Phillydrum lanuginosum*, Banks, Woolly Water Lily (new for Eastern Victoria); and *Limnanthemum geminatum*, Griesb., collected at Bairnsdale by Mr. T. S. Hart, M.A.: also *Chenopodium carinatum*, F. v. M., Crested Goosefoot, *Euphorbia cremophila*, Cunn., Desert Spurge, collected at Kerang by Mr. E. J. Semmens.

After the usual conversazione the meeting terminated.

THE LATE MR. GEORGE SWEET.—By the death on the 14th ult. of Mr. George Sweet, F.G.S., at the age of 75 years, the Field Naturalists' Club lost one of its earliest members. He was elected in July, 1886, and took considerable interest in the Club for many years, serving on the committee in 1894-5 and 1896-7. He acted as leader on several excursions when geology, his favourite study, was the object in view. He was a member of the expedition to King Island in November, 1887, and, at the request of Mr. C. C. Brittlebank, took part in an excursion to the Werribee Gorge in October, 1891 (*Vict. Nat.*, viii., p. 100), the result of that meeting being a joint paper on "The Glacial Deposits of Bacchus Marsh," read before the Adelaide (1893) meeting of the A.A.A.S. (vol. v., p. 376). He also did some good palæontological work at Mansfield in 1888 (*Vict. Nat.*, vii., p. 53). He was a prominent member of the Royal Society, and in other ways endeavoured to help his fellow man. His daughter, Dr. Georgina Sweet, D.Sc., also a member of the Club, is well known in scientific circles by her work at the biological and veterinary schools of the University.

## WILD LIFE IN TASMANIA.

BY G. WEINDORFER AND G. FRANCIS.

(Communicated by Dr. C. S. SUTTON.)

(Read before the *Field Naturalists' Club of Victoria*, 8th Dec., 1919.)

(Continued from page 160.)

The wombat is one of the few bush animals that roam the country at any time of day, especially if the weather be wet or overcast, though as a rule it prefers the night for feeding and exercise. Unlike so many other bush animals, it refuses to be "hypnotized" by the glare of an acetylene lamp, and the reflection of the light of their eyes is only accidental. The wombat would seem to rival the cat in its tenacity of life, and still makes efforts to escape even after experiencing the severest injuries.

The impression prevails that the wombat does not use its teeth as a means of defence. This is, perhaps, in one sense true, as the shortness of its neck does not allow it to turn its head side-wise, and any movement in the direction of its assailant must be followed out by its whole body simultaneously. This circumstance makes the animal too slow for the quick movements of the dog, and, knowing its disability, it does not waste any valuable time in trying to defend itself, but makes for cover as quickly as possible. Nevertheless, when circumstances were favourable, the wombat would, no doubt, use its teeth with formidable power. One caught in a hollow log, on being poked with a two-inch stick, promptly seized it with its teeth and bit it in pieces.

Amongst the animals of the bush the wombat is easily the most powerful. A young wombat which still finds refuge in its mother's pouch, if held as firmly as possible between the hands, will, with all its four legs simultaneously, work hard to get away, and will eventually free itself. To extricate a full-grown, unwounded wombat from a burrow, even with a rope attached to one of its hind legs, is impossible; and yet, as powerful as the animal may be as a whole, with one front paw caught in a springer snare it is rendered helpless. Under such conditions it does not attempt to burrow, neither does it attempt to escape; but let it be caught by one of its hind legs, and the chances are that in a short time springer and snare will have disappeared.

Like most animals, the wombat is an excellent swimmer, though no cases are known where it deliberately took to deep water. When worried by dogs, a creek or small water-hole will always appeal to it as one of the best means of escape. To test its swimming powers, one weighing about 50 lbs. was thrown into about 15 feet of water. Nearly 10 seconds

elapsed before it came to the surface, when the spitting, spluttering animal, swimming much after the fashion of a dog, its legs constantly under water, its mouth barely clearing the surface, made for the nearest shore, where dogs and man were waiting. It was again seized, and the performance was repeated twice, each time with the same result, with the only exception that its reappearances on the surface of the water were much quicker. Finally, nothing the worse for its first acquaintance with man, it relieved its dusky-coloured pelt of the adhering water by a vigorous shake, and, slowly waddling along, left the scene of the experiment. That the wombat can hold out under water for a considerable time was proved on an occasion when the brain of one was required for scientific purposes. Failing a gun, it was decided to drown the animal, and it took two men about five minutes to keep the animal under water until its struggles ceased.

With regard to its place of dwelling the wombat is by no means particular. When about two years old it will leave or be deserted by its mother, and will try here and there to burrow, as is evidenced all over the country by unsuccessful attempts to penetrate the rocky soil. As to the construction of the burrow, it would appear that the shape of it is mainly governed by circumstances. The entrance, however, which is invariably single, will always lead down at an angle of 10 to 15 degrees. The interior is devoid of bedding of any kind, and, as it is not always dry, it is no wonder that the animal is very fond of a sun bath amongst tufts of cutting-grass or against rocks and logs. It is tolerably certain that, while the male makes its burrow in the thick scrub, the female chooses an open situation for this purpose, where its young run less chance of being attacked by the tiger-cat or other frequenters of the former situation.

The breeding season of the wombat is not confined to any particular time of year, for at any time one—and only one— young, in different stages of development, may be found in the pouch. For that reason it is impossible to say how often a wombat becomes a mother. Observations on specimens held in captivity might throw light on the subject; but then, perhaps, the artificial conditions under which the animal would have to live would materially alter its habits.

The young wombat, when just too big for its mother's pouch, is easily tamed—in fact, there is no taming necessary. Once taken away from its mother, it will follow anything that moves—a man, a dog, or a horse (perhaps even a motor-car). They make admirable pets, but later on their propensity for burrowing, especially when executed in the vegetable or flower garden, makes them something of a nuisance. Once they

are accustomed to a place and master, they will never leave. In one of our small country towns it was an everyday sight to see an old lady going to the railway station for her mail followed by a pet wombat that was perfectly well aware of its mistress's dexterity in handling a stick on the approach of an over-confident dog.

The flesh of the wombat, as regards edibility, is easily first amongst that of bush animals. It is dark, though not quite so much so as that of the kangaroo, and may be compared in flavour with that of young beef. The skin is, however, removed with some difficulty, the bristles, especially on the back, growing right through from the flesh. As before mentioned, they make good mats, but are too porous for manufacture into leather.

MACROPUS RUFICOLLIS, VAR. BENNETTI, WATERH., BENNETT'S  
WALLABY.

Its fur enters the trade under the name of kangaroo, and the animal itself is generally called kangaroo. For reasons to be explained later on, the authors prefer to adhere to this name. Clive E. Lord, in his "Notes on the Mammals of Tasmania," 1918, page 32, describing the kangaroo (Bennett's Wallaby), says:—"Back of neck and rump bright rufous." In the Cradle Mountains and other high elevations further south and west, this variety is found. At times of heavy snowfalls on the mountains and other unpropitious weather conditions it may occasionally descend to lower altitudes, which are otherwise exclusively inhabited by a variety whose back of neck and rump are of dark grey colour. Besides the difference in colour, the variety of Lord seems to have a thinner but longer fur than the former, and offers shelter to an infinitely greater number of vermin. Furthermore, the scanty supply of good food in higher altitudes imprints its mark on the animal's condition, and the rocky nature of its environment has cultivated a foot whose under surface is covered with a far thicker horny substance. Otherwise, the habits of both varieties are identical, with the exception, perhaps, that the first-named is slower in its movements and falls an easier prey to dogs—most likely on account of its ignorance of danger.

In the early days of settlement by the Van Diemen's Land Co. at Middlesex, the presence of the kangaroo in the district was said to have been unknown; but it is more likely that the kangaroo had been attacked by disease prior to the arrival of man, and had been almost wiped out for a time, as was the case with the wallaby in later years. Like the wallaby, it subsequently increased to large numbers, and these were undoubtedly supplemented by those driven back by advancing

settlement. In those days the kangaroo could hardly be called a night animal, for to see a dozen or more of them grazing on the plains in broad daylight was no uncommon thing. Nowadays, since their ranks have been sorely depleted by dog, snare, and gun, they are rarely seen in daytime out on the plains unless fleeing from danger or during the pairing season, which falls about October or November, according to locality and season.

The kangaroo is one of the greatest roamers of the bush. It has no definite home, but in choosing its locality will always prefer a warm and sunny spot in winter and a cool one in summer. Like the wombat, it does not live in pairs, and after the mating season the different sexes will keep strictly to themselves, which the snare seems to prove. In daytime it lies hidden under bushes, below rocks or tufts of cutting-grass. On the approach of danger it lies low, and only at the last moment takes to its heels. The younger animals are faster than the old ones, which, to avoid the dogs, are forced to have recourse to frequent "doublings." This is always done without the aid of the tail, as imprints in the snow clearly show. In any case, the tail is only used as a means of support while sitting, and during quick movements in level situations is kept off the ground in a slightly horizontal position, but comes into action in uneven ground as a means to preserve the equilibrium. In cases of emergency, when close pressed by the dogs, the mother will, during its flight, dispossess itself of its young, which cannot be effected in any other way than with the help of its arms. The action takes place so quickly that, though some may be able to see the half-grown youngster thrown out on to the ground, the observers have never yet seen how it is done.

(*To be continued.*)

A FOSSIL BLUFF.—A rather unusual proclamation, that of an area of land on account of its geological interest, was made by the Lands Department of Tasmania in February last, when 7 acres 3 roods at Table Cape (Wynyard) was set aside as a reserved area for scientific purposes—viz., the preservation of fossils. A local syndicate had been endeavouring to secure the land and work it for manurial purposes, but the local Tourist Association opposed the scheme, and secured its permanent reservation, on account of its great interest to scientists and others,

# Field Naturalists' Club of Victoria.

\*\*\*\*\*

## \* OFFICE-BEARERS, 1919-1920. \*

President: MR. A. D. HARDY F.L.S.

Vice-Presidents:

MR. J. GABRIEL.

MR. J. SEARLE.

Hon. Treasurer: MR. F. PITCHER, "Frechencourt," Punt Hill, South Yarra.

Hon. Librarian: MR. P. R. H. ST. JOHN, Botanic Gardens, South Yarra.

Hon. Editor of the "Victorian Naturalist":

MR. F. G. A. BARNARD, 167 High Street, Kew (Telephone Hawthorn 443).

Hon. Secretary:

MR. E. E. PESCOTT, F.L.S., Seymour Grove, Camberwell.

Hon. Assistant Secretary and Librarian MR. W. GLANCE.

Committee:

MESSRS. F. CHAPMAN, A.L.S., G. COGHILL, C. DALEY, F.L.S.,

J. A. KERSHAW, F.E.S., and DR. C. S. SUTTON.

---

## \* OBJECTS. \*

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

---

## EXCURSIONS.

SATURDAY, 10TH APRIL.—"**Ripponlea.**" Object—**Epiphytal Orchids, &c.** Leader—Mr. F. Pitcher. By kind permission members are invited to inspect the orchid houses; &c., at "Ripponlea," the residence of Mr. B. Nathan. Meet at Ripponlea Station (Brighton line), at 3 p.m., or entrance gate, Hotham-street (ten minutes from Balaclava-road tram), at 3.5 p.m.

SATURDAY, 17TH APRIL.—**Lilydale.** Object—**Geology.** Leader—Mr. F. Chapman. Meet at Flinders-street Station for 1.20 train. Members should provide themselves with hammers, lenses, and boxes for specimens.

SATURDAY, 1ST MAY.—**Studley Park.** Object—**Geology.** Leader—Mr. R. Luher, B.A. Meet at Johnston-street Bridge (take red Carlton tram in Swanston-street), at 2.30 p.m. Cameras will be found useful.

## WATSON'S REQUISITES FOR FIELD NATURALISTS.

|                                                                                                              |                             |
|--------------------------------------------------------------------------------------------------------------|-----------------------------|
| JOINTED COLLECTING STICK, with bottles, drag hooks, line and reel, net ring, spoon and cutting hooks .. .. . | 30/-                        |
| CORKED GLASS COLLECTING TUBES, from .. .. .                                                                  | 1/6 doz.                    |
| FIELD COLLECTING BOOK (FOR BOTANY), hardwood boards, blotting paper, and straps .. .. .                      | 5/-                         |
| BUTTERFLY NET, with folding ring, 4 joints .. .. .                                                           | 6/-                         |
| INSECT STORE BOXES, of Corked Pine .. 10 x 8, 4/6; 14 x 10, 7/6; 17 1/2 x 12, 11/-                           |                             |
| INSECT COLLECTING BOXES, of deal, corked and papered .. .. .                                                 | 1/-, 1/6, and 2/-           |
| INSECT RELAXING BOXES, of zinc, oval shape, corked .. .. .                                                   | 1/6, 2/9, and 3/6           |
| GLASS FRONT SHOW BOXES, corked and papered .. .. .                                                           | 14 x 10, 8/-; 16 x 12, 11/- |
| INSECT-KILLING BOTTLES .. .. .                                                                               | 1/6 and 2/-                 |
| ENTOMOLOGICAL PINS, assorted .. .. .                                                                         | per box of 1 oz., 2/-       |
| INSECT FORCEPS, with broad gauze jaws .. .. .                                                                | 3/6                         |
| SETTING FORCEPS, finest nickelled steel .. .. .                                                              | 2/-                         |
| GEOLOGICAL HAMMERS .. .. .                                                                                   | 3/- and 4/6                 |
| POCKET ACID BOTTLE, in boxwood case .. .. .                                                                  | 1/6                         |
| THREE-POWER POCKET MAGNIFIER .. .. .                                                                         | 4/6                         |

W. WATSON & SONS PTY. LTD., 78 SWANSTON ST., MELBOURNE,  
And at Ocean House, Moore St., Sydney.

## ENTOMOLOGICAL APPARATUS.

**CHERRY & SONS PTY. LTD.,**  
GISBORNE (VIC.), and 231 SUSSEX STREET, SYDNEY.

STORE BOXES      SETTING BOARDS      ENTOMOLOGICAL PINS  
BUTTERFLY NETS      KILLING BOTTLES  
CORK LINING      ZINC RELAXING BOXES  
NEWMAN RELAXING TIN, ready charged, overcomes all dangers of mould  
POCKET BOXES      CABINETS  
CURVED FORCEPS      INSECT CEMENT  
&c., &c., &c.

Write for our Price List and Sample Sheet of Pins.







New York Botanical Garden Library



3 5185 00270 4839

