

THE  
**Victorian Naturalist**

THE JOURNAL AND MAGAZINE

*of the*

FIELD NATURALISTS' CLUB OF VICTORIA

VOL. 66

MAY, 1949, TO APRIL, 1950

---

*Hon. Editor :* J. H. WILLIS, B.Sc.

---

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

MELBOURNE:  
BROWN, PRIOR, ANDERSON PTY. LTD., 430 LITTLE BOURKE STREET  
1950

# The Victorian Naturalist

Vol. 66.—No. 1

MAY 5, 1949

No. 785

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on April 11, 1949; the President (Mr. J. Ros Garnet) and about 260 members and friends were in attendance.

It was with regret that the President mentioned the illnesses of Mr. A. H. Chisholm, also of Mrs. C. French\* and Mrs. A. S. Chalk, and best wishes were expressed for their speedy recovery.

Visitors to the meeting were cordially welcomed, among these being Mrs. H. Sinclair, a niece of Baron von Mueller, who has just made available to the National Herbarium a magnificent illuminated address that was presented to the Baron by the Victorian German Club on his 70th birthday in 1895 [exhibited at the meeting].

A letter had been received from Miss Ina Watson, from England, and was available to anybody who wished to read it.

Advice had been received from the Minister of Forests that the area comprising the suggested National Park along the Glenelg River had been examined, and the matter was still under consideration. By letter, the Director of Meteorological Services had asked if Club members would be prepared to co-operate with the Department in undertaking phenological observations. The President suggested that a small Sub-Committee might be formed, and those interested were requested to notify him.

The President reminded members that as the Annual Meeting would be held on June 6, nominations must be handed in at the May Meeting. Mr. Chalk had already been nominated as one Auditor, and Mr. Hook was elected as the second on the motion of Messrs. Coghil and Miller. No nomination had yet been made by the Club for the Natural History Medallion, 1949.

Maranoa Gardens Planting Day was fixed for April 23, and over 40 trees would be planted, children from all the Camberwell schools and representatives of our Junior Club at Hawthorn taking part.

A letter had been received from the Bread and Cheese Club notifying our Club that on April 15 at Stawell a plaque would be unveiled to the memory of Mr. R. H. Croll.

There would be no Show during the present year; but the Secretary appealed to all members who can help in a future

\*As this number goes to press, we are sorry to record Mrs. French's death (on April 27), and extend sincere sympathy to her husband and family.

Show to get in touch with him in order that a meeting may be held in good time.

The following were elected as Ordinary Members of the Club: Misses R. Potter and E. Prescott. Nominations as Ordinary members were received from: Miss Foster (Miss Latham/Mrs. Robinson), Miss K. Coram (Mr. Dakin/Mr. Dunn), Mr. A. B. Scott (Messrs. Baker/Preston), Mr. Lording (Miss Latham/Miss Peterson), and Mr. Barr (Messrs. Hanks/Stewart); and as Country Members from: Mr. L. V. Steen (Messrs. Baker/Bryant); Mr. Auchterlonie (Messrs. Stewart/Lord) and Mr. Layton-Lockton (Messrs. Lyell/Garnet).

#### MOTOR JOURNEYS TO MT. CONNER, AYER'S ROCK AND MT. OLGA

Mr. J. M. Béchervaise gave a brilliant address on "Central Australia," freely illustrated with colour photographs. He spoke of the vast distances in The Centre, comparing the length of a journey there to one from the South of England to Iceland, and of the magnetic fascination of this vast country with its vivid colouring. On the first of two expeditions Mr. Béchervaise and party had reached Mt. Conner, and from there could see Ayer's Rock, tantalising at a distance of 70 miles. His second party actually reached the Rock, "the largest pebble in the world" (six miles around and over 1,000 feet high) and camped on the plain beneath its towering talus-free walls; they climbed its smooth rounded slopes at the only negotiable point. The photographs showed well how the desert flora bloomed miraculously after rain—the widespread mulga scrub, the casuarinas and cork-woods, even the "plantless" gibber plains. Mount Olga's boulder peaks and deep, forested défiles were no less spectacular than the solitary grandeur of Mt. Conner or Ayer's Rock, and it appeared amazing that they could be scaled at all. This address was of outstanding interest and heartily applauded by all who were privileged to hear it.

#### NATURE NOTES

The President reported having recently seen Emperor Gum caterpillars transfer quite happily from Peppercorn to Mannia Gum leaves.

Mr. V. Miller contrasted the size of Ayer's Rock with what is probably the biggest single rock in Victoria, located at the You Yangs. Whereas Ayer's Rock is six miles round, the You Yangs rock covers only 4½ acres. Mr. Hammet said how he was reminded of Mt. Arapiles (Vic.) when looking at Mr. Béchervaise's pictures. He also drew attention to an exhibit—a flower of the only Australian Rhododendron from Mt. Bellu-

den Ker. Mr. French took the opportunity to explain how Baron von Mueller had forecast that any representative of the genus would be most likely to occur in this locality, and that subsequent investigation had confirmed his supposition.

Mr. Burston suggested that a "Nature Walk," such as laid out during the recent Jamboree at Wonga Park by Mr. Swaby, should be suggested to the local Council which has lately taken over part of the Mossvale area recently visited by the Club.

Mrs. Pinches drew attention to a recent picture in the Press of wheat growing on black coal.

Miss R. Chisholm asked if the Club was doing anything about the apparent vandalism at Penguin Rookeries on Phillip Island. The President assured the meeting that this matter was in the very capable hands of the Director of Fisheries and Game, Mr. D. Butcher.

Mr. P. Fisch showed some lantern slides of photographs taken on a recent trip to the Baw Baw Plateau. Of exceptional interest was the moss-like, blue-fruited *Coprosma Moorei*—the first record of this diminutive species outside Tasmania.

#### EXHIBITS

Mr. A. A. Baker: Fossil wood, resin, and marcasite (replacing wood) from Brown Coal deposits at Bacchus Marsh.

Mr. C. J. Gabriel: Marine Shell, *Magilus antiquus* Moatfort (Mauritius).

Mr. A. N. Carter: Volcanic bombs from Mr. Leura, Camperdown.

Mr. J. S. Seaton: *Astroloma conostephioides* grown at Caulfield.

Mr. K. Atkins, from Botanical Gardens: *Alphitonia zizyphoides*; *Baeckea limifolia*; *Baccharis citriodora*; *Banksia collina*; *Geijera salicifolia*; *Hakea snowdenii*.

Mr. R. Savage: *Melaleuca thymifolia*, *M. radula*, *M. pulchella*; *Correa rubra* and *C. speciosa* (garden grown).

Mr. J. Ros Garnet: Pressed specimens of plants recently recorded for Victoria, including an undescribed species of *Xyris*, *Plantago debilis*, *Stylidium laricifolium*, and *Lycopodium carolinianum*—all from far East Gippsland and collected by N. A. Wakefield. Pressed plants of the four other species of Victorian *Lycopodium* were shown for comparison.

Mrs. M. E. Frcame: Live sea-slug (*Doris* sp.) from Altona, also skeleton of a stingray.

---

#### NEWS FROM COUNCIL, MARCH 1949

Every endeavour is to be made by the Council to have the mangroves behind Williamstown racecourse preserved, as they will need protection when the Housing Commission commences building operations on the racecourse Crown Land. Enquiries in a number of directions are to be made with a view to finding the best means of carrying out this objective.

The Show Committee is to be revived, in order that it may be functioning when required for the next F.N.C. show.

A sub-committee has been appointed to enquire into the financial standing of the Club and will make important recommendations to Council.



**REPORT OF NATIONAL PARKS AND NATIONAL MONUMENTS STANDING COMMITTEE, FIELD NATURALISTS' CLUB OF VICTORIA—APRIL, 1949**

During its long history the Field Naturalists' Club of Victoria has evinced a sustained interest in the National Parks of this State. It has been, in fact, largely instrumental in having a number of them proclaimed as reserves for the preservation of native animal and plant life — reserves where the biologist and naturalist might continue his studies of the natural history of this changing land of ours and where the general public might satisfy its yearning for the joys that come to those who derive deep and lasting pleasure from a sojourn in places remote from the hurry and frenzy of cities and towns.

The Club has always been concerned with the problems of conservation of wild life, and the first step in the direction of ensuring its conservation and protection was to have as many areas as practicable set aside for this purpose. The first objective has been realized to an encouraging degree, but now there remains the task of ensuring that these reserves fulfil the purpose for which they have been set aside. It is a problem not easy of solution because of the many conflicting interests that are concerned.

Perhaps the most detrimental interest working against the realization of the ideals of the wild life conservator is one born of ignorance — ignorance of the value and importance of these reserves to the economy of the State, ignorance of their usefulness as places for the enjoyment, edification and education of the people, ignorance of the fact that, in theory, they are set aside for all time, not merely for the people of to-day, but for those yet unborn.

That our National Parks are not even defined by law, that they are commonly exploited by such private interests as graziers, local government authorities and the ubiquitous vandal and that their administration is often quite haphazard, guided by no common policy and without adequate finance is merely an expression of this ignorance.

During the recent war the National Park at Wilson's Promontory was occupied by our own military forces, and some considerable damage was caused during this occupation. When it was ultimately returned to the people there was a public outcry about the sorry condition of the Park, and the F.N.C.V. arranged a Conference of the many natural history societies and of organizations interested in the welfare of the Promontory to discuss ways and means of rehabilitating it, to determine the extent to which it required re-stocking with those native animals

that had been introduced there in the days gone by and with those that originally existed there.

This Conference, held in June, 1946, under the Chairmanship of Mr. Crosbie Morrison, was attended by delegates from more than twenty organizations but time was so limited that delegates had opportunity to do little more than express the views of their society on the general question of the control and management of National Parks and to make some scathing comments on the condition of Wilson's Promontory in particular and of National Parks in Victoria in general. One important outcome of the Conference was that, before it adjourned it set up a committee to investigate the actual condition of the Promontory and to explore ways and means of bringing about an improvement in the administration of the National Park and how best to approach the problem of its rehabilitation. The committee was expected to report back to the Conference when it resumed its sitting at a later date. The personnel of this committee included Mr. J. M. Allen (Victorian Advisory Council for Flora and Fauna), Sir Julius Bruche (Wyperfeld National Park Committee), Messrs. A. G. Campbell (Victorian Branch, Australian Wattle League), E. T. Charlton (Gould League of Bird Lovers—Victorian Branch), A. H. Chisholm (Royal Australasian Ornithologists' Union), F. S. Colliver (Field Naturalists' Club of Victoria), J. R. Garnet (Australian Association of Scientific Workers—Victorian Division), A. R. Henderson (Victorian Town and Country Planning Association), P. Crosbie Morrison (Trustees of the National Museum, Melbourne), F. G. Stewart (Federation of Victorian Walking Clubs) and Miss M. Wigan (Bird Observers' Club of Victoria).

At its first meeting late in June of the same year the Investigating Committee continued the general discussion and decided to extend its survey to all the Victorian National Parks. As the F.N.C.V. had already in operation a National Parks and National Monuments sub-committee which was pursuing an enquiry along these lines, the task of the Investigating Committee was delegated to it. The Club's sub-committee included Mr. G. N. Hyam (Chairman), Mr. J. R. Garnet (Secretary), Messrs. S. R. Mitchell, C. F. Lewis and R. Kershaw, and their inquiries occupied a period of almost two years, during which time an astonishing and often depressing amount of information was gleaned from many authoritative sources and, in several instances, by direct observation by members of the sub-committee.

The results of their labours were finally published as the now well-known "Report on the National Parks and National Reserves of Victoria"—a publication which occupied twenty-four pages of foolscap and which aroused considerable interest

among many sections of the general public. It was widely circulated to the metropolitan newspapers and to all the societies, institutions, National Park Committees of Management and government departments and agencies which were thought likely to be in any way interested in National Parks.

The Investigating Committee again met on July 21, 1948 and, with a few minor amendments, adopted the "Report." Using it as a basis, a number of resolutions were drawn up and submitted to the second session of Conference which was convened on July 28. This session of Conference had an even wider representation than that of the first session held in 1946, since, in addition to the natural history interests, delegates from several government departments and commissions and from the Committees of Management of a number of the National Parks were present. Again time was too short to allow proper consideration of all the resolutions that were submitted, but five of particular importance were studied and carried unanimously:—

- (1) *That the Victorian Government be asked to enact legislation to ensure the adequate control and management of Victoria's National Parks and Reserves of like nature.*
- (2) *That all the several types and classes of Reserve dedicated to the use of the public and the protection of nature and to the preservation of historic, scenic and natural monuments, be defined in and covered by the Act.*
- (3) *That the projected Act provide for the creation of a single corporate Authority to administer such control and management.*
- (4) *That the Authority be endowed with sufficient funds from general revenue to administer the Act effectively.*
- (5) *That the Authority be empowered to recommend the acquisition and proclamation as a National Park or Reserve of any object, site and/or area which, in its opinion, should be so reserved in the interest of posterity.*

Before the Session ended a Standing Committee was elected by Conference to continue the work of examining the remaining resolutions. This committee included the personnel of the former Investigating Committee, together with four additional members namely, the Hon. C. E. Isaac, M.L.C., Professor J. N. Greenwood (Chairman of Kinglake National Park Committee of Management), Mr. I. G. Forbes (Research Officer of the State Rivers and Water Supply Commission), and Mr. W. J. Northey (Chairman of Wilson's Promontory National Park Committee of Management).

After several meetings its task was completed and the Conference reassembled for its third and final session on December 6, 1948, at which the Standing Committee presented for consideration five resolutions which were complementary to those carried at the previous session. The resolutions fully discussed and finally adopted without dissent were:—

(6) That the Authority consist of five (5) members, one representing the Government and the other four (4) appointed by the Government from nominees recommended by (a) Committees of Management of National Parks, (b) Natural History Societies, (c) Educational Bodies and (d) Recreational Organizations.

(7) That the members of the projected Authority be appointed for a limited term, up to, say, five years, with eligibility for reappointment and that provision be made for continuity by staggering the terms of individual members.

(8) That the functions of the National Parks Authority be:—

(a) To develop the general policy concerning National Parks and National Monuments.

(b) To recommend the acquisition and proclamation as a National Park or Reserve of any object, site and/or area which, in its opinion, should be so reserved in the interest of posterity.

(Note: It will be seen that the above clause (b) is identical in purpose with that of Resolution 5. It was deliberately incorporated in resolution 8 as being but one of the several functions of the projected Authority.)

(c) To administer funds for the preservation and development of all National Parks under its control.

(d) To appoint such personnel as are required to carry out the detailed supervision and development of the National Parks.

(e) To maintain overall supervision of detailed work carried out by Committees of Management.

(f) To control membership of Committees of Management under prescribed rules.

(g) To report annually to Parliament.

(9) That the present system of appointment and functioning of Committees of Management of our National Parks and Reserves be modified to provide for:—

(a) Limitation of tenure to five (5) years with the right of eligibility for reappointment.

- (b) *One representative of the local governing body or bodies of the district within whose boundaries the Reserve is situated.*
- (c) *One representative of a Government Department.*
- (d) *The selection by the Authority of nominees from a panel of names submitted by interested organizations or groups of citizens.*
- (10) *That the functions of the Committees of Management of the National Parks and Reserves under the control of the Authority be:—*
- (a) *To ensure the preservation and to promote the development of the Reserve under their charge in conformity with the general policy formulated by the National Parks Authority.*
- (b) *To control and direct such personnel as are allotted to them.*
- (c) *To regulate traffic in the Parks and to collect charges for the various facilities (parking, camping, etc.).*
- (d) *To report annually to the Authority.*

As the adoption of all these very worthy resolutions meant that a substantial cross-section of the community is desirous of seeing them put into effect, Conference set up a Standing Committee for this purpose. This committee, comprising the Hon. C. E. Isaac, M.L.C., Professor J. N. Greenwood, and Messrs. P. Crosbie Morrison (Chairman), J. Ros Garnet (Secretary), A. G. Campbell, E. T. Charlton, A. R. Henderson, J. F. McLaren (who had succeeded Sir Julius Bruche as Chairman of the Committee of Management of Wyperfeld National Park), E. G. Stewart and Miss M. Wigan, was charged with the responsibility of bringing them to notice at the appropriate time by deputation to the Government and the Chairman, Secretary and Professor Greenwood were appointed as a sub-committee to make the necessary preparation and, with the assistance of Mr. Isaac, to arrange the time and place of the deputation.

Closely following the final session of the Conference, the President of the F.N.C.V. (Mr. J. R. Garnet), Mr. G. N. Hyam and the Secretary of the Federation of Victorian Walking Clubs (Mr. E. G. Stewart) were invited to give evidence before the Parliamentary State Development Committee, whose wide terms of reference provided it with an opportunity of inquiring into the possibilities of development of our National Parks. This Committee, whose members are Lieut.-Col. J. A. Hipworth, M.J.A. (Chairman), Mr. H. V. Drew, M.L.A., Mr. W. Ruthven, V.C., M.L.A., Brigadier R. W. Tovell, M.L.A., Mr. R. K.



Whately, M.L.A., Mr. A. E. Shepherd, M.L.A., the Hon. I. A. Swinburne, M.L.C. and Mr. J. L. Gillies (Secretary), listened sympathetically to the submissions that were made. Some emphasis was given to the views expressed by the delegates who had attended the several sessions of the Conference on National Parks, and comparisons were drawn between the conditions of management and control of similar reserves in Queensland and in certain overseas countries and those prevailing in Victoria. It was suggested that the interests of not only naturalists and those concerned in the preservation of nature, but of the State itself, would be served by utilizing public funds to establish our National Parks on a sound basis and by bringing into being an Authority which could accomplish not only this, but the further objective of preserving our unique National Monuments.

A number of documents, including the Report on National Parks and National Reserves in Victoria and those covering the proceedings of the several sessions of the National Parks' Conference were submitted as exhibits. It is felt that this Committee has provided the Club with one of the most encouraging avenues of approach in furthering the campaign for legislative action in respect of our National Parks and National Monuments.

Such is a brief outline of the development of the campaign, which was initiated by the F.N.C.V. It is hoped that 1949 will see the end of our labours in this phase of the work, but so long as there is work to do, so long as ignorance has to be combated and overcome, the Club can be assured of the support and encouragement of all those organizations and agencies which have added their voice to the cry for a better deal for what should be among our most important centres of nature preservation—our National Parks. The subjoined list includes those bodies which have supported the F.N.C.V. during the campaign:

Anthropological Society of Victoria.  
 Australian Forest League—Victorian Branch.  
 Australian Natives' Association.  
 Australian Wattle League—Victorian Branch.  
 Bendigo Field Naturalists' Club.  
 Bird Observers' Club.  
 Botany Department, University of Melbourne.  
 Federation of Victorian Ski Clubs.  
 Federation of Victorian Walking Clubs.  
 Gould League of Bird Lovers—Victorian Branch.

Kinglake National Park Committee of Management.  
 Lakes National Park Committee of Management.  
 McCoy Society.  
 Melbourne Bush Walkers.  
 Melbourne Walking Club.  
 National Fitness Council.  
 Royal Australasian Ornithologists' Union.  
 Royal Automobile Club of Victoria.  
 Royal Society of Victoria.  
 "Save the Forests" Campaign.  
 Ski Club of Victoria.  
 Town and Country Planning Association of Victoria.

Traralgon Tourist League.	Department of Fisheries and Game
Victorian Compost Society.	Forests Commission of Victoria.
Victorian Mountain Tramping Club.	Government Tourist Bureau.
Wyperfeld National Park Committee of Management.	Melbourne and Metropolitan Board of Works.
Youth Hostels Association	Soil Conservation Board.
The National Herbarium, Melbourne.	State Development Committee.
The National Museum, Melbourne.	State Electricity Commission
Central Planning Authority and its regional committees.	State Rivers and Water Supply Commission.
	Zoological Board of Victoria.

Although the F.N.C.V. has borne the major part of the cost of this campaign, several of the associated organizations have assisted materially. Donations totalling five guineas have been received from the Wattle League, Committee of Management of Kinglake National Park and the Melbourne Bush Walkers. To both the Kinglake National Park Committee and the "Save the Forests" Campaign we are grateful for the work they have each undertaken in preparing circulars and multigraphed minutes and Conference Proceedings.

As well as undertaking the organization of the Conference sessions, the Club's National Parks and National Monuments Committee which, in July, 1948, was established on a permanent basis, has worked assiduously to maintain the campaign as a lively movement. There has been a regular exchange of views on matters affecting nature protection and conservation with interstate and overseas organizations. The Queensland National Parks Association has given valuable help in supplying relevant Parliamentary Acts and Regulations and a number of informative booklets and leaflets dealing with the 240 National Parks in that State. The Wild Life Preservation Society of Australia, the Forestry Advisory Council of N.S.W., and private individuals in that State have all materially assisted us in a similar way. The New South Wales organizations are gravely concerned for the fate of the various reserves in their State and are now convinced that the whole question of nature protection, wild life preservation and forest conservation can be tackled effectively only on a Commonwealth-wide basis.

Some interesting information regarding the structure of the National Park Commission in South Australia has been made available through the good offices of Mr. Noel Lothian, who, by virtue of his appointment as Director of the Adelaide Botanic Gardens, is a member of the Commission. From West Australia has come a wealth of data concerning the several types of reserve in that State, and for this we are indebted to the West Australian State Gardens Board.



All these documents and data are adding to a collection which is proving of great use to the Club's National Parks and National Monuments Committee, and, indirectly, to the Conference Standing Committee.

Our overseas contacts have brought us information from Denmark, Sweden, Switzerland and Great Britain. Through the kindness of the Director of the British Museum (Natural History), we have received a number of publications, several of which have been issued under the auspices of the British Government. These deal with National Parks and similar reserves in Great Britain, and a perusal of these papers has revealed how similar to our own are the problems in that country.

In Europe has been founded the International Union for the Protection of Nature, and it seems likely that this organization, working under the aegis of the United Nations, acting through U.N.E.S.C.O., will be securely established as a body of considerable world influence. The General Secretary of the Union has been good enough to forward us a particularly fine and well-illustrated publication, "Pro Natura," which is now issued each month, and the Council of the Club has, in exchange, agreed to forward our own journal, the "Victorian Naturalist."

At home, the Committee has used its influence to discourage such projects as the transfer of the Royal Park "Zoo" to Fern-tree Gully National Park. It is surprising that the proposition was ever contemplated, as its announcement in the Press closely followed the withdrawal by the Chief Secretary's Department of the licence held by a private concern to keep protected animals in captivity within the precincts of the National Park. This withdrawal followed representations by both the F.N.C.V. and the R.A.O.U., and our contention that the National Park was quite unsuited for the confining of animals had the support of the Director of Fisheries and Game.

The Club, its Council, and the National Parks Committee have maintained very cordial relations with all the governmental agencies with whom there has been contact and, with the continued sympathetic and able assistance from them, and from our own members, it is believed that the care of our historic and natural monuments and our biological research stations — the National Parks and Nature Reserves — will yet become an integral and properly appreciated responsibility of the people of Victoria and their Government.

—G. N. HYAM (Chairman).

J. ROS GARNET (Secretary).

S. R. MITCHELL.

COLIN LEWIS.

F.N.C.V. National Parks and National  
Monuments Committee.

April 12th, 1949.

## RECTIFICATIONS TO THE NOMENCLATURE OF SOME KOCHIA SPECIES IN THE "TRIPTERA" GROUP

By DR. ERWIN GAUBA, Research, Victoria

In the *Victorian Naturalist*, Nov., 1948, p. 165, I established a new species, *Kochia decipiens*, citing (among specimens preserved in the National Herbarium, Melbourne) a collection from the Aroona Range, South Australia, by R. Tate, under what I believed to be a manuscript name, "*Kochia pentatropis*." Through a letter from Mr. S. T. Blake, Botanist at the Brisbane Herbarium, my attention was recently drawn to the fact that Tate had correctly published a diagnosis of his *K. pentatropis* [in *Trans. Royal Soc., S. Aust.* vii, 67 (1885)]. Thus, according to the Rules of Nomenclature, my name *K. decipiens* must lapse as a synonym of *K. pentatropis*.

Unfortunate as was the publication of *K. decipiens*, thereby adding yet another synonym to the long list already existing under *Kochia*, I feel that some explanation of my action is pertinent and that the literary confusion surrounding entities in the "*Kochia triptera*" group of species requires clarifying by re-examination of type materials.

The repeated changes in systematic position and rank of *Kochia pentatropis* by various authors, more particularly the fact that Tate himself had later rejected his own plant as a *species propria*, led me to the conclusion that *K. pentatropis* was only a *nomen nudum*; so I placed it as a broad-winged form under my *K. decipiens*. In the *Key to South Australian Plants* (1890), Tate still maintained his *K. pentatropis*; but later, becoming doubtful that it was really specifically different from *K. decaptera* F.v.M., he states: "*K. pentatropis* Tate is now reduced to *K. decaptera*" [Suppl. Census Fl. Extratrop. S. Aust., in *Trans. Royal Soc. S. A.* xix, 79 (1894/5)]. If this statement were correct, then my *K. decipiens* should be considered as a synonym of Mueller's *K. decaptera* which, in J. M. Black's opinion, is a very dubious species.

In "Additions to the Flora of South Australia," No. 19 [*Trans. Royal Soc. S. A.*, xlv, p. 6 (1921)] Black remarks under *Kochia triptera* Benth: "The more specimens I see, the more I feel convinced that *K. decaptera* F.v.M. *Fragm.* IX, 75 (1875), cannot be maintained even as a variety." Nevertheless, in both the first and second edition of his *Flora S. Aust.* (1921 and 1948), *K. decaptera* is presented under the combination *K. triptera* Benth var. *pentaptera* J. M. Black, while *K. pentatropis* Tate appears under *K. triptera* var. *eriodlada* Benth. So, finally, both Tate's and Mueller's plants were relegated to *Kochia triptera*—a species

well defined by its "broadly turbinate tube" with a "thick solid base." But how can Tate's *pentatropis*, with an "obconic tube" hollow down to its base, be brought into any close affinity with *K. triptera*?

We now approach the question — *what is Kochia decaptera* F.v.M.? Its diagnosis is based on "fruiting perianths" only, collected by E. Giles to the north of Fowler's Bay, S.A., in 1875. I examined the few original samples in the Melbourne Herbarium, with the amazing result that they represent nothing else than the withered seceding corollas of some *Abutilon* species (*Malvaceae*)! A certain resemblance cannot be denied: the contorted petals imitate a winged conical tube, while the base of the corolla, splitting into five lobes, copies the horizontal wings.

Therefore, "*Kochia*" *decaptera* F.v.M. doesn't exist at all, and can be dropped from future lists of synonymy. On the other hand, I re-affirm as a good species *Kochia pentatropis* Tate, rejected by its author, and place under it as a synonym my *Kochia decipiens* with all its forms, grouping them around Tate's Arcoona specimens as type.

No doubt responsible for a great deal of the confusion, indicated above, is the fact that too much importance has been attached to the very unstable number of perianth wings, as expressed in such epithets as *pentatropis*, *decaptera*, *pentaptera* and *triptera*. The best reliable character for classifying those *Kochia* species that I have treated is the *structure and shape of the tube of the fruiting perianth* (shown in Fig. 2, *Vict. Nat.* LXV, p. 164):

Tube broadly turbinate . . . . .	<i>K. triptera</i> Benth.
Tube funnel-shaped . . . . .	<i>K. erioclada</i> Gauba (syn. <i>K. triptera</i> var. <i>erioclada</i> Benth.)
Tube obconic . . . . .	<i>K. pentatropis</i> Tate (syn. <i>K. decipiens</i> Gauba).

In each of these three species the *number* of vertical wings is so inconstant, even on the same sample, that the segregation of any varieties based on numbers alone is not justified. Both *Kochia erioclada* and *K. pentatropis* are now known from several parts of the Victorian Mallee and, since contributing my article to the November number of the *Victorian Naturalist*, specimens of genuine *Kochia triptera* have reached the National Herbarium for the first time from a locality in this State, viz., "In a depression between low sand ridges, 3 miles S.E. of Mildura University" (*leg.* Brian Easterbrook, 11/4/1948, 10/11/1948); these show the typical glabrous-glaucous branchlets and foliage and laccate broadly turbinate fruiting perianth tubes of Benthani's species.

## SALUTE TO THE BIRDS OF A MELBOURNE PARK

By A. H. CRISHOLM

Writing rather more than six years ago (*Vict. Nat.*, September 1942), I gave some detailed notes on the birds of Wattle Park, and some months later (April 1943) published additional observations drawn from the same area. Now it seems desirable to submit some further, and perhaps final, comments on the birds of this air-well-of suburban Melbourne.

As with the earlier papers, the notes here given relate only to the eastern portion of the park, an area perhaps 600 yards long by 300 or 400 yards wide. It is a well-grassed spot carrying a considerable number of eucalypts (some quite old) and acacias, together with a sprinkling of shrubs growing in an eroded channel.

Because of the wealth of native trees, it is possible to find on any favourable occasion, during a ramble of an hour or two, at least 20 species of native birds. Thus the area, served as it is by tram cars from the city, ranks as a very gracious asset for others besides those people who live in neighbouring suburbs. When members of the F.N.C. last paid a company visit there, to the number of about 50, they saw in a brief time 16 nests, belonging to 11 species; and when some 250 trainees from the Teachers' College had a similar ramble, they too saw many birds and quite a number of nests.

Over the seasons and the years, of course, the number of species recorded is much larger than the number that may be seen during any one ramble. Some of the birds on the list for the park are seasonal visitors. Others are "casuals". It is one of the charms of the place that you never know what novelty will be there to greet you.

Here is a summary of the number of species recorded for the park (eastern end only) during the past eight years:

Native "regulars" and frequent visitors ..	39
Native species rarely seen in area .. ..	17
Introduced species in or near area .. ..	<u>8</u>
Total .. ..	64

Necessarily, the 56 native species recorded for the area include quite a number of birds that one would not expect to see in a metropolitan park. It is surely remarkable to find on a list for such an area the names of such birds as the Red-backed Grass-Parrot, the Rose Robin, and the Grey Currawong, even though they be noted only as casual visitors. It is remarkable, too, that the records include among birds that breed in the area such species as the Rufous Song-Lark, Scarlet Robin, Oriole, White-winged Triller, Regent Honeyeater and Sacred Kingfisher, to say nothing of sundry Cuckoos.

My total of native species that have been known to breed in the park (eastern end only) is now 28. Possibly a check upon other portions of the reservation would materially increase this figure.

It follows that an area having a bird-list that includes five kinds of parrots, three robins, and seven honeyeaters must produce from time to time some very beautiful sights. Reference to these, as well as to other interesting observations garnered in the park during recent years, is made in the detailed notes that follow.

**PARROTS.**—Earlier references have remarked the frequent presence in the park of the Red (Eastern) Rosella and the occasional appearance of that other beauty-bird, the Crimson Parrot or Red Lovry. In addition, an odd pair of Swift Parrots—those pretty birds with the clinking notes and the rapid flight—have been noted as casual visitors, and so too have small companies of the dainty little Budgerigar. Curiously, "Budgies" irrupted in the area in January of 1949, when, according to a local resident (Mr. S. W. Harcourt), there were at least a thousand birds festooning the gum trees during several days. We may well believe that the sight was very striking. That aside, it is difficult to conjecture what caused so many of the birds to visit Wattle Park.

An unexpected addition to the list of park parrots came in August of 1948: to my surprise a company of twelve Red-backed Grass-Parrots (eight males and four females) was seen feeding contentedly beneath the wattles. This species is not rare, of course, but one looks for it in the sub-urban rather than in a suburban park. Apparently opinions differed among the birds regarding the wisdom of remaining in the area, for a month later only one pair remained, and soon afterwards those two disappeared.

**CUCKOOS.**—All three of our commonest parasitic birds, the Pallid, Fan-tailed and Narrow-billed Bronze Cuckoos, have been recorded in the area in springtime, and one species at least, the enterprising Pallid bird, has been known to foist its eggs upon White-plumed and Regent Honeyeaters. Also, on one occasion it seemed to have achieved the novel feat of causing an English Sparrow to become a fosterer. On December 30, 1944, a peevish cheeping revealed a young Pallid Cuckoo, perhaps a week out of the nest, sitting in nightjar fashion on a broad branch of a gum; and presently, to my surprise, a female sparrow flew up and fed the fledgling. Since no other kind of bird approached during 40 minutes of watching, it appeared that the young cuckoo actually "belonged" to the sparrow—an unusual development in the case of a seed-eating bird. Obviously, the sparrow was a novice at the business, for instead of popping food into the large mouth and retreating quickly (as most practised fosterers do) she usually stood up close and "pumped" food repeatedly into the wide-open bill. Possibly, however, that action was prompted by the nature of the food—insects can be passed over quickly but seeds have to be broken up and fed to the babe in "spoonfuls".

**TAWNY FROGMOUTH.**—We first noted Frogmouths breeding in the park in September of 1943 and have found nests in each spring ever since. A normal nest is a saucer-shaped structure of twigs in the rough fork of a gum tree (over which the curious, protectively-coloured bird broods in statuesque fashion), but in one instance the site chosen was an old nest of the Magpie-Lark. On August 25, 1946, a queer zooming or buzzing sound caused me to peep up into a Yellow Box, and there I found the "buzzer" to be a Frogmouth, sitting lizard-like on a branch. It was the first time I

had heard such a sound from one of these birds, and the first time I had heard one call in daylight.

Another nocturnal bird was added to our park list in August of 1947: it was a stray Boobook Owl, and its presence was being strongly resented by a band of Chickwees.

**KINGFISHERS.**—Several pairs of Kookaburras inhabit the area. Possibly some breed there, and possibly, too, they are responsible for the calamities that sometimes overtake the nests of various small birds. A migratory species, the Sacred Kingfisher, usually visits the park during springtime and remains to breed in a hollow tree near the kiosk.

**SWALLOWS AND SWIFTS.**—Both the House Swallow and the Fairy Martin are to be noted from time to time hawking above the park, and in some years it is possible to see small numbers of swallows at work there in the depth of winter. Swifts were added to the list in March of 1947 when a considerable number of Spinetails was seen carrying out aerial evolutions above the treetops.

**FLYCATCHERS.**—It was perhaps injudicious of me to say, in an earlier paper, that several pairs of Wagtails are "constant" to the area; for, although the species nests freely among both the gums and wattles, and although numbers of the birds may usually be seen in late summer and autumn, the main body appears to "go walkabout" in winter, and then it is, sometimes difficult to find even a single bird. Nesting of the species may extend from as early as August to as late as January, each pair usually having more than one brood. In at least two instances Wagtails in the park have been known to nest in the same trees as those of Maggie-Larles, a combination that has been freely recorded elsewhere. Another oddity in black-and-white was recorded when one of the local Magpies (which are in general a peaceable contingent) was seen to attack a black-and-white terrier, whereupon a Wagtail in turn attacked the Magpie.

That other familiar flycatcher, the little Grey Fantail, continues to be a cool-weather visitor to the area (usually arriving in March and sometimes staying as late as October), and the species that is often confused with the Wagtail, namely, the Restless Flycatcher, or "Scissors-grinder", has been twice recorded of late as a casual caller at the park.

**ROBINS.**—As recorded earlier, the vegetation of the park is not suitable for the charming Yellow Robin, but during winter an observer may see occasional Flame-breasts in the open parts near gardens and Scarlet-breasts among the wattles and gums. Scarlet-breasts nested in the area in 1942 but were scared away by a military camp in the following year and have since been known only as visitors during the cool months. Incidentally, they seem then to be always in pairs.

An interesting addition to the park's list of robins was made on September 19, 1948. "Here's another Mistletoe-bird," shouted a local resident who had just been introduced to that species, and who was peering into a rather dense bush. The spot being no place for a Mistletoe-bird, I approached it dubiously. Then, to my astonishment, I saw a fine little male Rose Robin, all alone and obviously a trifle bewildered. How did this jungle-breeding bird find a way, on its small wings, across open areas to the temporary haven of Wattle Park?

**WHISTLERS.**—It is possible to see a Golden Whistler, usually a female (or at any rate an uncoloured bird) but sometimes a radiant male, in the park during any one of the cooler months. Once, on a bright day in July, I saw a male "Goldie" and a male Scarlet Robin perched near each other in

a grey old tree, and—well, you may readily imagine what a pretty sight they made.

Our other familiar *Pachycephala*, the Rufous Whistler, appears in the area only capriciously. In 1943 a male bird was seen on October 3, and, oddly enough, not a sound did it utter—this in the height of spring! In 1944 a male caused surprise by appearing as early as August 13, and on December 17 of the same year further surprise was caused by the sight of two Rufous Whistlers in female plumage, one of which was singing heartily. (There is an impression among some ornithologists that the female Rufous Whistler does not sing, but, as a fact, I have heard and seen both male and female, when agitated, singing lyrically together at a nest, and that while their beaks were full of insects.)

THORNBILLS.—Wattle Park continues to be the most reliable spot near Melbourne for observation of that tiny and extremely active bird, the Little Thornbill, which lives in close association with the acacias of the area. The small nest is more difficult to find than that of the other tit of the locality, the Yellow-tailed Thornbill. In the case of one nest of the Yellow-tail, built in a thorny bush, the situation did not afford scope for the usual "top story", and so this was set apart, ten inches away from the nest proper.

Mr. K. A. Hindwood has suggested that the "upstairs room" of the Yellow-tail is not designed for a special use, such as a roosting place for the male bird, but is constructed by the male bird merely because his nest-building urge remains strong even when the egg-chamber is completed and his mate is brooding. Perhaps so. But why is the practice restricted to this one kind of small bird?

CRESTED SHRIKE-TIT—Having long been familiar with the breeding-time notes of Shrike-Tits, I have found at least twelve of their nests in the park during the past eight years—always one in a season and occasionally two or three. The breeding period may range from August to November, and in every instance the nest, although constructed by small birds with beaks resembling those of parrots, is a model of artistry—cup-shaped, deep, very compact, symmetrical, and attached firmly to thin twigs at the tip of an upright branch, perhaps 25 or 30 feet aloft.

Once, on the first day of spring (September 1), I heard the soft nesting whistle of a Shrike-Tit and saw two birds. Presently I "lost" them both, but after a while found the male again and, from subsequent observations, suspected him of taking up a position midway between the source material and a half-built nest. That deduction proved to be sound, and the point may be worth keeping in mind by other observers who want to find the treetop cradles of these birds. Both Shrike-Tits, of course, are yellow-breasted, but the throat of the male is black while that of the female is greenish. In general the male is content to supply incidental music while building is in progress, but sometimes he assists in the work. Also, he takes his turn at brooding the eggs and feeding the young.

Shrike-Tits appear to remain in the park during the cooler months, although their voices then are rarely heard. It is odd that at such times they are often seen in threes. This habit on the part of certain birds—the custom of associating in threes—needs investigating.

WHITE-WINGED TRILLER.—In my notes of April 1943, I made somewhat detailed remarks on four pairs of Trillers that bred in the park in the spring of 1942. Now it is to be stated that a female of the species made an unexpected appearance in the area on May 2, 1943, but no breeding occurred in any of the following three seasons. In November 1946, how-



ever, some few of the shapely little birds appeared, but then, instead of beginning nesting at once (as they did in 1942), the males spent much time in disputation; also, when three nests were built they remained largely untended, and in December all of the birds vanished. In the spring of 1947 I saw nothing of the Trillers, but in 1948 two pairs attended and built nests, in both instances eggs were laid and young hatched, and in both instances the male birds took part in the brooding and feeding. Strangely, though, both were quiet throughout, in strong contrast to their usual fondness for chatter. Curious birds! You never can tell whether they will or will not appear or how they will behave if they do appear.

**WOOD-SWALLOWS.**—Of three species of these graceful birds recorded for the park, the most constant one is the Dusky Wood-Swallow. Although this dapper little bird usually deserts the area in winter, varying numbers are present during perhaps nine months of the year, and, from time to time, you may see the "Blujes" tending their small stick nests, or cuddling up to each other on a horizontal branch, or soaring and swooping after flying insects, or clustering together for the night in a tree-fork or among dense leaves. One nest, built in a tree-cleft only 4 feet from the ground, contained the unusual number of four eggs.

Like other springtime visitors to the area, the two migratory members of the group, the White-browed and Masked Wood-Swallows, have continued to be sporadic in their appearances and generally unpredictable in their brooding behaviour. Occasionally, in recent years, the White-brows have built nests in the park and then have sometimes failed to use them. One nest was placed in an old nest of a Magpie-Lark.

An amusing incident occurred when, on a November evening, a Blue Jay leaned over a few inches from one branchlet to another to feed its young one. A male White-brow immediately flashed between the old and young "Jays", grabbed the food, and flew hurriedly away, with the larger bird in hot pursuit. As that Wood-Swallow had taken up a strategic position near the young Blue Jay, it seemed to me that the theft was carried out on a basis of "malice aforethought".

**LARKS.**—Although Rufous Song-Larks were conspicuous in the park in the spring of 1941, and three of the rarely-found nests were discovered then, the birds failed somehow to reappear in the following two seasons, both of which were good. In October of 1944, however, the species "staged a comeback", and on November 16 I went to the area in the coolness of dusk to try to flush a bird from a nest. Sure enough, at a spot on the hillside where I had seen a slim female bird previously, a lark rose at my feet, disclosing a nest cleverly built into a depression, with three pretty eggs resting on a lining of horse-hair. Two days later some of us noted, in another part, the general area favoured by a male Song-Lark, and when the female appeared we followed her to a neat nest. Again there were three pretty eggs and again the lining was horse-hair. In each instance we heard only a slight grating or churring note from the lady, whereas the males were vocally very assertive. Since then the appearances of the bird have been unaccountably sporadic, and no further nests have been found.

Until recently we had been accustomed to see Pipits (Ground-Larks) and an occasional pair of Brown Song-Larks, as well as a few pairs of English Skylarks (which seem to sing as well in May and December as they do in springtime), in a field just east of the park. Now, however, that field has become a new suburb, and so we shall hear the larks there no more.

**MISTLETOE-BIRD**.—I have seen single examples of this tiny bird in the area during April, May and June of various years, which period appears to be the fruiting-time of some few rather anæmic-looking specimens of mistletoe that are attached to both eucalypts and acacias. None of the plants is at all conspicuous, but the "professional" eye of little *Diatum* discovers them all with unfailing skill. A memorable sight is provided when the red and blue feathers of the male bird are burnished by sunlight.

**SPOTTED PARDALOTE**.—First noted in 1943, this pretty little Diamond-bird has since become revealed as an established resident of the area, mainly being known as an un bodied voice issuing from the tops of the large Yellow Box trees. Doubtless the species breeds in the park: a pair was seen trying to make a nest-burrow in the low bank of a roadway.

**HONEYEATERS**.—The blithe shout of "chick-o-wee" being one of the commonest and most distinctive bird-calls about Melbourne, it follows that the White-plumed Honeyeater is abundant in Wattle Park, and that at all seasons. The Red Wattle-bird is less constant: sometimes only a few are apparent and at other times the din created by the raucous voices of many birds dominates the area. Other honeyeaters of the locality, previously listed, are the Brush Wattle-bird, Noisy Miner, Regent Honeyeater, and Silvereye, to which should be added the Spinebill, recorded for the eastern portion of the park in 1947.

The pretty Regent Honeyeater, it may be noted, seems to gather a good deal of food from the leaves of the Yellow Box. Three nests of this bird were found in one season, but you cannot always rely on seeing it in the area.

**CROW-SHRIKES**.—White-backed Magpies appear to have maintained their normal numbers in the park over several years, apparently surplus birds move off to fresh fields. "Maggies" are, of course, among the chief vocalists of the area; they carol in autumn as well as in spring, and both singly and in choruses, a fact that seems to dampen the theory that bird-song is prompted only by the desire to defend territory in breeding-time.

Grey Butcher-birds, too, may be heard singing lustily at almost any time, and notably in autumn. On January 21, 1945, I saw a pair of these birds singing strongly while attacking a Kookaburra. Like the Magpie, the Butcher-bird breeds regularly in the park. In one instance a "Whistling Jack" was seen, on October 23, sitting on a nest that had been seen to contain eggs on August 14; evidently it was tending a second or third clutch in the same nest.

An addition to the Crow-Shrikes of the area was made when, in September of 1945, a Grey Currawong was heard and seen lifting up its clanging voice among the gum trees. That bird remained in the park about a month. Later, in May and July of 1947, the same or another member of the species was observed.

**OTHER SPECIES**.—"Regulars" in the area include also the Grey Thrush (seen at all seasons but not known to nest there), the Black-faced Cuckoo-Shrike (often nests in the same spot as was used in a previous season), the Bronzewing Pigeon (breeds in the park), and the Magpie-Lark (nests freely from August to December). Casual visitors include the Goshawk, Crow, White-faced Heron, Landrail, Brown Quail, and Oriole, which last has failed to nest since its enterprising experiment of 1941 (see paper of September 1942). The Blue Wren and White-browed Scrub-Wren stray into the area from blackberries in the south-eastern corner.

Introduced birds recorded in or near the park include the European Sparrow, Starling, Blackbird, Thrush, Goldfinch and Skylark, and the Indian Minah and Java Dove.

**WHAT, WHERE AND WHEN****General Excursions:**

- Saturday, May 7—Monbulk and Kallista. Subjects: "Gully Tree-ferns and Fungi." Train from Flinders Street 9.18 a.m. to Upper Ferntree Gully, then service bus to Monbulk. Bring two meals. Members on this excursion to collect fungi for exhibit at May general meeting.
- Saturday, May 21—National Museum. Subject: "Australian Marsupials." Leader: Mr. C. W. Brazenor (mammologist to Museum). Meet at Russell Street entrance 2.30 p.m. Names of intending excursionists to Mrs. M. Pinches, 8 Thomas Street, Brunswick.
- Saturday, May 28—Mystery Winter Walk (approx. 6 miles, easy going). Leaders: Mr. and Mrs. D. S. Lewis. Nash's bus from Batman Avenue, 9 a.m. Bookings, 7/6, with leaders, 77 Dendy Street, Brighton. Bring two meals.
- King's Birthday week-end, June 10-13. Albury and Upper Murray. Subjects: Physiography, Birds, and General. Leader: Mr. H. Stewart, with Mr. J. Watson as local guide. To leave Melbourne by evening train on Friday, June 10, return Monday evening. Hotel accommodation at Albury, from thence district motor excursions will be made. Limited party only. Further particulars from leader.

**Group Fixtures:**

- Saturday, May 7—Geology Discussion Group excursion to Essendon Sand Pits. Subject: "Field Work of Part I." Meet at Essendon railway station 2 p.m.
- Monday, May 21—Botany Discussion Group. Royal Society's Hall, 8 p.m. New members welcome. Further details from Hon. Sec. of Group, Mrs. A. Osborne, 21 Renwick Street, Glou Iris.
- Thursday, June 2—Wildflower Garden Group. Royal Society's Hall, 8 p.m. Subject: Film Studies, by Mr. Fred Lewis. (Hon. Sec., Miss Dawn Weston, XW 2091.)
- Friday, June 3—Marine Biology Discussion Group. Royal Society's Hall, 7.45 p.m. Lecturette by Mr. A. J. Swaby. Beginners invited.
- Tuesday, June 7—Geology Discussion Group. Royal Society's Hall, 8 p.m. Hon. Sec. of Group, Mr. A. A. Baker, 53 Carlisle St., Preston, N.18.

H. E. C. STEWART,  
For F.N.C.V. Excursion Committee.

**FIXATION OF ODOURS BY ANIMAL HAIR**

I wonder if others have noticed that the coats of some dogs pick up a pleasant heather-like scent after being for a few days in the scrub at Sorrento or other ocean localities? It lingers on the coat of one of our dogs for several days, and we notice the same scent on my husband's tweed coat after he has been at Sorrento for a week or two. I fancy it is akin to the characteristic scent of Harris tweeds.

The odour seems to be gathered from the air, rather than from contact with the scrubs, and is, I assume, held by the natural oil of certain hair, or woollen materials. Although both dogs share our holidays, the scent is picked up by only one of them. A former dog carried the same fragrance for days after a holiday at Sorrento.

—E.C.

# The Victorian Naturalist

Vol. 66.—No. 2

JUNE 1, 1949

No. 786

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on May 9, 1949. The President (Mr. J. Ros Garnet) and about 160 members and friends were in attendance.

A welcome was extended to any visitors present, and cordial greetings to Miss Jean Galbraith, an esteemed member from South Gippsland.

With regret the President announced the deaths of Mrs. C. French, Mr. Gregory Mathews (in England), and Mr. Vernon Davies of Toolern Vale. Expressions of sympathy had been sent, and several Club members had attended the funeral of Mrs. French. Members were asked to stand for a moment as a tribute to the memory of our former friends.

The planting day at Maranoa Gardens on April 23 had been a great success; more than 100 interested members and friends of Maranoa were present, and children took an eager part in planting the shrubs. A short address was given by the local Member of Parliament, Mr. Reed; the Mayor of Camberwell was present, also Mr. (Brigadier) Wilfrid Chapman.

The Club has nominated Mr. E. E. Pescott for the 1949 Australian Natural History Medallion award.

By kind co-operation of an exhibitor, the National Parks Campaign will receive publicity in the form of an exhibit of animals and birds in appropriate setting at the International Motor Show.

Notice of motion was given, "That the annual subscription of Country and Inter-State Members be increased to 15/- in order to cover their share of the increased cost of *The Victorian Naturalist*." On behalf of the Finance Sub-Committee, Mr. Hyam and Mr. Hooke spoke in support of the motion. Mr. Hyam pointed out that the present country subscription of 12/6 did not cover the actual costs associated with the *Naturalist*, which have almost doubled over the last three years.

Mr. Miller reported that the plot of ground which had been allotted to the Club by the St. Kilda Council many years ago is in a neglected and disgraceful condition, and he asked that the matter be discussed by Council.

The following new members were elected:—As Ordinary: Miss E. L. Foster, Miss K. Coram, Mr. A. B. Scott, Mr. L. V. Steen, Mr. E. K. Lording and Mr. J. W. Barr; and as Country Members: Dr. E. Langton-Lockton and Mr. R. N. Auchterlonie.

The following were nominated for membership:—As Ordinary: Mr. H. Best (Mr. J. Willis/Mr. P. Bibby), Mr. P. Green (Mr.

J. Willis/Mr. P. Bibby), Mr. T. E. Allen (Mrs. Freame/Mr. Freame) and Mr. Clark (Mrs. M. Freame/Miss M. Wigan); and as Country: Mr. J. Watson (Mr. H. C. E. Stewart/Miss M. Wigan).

Nominations for office-bearers during 1949/50 were as follows: *President*, Mr. Colin Lewis (Mr. Garnet/Mrs. Sarovich); *Vice-Presidents*, Mr. Fred. Lewis (Mr. Stewart/Mr. Sarovich) and Mr. George Hyam (Mr. Hammet/Mr. Chalk); *Hon. Secretary*, Mr. H. Preston (Mrs. Pinches/Mr. Lee); *Hon. Assistant Secretary*, Miss A. B. Adams (Miss Young/Mr. Hanks); *Hon. Treasurer*, Mr. Lord (Mr. Hooke/Mr. Chalk); *Hon. Assistant Treasurer*, Miss N. Fletcher (Mr. Lord/Mr. Preston); *Hon. Editor*, Mr. J. H. Willis (Miss Young/Miss Raff); *Hon. Assistant Editor*, Miss I. Watson (Mr. Preston/Miss Blackburn); *Hon. Librarian*, Mr. A. Burke (Miss J. Dixon/Mr. Seaton); *Hon. Assistant Librarian*, Mr. R. Lee (Mr. Watt/Mrs. D. Lewis); *Hon. Excursion Secretary*, Miss J. Blackburn (Mr. Lord/Miss Adams).

The following nominations were made for Council members: Mr. H. C. E. Stewart (Mr. Lord/Mr. Hooke), Mrs. M. E. Freame (Miss Raff/Mr. Preston), Miss M. L. Wigan (Mr. Hardy/Mr. Hyam), Mr. R. B. Jennison (Mr. Hyam/Mr. Watts), Dr. M. Chattaway (Mr. Hardy/Mr. Coghill), Mr. A. Cobbett (Mr. Stewart/Mr. Hooke), Mr. R. Davidson (Mrs. D. Lewis/Mr. D. Lewis), Mr. Dodds (Mr. Lee/Mr. R. Dunn) and Mr. T. C. Bryan (Mr. Preston/Mr. Baker).

#### THE "RUINED CITY" OF ARNHEM LAND

The "city" of Mr. Keith Young's film is roughly 80 miles south-east of Darwin, through practically unknown country. It is comprised of a maze of cliffs and gorges, in conglomerate, sandstone and limestone, eroded away into the most fantastic shapes and beautiful colours by water and wind action under a merciless sun—a place of dread to aborigines, who could not be enticed into the area and who were convinced that Mr. Young would be devoured by the presiding evil spirit. Little animal life was apparent there, but cockatoos, snakes, many iridescent beetles and countless flies had been noticed in the brief time available; a fairly thick vegetation grew in and about the rocks. The "city" glowed with a faint aura after sun-down, and the cause of this phenomenon is not yet known. Mr. Young accompanied his films with lively description and, once again, members were fortunate to be taken on tour to a remote and little known part of our vast continent. Of particular interest was the screening of an actual native "Making-man" ceremony at sunrise. A hearty vote of thanks to the lecturer was moved by Mr. Colin Lewis and seconded by Mr. R. Davidson.

### NATURE NOTES

Mr. Burston reported having found in a hollow stump a ring-tailed possum and two half-grown young. This nest was lined with fresh green leaves, and he suggested that the occupants had been driven out of their original nest by bush fires.

### EXHIBITS

Mr H. C. E. Stewart: Fronds of Slender Tree-fern (*Cyathea Cunninghamii*), the giant moss (*Dawsonia superba*) and various fungi collected at the Monbulk excursion on May 7. Also Grey Bush-pea (*Pultenaea Cunninghamii*), foliage only, from Mt. Granya, collected during the Easter excursion to Tallangatta; and a sample of jelly made from fruits of *Cydonia sinensis*, "Chinese Quince," collected on the excursion to Mossvale, March 26.

Mr. J. Ros Garnet: Large "cup-fungus" (probably *Galactinia Sarracini*) growing on cement.

Mr. Ken Atkins: Collection of cultivated Australian flowers from Melbourne Botanic Gardens, including *Acacia alata* and *Crotalaria laburnifolia*.

### "NEWS FROM NATURE"

(Book Review)

During the War, Mr. Alec H. Chisholm, F.R.Z.S., published in a daily paper many topical sketches on natural history subjects to be observed about the streets and gardens of Melbourne. Selections from these have now been combined into a book, generously illustrated (mainly with photography by the author), and published in a handy format by Georgian House.

The sub-title, "A Selection of Seasonal Gossip," underlines the interesting arrangement of the sketches, whereby twelve are grouped together for each season. What a pleasant thought to introduce Summer by referring to Australia as "The Land of Christmas Carols," and to take the reader, during the holiday season, to the coolness of Sherbrooke Forest to hear the red fantail and the golden whistler in "solos and choruses of warm appeal," or, again, to inform the reader that there are 440 species of Australian and New Zealand plants in the Maraua Gardens, North Balwyn, which makes it possible "to see and smell the blooms of a wider variety of wattles than can be seen in any one area of Australia," as Nature prepares for "her age-old Pageant of the Spring."

Reference to high personages and military camps are brief reminders of the period during which the sketches were written, but natural happenings among the birds, the flowers, the trees and the insects have a freshness quite independent of time. Indeed, it would seem that Mr. Chisholm had this contrast in mind when he decided on the book, for he invites the reader to decide whether seasonal gossip written hurriedly, day by day, has any of the tonic qualities "which we look for in nature writings born of more leisurely moments." My answer would be a firm "yes"—and I believe that readers of the book will agree with that opinion.

As one would expect from such a keen ornithologist, birds are the subject of a majority of his sketches; but a very wide ambit of other natural history subjects is covered with equal facility, and, combined with the knowledge that the "news" was gathered from familiar haunts, makes the book attractive and instructive.

—JEAN BLACKBURN.

## MENACE OF THE MISTLETOE

By EDITH COLEMAN, Blackburn.

### *Introductory*

That mistletoe infestation is increasing can hardly be doubted. One sees dead and dying trees in any settled forest area. Unfortunately we are apt to view the devastation along roadsides, or in distant timbered country, with an easy complacency; but when its ravages are seen at our gates the matter becomes an urgent one.

Those who have lived for twenty or thirty years in one locality cannot fail to have noted the inevitable changes which settlement makes in native flora. Here at my gate (I am writing from Healesville) are three stark trees (Grey Box and Ironbark), mistletoe victims, and within the space of 100 yards up or down the path, and opposite, are scores of once lovely trees in all stages of infestation. Within a stone's throw a grove of noble Cedar Wattles (*Acacia terminalis*) is succumbing, one by one, to infestation by the Grey Mistletoe (*Amymma quandang*), the most beautiful, and most deadly, of the mistletoes known to me. As the seeds of this species germinate freely on wattle trunks and main limbs, its work of destruction is swift.

Last night a Blackwood, weakened by a mass of foliage not its own, came down in a not very high wind. At a distance, it had appeared to be a shapely, well-foliaged tree, but now was seen to be overwhelmed with Grey Mistletoe.

Few people doubt that human settlement has brought about disturbance of what was once a perfect balance of tree and mistletoe, animal, bird and insect life. In virgin country, unfit for settlement, the parasite does not appear to have become a menace. Periodically an alarm is sounded, with little effect. The latest comes from Central Australia. It was reported, 13/9/48, that the Mayor of Port Augusta was sending possums to Pichi Pichi Pass, where mistletoe is killing valuable forest trees. The possums will feed on the mistletoe and so act as a control.

Some botanists contend that, like birds, possums will spread the seeds. That danger seems negligible. From the nature of their excrement, it would roll to the ground, although seeds in faeces that lodge in forks might germinate in moist conditions—so rare in Central Australia. Writing in 1908, C. C. Brittlebank said: "Twenty years ago the parasites were very scarce in the Myrning district. At the present time there is scarcely a tree free from them, some trees supporting several dozen separate plants."

Writing to me from Paterson, N.S.W., in 1927, in reference to an article I had written on the mistletoe menace, the Rev. H. M. R. Rupp said:

Your remarks on the advance of the mistletoe make me feel uneasy; and they appeal to me because I have more than once called attention







1st fig.: Honeysuckle-like flowers and developing fruits of Grey Mistletoe (*Amyema quandary*), one of the most destructive species. 2nd fig.: Mistletoe seeds germinating on apple and wattle twigs. 3rd fig.: Cord-like outgrowths sent outside the branch by established mistletoe clumps, also peg-like absorbing "suckers" which enter the wood and are able to provide fresh plants should the original clump die.

to the increase of several species in many districts, and their devastating inroads upon tree life. Is it mere coincidence, or is there something more than mere coincidence underlying this insidious advance of parasites north and south? How do you account for it? The Loranthi are indigenous plants which in the past have not, so far as we can judge, previously affected the vegetation of their habitats. Why are they doing so now? I am told that 25 years ago you would have had to "take a look round" for mistletoes in this district. Now, wherever you turn your eyes you are greeted by them or their handiwork. Trees in all stages of destruction can be seen within half a mile in any direction. . . . Some accuse the Mistletoe Bird as responsible. I don't believe it. The Mistletoe Bird is not at all common and it has always been here. At the present rate of destruction, in a few years the five miles between here and Vasy, once a notable Ironbark area, will be treeless. It is a very serious matter, and should engage the attention of forestry departments. It is most difficult to see any possibility of checking the pests.

I quote Mr. Rupp's remarks in full because they might have been written today from hundreds of localities. The Mistletoe Bird is not sufficiently common at Healesville to account for the great spread of the parasites. We know, today, that many other birds must share the responsibility of seed-sowing, but man himself is the chief culprit.

In 1927 the Chairman of the Forests Commission stated that the most effective means of control was to remove infected branches. In this way many thousand acres were dealt with annually by the Commission, who viewed the matter seriously.

In 1941, following an article I had written in the School Paper, suggesting that children might form a mistletoe-army, I was told that in many districts parents and children were lopping off infected branches within reach—a mere drop in the ocean.

R. H. Anderson, B.Sc.Agr., in his Presidential address to the Linnean Society of New South Wales, 1941, referred to a marked increase in many districts, the infestation being greater than previously, although the cause of increase was not clear. He stated that, as we note today, infestation is more apparent in fairly open country than in closely timbered areas, and mentioned that mistletoe was quite rare, for example, in rain-forests. (The writer has seen it high up on Mountain Ash, *Enc. regnans*, trees at Belgrave, and has planted seeds, picked up on the ground beneath the trees, on plane, apple and wattle. They germinated *only on apple*.)

Most observers will agree that mistletoe is a light-loving plant. As country is opened up, and timber thinned, infestation is more common, partly because birds carrying seeds have fewer perches, and so infestation on any one tree will be increased, and partly because the percentage of germinations is higher where more light is available.

In *A Survey of the Mistletoes of N.S.W.* (1941), Valerie May, M.Sc., states that trees on semi-cleared lands are more liable to

infestation, and attributes this to high light requirement of mistletoe. She found that in darkness the embryos of *Amyema Miqueli* gave only 44% germination, but those in the light gave 91%, which clearly sheets the blame on to settlement. The writer also pointed out that the pest weakened its host; that when uninfested trees are felled they give rise to suckers, but infested trees do so only rarely.

Professor Cleland (1940) showed that mistletoes are more susceptible to fires than their host trees. He recorded 36 dead mistletoes, on a White Ironbark (*Euc. leucoxylon*) which had recovered after the fire—a sorry means of control that we must not adopt.

#### *Agents in Spreading the Pest*

The fact that in many countries mistletoe is lopped for fodder suggests that many animals relish the leaves. I have seen cows, knee-deep in good grass, eating mistletoe at Healesville.

Possunns have been blamed for spreading the pest, but I regard them as a definite check. In my garden the foliage of a clump of *Phrygilanthus eucalyptifolius* (Creeping Mistletoe) on *Acacia adunca* was completely eaten by possunns.

Many people believe that mistletoe increase is due to decrease in koalas. In 1923 export of skins was prohibited by Federal proclamation, but many were still secretly destroyed. At the beginning of an open season in Queensland 23,000 skins were sold. According to Mr. David Stead, 40,000 skins left Sydney by the *Aorangi*, and before the end of the season at least 300,000 koalas had been killed. Many naturalists blamed this slaughter for the increase of mistletoe.

In 1928, through the efforts of Mr. Raleigh Black, then secretary of the Australian Naturalists' Club, Sydney, circulars were sent to the Shire councillors of N.S.W. asking for an opinion as to whether koalas fed on mistletoe. Most of the replies were of a negative character. (As Jan Ridd said, "We look at things and never think to notice.") Some councillors said that there was little mistletoe when koalas were numerous. One man had fed a tame koala on mistletoe. Another said that koalas could not reach the mistletoe at the ends of slender branches, and blamed flying foxes. A third man blamed the Currawong and Noisy Friar-bird. (The knob formed by mistletoe is a favourite nesting site of the Currawong—handy to the table, as it were.) The replies were really not very helpful.

Mr. Basil Burdett's koalas had access to mistletoe at Koala Park but did not touch it. Miss Valerie May, in her "Survey", stated that the faeces of flying foxes contain an immense number of mistletoe seeds.

Birds are undoubtedly distributors of seeds, and the Mistletoe-

bird (*Dicaeum*), whose range over the continent is as wide as that of the pest, enjoys the viscid seed covering, and feeds it to nestlings. H. P. C. Ashworth, writing on "The Dispersal of Mistletoe" (*Vict. Nat.*, XII, Aug. 1895, p. 51) says: "I am convinced that in Victoria . . . it [i.e., *Dicaeum*] is the exclusive agent in the dispersal of mistletoe." He also gives personal observations on the feeding habits of the bird.

In a letter to the writer, 3/10/27, Mr. L. Rodway, then Government Botanist, Hobart, said: "I have never met with *Loranthus* in Tasmania and there is no record of its existence here. Mr. Lord, of our Museum, tells me that the Mistletoe-bird (*Dicaeum hirundinaceum*) does not occur in Tasmania." But, contrary to Ashworth's assertion, the Mistletoe-bird is by no means the *only* distributor. Indeed it is probable, as we shall presently see, that this bird is responsible for only a small percentage of infestations.

Few of the seeds voided by birds are left on trees, owing to their habit of perching "across", not "along" a bough, but many are deposited by bill-cleaning. Forty years ago Mr. Brittlebank stated that the greater portion of seeds are ejected by birds after the viscid covering is eaten. Many of the unwanted, rejected seeds stick to bills and are wiped off on branches. He had noted that the Grey Bell-magpie swallows the whole fruit, casting the seeds as owls cast pellets of bones, teeth and hard, indigestible parts of small mammals.

The writer has seen pellets of "peppermint" seeds (*Schinus molle*, an introduced plant) ejected by currawongs, almost as large as the pellets of cormorants. Many other birds, natives and aliens, eject seeds in the same way. It is probable that many seeds are rejected by the Mistletoe Birds, i.e., not eaten.

Mr. R. Littlejohns, who is as intimate with this bird as with the Lyre-bird, estimates the number of mistletoe "fruits" (seed and pulp without the fruit-coat) fed to each fledgling at 60 per day. Considering the large size of the "fruit", as shown in his beautiful photographs (*Wild Life*, Aug. 1948), it seems feasible that many of the seeds may be retained in the parent's bill, the pulp only being left with the nestling—the size and internal structure of the nestling's bill would have some bearing on this. Examination of the excrement-sacs should enlighten us on this point.

One often sees the British Song-thrush and the Blackbird insert a huge "bunch" of broken up snails, or worms, into three or even four open bills, finally leaving it, much depleted, in the last eager bill. Lizards and moths are proffered in the same way to Grey Thrush babies, but are taken whole by the last bill.

That some seeds pass through the bodies is not questioned. It seems remarkable that a large bird like the Currawong should eject them, yet a tiny bird like the Mistletoe Bird retain them.

A member of my family watched an adult Mistletoe Bird stretch back a foot, catch the dropping as it fell, then wipe it on a branch. The dropping was examined and found to contain a mistletoe seed. This might be regarded as fortuitous were it not that the action was described to me as deliberate and practised. A sketch of it was made. Was it not, rather, that the presence of an onlooker was fortuitous?

A hundred years ago, Ann Pratt, quoting from Mudie's *History of Birds* regarding the Missel-thrush, which is regarded as the chief distributor of seeds of the British mistletoe *Viscum album*, said:

Missel signifies to soil. It is called Missel-thrush because it missels (soils) its toes with the slimy juice of the berry, and the Mistletoe derives its name from its soiling the toes of the bird.

How does it soil its feet, unless by using them to wipe sticky seeds from its bill, when rubbing on a branch does not dislodge them?

In the Dutch East Indies a *Dicaeum* feeds on mistletoe fruits. In Australia King Parrots and Gang-gangs eat the seeds, but as these are ground up the birds must be regarded as checks.

According to A. G. Hamilton (*Bush Rambles*), peach trees growing near brush forest at Illawarra were infested with a Loranthus and a true mistletoe (*Viscum articulatum*). He blamed the Silver-eye which fed on the berries, then alighted on the peach trees, to leave the berries: "As I have seen, one or two may stick to their beaks, which they rub on the twigs to clean, and the berries being sticky find a suitable place to germinate." He had seen as many as 20 or 30 of these tape-worm-looking plants of the *Viscum* flourishing and fast killing the trees.

[The accepted name of these jointed mistletoes is now *Korthalsella opuntia*.—Ed.]

#### *World-wide Problem*

The problem is almost world-wide. Sir John Farmer, 1889-1890, saw hosts of germinating embryos covering telegraph wires in the Nilgiri Hills, left there by birds which had alighted to clean their bills.

In Jamaica, mistletoe was described by Gosse as growing on "Sour Sop" (*Anona muricata*), the seeds sticking to leaves and twigs, germinating in every instance, so that there were thousands of young plants springing from the leaves, on both upper and lower surfaces. The position of embryos on the "under" surface of leaves is interesting. How did they get there? Not from droppings. Probably wiped off as the birds moved from twig to twig.

A "leafless" mistletoe was said to be ruinous to orange and coffee plantations of Brazil. Being wholly parasitic, its effects would be rapid.

A mistletoe on pines in California squirts its seed out violently when ripe, to a distance of some yards.

Fifty years ago Sir Frederick Keeble made a close study of the mistletoes of Ceylon, where the smallest bird in the island (*Dicaeum minimum*) feeds on the fruits. Like our *Dicaeum*, this bird had adopted the habit of squeezing out the pulp and rejecting the fruit-coat. Keeble found that birds generally avoided swallowing the seed. In none of the many birds which he shot for examination did the gut contain a fruit-coat, though it was distended with the pulpy matter extracted from the fruit; but, like Mr. Brittlebank's Currawong, the crop of a Bul-bul, which only visited mistletoe when other food was scarce, was full of whole fruits. *In most of the birds examined he found only pulp and one or two seeds, three at most.* But birds visit more than three fruits; they gorge them! It seemed obvious that they avoided swallowing the seeds. When seeds were found in the excrement they had been acted on by digestive juices, and the embryos were killed.

So we may say that, with most birds, pulp is the objective, and that birds get rid of the seed by striking the bill against branches. ("Sharpening their bills" as we say of canaries.) On the single telegraph wire Sir Frederick saw, every year, hundreds of seedling mistletoes, all in the early stage of germination, but they were doomed to die in the absence of a living host. They could not possibly get there by being voided; only by beak wiping.

Summing up, Sir Frederick believed that with most Ceylon species seeds reach their hosts without having passed through the alimentary canals of birds. Their spread depends upon an acquired habit—squeezing and rejecting both seed and fruit-coat, which are rich in tannin, and probably distasteful.

He found groups of small-seeded *Loranthus* in voided excrement, on leaves and twigs. Such seeds were often quite hollow, due to the action of digestive juices. He believed that, even in the case of small-seeded species, the seeds were distributed by bill-wiping. And this, I suggest, is the chief method of distribution in Australia.

### *Natural Pruning*

Mr. Littlejohns suggests that, because the extremity of an infected branch often dies and drops off, this may be Nature's method of tree-pruning—to allow light to reach young trees beneath. But this would leave a chink in her armour, and the mistletoe has more than one "string to its bow."

In many instances, removal of the terminal infestation would be quite ineffective to arrest growth of the pest, unless the cord-like outgrowths that run up or down the branches for many feet (as in *Phrygilanthus eucalyptifolius*) are also removed. From the



upper layer of the swollen disc of the first sucker sent into the host these thong-like outgrowths arise. Every here and there they send down fresh suckers into the wood, and from these new mistletoe plants may shoot.

A growth pulled away from the host will reveal the suckers, like a row of pegs, at intervals of from half an inch to many inches. A six-foot length of the Creeping Mistletoe, *P. encalyptifolius*, pulled from a Wallangara wattle showed 50 of these "suckers". The outgrowth, on reaching the end of a branch, had coiled back on itself, sending "pegs" into its own wood (auto-parasitism). So that, unless these growths and their suckers are removed, it would be quite ineffective in many instances to remove the terminal tufts. These suckers may not themselves be absorbing "mouths" but have power to produce a new plant, if needed.

At Healesville there are many infected trees bearing six or eight infestations on one branch. Sir F. Keeble suggested that these aerial "roots" may throw light on the course by which the mistletoes became parasitic. In the early stage of their history they probably threw out roots, which, like those of *Ficus*, grew towards the ground, rooting in any earth which had collected in forks of trees, enabling the plant to exist until it had tapped its host's supplies.

It may safely be said that the Mistletoe Bird is *not* so culpable as it has been thought to be. It may as safely be said that the mistletoe itself once served a useful purpose in feeding useful fruit-loving birds which dropped more seeds than they planted, and preyed on harmful insects when the fruits were out of season.

In virgin country, where possums and other animals have not access to garden products, orchards and crops, they doubtless play a useful part in checking the growth of the pest.

### *Movement of the Embryo*

An almost incredible movement is seen in the embryos of germinating mistletoe seeds. It may be followed by squeezing the fruits on to twigs of wattles, sycamores, apples, or other trees with smooth, tender bark. In a moist atmosphere they may germinate in a few days.

One sees a tiny "radicle" emerge from the seed, becoming thickened at its tip into a club-shaped disc. As if in response to a seeing eye, it moves, seeking a suitable spot for anchorage. It may continue to stretch forward until the embryo has almost left the seed-coat.

Having reached a suitable spot, sometimes after several changes of direction, the disc exudes drops of fluid and soon penetrates the bark, softening the cellulose matter beneath, "dissolving" a passage into and cementing itself to the host.

Mr. Brittlebank, in his observations on *Lysiana exocorpi*, found that when he placed a piece of paper between disc and host the fluid dissolved a passage through the paper; but, if mica were inserted, the embryo, being unable to penetrate it, moved forward or from side to side, seeking a place for attachment. Having reached its objective, and become firmly cemented, the disc spreads into the unsightly growths that disfigure so many branches.

From its lower surface it sends down, not roots, but an absorbing sucker, into the sap wood, where it taps the supplies of water and mineral salts being conveyed to the host's own leaves. From the upper part of the disc the first small leaves appear. There are few more fascinating plant movements that may be watched with a lens.

De Candolle found that, with the European Mistletoe (*Viscum album*), the germinating seed, placed close to a window inside a room, turned away from the glass toward the shady room; but, if placed just outside the window, it turned to the glass as if to penetrate it—towards the shade. The branching of the mistletoe is as interesting as the rest of its processes. In some species the age of the plant may be calculated from the number of branches.

Because of its mysterious way of life, there has always been much superstition wrapped about the mistletoe. It was believed not to grow from seed at all. Descriptions by early writers are often delightful. That of Jerome Bock (1539) may be instanced. Bock followed writers whose herbals were so beautifully illustrated that words could add little to the work of the draughtsman, and so fewer pains were taken with the text. Being unable to afford illustrations for the first edition of his herbal, Bock described his plants more carefully in words. Of the mistletoe he says:

They grow into the shape of a cluster, with many forks and articulations. . . . The berries are full of tough white lime, yet each has its small black grain, as if it were the seed, which however does not grow when sown, for the Mistletoe only originates and develops on trees. In winter the missel-thrushes seek their food from the Mistletoe, but in summer they are caught with it for bird-lime is made from the bark. Thus the Mistletoe is both beneficial and harmful to birds.

Gerard, 1597, repeats the old belief: "This excrescence hath not any root, neither doth increase himself of his seed, as some hath supposed, but cometh of a certain moisture gathered upon the boughs and joints of the trees, through the bark thereof this vaporous moisture proceeding, bringeth forth Mistletoe."

Bulleyn (*Book of Simples*, 1562) assures us that "the tree derives no more benefit from the Mistletoe growing on it than any member of the body upon whom a canker is placed. It will at length destroy altogether unless pulled from the tree."

Pliny in the first century sums it up: "Moreover there is nothing more certain than this, that Ivy killeth trees. The like is to be

said, in some sort, of Mistletoe, although it is generally thought that the harm thereof is not so soon seen."

### Controls

Apart from making its deadly work more widely known, and perhaps making others more mistletoe-conscious, naturalists, in studying the mistletoe, have opportunities of following up interesting life-stories of what were once, undoubtedly, checks and controls of the pest. The story of the pest is bound up with that of certain butterflies and other insects, as fascinating as anything in Nature.

There are few more beautiful, nor more interesting, butterflies than the Imperial-white (*Delias harpalycce*), whose larvae prey on the leaves of several species of mistletoe. Other species of *Delias* prey on other mistletoes.

The Imperial-white has the habit of soaring, like an eagle, with motionless wings. This butterfly was once numerous at Healesville, Greensborough and Diamond Creek, but unfortunately the larvae are destroyed in the mistaken belief that they may prey on garden plants. I have seen tufts of mistletoe denuded of leaves by these larvae.

At Sorrento we have watched the life processes of a smaller, but not less beautiful, species (*Delias oganippe*), whose larvae gorge the leaves of the Wire-leaf Mistletoe (*Amyema Preissii*) which infest the Wirilda Wattle (*Acacia rhetinodes*). It is in full flower in January. A community of the larvae brought from Sorrento, 12/12/38, had all pupated by Dec. 26. The butterflies emerged from Jan. 6 to Jan. 10. It will be noted that the larvae do their good deed before the mistletoe has produced seed.

The foregoing was written in October, 1948. It was recently reported (18,549) that flame throwers are to be used this winter against the mistletoe which is slowly killing tens of thousands of eucalypts and other trees in South Australia. Prof. J. B. Cleland stated that, undoubtedly, the chief cause of the spread of the pest was the more effective control of bushfires. Mistletoe was sensitive to fire. When a bushfire swept through gum country it cleaned out the parasite, but left the gums to grow vigorously again. (Unfortunately, although some burnt gums shoot again, too many do not recover.)

---

### BIRDS OF NORTH QUEENSLAND

No. 5 of the publications by the North Queensland Naturalists' Club, Cairns, is a twelve-page pamphlet entitled *List of Birds Occurring in North Queensland*. This comprises a census of nearly 400 species of the 700 birds in the R.A.O.U. Official Check-list for the whole Australian Continent, and embodies nomenclatural and other changes made since the second edition of the latter was printed. For ornithologists resident in or visiting the North, this local List will form a convenient adjunct.

—H.C.E.S.

## PLATE II



1st fig.: Larvae (*D. as harpalus*) on their community web, ready to pupate (about four-fifths natural size). 2nd fig.: Several butterflies just emerged from chrysalids.



## NEW BEES AND WASPS — PART XI

## Two Confusing Earth-digging Bees

By TABLETON RAYMENT, F.R.Z.S.

*PARACOLLETES SUBDOLUS* (Ckll.), stat. nov.[Syn. *P. fervidus* Sm., subsp. *subdolus* Ckll., *Ann. Mag. Nat. Hist.* (8), XI, p. 279, 1913]

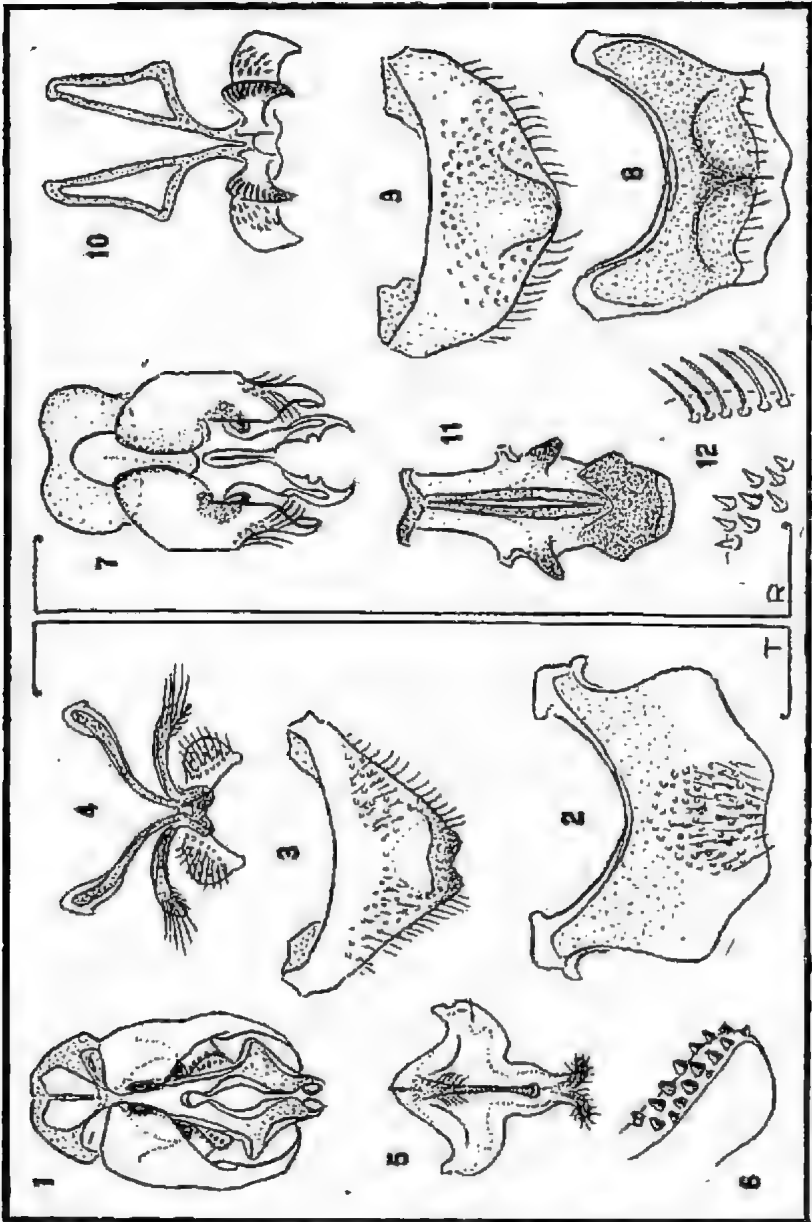
Although originally published as a subspecies, *subdolus* has distinct characters which readily separate it from *Paracolletes fervidus* Sm. Dissection of a long series of both sexes (including some topotypes) shows that it is nearer to species in the genus *Trichocolletes*; but, since *Paracolletes* (as known at present) contains many diverse elements, I propose to leave both bees in this latter genus pending critical revision. Smith's only locality was "New Holland", but males and females of *fervidus* have been collected from Cheltenham through to Clyde, Gippsland. A description of the allotype is appended, and the following notes will amplify the original descriptions and simplify the identification of these two bees.

*P. fervidus* Sm. is larger, altogether a more robust species, with broad ovate abdomen; the abundant hair of the mesothorax is redder; the scattered yellow punctures on a coriaceous integument; scutellum emarginate posteriorly; metathorax with two concentric patterns of fine lineation, but no keel; hind calcar with very fine short serrations; punctures of clypeus large, even, and confluent; flagellum long, sub-cremulate; second cubital cell large, quadrate; the third cubital greatly contracted at apex; third intercubitus nervure reduced to a mere stump on several females, but where complete it meets the second recurrent nervure. Males with a similarly wide ovate abdomen; terga broadly red.

*P. subdolus* Ckll. has a narrow elongate abdomen; hair of mesothorax paler, with much fuscous hair, the deep punctures scattered over the polished integument; scutellum simple; metathorax with a sharp transverse keel; hind calcar long-pectinate, with eight teeth; punctures of clypeus deep, but of irregular size; flagellum much shorter, sub-mouiliform; second cubital cell small, greatly contracted at apex; third cubital large, slightly contracted at apex; second recurrent nervure received inside of the third intercubitus. Males with a conspicuously narrow elongate abdomen, and hair varies in colour from straw to foxy-red; terga practically all black. Genitalia and sterna of the two bees are very different.

*PARACOLLETES FERVIDUS* Smith[*New Sp. Hym.*, B. M., p. 4, 1879]

ALLOTYPE: Male—length 12 mm. approx. Brownish black.



Characters of *Parnacollestes fervidus* Sm. [1-6] compared with those of *P. subdolosus* (Ckll.) Rayment. [7-12].



*Head* small, with much golden-red hair; face masked entirely with long plumose hair; frons with large scattered punctures; clypeus with large contiguous punctures (hair must be removed to see these); supraclypeal area similar; vertex sharply developed, with scattered large punctures; compound eyes with anterior margins parallel; genae with large rough punctures on a tessellate sculpture, and much golden hair; labrum reddish; mandibulae more or less suffused with red; antennae with flagellum sub-crenulate, black above, reddish beneath; the scapes short and stout.

*Prothorax* not visible from above; tubercles black, with long golden hair; pleura with large scattered punctures; mesothorax with much foxy-red hair, large close shallow punctures over the coriaceous tegument; scutellum with a median depression posteriorly, hair dusky; postscutellum with abundant golden hair; metathorax with the fine concentric lineation of the female; abdominal dorsal segments with the reddish posterior margins wider than the black portions, much long simple pale hair, a large red pygidial plate; ventral segments similar.

*Legs* blackish-brown, with a wide red stripe, and much yellowish hair; tarsi reddish; claws red, black apically; hind calcar reddish; tegulae black, shining.

*Wings* clouded apically; nervures brown, strong; second cubital cell large and quadrate, receiving first recurrent nervure at its middle; pterostigma brown, small; hamuli eleven, strong.

*Locality*: Clyde, Victoria, January 30, 1949, *log.* Owen Dawson. (Allotype in the collection of the author.)

*Allies*: These bees show a superficial likeness to *P. subdulus*, but are not closely related to it (see notes and drawings to separate them).

*Collections*: Females of *P. fervidus* were taken at Tooradin, Victoria, Jan. 11, 1946 (Owen Dawson); females of *P. subdulus* at Tooradin, Feb. 5, 1944 (Owen Dawson); males of *P. subdulus* at Tooradin, Jan. 11, 1946 (Owen Dawson), at Cheltenham, Vic., Feb., 1946 (T. Rayment), at Highett, Vic., Feb. 15, 1946 (T. Rayment), and at Watsonia, Vic., Feb. 10, 1941 (Rev. Father Stanley, S.J.). The specimen cited last is not typical and should, perhaps, be separated as a subspecies.

The remarkable sheltering habits of the males of *P. subdulus* depart from those of typical Paracolletid males, which congregate at evening in a dense cluster on the branch of a shrub, or even in an old dry frond of a fern. The Rev. Father Stanley, now at Riverview, Sydney, collected his specimen in a cavity in a branch at Watsonia, Vic., and several of Owen Dawson's specimens emerged through the wet plaster covering a brick wall at Clyde, Vic.

## EXPLANATION OF ILLUSTRATIONS

1, Genitalia of *Paracolletes ferridus* Sm. 2, Sixth sternum of male. 3, Seventh tergum of male. 4, Eighth sternum of male abdomen is nearer to *Trichocolletes*. 5, Ninth sternum of male abdomen. 6, Pegs on genitalia highly magnified. 7, Genitalia of *P. subdolos* Ckll. 8, Seventh sternum of male. 9, Seventh tergum of male. 10, Eighth sternum of male abdomen. 11, Ninth sternum of male is nearer that of typical *Paracolletes*. 12, Pegs and spines of eighth sternum (highly magnified).

Note: All figures are at same magnification, but plates are distorted owing to pressure of the cover-glass on the mounts.

## A VOLCANIC PLUG AT BALWYN

By J. A. BLACKBURN

On December 18, 1948, a party from the Geological Group set out to re-locate the "Limburgite Rock occurring as a volcanic plug at Balwyn, near Doncaster" as described by F. Chapman and A. O. Thiele (*Proc. Roy. Soc. Vic.*, XXIV (N.S.), Pt. I, 1911).

The published locality description was misleading, owing to the alteration of a road name, and because the distances were given as "feet" instead of "yards". Amended, it should read: At about 800 yards down Greythorn Road, north from Belmore Road, and about 200 yards east from the road. Subsequent subdivision of the land now enables the location to be more precisely described as: near Wild Life Sanctuary, about 200 yards east of Greythorn Road and 40 yards south of Swynn Street.

The site of the occurrence is occupied by an irregularly shaped depression about 100 feet long, 50 feet wide and 15 feet deep, which is in the process of being filled in with soil and rubbish—it will apparently be built over in the near future. No rock is visible on the surface, but specimens were obtained by digging into a bank about five feet below natural ground level.

Our observations confirmed the description of "a jointed rubbly rock . . . decomposed in the superficial layer but in the interior dense and of a blue-black colour." The description also says: "There are few vesicles in the mass but many of the cavernous parts of the surface material are seen to be due to the decomposition of the olivines . . . Some of the lava was formerly employed for metalling the Doncaster Road, but was eventually given up on account of the objection of the stonebreakers to using material harder than Collingwood bluestone." This objection was sustained by the experience of the Group members.

Volcanic plugs and necks have been recorded from other localities in Victoria, viz.: Mts. Adam and Eve near Coleraine, Mt. Consultation near Castlemaine; in South Gippsland near Anderson's Inlet and south of Woodend. These rocks are generally similar to that found at Balwyn and are considered contemporaneous with the older basalts. "The nearest occurrences of older basalt on either side of Balwyn are at Lilydale on the east, where there is a vent represented by tuff and cinder cones, and Flemington on the west, represented by a rather massive flow of sphaeroidal basalt."

Chapman and Thiele suggest that the Balwyn volcanic plug solidified in mid-Tertiary times at some distance below the land surface and was subsequently exposed by erosion. If it had reached the original surface, the outpoured lava, being resistant to subsequent erosion, would have had considerable influence on the topography of the area. As evidence of this is lacking, they favour the former opinion.

The occurrence of the plug right on the axis of the Templestowe anticline seems to indicate that its origin is directly connected with crustal folding

## PLANT REGENERATION ON STABILIZED SANDHILLS IN THE MALLEE

By H. J. SIMS, Walpeup.

In many localities in the Mallee, sandhills which have been denuded of vegetation cover (either by the cultivation practices adopted, or through overgrazing by farm livestock or by rabbits) have become seriously wind eroded. The northern section of the Mallee, where the rainfall is lower and the soil more sandy, has suffered to a greater extent than the more southern areas.

Where steps are not taken by landholders to check the erosion which has started, these sandhills can develop rapidly into moving sand-dunes, which are locally referred to as "weeping-ridges" or "razor-backs."

Demonstrational work carried out by the Department of Agriculture and the Soil Conservation Board has shown that such sandhills can be stabilized by sowing with cereal rye. This stabilization work has been described in the *Journal of the Victorian Department of Agriculture* (XLVI, No. 11, pp. 477-478, Oct., 1948).

Stabilization of these sandhills is necessary before any natural regeneration of plants can occur. On the unstabilized areas, the sand blown by each wind cuts off and kills the seedlings of any natural regeneration before they are big enough to stand such blasting. In the stabilization with rye, the rye is sown thickly enough to give a quick cover to the surface — and this cover then protects the surface from further wind action.

However, after consolidation, many plants naturally occurring in the Mallee have established themselves on these hills. During the three seasons 1946-48, a census was made of the plants growing on three of the demonstration areas sown to rye in 1945. These areas were at Paignie (5 miles east of Walpeup), Bronzewing (7 miles south of Ouyen), and Torrita (2 miles north of that township). The plants recorded in each year are enumerated in the accompanying list.

In 1946, self-sown rye plants were the dominant plant growth on the Paignie site, accounting for approximately 95 per cent. of the plant growth on the area. This rye was harvested when ripe, and yielded about 1½ bushels of grain per acre. In the next year, about 30 per cent. of the plants were rye, but it had been replaced as the dominant species (approximately 60 per cent.) by "ham-and-eggs daisy" (*Myriocephalus Stuartii*). Arabian grass (*Schismus barbatus*) had spread also, and was present to the extent of 5 per cent. In 1948, ham-and-eggs daisy was still the dominant plant, but there was a very large increase (to 30 per cent.) in plants of Arabian and barley grasses.

On the Bronzewing site, rye also was the dominant plant in the



At Torrita, practically all the growth in 1946 was wild turnip (*Brassica Tournefortii*) (50 per cent.), and self-sown rye (45 per cent.). By 1947, wild turnip had taken practically complete control (95 per cent.), but in 1948, comparatively few wild turnip plants were present, and the dominant species was now ham-and-eggs daisy (more than 80 per cent.).

In all, a total of thirty-three different species were observed on the three sites. Of these, only nine species occurred on all three sites. Twenty-three species were recorded at Bronzewing, twenty-one at Paignie, while only thirteen were recorded at Torrita.

### MELALEUCA PUBESCENS IN QUEENSLAND

In the *Victorian Naturalist* for August, 1948, Mr. J. H. Wilks had an interesting article on the Moonah (*Melaleuca pubescens* Schauer) and its distribution in Australia. In it he stated: "*M. armillaris* is related and very similar in appearance; it seems to replace *pubescens* along the coast from Genoa northward into Queensland." I have no knowledge of *M. armillaris* in Queensland. When in Melbourne recently, I looked through the material in the National Herbarium and saw that the specimens from Queensland and northern New South Wales so labelled (presumably by Baron Mueller) belonged to *M. alterifolia* Cheel. *M. pubescens* Schauer, on the other hand, is a common tree in our brigalow (*Acacia harpophylla*) scrubs on the Darling Downs and is very difficult to eradicate by ordinary ring-barking and burning. When cleared, brigalow country is among the most productive in Queensland. The usual method is to ring, allow to stand for a few years, and then fire. In some places the "Moonah" or "Black Tea Tree" as it is known in Queensland is very abundant and makes a rapid recovery after even an otherwise successful burn.

Our specimens were first determined by Mr E. Cheel and were later compared with type material from the Lachlan River, New South Wales, collected by Allan Cunningham in May, 1817 (No. 283). In Queensland, *M. pubescens* does not occur on the coast but is confined, so far as we know, to the Darling Downs district.

C. T. WHITE,  
Government Botanist, Brisbane.

### EYES OF THE MARINE ONCHIDIUM

(Note on an exhibit at the January "Hidden Treasure" Night)

Semper, a famous German zoologist, discovered that the upper surfaces of certain *Onchidium* species were very unusual. He found that some of the rough papillae freely scattered on this surface were actually tipped with eyes. There were dozens of them in little groups of two to four, and these papillae could be retracted from the summit downwards and inwards after the manner of a periscope.

The structure of the normal pair of eyes in the head tentacles resembles that of the eyes of other slugs and snails, but the extra eyes on the back are most surprising: they have an inverted retina and a pierced retina with blind spot—the sort of thing (although far more rudimentary) which is characteristic of vertebrates.

M. E. FREAME.

## MONTHLY NOTES FROM PORTLAND F.H.C.

By NOEL F. LEARMONTH.

We noted with interest in the *Naturalist* for March, 1949, that some Flying Phalangers from Port Fairy had been liberated near Portland. Repeatedly some of the marsupial "smaller fry" are sent (or described) to us for identification. A district list, which we hope to compile, will assist those interested, as well as show what a wealth of marsupial life still exists in the little disturbed forests around Portland. During March, one of our members brought in a Pigmy Possum (*Cercartetus nanus*) which, after many attempts, was photographed by our secretary, R. E. Cartlew, and near Tyrendarra a Sugar Glider (*Petaurus brevicaeps*) was caught a few days later.

A new sanctuary has been proclaimed on Darlot Creek, two miles north of Tyrendarra, and it contains about 1,200 acres along both sides of the stream. This preserves a White Ibis rookery and the nesting sites of many water birds. The area on the Western bank alternates between swamps and basalt flats and barriers, while on the East are flooded creek flats densely covered with rush and sedge growth and backed by clumps of Munna Gum, Tea-tree and open pastoral land. The area is a particularly rich hunting ground for the botanist, and Mr. Beanglehofe has undertaken to make a plant census.

A complete bird list has still to be made, but up to date 102 species have been noted there. Briefly, we have two rails; two crakes; stilts and stints; brolga and Yellow-billed Spoonbill; three herons and two egrets; eight species of ducks; four cormorants; nine hawks; eleven parrots and cockatoos, Field, Emu, Blue and Scrub Wrens; Fantail, Speckled and Reed Warblers, seven honeyeaters; Oriole, Chough, three currawongs, and many others.

*Naturalist* readers will remember that during Easter, 1947, the F.N.C.V. sent an executive party to the Glenelg to inspect and report on a proposed National Forest on the lower reaches of the river. Their report was very favourable and, since then, efforts have been made to conclude the matter by obtaining gazettal of this area.

Difficulties arose because some of the land was considered suitable for settlement. On February 17th last, representatives of Lands and Forests Departments were accompanied by our local F.N.C. President in an inspection of the sectors most likely to be alienated. In general, they found a good strip of stringy-bark country, from 10 to 20 chains wide, fronting the river and considered that this could with advantage be included in the proposed reservation. The balance of the blocks are not necessary for wild life conservation, and can be selected if need be.

This left the fern gullies of the Little Moleside Creek system the only portion to clear up, as they are probably on Crown Lands. Our president interviewed the Secretary for Lands, and asked that these beauty spots be left out of any Cluser Settlement plans, a request that Mr. McIlroy readily granted. So, when the Glenelg National Forest is finally gazetted, we will have reserved as a perpetual sanctuary all the lower river frontages, adjacent forests and the Moleside watershed—some 70,000 acres.

Since the Melbourne Club's visit, our local Club has discovered another fern gully about two miles N.E. of the Little Moleside one. It contains two kinds of tree ferns (the soft and rough tree fern). The appearance of the rough species is most unexpected, as none is in nearby gullies, and only two other plants known in the whole Portland district.

Another new find in the proposed sanctuary area is 200 acres of open heath, surrounded by thick forest, four miles N.E. of Nelson. In season it is one blaze of colour—red, pink and white heaths, with many orchids.

# The Victorian Naturalist

Vol. 66.—No. 3

JULY 7, 1949

No. 787

## PROCEEDINGS

The Annual Meeting of the Club was held at the National Herbarium on June 6, 1949, the President (Mr. J. Ros Garnet) and about 130 members attending.

A letter had been received from Mr. E. E. Pescott, accepting with pleasure the Club's nomination as candidate for the 1949 Natural History Medallion. Mr. French had requested the President to convey to members his gratitude for their expressions of sympathy in his recent bereavement.

Members were interested to learn that Miss Ina Watson had been invited to address the London Natural History Society on March 29.

The following were elected to membership and warmly welcomed by the President: as Ordinary Members—Messrs. H. Best, P. Green and I. O. Maroske [The name of "Mr Clark" (Mrs. Freame/Miss Wigan) appearing on the Business Paper in the *Naturalist* is incorrect and should read "Mr. Allen"]; and as Country and Interstate Members—Mr. J. Watson and Mr. J. A. Patrick.

Nominations for membership had been received from: Mr. T. E. Allen, 4 Glen Eira Rd., Ripponlea (Mrs. Freame/ Miss M. L. Wigan); Mr. McLaughlin, Valonia Avenue, Surrey Hills (Mr. J. Willis/Mr. L. B. Williams); Mr. E. Diem, 90 Caroline Street, South Yarra (Mr. P. Fisch/Mr. J. Ros Garnet) and as Junior Member, Ken. Sargent, Henry St., Murrumbidgee (Mr. P. Crosby Morrison/Mr. H. Preston).

The Secretary, Mr. H. Preston, read the Annual Report, its adoption being carried on the motion of Mr. Preston, seconded by Mr. Chalk.

Mr. A. G. Hooke, one of our Auditors, then spoke on the Balance Sheet; the salient points were written on a blackboard and Mr. Hooke pointed out that the £100 collected from outstanding subscriptions was unusually large and due to the determined efforts of the Treasurer, Mr. E. E. Lord, to collect these amounts. During the year expenses had been cut to a minimum and quite recently advertisements had been included in the *Naturalist* and these would return approximately £60 per



annum. Notwithstanding such measures, the Club has a deficit of £36, which is undoubtedly attributable to the increasing cost of the journal. The President pointed out that if prices continue to rise in the future there will be no alternative but to raise subscriptions of Ordinary Members. Mr. Lord elucidated some items appearing on the Balance Sheet, which was adopted on the motion of Mr. Hooke, seconded by Dr. M. Chattaway.

Mr. G. N. Hyam then spoke on the notified Motion, "That the annual subscription of Country and Interstate members be increased to 15/- in order to cover their share of the increased cost of *The Victorian Naturalist*." On the Motion of Messrs. Hyam and Hooke, "Country and Interstate Members" was expanded to "Country, Interstate and Overseas Members." A further amendment to the Motion was proposed by Mr. Sarovich: "that the rate for Ordinary Members be raised an additional 2/6 also," but as there was no seconder the amendment lapsed. The Motion as amended was carried without dissent.

The retiring President, Mr. J. Ros Garnet, then handed the meeting over to Mr. Colin Lewis, whom he had much pleasure in declaring unopposed President for 1949/50. Mr. Lewis, taking the chair, thanked members for the honour that had been shown him and proceeded with the election of office-bearers and Council members. [The personnel and addresses of the newly elected Council appear elsewhere in this number of the journal].

Mr. Swaby thanked retiring councillors for all the hard work they had put in during the past year. This motion was seconded by Miss Young and carried with acclamation. Mr. J. Ros Garnet then delivered his Presidential Address, a summary of which will be published later.

#### NATURE NOTES

Mr. H. C. E. Stewart reported sighting a Fan-tailed Cuckoo at Maribyrnong near the river bank on June 2, at midday, he watched and followed the bird for several minutes, once within a range of about four yards, but it did not call. This supports evidence that the species does not always migrate from Melbourne for the early winter. Miss Perry saw another cuckoo in the Fitzroy Gardens about the same time.

An observer had reported hundreds of sea gulls at Hampton in the still, shallow water "dancing." Mr. Swaby's explanation was that they were stirring up the sea lice that were attempting to bury themselves beneath the surface of the sand.

Mr. Miller remarked that for several years past the Spinbill Honeyeater had been absent from his garden but has now returned.

Miss Chisholm reported having seen a particularly beautiful complete treble rainbow one morning at Sunshine.

### EXHIBITS

Mr. V. H. Miller: *Cymbidium traceyanum*, grown under glass at St. Kilda.

Mr. Ken Atkins, from Botanic Gardens: *Acacia alata*, *A. diffusa*, *A. rhetinodes*, *Banksia ericifolia*, *B. robur*, *Eucalyptus lewozeylan* (rose form), *Grevillea alpina*, *Hakea laurina*, *Leptospermum lanigerum*, and *L. scoparium* var. *grandiflorum*. (rose form).

## SIXTY-NINTH ANNUAL REPORT

The total membership is now 546, including—345 Ordinary, 166 Country, Interstate and Overseas, 12 Junior, 3 Life and 20 Honorary Members; there are also 13 subscribers. The Club had the pleasure this year of electing to Honorary Membership Messrs. J. T. Hamilton (of more than 40 years' association with the Club), A. H. Chisholm (a Past President and Honorary Editor for eight years) and F. S. Colliver (also a Past President and Honorary Secretary for 17 years).

It is with sorrow that we recall the loss through death of several members, amongst whom should be mentioned Mrs. V. H. Miller, Mrs. Charles French, Mr. Alister Clark of Bulla, and a one-time member Mr. Vernon Davey of Toolern Vale. At this juncture reference might be made to the unveiling of a plaque in memory of the late Mr. R. H. Croll at Stawell, on April 15, 1949; the President had forwarded an appropriate letter to be read at the unveiling. Also, a eucalypt had been planted on behalf of the Club by Mr. A. S. Chalk at Toolern Vale Bird Sanctuary in memory of our much esteemed late member, Mrs. V. H. Miller.

Excursions have continued to be a prominent feature of the Club's activities, but their effective organization has unfortunately been hampered by the paucity of Leaders and the vacant office of Permanent Excursion Secretary. Such disadvantages were offset to some extent by the Excursion Committee, and especially by Mr. H. C. E. Stewart who stepped into the breach to maintain a regular programme. The parlor coach venture, initiated the previous year, was continued at intervals and amply justified by capacity attendances. Principal objectives for these trips were Lock, Inverleigh, Vaughan, Inverloch, Geelong, Moss Vale and Granite and personal contacts were established in this way with several country members. Shorter bus trips were also well patronized. A highlight was the four-day visit to Rushworth, and the Easter period enabled a successful natural history venue at Tallangatta. Reference to the statement of accounts will disclose that the excursion fund has been carefully financed. Future surpluses may help this fund to subsidize some long-range project such as a visit to Central Australia or the Barrier Reef. Useful

suggestions and volunteer leaders must be forthcoming to marshal the very apparent interest evoked in the field by those attending. With more leaders and the appointment of a permanent Excursion Secretary, it is confidently anticipated that the committee will improve the range and quality of the excursion syllabus.

Group Meetings inaugurated the previous year have continued to flourish. The Botany Group functioned normally with ten monthly meetings interspersed by field excursions during 1948. The average attendance was 32. Most of the lectures were ably given by Messrs. J. H. Willis, A. J. Swaby, J. Ros Garner, and P. Ribby. The Group is indebted to Messrs. Swaby and Stewart for the foundation work put in by them and regrets that the commencement of 1949 found them both unable to continue in office. Mrs. A. Osborne kindly consented to act as Group Secretary in the New Year. A healthy sign of members' interest is the many and varied exhibits of native flora at the meetings and the enthusiastic use members are making of the Club's library facilities.

In the Marine Biology Group, though small in numbers, members are very keen and are encouraged to exhibit specimens. The Group is greatly indebted to Mr. Swaby for his series of lectures, to Mrs. M. E. Freame for her exhibits, which are many, varied and appropriately explained, and to Miss W. Taylor who has worked hard as Group Secretary. During the year excursions have been held to several beaches, and dredging has been carried out in Port Phillip Bay.

Steady progress is being maintained by the Geology Discussion Group. Attendances were consistent, with most members taking an active part. The Group has been assisted by Rev. E. D. Gill (now palaeontologist to the National Museum) in both discussions and excursions and wishes to register its grateful thanks to him. At the General Club Meeting in December, members of the Geology Group presented the subject, "Melbourne with a Past" and, as a result, members are now preparing this matter for a special publication by the Club with approval of Council. An important feature of the Group's work is the study of geological areas and this year the Bacchus Marsh region was described by Mr. T. C. Bryan. Several of the more active members of the Group made weekend camp-outs to Torquay and the Korkuperrimul Creek. The area under observation at Black Rock is proving its worth as an example of cliff erosion in progress and successive coastline maps are being prepared for record. Regular excursions are made and particular attention paid to "lost" localities in view of the rapidly expanding built-over area around Melbourne. A series of talks, "Geology Simplified" in four parts, prepared specially for the beginner is now being presented by Mr. A. A. Baker, and Club members who desire a knowledge of this

interesting subject are invited to attend the meetings held on the first Tuesday of each month.

The scope of the Australian Wild Flower Garden Group is not as wide as that of other Groups, but 15 to 20 enthusiastic members have attended. In the past year instructive talks were given by Miss Waddell, Messrs. A. Burke, P. Bibby, A. J. Swaby, J. Ros Garnet, and Colin Lewis. The Group possesses a Seed Register in charge of Mr. R. Savage and into this Register members place their good unused seed, to be used in exchange for species difficult to purchase elsewhere. Miss Dawn Weston is Group Secretary.

During the year a sub-committee was elected to revise the list of Institutions and Societies receiving the *Victorian Naturalist* either *gratis* or on exchange. From a questionnaire forwarded to recipients, the sub-committee has carefully reviewed the "exchange" list and selected only publications most useful to the Club.

The Nature Exhibition for 1948 was extended to three days. Continuous heavy rain reduced the attendance at Hawthorn Town Hall on the last evening, but good publicity was secured. Visitors numbered only 1241 adults, and 767 children. Receipts were £121/7/6 and expenses £85/9/3, leaving a balance of £35/18/3. The generosity of the Hawthorn City Council was much appreciated and an outstanding feature was the exhibit set up by the Hawthorn Junior Naturalists. Council sincerely thanks Mr. A. J. Swaby, organizer of the exhibition, the exhibition Committee for assistance given, the many country members who co-operated and the large body of helpers for their enthusiasm and excellent team work.

The Record of Research makes little progress. Any member who is investigating even the simplest matter should let Mr. A. J. Swaby have a note for entry in the record.

The Club still takes an active interest in the affairs of the Council of Scientific Societies. This Council, representing many scientific bodies in Victoria, strives to help its member societies by working for communal requisites such as a general technical lending library and possible creation of cultural centres. Mr. E. E. Lord the Club's representative on the Council has been elected Honorary Treasurer to the Council for the year 1949.

The Australian Natural History Medallion for 1948 was awarded to Mr. Ludwig Glauert, Director of the Perth Museum, Western Australia. Although Mr. Glauert was not the Club's nominee, we take pleasure in the finding of the Award Committee. Mrs. Edith Coleman, the Club's nominee for 1948 will stand again without further nomination and arrangements for the 1949 Award are well under way, Mr. E. E. Pescott having been nominated as Club candidate for the current year.

In the capable hands of Messrs. A. Burke and R. D. Lee the library has served those members who have attended the Royal

Society Hall, especially during group meetings. Your Council regrets that it cannot house the library at the National Herbarium but invites you to use it at the Royal Society Hall on convenient evenings. Many fine books have been donated during the year and for these we are indebted to Miss Raff, Messrs. E. E. Lord, R. Kershaw, H. P. Dickins, H. C. E. Stewart, P. Crosbie Morrison and A. H. Chisholm. Miss E. T. Green donated several early volumes of the *Victorian Naturalist* and Dr. M. Chattaway copies of *Countryman and Country Life*.

The Plant Names Committee has not met as frequently as it would have wished since May, 1948, but revision of the Victorian flora has not been overlooked and the Committee has an immense amount of material ready for publication and approval in the *Naturalist*.

During January, 1949, the A.N.Z.A.A.S. held another Conference at Hobart, Tasmania. Three of our members attended as official delegates and on their return reported on findings of natural history importance.

General Meetings held at the National Herbarium have received good support from members, attendances averaging 180. Lectures have been wide and varied and usually supplemented with slides or films.

Volume 65 of the *Victorian Naturalist* with Index is now complete. The included articles have been well balanced and for this and many other requirements of the Journal our thanks go to Mr. J. H. Willis, Honorary Editor, and his two able assistants, Miss Ina Watson (now in England) and Dr. Margaret Chattaway.

A report from the Maranoa Gardens Advisory Standing Committee indicates a successful period. A highlight of the year's activity was the Annual Planting Day by members, on April 23, 1949. For the advancement of the Gardens the Club requires many more "Friends of Maranoa" and those who have not joined its ranks are urged to do so.

The Youth Movement Committee can look back on a useful year. The Hawthorn Junior Club, mainly under the careful guidance of Mrs. Freame and Mr. Mitchell, have held regular monthly meetings and the Standing Committee wishes to thank those members of the Club who have helped the Hawthorn Juniors.

A further report from the National Monuments and National Parks Committee seems unnecessary after the comprehensive statement published in the recent May issue of the *Naturalist*. The Standing Committee is to be congratulated on its worthy accomplishments during the year. Thanks of the Council are conveyed to Messrs. G. Hyam, Colin Lewis, R. Kershaw, S. R. Mitchell, P. Crosbie Morrison and J. Ros Garnet for their constant efforts to bring about adequate control and management of Victoria's National Parks and Reserves.

With regard to incorporation of the Club there is little to report, the matter being still in the hands of the Club's solicitors and awaiting their pleasure.

Before concluding this report, the Council wishes to express its gratitude to several persons and institutions on your behalf: to Mr. A. W. Jessop, the Government Botanist, for use (rent free) of the National Herbarium Hall as a general meeting place and for rooms in which to hold Council Meetings; to Miss Ina Watson for the use of her home as a Council meeting place up to the time of her departure for England; to Miss Jean Blackburn for help rendered in preparing typing and in reconcoing; to Messrs. Hooke and Chalk for auditing of the Club's accounts and for preparing with Mr. Lord and Mr. Carter the Club's Balance Sheet; to Mr. and Mrs. Mitchell for help at the Royal Society Hall; to Mr. E. Cudmore for his help with the Club's Library; to Mr. Swaby for painstaking effort in organizing working bees at the Royal Society Hall; to Brown, Prior, Anderson Pty. Ltd. for their continued interest in and praiseworthy effort in publishing our *Victorian Naturalist*; to the Council of the Royal Society for use of the lower supper hall in which to store the Club's Library and as a meeting place for the Discussion Groups, and finally to all members and friends who have unselfishly devoted time and energy to furthering the aims and ideals of the Club.

(Signed) J. ROS GARNET, President.

H. E. PRESTON, Hon. Secretary.

---

### BOOK REVIEW

The illustrated booklet *New Australians*, written by Ernest Platz, and published by the Jewish Council to Combat Fascism and Anti-Semitism, should be read by all those who have at heart the adequate permanent settlement of displaced Europeans in Australia. As indicated by Mr. Clive Turnbull in the introduction, this publication goes a long way to remove misunderstandings concerning the cultural calibre of folk of non-Australian origin who have sought to live with us. Some of these very desirable "new Australians" have already made their mark in scientific circles here, notably Dr. Boas, a physicist, one of the principal research officers of the C.S.I.R.; Dr. F. Luewe, associated with the Australian Antarctic Expedition on board the ship *Wyatt Earp*; and Dr. Leonhard Adam, an ethnologist of distinction, who proved his special metier by sponsoring a unique exhibition of primitive aboriginal art in our National Museum a few years ago. The Club has welcomed to its membership others personally known to us. Without exception, these have demonstrated their genuine interest in the native flora and fauna, given us the benefit of their overseas training and experience, and, further, set a worthy example in the systematic study of Australian wild life.

## FIELD NATURALISTS' CLUB OF VICTORIA

STATEMENT OF RECEIPTS AND PAYMENTS FOR 12 MONTHS ENDED 30th APRIL, 1949  
GENERAL ACCOUNT

ORDINARY INCOME—		ORDINARY EXPENDITURE—	
Subscriptions—		<i>Victorian Naturalist</i> —	
Arrears . . . . .	£100 1 1	Printing . . . . .	£377 15 0
Current . . . . .	478 19 8	Illustrating . . . . .	66 9 6
Life Membership . . . . .	2 0 0	Despatching . . . . .	46 15 11
	<u>£581 0 9</u>	Index . . . . .	8 0 0
Cash Sales of—		Reprints . . . . .	£499 0 5
<i>Victorian Naturalist</i> . . . . .	£8 1 2	Postage . . . . .	5 10 6
Badges . . . . .	4 11 3	General Printing and Stationery . . . . .	16 19 8
	<u>12 12 5</u>	Library . . . . .	27 7 5
Advertisements in <i>Naturalist</i> . . . . .	8 11 0	Rent, Caretaking and Meetings . . . . .	7 12 5
Interest received, Library Fund, £50 @ 3½% . . . . .	1 12 6	General Expenses . . . . .	30 16 0
Donations received . . . . .	2 7 0	National Parks Report, cost of printing . . . . .	30 17 10
	<u>£606 3 8</u>	Donations and Affiliation Fees . . . . .	8 9 0
Excess of Expenditure over Income for year . . . . .	36 15 7		16 6 0
	<u>£642 19 3</u>		<u>£642 19 3</u>

## BUILDING AND CONTINGENCIES ACCOUNT

Balance in Savings Bank Account at 30/4/48 . . . . .	£118 10 4	Balance in Savings Bank Account at 30/4/49 . . . . .	£193 7 10
Interest on Commonwealth Bonds and Current Account . . . . .	£34 0 3		
Sale of Publications . . . . .	4 8 0		
Wild Nature Show, net proceeds . . . . .	36 9 3		
	<u>74 17 6</u>		
	<u>£193 7 10</u>		<u>£193 7 10</u>



LIFE MEMBERSHIP ACCOUNT

Balance in Savings Bank Account at 30/4/48 .. £36 0 0 Subscriptions received during year .. . . . . 29 5 0 Interest on Current Account .. . . . . 15 2 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£66 0 2</p>	Taken into Ordinary Income of year to 30/4/49 £2 0 0 Balance in Savings Bank Account at 30/4/49 .. 64 0 2 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£66 0 2</p>
---	---

BALANCE SHEET AS AT 30th APRIL, 1949

LIABILITIES	ASSETS
Building and Contingencies Fund £1,143 7 10 Dudley Best Library Fund .. . . . . 50 0 0 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£1,193 7 10</p> Subscriptions paid in advance— Ordinary .. . . . . £30 1 6 Life Membership .. . . . . 64 0 2 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">94 1 8</p> Excursion Account .. . . . . 44 4 11 Special Donations in Hand .. . . . . 5 5 0 Surplus of Assets over Liabilities .. . . . . 915 1 8 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£2,252 1 1</p>	Bank Current Accounts— General Account, E.S. & A. Bank £11 3 1 Life Membership Account, State Savings Bank .. . . . . 64 0 2 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£75 3 3</p> Arrears of Subscriptions, estimated to realize .. . . . . 25 0 0 Stocks on Hand at Valuation— Publications .. . . . . £36 18 9 Badges .. . . . . 21 11 3 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">58 10 0</p> Investments— Dudley Best Library Fund— Commonwealth Bonds .. . . . . £50 0 0 Building and Contingencies Fund— Commonwealth Bonds .. £950 0 0 State Sav. Bank .. 193 7 10 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">1,143 7 10</p> <p style="text-align: right; margin: 0;">1,193 7 1</p> Library, Furniture, Epidiascope and Water-colour Paintings, at valuation .. . . . . 900 0 0 <hr style="border: 0.5px solid black;"/> <p style="text-align: right; margin: 0;">£2,252 1 1</p>

Audited and found correct,

A. S. CHALK }  
 A. G. HOOKE } Hon. Auditors.

6th June, 1949,

E. E. LORD, Hon. Treasurer.

July 1949

Statement of Receipts and Expenditure

## SOME NOTES ON THE LYRE-BIRD'S DISPLAY

By FRED. LEWIS, Melbourne

Is the display of the male lyre-bird associated mainly with courtship? Is it an evidence of male pugnacity, defiance or challenge, or is it simply "show-off?" Miss Ina Watson's report on the lyre-bird's display at Sherbrooke during the Christmas holiday season set me thinking along these lines and, after summing up all the evidence, I am frankly puzzled. This is a subject on which comments and observations from interested and critical observers would be welcome.

The display of the male lyre-bird is so well known that a description of it is not necessary. It is sufficient to say that, in my opinion, it is amongst the most beautiful of all bird displays and transforms a dull brown inconspicuous bird of the forest floor into a most glamorous, entrancing creature.

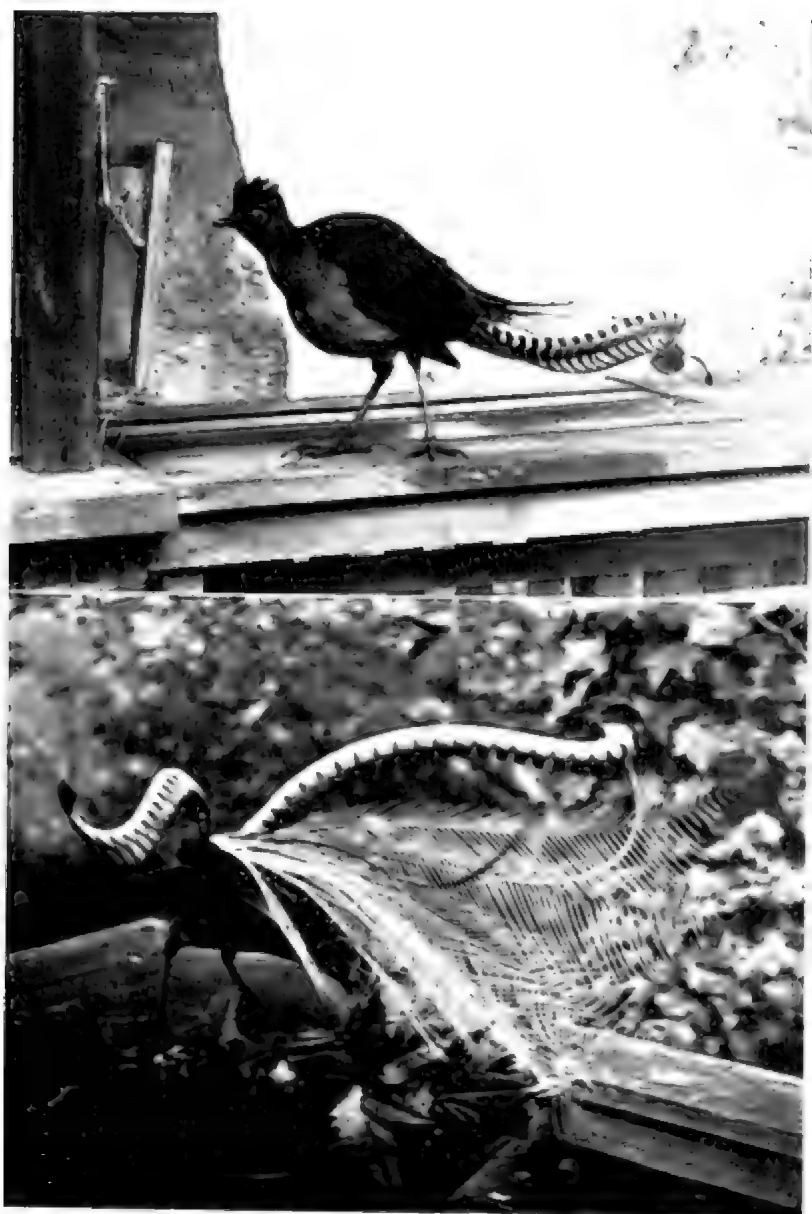
For a long time I held the opinion that the display was associated mainly with courtship. Practically all birds, as the breeding season approaches, indulge in some form or other of courtship behaviour. W. P. Pycraft, a noted English ornithologist, in his book *The Story of Bird Life* has a most interesting and informative chapter on this subject. He divides courtship behaviour roughly into two categories—conquest by blandishments and conquest by battle. Blandishments would include such things as vocal and instrumental music, dances, antics and display of decorative or brilliantly coloured plumage. All those who have seen the lyre-bird's display will, I think, agree with me that it includes *all* these items, viz., music, dances, antics and display of attractive plumage.

Lyre-birds breed in the winter, the one egg being laid usually in May. Those who have seen them displaying in the autumn will no doubt have noticed that the hen is seldom if ever in evidence. The male performs on his dancing mounds apparently entirely by himself. It may be, of course, that the hen is watching the performance unseen by us. Miss Watson reported that at Christmas the hen was present at the mound and watched the display.

The matter in regard to these birds is complicated by the widely held belief that lyre-birds pair for life. If that is so, then *why* the need for so much elaborate display in persuading the hen to select him as her mate, if they are already an old "married couple"?

It is well known that at Sherbrooke a pair of lyre-birds will occupy the same breeding territory year after year to the exclusion of all others, and it is my experience that, in the breeding season, no other birds dare trespass thereon. Apparently this taboo ceases to exist after the breeding season is over and the birds then wander all over the forest. There seems to be some evidence that the male uses display as a means of driving away any trespassers on his domain during the breeding season.

## PLATE III



*Above:* Lyre-bird examining his image in a mirror.  
(Note the raised crest.)

*Below:* Displaying in front of mirror which is concealed by foliage in the foreground.

*Photo.:* Fred Lewis.



One pair of birds which I studied for several years nested in a gully at Ferny Creek on the western edge of Sherbrooke forest. The male was easily recognizable because he had a twisted toe on one foot. During the autumn and winter he used to feed regularly up the side of the hill which, near the top, included several private gardens and homes. One house had a large window facing the west and one day the male, feeding nearby, saw his reflection in the glass. At once he flew on to the sill and endeavoured to attack the supposed intruder in his territory. Being unsuccessful, of course, in driving his reflection away, he drew back and for some time gave his well known display. This performance was repeated frequently throughout the season and for several years, in fact until he died of old age. I saw this performance after two or three years and hoped to photograph it, but conditions were always unfavourable for photography.

In the meantime, the owner of the house built a wooden platform outside the window. At the end of this I securely fastened a mirror about 10 inches square. As soon as he saw this he endeavoured to fight his reflection and dislodge the mirror. Frustrated, he drew back and gave a most wonderful display which I was able to photograph. These facts seem to indicate that, here at least, the display was an evidence of male pugnacity and defiance or a challenge, used in an effort to drive away the supposed intruder.

A pair of lyre-birds was kept under most favourable conditions in a large aviary at the Sir Colin Mackenzie Sanctuary at Badger Creek for seven years. During the whole of that time, I am informed, the male never gave his well known display. It has been suggested that the reason for this failure was the fact that no other lyre-birds lived anywhere near and that he had therefore no need to demonstrate his ownership of that territory. If that be so, it would appear that the display is predominately one of defiance or challenge to other males.

The third point to be considered is whether the display is simply "show-off." Why does a bird sing? Is he telling the world that—

"The blue eggs in the robin's nest  
Will soon have wings and beak and breast,  
And flutter or fly away"?

"Some hold that singing is merely the expression of super abundant energy; that a bird sings from the pure enjoyment of life, the song being the measure of his superfluous vitality."

It is true that many birds sing at times other than in the breeding season, although Darwin regarded true song primarily as a method of courtship.

But the lyre-bird displays at times quite apart from the breeding season and sometimes under circumstances where there is no

question of trespass by another male. Can it be said that under such conditions there is any explanation other than simply the desire to show-off? Those who have watched the displays of peacocks will have found plenty of evidence that "show-off" is a frequent reason for their display. Amongst certain monkeys and apes in a zoo, as soon as a crowd gathers round their cage the animals begin to show off. May it not be so too, in regard to the lyre-bird at those times of the year when there is no other obvious reason for his wonderful performance?

---

#### A BIRD BOOKLET

Though only in the third year of its activity, the Illawarra Naturalists' Society, Wollongong, N.S.W., has shown enterprise in reprinting in brochure form, with a foreword and index, *Birds of the Illawarra District*, compiled by Ellis McNamara, and originally published in *The Australian Naturalist*. The idea of issuing regional lists, with appropriate notes, on our native flora and fauna by country nature clubs is commended.

Mr. McNamara's list of 200 species, with brief relevant observations, is the summary of his 20 years' experience in the district. He records some unusual facts, such as the virtual disappearance of the White Cockatoo and the King Parrot, both formerly very common. Against this we are heartened to read of the increase of the Wonga Pigeon. A new note concerns the Pilot Bird evincing a propensity for hush burnt out the previous season, and for blackberry-covered areas. Another deals with the habit of the Yellow-faced Honeyeater in frequenting orchards and occasionally damaging soft fruits. Have Victorian observers evidence of similar tendencies in these two birds here?

The booklet is obtainable (post free for 1/3) from the author, Mr. Ellis McNamara, Cordeaux River, Mount Kembla, N.S.W.

H. C. E. STEWART.

---

#### ANTS AND THE "CRUCIFIX ORCHID" (*EPIDENDRUM O'BRIENIANUM*)

For many years I have had several plants of this hardy hybrid orchid growing under glass. They thrived in pots, attaining a height of two feet, but, as I had propagated them from the green tips, I had to wait three years before the golden cluster of cruciform flowers appeared. This year one of the clusters produced a number of globules of a viscid sweet substance from what I take to be extra-floral nectaries, since they were on the stems and not in the flowers. The small common black ant attended daily to lick the exudate and, later on, at the end of February, four or so pretty green seed-capsules—fashioned somewhat like Chinese lanterns—developed after the flowers had fallen. Ants probably pollinated them [see note by Rev. H. M. R. Rupp, *Vict. Nat.*, LXII, Feb., 1946, p. 188], for no other insects were observed to frequent the flowers. The green capsules, about half an inch in diameter, began to split on April 5, and thousands of microscopic long slender seeds wafted down like bright dust in the sunlight.

—TARLTON RAYMENT.

## ADDITIONS TO THE ORCHIDACEAE OF WESTERN AUSTRALIA — IV

Four New Varieties of *Thelymitra spiralis* Lindl., with Notes on Allied Species.

By W. H. NICHOLLS, Melbourne.

*Thelymitra spiralis* Lindl.<sup>(1)</sup> is a widely distributed endemic terrestrial orchid of Western Australia. It is closely related to the New Zealand and Victorian *Th. Matthewsii*, Cheeseman<sup>(2)</sup> [*Th. D'Altonii* Rogers], a species which invariably has a solitary deep violet-blue flower.

*Th. variegata* Lindl.<sup>(3)</sup> is also a close ally, and R. D. FitzGerald's plate purporting to be this species unquestionably represents a very excellent specimen of *Th. spiralis*.<sup>(3)</sup> Both *Th. spiralis* and *Th. variegata* are to be found chiefly in forest or scrubland, where they grow in sandy soil among rushes or in grass tussocks, sometimes several plants together.

Dr. R. S. Rogers writes at some length concerning the problem of differentiating between these spiral-leaved species<sup>(4)</sup>.

In his *Swan River Appendix* to Vol. xxii of the *Botanical Register* (1839), p. 50, Lindley published two new species of *Thelymitra* (*Macdonaldia*), which he named *Th. variegata* and *Th. spiralis*.

These short descriptions lack details of diagnostic importance, but for convenience I quote them here—

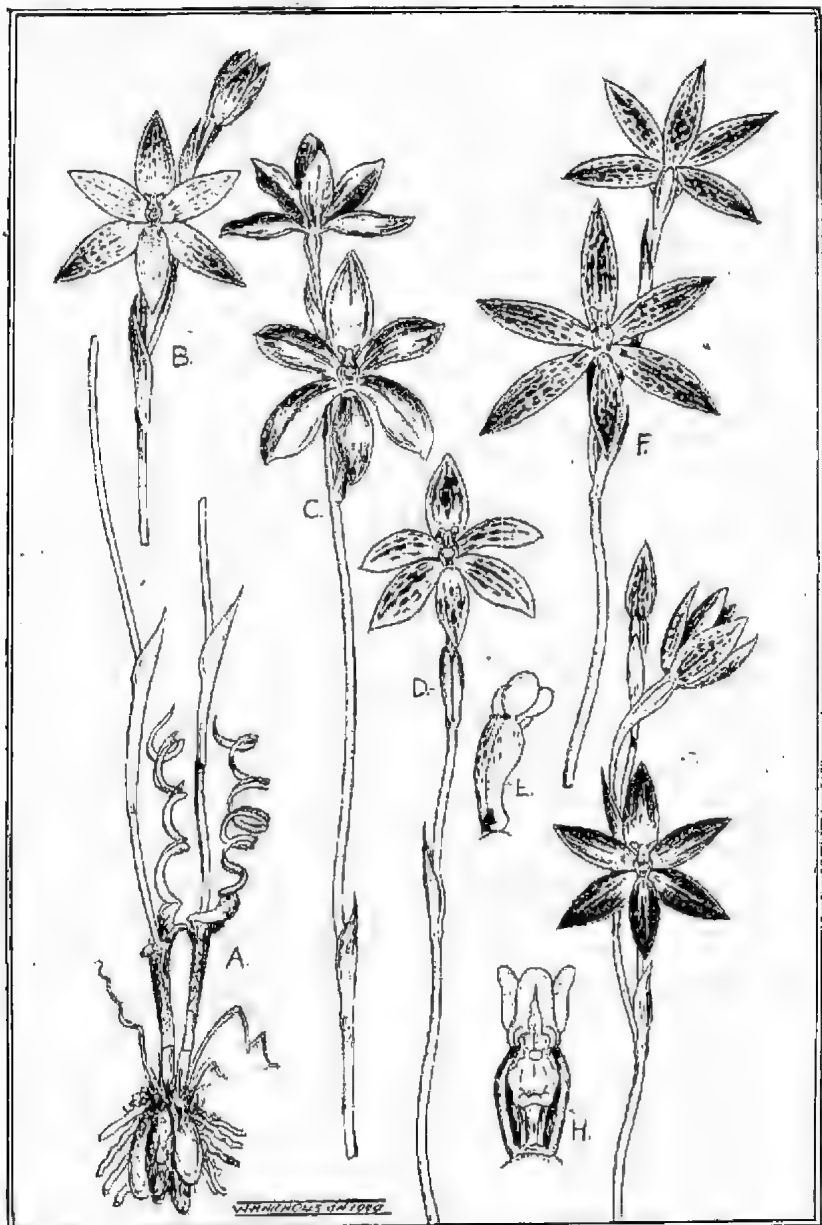
1. *T. "variegata—floribus purpureis, sepalis petalisque linearibus acuminatis, cuculli laciniis lateralibus lanceolatis subcarinatis intermedia obsolete, anthera carnosae obtusa elongata loculis brevibus semicircularibus membraceis."*
2. *T. "spiralis—folia radicali spirali caulino solitario ovato, caule unifloro, floribus purpureis, cuculli laciniis lateralibus carnosae dolabri formibus intermedia obsolete, anthera obtusa apice papillosa."*

[It will be noted in these descriptions that the leaf is undescribed in *T. variegata*, but stated to be spiral in the other; the flowers are purple in both; the intermediate lobe of the hood is absent or rudimentary in both, and there is no reference to the presence of a crest in either; the lateral lobes of *T. variegata* are lanceolate and subcarinate, in *T. spiralis* they are fleshy and hatchet-shaped. The name *variegata* implies a character (presumably in the flowers) which receives no reference in either description. . . . In my own material from Western Australia, the flowers are sometimes punctate or variegated, sometimes not; the lateral appendages vary considerably from oblong to elliptical, but are always more or less elongated, in one specimen reaching a length of 5 mm. It is difficult to avoid the conclusion that Bentham<sup>(5)</sup> and other authors have included more than one species under the same name.]

*Th. variegata* Lindl. is a very beautiful species, the most brilliantly hued *Thelymitra* of all, and has been dealt with by the present author<sup>(6)</sup>. The leaf, however, is just as often spiral as not, and the perianth is definitely variegated as the specific name implies.

*Th. spiralis* Lindl. The leaf (in my experience) is usually strongly spiral, only very occasionally linear. The flowers vary in





For description, see page 56.

size and in number; in colour they are purple or purplish-blue, and the column appendages are usually but not invariably hatchet-shaped.

The writer visited Western Australia during the spring of 1946, and again in 1948; he saw these two species growing *in situ*, and also obtained material of both from other collectors. *Th. variegata* appears to be a stabilized, well-defined species; but *Th. spiralis* is definitely of polymorphic unstable character. The typical *spiralis* flower (as already mentioned) is figured by FitzGerald under "*Th. variegata*", but is shown with several flowers (2-3) instead of the solitary bloom specified by Lindley. Both species flower between August and December, according to habitat and climatic conditions.

Four additional varieties of *Th. spiralis* will now be dealt with, indicative of the diversity of form and colouration within this species and showing the difficulty which confronted previous workers in their efforts to unravel a most perplexing botanical problem.

1. *THELYMITRA SPIRALIS* Lindl., var. *SCOULERÆ* var. nov.

*Planta gracilis, circa 25-30 cm. alta. Flores (in meo specimen), majusculi, Segmenta-perianthii late ovato-lanceolata, purpurea, flaccida.*

A slender plant about 25-30 cm. high. Flowers 2 (in my specimens) large; the perianth-segments purple, broad ovate-lanceolate, flaccid.

Habitat: Yarloop (Mrs. E. Scouler, Sept.-Oct., 1946—also several seasons prior).

This showy, largest-flowered form was seen by the writer *in situ* near Yarloop. It was first found by Mrs. Ethel Scouler of Yarloop, and is named in her honour. Mrs. Scouler is an enthusiastic collector of Western Australian Orchids, with numerous interesting finds to her credit, among these being several new species.

2. Var. *PALLIDA*, var. nov.

*Planta gracilis, circa 30-35 cm. alta. Flores 1-2, majusculi, cornea; segmenta-perianthii lanceolata, stellata.*

A tall slender plant 30-35 cm. high. Flowers 1-2, large, star-like; perianth-segments lanceolate, acute, sepals brownish-green and blotched, petals pale pink.

Habitat: Yarloop (Mrs. E. Scouler).

3. Var. *PUNCTATA*, var. nov.

*Planta gracilis, circa 20-25 cm. alta. Flores 1-2, majusculi, sub-purpurei; Segmenta-perianthii anguste-lanceolata, punctata.*

A slender plant about 20-25 cm. high. Flowers 1-2, large somewhat purple; the perianth-segments narrow-lanceolate, generously marked with spots along the nerves.

Habitat: Yarloop (Mrs. E. Scouler).

4. *Var PULCHELLA*, var. nov.

*Planta gracillima, circa 15 cm. alta. Flos solitarius (in meo specimine), carneus, punctatus, circa 2-5 cm. in diametro. Segmenta perianthii flaccida. Columna carnea, lobi laterales sub-orbiculares, aurantiaci.*

A very slender plant about 15 cm high. Flower solitary (in my specimen). Perianth segments pink, spotted, chiefly on the outer ones, somewhat flaccid. Lateral lobes of the column almost orbicular, orange.

Habitat: Open plains or sand covered gravel, near Bolgart (Mrs. Rica Erickson, Bolgart, August 1934 and 1949).

"The locality of collecting was 7 miles north of Bolgart, near the main road and about a mile from Wyening Siding. The country is sandplain and gravel, a small area with Wandoo, Marri and Banksia trees near at hand. I found it in August, 1934, and was very interested in the leaf shape which varied from straight to wavy and spiral. Never was it so conspicuously spiral as the leaf at *Th. variegata*. The lobes of the column were consistently 'stumpy.'" (Ext. Letter, Mrs. Erickson, 17/2/1949.)

### KEY TO ILLUSTRATIONS

*Thelymitra spiralis* Lindl. and its varieties

A—Two specimens growing together, showing leaves, bracts and lower portion of peduncle, also tubers. B—Flowers of variety *pallida*, var. nov. C—Flower of var. *Scoulerae*, var. nov. D—Flower of var. *pulchella*, var. nov. E—Column from side in var. *pulchella*. F—Flowers of var. *punctata*, var. nov. G—Flowers of the typical form. H—Column of the typical form. (For natural size, see letterpress.)

### REFERENCES

1. *Swan River Appendix XXII* (1839), 50.
2. *Trans. N.Z. Inst.*, 43 (1910), 177.
3. *Austr. Orchid.*, 2, Pt. 4 (1889).
4. *Trans. Roy. Soc. S.A.*, LIV (1930), 43.
5. *Fl. Austr'is*, VI (1873), 323.
6. *Vict. Nat.*, 62 (1945), 146.

### EXCHANGE OF CRYPTOGRAMS INVITED

Through Miss Ina Watson has come the following request: Will any member interested in an exchange of Moss, Lichens, Hepatic or Seaweed specimens please communicate with Mr. A. H. Norkett, British Museum of Natural History, Cromwell Road, South Kensington, S.W.7, London?

## FURTHER NOTES ON THE SWARMING OF WOOD-SWALLOWS

By EDITH COLEMAN, Blackburn.

This year, wood-swallows again swarmed in our trees on February 16, 17 and 18. On February 19 they did not appear, probably sensing the heavy rain which fell at 10 p.m. February 20 brought rain in the late afternoon, and was still moist and overcast at 7.15; when the swallows clustered "under" an almost horizontal bough. On the 21st, 22nd and 23rd there was rain and wind; the birds did not appear.

On the 24th and 25th, after warm sunny days, they flitted between two of our tallest old gum trees which were lit up by the setting sun; birds and trees turned to rose colour—a pretty sight. They settled in small clusters, preening and twittering, finally clustering in a more densely foliated tree. The 26th found them again sitting and preening, but they did not cluster. The 27th and 28th were cold and windy; birds did not appear to settle in our trees, although they were about. On March 1st and 2nd, they were hawking over the garden, but did not cluster.

For the first two nights (February 16 and 17), the birds settled on the same tree, exactly in the same spot as last year. On February 18, a large cluster had formed at 7.10 p.m. At 7.30, a magpie flew into and dispersed the cluster. They then settled in lines on branches of a large stringy bark which had been ring-barked and had lost most of its foliage.

Later they clustered on a very slender limb just below a fork. On the defoliated tree, the cluster stood out boldly against the evening sky—a great bristly oval mass that should have presented a formidable appearance, even to a bird of prey. (It is possible that magpies are feared. I have myself seen one snatch up a yellow robin which was foraging in a wood pile.)

Fortunately, there was no wind, as on the previous evenings, or the birds would have been uncomfortable in such an exposed situation. There was much movement before they had finally settled. At 8 p.m. all was quiet. Although it was not very light in the garden, the cluster, high up on the bare tree, stood out clearly. At 8.45 it was still plainly visible.

It will be noted that the birds may cluster above or below a fork which, obviously, is not chosen as a support; but all of the trees have thick stringy bark into which the clawed toes should sink. Has any observation been made on the type of bark chosen for swarming? Apart from giving a good foothold, perhaps stringy-bark would be warmer than a smooth bark, probably holding longer the warmth of the tree.

At 3.45 a.m., this particular swarm had flown. The sky was still pierced with stars and the moon clear, though it was not

very light in the garden. I had hoped to see them "take off" from such a splendid position, but missed what would surely have been a beautiful thing to see.

It is interesting that the daily papers recorded the coldest weather in February for 25 years. A comparison of the clustering dates for the past six years stresses the punctuality of our wood swallows:—

1944	.....	Feb. 26	1947	.....	Feb. 18
1945	.....	Feb. 20	1948	.....	Mar. 1
1946	.....	Feb. 17*	1949	.....	Feb. 16
1946	.....	April 5			

\*[In the April, 1948, issue of the *Victorian Naturalist* the clustering date for 1946 was omitted, and that for 1947 inadvertently substituted.]

Resulting from an article I wrote for *The Age* on May 7, a letter from Lieut.-Col. Sutton (May 11) brought the report that he and his wife watched a swarm of wood-swallows about 40 feet from the ground at his country home, on the Woori Yallock side of Emerald, during Easter Saturday. He said: "We watched this (to us) phenomenon until we could see no more, by which time the cluster was only a darker blur against the lighter shading of the gum tree." It was estimated that there were 60 or 70 birds in the swarm and that it would occupy an area of 3 feet in diameter. They did not see them again during the holidays, but, knowing now when to look, there is little doubt that Lieut.-Col. Sutton will report similar proceedings next year.

### AUSTRALIAN FOREST LEAGUE

The Australian Forest League, Victorian Branch, founded 1912, with membership unbroken for 37 years, has urged Australians to maintain existing forest reserves, have more reserves on hilltops and river banks, restore denuded areas, plant waste places and sand dunes, protect forests from fire and damage, prosecute offenders, use wise legislation, plant trees to shelter stock, crops and homesteads and for ornamentation, use timber correctly, meet to discuss forests, publish facts and statistics, form forest consciousness, and protect native flora and fauna.

Full Members, 10/-; Associates, 5/. Apply immediately to A. N. C. Gilbert, Hon. Treasurer, 12 Edward Street, Kew, E4.

### PERSONAL

Dr. Harry E. Young, of Brisbane, has accepted an important undertaking with the Imperial Institute in connection with research among the rubber plantations in Ceylon. During Dr. Young's period of war service in Melbourne he evinced a keen interest in our Club, and gave a splendid lecture on one occasion. His many friends here wish him success in his new sphere of work, which is anticipated to cover a period of 3½ years.

## NEW COMBINATIONS IN SOME AUSTRALASIAN FERNS

By N. A. WAKEFIELD.

Family *Hymenophyllaceae*

Perusal of Australasian material, in conjunction with Copeland's "Genera Hymenophyllacearum," (*Philipp. Journ. Sci.*, LXVII, No. 1), indicates the necessity for the following additional revision within this family:

1. *MECODIUM WHITEI* (Goy) *comb. nov.* [Syn. *Hymenophyllum Whitei* D. A. Goy, *Queensland Naturalist*, XI, No. 6, p. 126, Aug., 1941.]

Thornton Peak, North-east Queensland.

2. *CREPIDOPTERIS WILDII* (Baill.) *comb. nov.* [Syn. *Trichomanes Wildii* Baileyl, *Queensl. Bot. Bull.*, No. 4, p. 19, t. 5a, 1891.]

Near Cairns, North-east Queensland.

3. *CREPIDOPTERIS AUSTRALIENSIS* (Domin) *comb. et stat. nov.* [Syn. *Trichomanes nanum*, var. *austrahense* Domin, *Bibliotheca Botanica*, p. 13, 1913.]

Daintree River, North-east Queensland.

The above three combinations were used and attributed to the present writer in *Check List of North Queensland Ferns* (Publication No. 3 of the North Queensland Naturalists' Club, Nov., 1946) with the assistance of Mrs. L. S. Smith, lately of Queensland Herbarium, Brisbane. They had not, however, been correctly published, but had been in manuscript form for several years, and as such had been communicated by the writer to Brisbane Herbarium.

4. *CREPIDOMANES MAJORAE* (Watts) *comb. nov.* [Syn. *Trichomanes Majorae* Watts, *Proc. Linn. Soc. N.S.W.*, XXXIX, p. 759, Pl. LXXXVI, t. 2, 1914; *Trichomanes Walleri* Watts, *l.c.*, p. 761, f. 3] Queensland.

5. *CRASPEDOPHYLLUM CHEESEMANII* (Baker) *comb. nov.* [Syn. *Hymenophyllum Cheesemani* Baker, *Hook. Ic. Pl.*, t. 1132, 1873.] New Zealand.

The genus *Craspedophyllum* was described by Copeland as characterized by the black contents of the obliquely placed marginal frond cells, and as monotypic, the only species being *C. marginatum*. The conception of this genus must now be broadened to cover two other New Zealand species, the one above having the margins of its involucrel valves only, thickened and black.

The combination, *Craspedophyllum Armstrongii* (Baker) F. J. Rae ex Copeland, was made for the third species as recently as 1947 (*Genera Filicum*, p. 33). Professor E. B. Copeland had previously (*Philipp. Journ. Sci.* LXXIII, No. 4, p. 157, 1940) transferred it to the genus *Microtrichomanes*. Holloway considered Baker's *Hymenophyllum Cheesemani* to be no more than a form of his *Trichomanes Armstrongii* [*i.e.*, *H. Armstrongii* Kirk, 1878] published in 1868 (*Syn. Fil.*, I, p. 452).

Family *Cyatheaceae*

*CYATHEA WOOLLSIANA* (F. Muell.) *comb. nov.* [Syn. *Alzöphila Woollsiana* F. Mueller, *Fragm.* VIII, p. 179, 1874.]

Mount Graham, Mt. Spurgeon, Cardwell Range, Rockingham Bay and Herbert's River—North-east Queensland.

This species has the dark terete basal hairs of *Dicksomia antarctica* as well as rigid curved scales, and is not at all allied to *Cyathea Leichardiana* with which many have combined it. From information supplied by the writer, Mrs. L. S. Smith (née Goy) has already used the name "*Cyathea Woollsiana*" [see "The Tree-ferns of Queensland," in *Qland. Nat.* XII, 42, May, 1943]; but, in the absence of any "references in a previously and effectively published description" (Art. 37, *Rules Bot. Nomencl.*), her combination can not be accepted as validly published.

## WHAT, WHERE AND WHEN

**General Excursions:**

Saturday, July 16 Zoology School, University of Melbourne. Subject: "Biology." Leader: Professor O. W. Tiegs. Meet at entrance to Zoology School, University grounds, at 2.30 p.m. Names to be registered with Miss W. Taylor, 13 Jolimont Square, Jolimont, C.2 (Tel. MY 4269).

**Preliminary Announcements:**

Saturday, August 13—Rocking Stone at Lysterfield Hills. Subjects: Geology and Botany of area. Round trip via Upper Ferntree Gully and return via Narre Warren. Nash's new Blue Bus from Batman Avenue, 9 a.m. Fare, 6/6. Bookings with Miss M. Eider, 17 Adelaide Street, Malvern, S.E.3 (Tel. U 7297). Leader and further details later.

Saturday to Sunday, August 27-28—Bendigo week-end. Subject: "Hakea Wattle and early Whipstick Flora." In conjunction with Bendigo Field Naturalists' Club and Wattle Club of Victoria. Leave Melbourne by morning train on Saturday, return by road service on Sunday evening. Limited hotel accommodation, and local transport (one half day and one full day) at Bendigo. Further details from Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale. Early hotel booking essential.

Saturday, Sept. 3—Snob's Creek Fish Hatcheries (by courtesy of Mr. A. D. Butcher, Director of Fisheries and Game Dept.). 200-mile parlor coach excursion via Healesville and Buxton. Leave Batman Avenue 7.45 a.m., return to city about 9 p.m. Reserved seat bookings, 22/-, with Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale, W.2 (Tel. FU 022, extn. 457). Advance bookings must be confirmed on or before 11th August, otherwise cancelled. Bring two meals.

**Group Fixtures:**

Saturday, July 23—Botany Discussion Group excursion to Somerton and Mount Gellibrand. Subject: "Red Gum and Associated Ground Flora." 9.28 a.m. train from Flinders Street to Somerton (via Coburg and Fawkner); return 4.5 p.m. train from Broadmeadows. Fare, 1/10, second class return. Easy walk of about 4½ miles. Bring one meal. All Club members cordially invited.

Monday, July 25 Botany Discussion Group. Royal Society's Hall, 8 p.m. Subject: Discussion on Ground Flora from Saturday's excursion. Hon. Sec. of Group: Mrs. A. Osborne, 21 Kenwick Street, Glen Iris, S.E.6.

Tuesday, August 2—Geology Discussion Group. Royal Society's Hall, 8 p.m. Monthly Meeting. Particulars from Hon. Sec. of Group: Mr. A. A. Baker, 53 Carlisle Street, Preston, N.18.

Thursday, August 4—Wildflower Garden Group. Royal Society's Hall, 8 p.m. Subject: "My Experiences in Growing Native Flowers," by Mr. G. McR. Duncan. Hon. Sec. of Group: Mr. J. R. Jennison, 3 Linda Street, Moreland.

Friday, August 5—Marine Biology Discussion Group. Royal Society's Hall, 7.45 p.m. Lecture by Mr. A. J. Swaby. Hon. Sec. of Group: Miss W. Taylor, 13 Jolimont Square, Jolimont, C.2.

N.B. Excursion Committee would welcome suggestions for new excursion programme.

—Jean Blackburn,

Excursion Secretary.

4 Allenby Avenue, Glen Iris, S.E.6.

# The Victorian Naturalist

Vol. 66.—No. 4

AUGUST 4, 1949

No. 788

## PROCEEDINGS

As the July number of the *Victorian Naturalist* was being wrapped for despatch to members, the F.N.C.V. Council reluctantly decided that, by reason of unforeseen power and transport restrictions and the engagement of the Herbarium Hall on other possible meeting nights, it was desirable to abandon altogether the July meeting of this Club. Metropolitan members were notified of the cancellation by a slip inside the cover of their journal copies; press and radio announcements were also made, but it is to be hoped that circumstances will not soon necessitate a repetition of this extreme and unfortunate measure and that we shall be privileged to hear Mr. J. Ponder's lecture, "Birds of the You Yangs," in the not too distant future. Nominees for membership, as published in the July *Naturalist*, will stand for election at the August meeting.

## PRESERVATION OF NATURE, AND THE F.N.C.V.

(Summary of Presidential Address, June 6, 1949)

By J. RÖS GARNET

I have heard it said that a Presidential Address, like a good sermon, should be modelled on a radio talk—it should not exceed 15 minutes. I may not be able to say all that I wish to within that desirable limit; but, if I do take rather longer, it will be because my theme is of engrossing interest to me and, I imagine, to you also.

This is the one occasion in the Club year when your retiring President may, if he so desire, undertake the task of reviewing the past, discussing the present, or anticipating the future. My purpose now will be to discuss the present and look forward a little to see what the future may have in store for the Club in its ever-widening membership. During recent years some of our presidential "swan songs" have had as their principal theme memories of the past—rather saddening memories of men and things long since departed. We have gazed retrospectively at the picture of some long-departed form of wild life and, perhaps, we have drawn a moral.

We live in a world, and especially in a land, that is intensely interesting—with multitudinous changes in pattern of life and



form—and, although fossils and museum specimens are part of that pattern, we surely never cease to recall that once they were all living things. It is the vital thing that matters most and it is the prime object of this Club to see that the living things of to-day do not too hastily become the fossils of to-morrow. How much better it is to browse among the living than among the tombstones, salutary though that latter process may sometimes be!

With us and around us are Birth, Life and Death—Innovation, Conservation and Destruction—and the interactions between them are aptly summed up in the phrase, "The Balance of Nature."

As mankind struggles toward its destiny—as the process of civilization moves toward its climax—the concomitant processes of destruction are modernized and improved to a degree where the CONSERVATORS become more and more essential if this balance of Nature is to remain stable.

Most of us have lived our lives in years which have surely witnessed unparalleled destruction, not only of precious human lives but of almost everything that makes for human livelihood—forests, soil, arable land, wild-life and so on. This destruction, brought about by man himself, is so complex and so highly specialized in his present system of living that he is apparently powerless effectively to halt these destructive processes that he has unleashed.

This is hardly the place to enlarge upon the adverse effects of industrialization and the development of urban communities in relation to modern economics, unless it be to remind ourselves that these very factors have led to the formation of such societies as our own Club and it is imperative that the activities of all such bodies be perpetually expanded.

The F.N.C.V. can be taken as a typical cross-section of people who, to the limit of individual and collective means, endeavour to weight the balance in favour of preserving and protecting all those things that are most prone to wanton destruction. It is easy to believe that in this, our own country, without the continued influence of naturalists and nature lovers, our birthright of virgin forests, crystal-clear streams, enchanting bush tracks, coastal scrub and the haunts of native wild life would rapidly disappear, never to be seen again.

It is only in recent times that the public has begun to appreciate properly the need for all these things and by "properly appreciate" I do not mean merely the wish to preserve them as museum specimens. The need for preserving nature's balance implies much more than that. To preserve our rural and urban communities and, what is even more important, before we can extend them, steps must be taken to see that sufficient land is available for the farmer and, not only available, but effectively worked. No

farm, nor, indeed, any kind of community, can prosper where there is inadequate water and water can hardly be controlled in the absence of perennial vegetation, especially of trees.

Trees, with their associate shrubs and herbs, will soon pass away and fail to regenerate if their own communities are reduced in number below a certain biologically stable value. Their disappearing in such circumstances can be related to a corresponding depletion of birds, beasts and insects.

Thus it is that, to preserve our communities, and even our civilization, the soil, forests, bush, springs, creeks and rivers, lakes, hills and mountains must all be husbanded, tended and controlled. Where damage or unwitting destruction of any kind takes place we should be alert to see that the damage is promptly repaired and the effect of the destruction nullified by appropriate action of a constructive kind.

Action along these lines is, as you well know, a matter of public policy nowadays. We in Victoria have a Forests Commission, a Board of Works, a State Rivers and Water Supply Commission, a Soil Conservation Board (and the prospect of an equally necessary Land Utilization Authority), a Department of Agriculture, of Mines and Geological Survey, of Fisheries and Game, a Central Planning Authority with its several regional committees and all these, with several other public bodies, are intimately concerned with one or other phase of conservation, utilization, repair and planning of the State's natural resources. We are surely moving towards the time when there will be yet one more public organization, one specifically concerned with the task of undertaking a biological survey of the State—a body that may be but a Division of an organization concerned with a task of much greater scope and importance, the biological survey of the whole of the Commonwealth.

A comprehensive survey of this kind is appearing more and more necessary if all those other statutory bodies are to function to the best advantage for the people and, to function in this way, each must be aware of what the other is doing or what it proposes to do. A Biological Survey Service can become the clearing house of biological knowledge which can be collected and marshalled only by trained scientists and trained field observers.

Our Club and allied societies have been important media for the training and instruction of field observers and from their membership have been drawn many men and women who to-day are widely known and recognized for their experience of the general and scientific aspects of natural history. Our first President, Professor Sir Frederick McCoy, very clearly recognized the need for supplementing academic studies with practice in the field and encouraged many teachers and students from the

then-young University to become F.N.C. members; this early-formed tradition still persists.

There is, however, a difference now. I think I am right in saying that the present membership includes a lower percentage of University students than actual graduates and this can be explained, perhaps, on the assumption that the high pressure of a modern University course leaves little time for the more leisurely pursuit of field natural history. When his course is finished, a student may then join us for the recreation and pleasant associations that develop among those very kindly people called naturalists.

It is the young man and young woman whom we need now if the Club is to play a continuing and effective part in the training of future biologists—those botanists, entomologists, zoologists and general naturalists who will be required for the inevitable Biological Survey Service. Obviously, it is not the function of the Club to train them in the academic sense, although through the kindness and enthusiasm of certain experienced senior members their own enthusiasms may be kindled along many avenues of profitable research.

Our aim should be rather to instill into members, by precept and example, a sense of the intimate relationship of all natural phenomena—to demonstrate to them that every accurate observation, however unimportant it may seem, is worthy of record. The medium for recording these apparently trifling or insignificant data is available to all of us in our journal and magazine, *The Victorian Naturalist*, which we must never allow to cease—a month-by-month publication for 65 unbroken years is a splendid tradition that must be upheld at all costs. Among more obvious purposes, it serves to bring to the notice of all kinds of people and institutions recent advances in natural history and, even more importantly, the views of a considerable cross-section of the thinking community on matters affecting the conservation of our wild life.

Let us encourage the youth of the cities and towns to understand our objectives, to share our recreational activities and help us in our work; from their ranks can be chosen the leaders of scientific thought to-morrow—the men and women who will direct the several government departments of which I have already spoken.

If we are to do this, the appropriate schools must be available to those who would wish to learn. The "school" of the Field Naturalist, whether destined to become a geologist, a botanist or what you will, is the whole world of nature and if his studies are to be something more than a mental exercise, making some contribution to the sum total of ecological knowledge, then he must have materials available for such studies. **HEREIN LIES THE IMPORTANCE OF OUR NATIONAL RESERVES.**

Unfortunately, the distribution of those we already have is not well-balanced, if we think of them in terms of scientific usefulness.

Certain areas within this State which are highly desirable, even necessary, for the purposes of special study and training are not subject to public control in any way and they may easily suffer irreparable damage and lose their scientific value at the mere whim of their owner or controlling body. Others of unique scenic or historical interest are being lost to us through the inevitable extension of settlement. Even such National Parks and Reserves as have already been set aside for centres of nature and scenic preservation stand in grave danger through neglect and gradual deterioration.

The time has come when our country's leaders must act to protect and control the existing National Reserves and the wild life within them. To ensure that they will have the greatest possible value to the State, steps should be taken to prevent them from becoming breeding grounds for pests, and we should see to it that their function as resorts for out-of-door pleasure by the people does not over-ride that of their function as strict reserves which typify the best in natural beauty and attractiveness of the Victorian landscape. It is superfluous to stress the need for many more inalienable reserves, properly controlled and managed as assets of great value to the State and its people, both to-day and in years to come.

To secure this effective management of nature reserves, there is only one course open to our Government and it was clearly seen by delegates who attended the several conferences on Victoria's National Parks and National Monuments which were held last year. There was complete unanimity among delegates that nature reserves should be placed in the control of a special statutory authority whose executive officers would be experts in wild-life management, fauna biology, forestry, botany, ecology, etc.

Such an authority could do much, with the co-operation and support of existing Government agencies and with the future Biological Survey Service. Without co-operation it could do little; but, if we can judge from the enthusiasm of delegates who represented Government agencies at the conferences, it is certain that a National Parks Authority would be welcomed by their administrators.

An annual expenditure of £25,000, with capital expenditure of at least twice that sum, would go far toward giving our National Parks the attention they deserve and would bring untold advantages to the State—in the obvious way of attracting tourists and visitors and in the less apparent way of providing a healthy outlet for youthful energies, e.g., the establishment of "nature trails" for hikers and campers, the provision of hostels, chalets, etc.

Then, even less apparent, would be the stabilizing effect on the natural biological balance of the State's forests, streams, and wild life.

Members of this Club should not spare their individual influence to see that this project is realized. It may be recalled that, through the wide and influential membership of our Club, many of our nature reserves have actually been established. We must now see that these reserves fulfil the very purposes for which they have been reserved.

If our unique and characteristic native flora and fauna is to prosper, or even survive, the job of preservation must no longer be delayed. "Leadbeater's 'Possum" is but one example of marsupials which can now be seen only in our National Museum (this particular animal was originally described by Professor McCoy, the first President of our Club). Other species will surely disappear unless we take steps NOW to preserve them and the ideal place for their preservation is not in a museum but in a National Park within which close wild life refuges can be established.

In what other ways can the Club continue to justify its existence? The days are gone when the majority of members vied with one another in contributing to the well-being of the Club and efficient management of its affairs. This is rather regrettable as, with our present large membership, far too much work is imposed on those who are appointed to shoulder the routine business, without fee or reward. There are very few of us who, while still pursuing our daily vocations, can give continuously and unstintingly of leisure hours without feeling the strain.

It must be realized that efforts of your Council to conduct the Club's business within the limits of income mean that stringent economy is practised; but I doubt if these economies are very evident to the average member who receives his *Naturalist* regularly each month, whose excursions are carefully organized, whose General Meetings are provided with an attractive and interesting subject, who, in short, has to do nothing but pay twenty-five shillings a year and come along. Is not the F.N.C. now a society, rather than a "club" in which every member pulls his weight?

There is a reluctance in most members to accept nomination for office or to lead an excursion, and the same team is allowed to carry on as best it can with whatever makeshift devices it can secure—so long as it does nothing that will prejudice our balance-sheet to the extent of indicating a desirable increase in our subscriptions; but, unfortunately, the device of increasing subscriptions applies equally to the hard workers as to the sleeping partners!

We have all wished that a list of members could be published; but, as it will involve much extra labour for the Secretary and as the cost of printing would be about £30, the project is deferred

from year to year. The Rules of the Club, as now revised, should be available to every member; but to print and circulate them will cost another £20 or £30. The Club's income from current revenue just will not permit such expenditure. These are items which must be distinguished from those which are in the nature of contributions to the community as a whole, e.g., incorporation of the Club and the publication of the Fern, Shell and Fungus booklets, the Census of Victorian Plants, etc. The latter would be financed from the special fund, resulting from the accumulated efforts of members past and present, viz., the "Buildings, Publications and Contingencies Fund."

As a final word on this topic, we should endeavour to develop the special fund so that, eventually, the Club may have a home of its own—a place where our library may be safely housed, where members may meet as in a Club, where we may keep collections of natural history interest and where we may browse and talk as individuals and groups. One of these days it may be worth our while to convene a special general meeting to consider such a long-range project. I feel sure that the objective *could* be achieved by some such scheme as the issue of debentures to all willing members, to interested and affluent people.

If the F.N.C.V. is to continue as a front-line vehicle for the dissemination of the conservation gospel, if it is to continue contributing to the accumulation and dispersal of scientific natural history knowledge, then we members must take a greater share in its activities. We must be prepared to do just a little more than assemble once a month to hear what someone else has to say or passively watch the result of someone else's creative effort.

There was a time when members of this Club were the recognized giants in most branches of natural history—Mueller, McCoy, Spencer, Lucas, Dendy, French and Leach, to name but a few of the stalwart leaders of a past generation. Their fields have been so well scanned that relatively few novel or spectacular species remain for naturalists of the present day to discover, but there *are* still vast virgin tracts awaiting the student. The life-histories of countless insects and many of our spiders yet await study and description; birds and their habits have still many mysterious features which can be solved only by patient observation of the naturalist; plant specification is now a matter mainly of academic interest; but there is still the limitless field of ecology—the relation of plants (and animals) to their environment—almost unexplored in this country.

How little we know of the natural history of our own shores and coastal waters. So little, I think, that each of us could spend a lifetime studying marine natural history without trespassing on each other's field, and then pass on, leaving merely the preface to a story.

There is work, too, for the mineralogist, geologist and palaeontologist—by no means all of it need be directed consciously to economic needs. The specialist can later piece together the whole story from piecemeal records so that, ultimately, the economic need may be met when it arises.

Field Naturalists are workers in the *field*—their principal laboratory. Even though they need not be trained scientists, they have eyes to see, ears to hear, tongues to speak and hands to write.

Let us therefore individually use all these faculties within the compass of our capabilities. If we do so, I am prepared to forecast a lively and increasingly useful future for our Club which now approaches its 70th year of fine tradition in vigorous growth and public service. May we be ever justified in believing that the past can never rival the future.

### MONTHLY NOTES FROM THE PORTLAND F.N.C.

By NOEL F. LEARMONTH

Among the exhibits brought to our last meeting were two Rufous Bristle-birds (*Dasyornis broadbenti*), a Ground Thrush (*Oreocincla humulata*), a Goshawk (*Astur fasciatus*) and an Allied Rat (*Rattus ossiouri*)—all from among that morning's catch in a member's line of rabbit traps. Bristle-birds are frequently killed in this way and, though difficult to see in the thick undergrowth south of Portland, are quite common; the writer saw five birds on one bush track at Cape Nelson recently. Ground Thrushes are rare here, though widespread. The goshawk was only just dead when found at dawn, so it must be a very early hunter.

Several members spent a day last month hunting for the patch of tree-ferns, said to be growing still at the headwaters of the Fitzroy River. We found them in a remote gully between Mts. Vandyke and Deception—about one hundred specimens of *Dicksonia antarctica* (Soft Tree-fern), protected from man's intrusion by almost uncrossable bog with swarms of hungry leeches. In this locality also we found several examples of the Yellow-staining Mushroom (*Psalliota xanthoderma*), a rather repulsive-looking fungus which had not been reported previously from our district; the species has recently achieved fame as the source of a powerful antibiotic of far greater potential usefulness than penicillin or streptomycin. Another new botanical find was a patch of Wiry Coral-fern (*Gleichenia circinnata*, syn. *G. dicarpa*), which Mr. Beaglehole came across near the site of the old Pipeclay Mill—an early-day timber venture. Swamp Club-moss (*Selaginella uliginosa*) was seen near the source of the Surrey River, the only other known locality in our district being the western slopes of Mt. Clay. During this auspicious day we saw 40 emus and some outsize "Foresters" (Red Kangaroo, *Megaleia rufa*).

Under the direction of Mr. H. B. S. Womersley, of Adelaide, our sea-weeds are being gathered and listed by Cliff Beaglehole. A great wealth of marine Natural History material awaits the collector on the rock-bound headlands of Grant, Nelson, and Bridgewater; but such work is very risky and can only be attempted under favourable weather and tides.

The Portland District Bird List has now reached 253 species since checking began on 1st July, 1948. Owing to many unforeseen difficulties the work has been much interrupted; but, despite this, 170 of the recorded species have been actually seen in the past twelve months.



## EARLY TERTIARY PLANT BEDS NEAR PASCOE VALE, MELBOURNE, VICTORIA

By EDMUND D. GILL, B.A., B.D.  
National Museum, Melbourne.

The Great Dividing Range runs east-west in Victoria, and so the natural drainage is always to the south. This has held since early Tertiary times at least, a matter of 60,000,000 years. At the present time all the Victorian rivers drain directly to the south except two—the Mitchell and the Yarra. Faulting is the reason given for the easterly flow of the Mitchell along a great part of its course. The Yarra, however, is a patchwork river, compounded of various pieces of various ages. There are two main pieces involved. One is the early Tertiary Wurunjerri River, which drained the Woori Yallock basin and then flowed southwards through Lilydale and Frankston (Gill, 1942). The other is the Melbourne River, which flowed southwards over the site of Melbourne in early Tertiary times, and over the land which later subsided to form Port Phillip. A branch of the Melbourne River later linked up with the marginal drainage of the lava-blocked Wurunjerri River valley to form the ancestral Yarra (Gill, 1949).

### *Early Tertiary River*

The city of Melbourne proper is built on Silurian foundations. This ridge of Silurian rocks continues northwards, although hidden at times by a thin veneer of sands and gravels as at Parkville, or Newer Basalt, as at Brunswick. The brick pit sections in Brunswick show this very clearly.

But west of this Silurian ridge there is in the bedrock a deep valley now filled in with Older Basalt, Pliocene sands and gravels, and Newer Basalt. The deep railway cuttings at Footscray do not penetrate the Newer Basalt flows, much less the underlying sands and Older Basalt. The Spotswood Bore (see Keble, 1918) penetrated 222 ft. 6 in. before meeting the bedrock!

If one proceeds west from Brunswick, the Silurian bedrock is not met again at the surface until the meridian of Braybrook and Keilor is reached. A geological map of Melbourne (such as that published by the Mines Dept.) shows much Older Basalt outcropping between the two lines of Silurian outcrops described. This occupies the valley of the buried Melbourne River, which flowed from north to south as is the normal direction for rivers in Victoria. When this valley became filled with later deposits, marginal streams slowly developed along its flanks—the Moonee Ponds Creek on the east and the Maribyrnong River on the west. The history of these streams was complicated by the extrusion of the Newer Basalts.



*Trail of an Ancient Stream*

Although the main part of the bed of the ancient Melbourne River is still buried deep under later deposits, occasional glimpses of it can be seen along the Moonee Ponds Creek and the Maribyrnong River. These consist of gravels, sands, and clays which the waters of that river of long ago carried along its course. They contain as fossils fragments of the trees and shrubs which grew along its banks. For instance, Hall and Pritchard (1894), Hall 1906, p. 64), Pritchard (1910, p. 94), and Hanks (1934) refer to some of these plant beds at various places along the valley of the Moonee Ponds Creek, and Paterson (1934) has described leaves therefrom.

### Sketch Plan of Location of EARLY TERTIARY LEAF BEDS on Moonee Ponds Creek. Pascoe Vale.

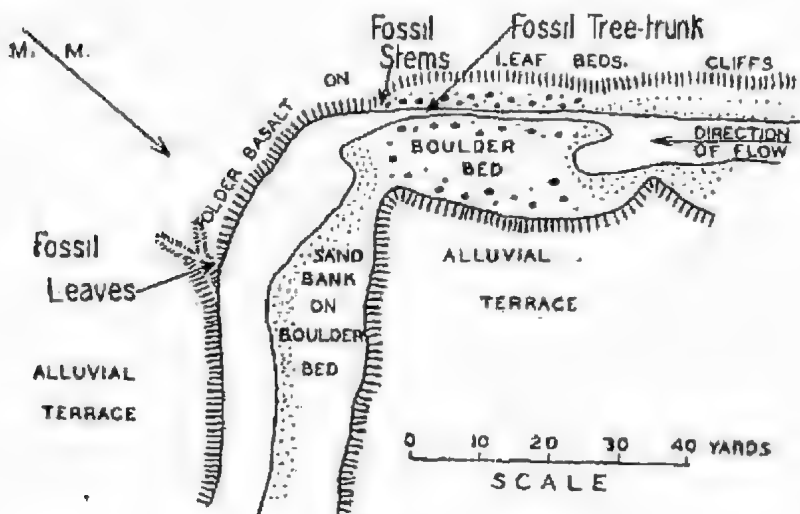


Figure 1.

In a survey of fossil localities round Melbourne, the beds on Moonee Ponds Creek at Pascoe Vale, whence came the leaves described by Miss Paterson, were investigated, and the present notes are the result. The locality is shown on Mr. Hanks's map, and is Military Map reference Sunbury Sheet 950,476, i.e.,  $1\frac{1}{4}$  miles in a direct line west  $35^\circ$  north (grid N.) from Pascoe Vale railway station. Figure 1 shows the exact positions of the fos-

siliferous beds, and Figure 2 sets out the relationships of the rocks as seen in a cliff section there. At the base are grey sands which have lines of current bedding brought out by slight differential erosion by the creek waters. Above this are four feet of unstratified but well compacted sands which become browner upwards in the section due to the infiltration of ferruginous stain from the overlying basalt.

At the top of the sub-basaltic fluvial deposits are three feet of very fine sands and sandy clays containing plant remains. Part of the bed is hardened into dark red ironstone, and parts also are quartzitized, but most of it is comparatively soft.

DIAGRAMMATIC SECTION  
of cliff on right bank of MOONEE PONDS CREEK  
at bend shown on Plan

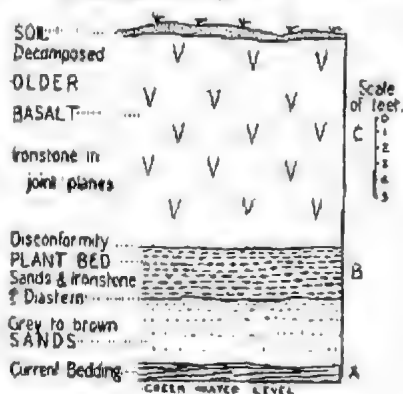


Figure 2

### *Remains of an Old-time Flora*

As shown in Figure 1, fossil stems were found at the upstream end of the section, and fossil leaves at the downstream end. The leaf bed is of limited extent, and apparently but a lenticle. The fine silt in which they are preserved has been coloured brown with iron oxide from the overlying Older Basalt. The leaf remains are very numerous, but no plant tissue remains, the fossils being in the form of impressions.

A large piece of tree trunk replaced by silica and iron oxide was found in the creek bed. It was not *in situ*, but is presumed to have come from another part of the leaf beds a little farther upstream where much more silicification has taken place. The piece was so big and heavy that it could not have come far in so small a stream. However, the possibility of it having come from sub-Newer Basalt sands higher up the valley wall cannot be excluded.

The leaves from Pascoe Vale are part of a widespread early Tertiary flora, which is notable in that it supplied the materials to form the great brown coal deposits which have become so important in the economy of Victoria. Deane (1902) and Chapman (1926) described plant remains from Berwick and Narracan respectively. It is generally considered that the flora indicates a warmer and moister climate than obtains now. Further attention is now being given to these interesting palaeobotanical remains (Cookson, 1946, 1947).

### *River of Stone*

Millions of years ago, a flood of molten lava flowed down the valley of the Melbourne River, obliterating it from the landscape and covering the sands and clays with their fossil plants. That basalt is now greatly reduced and highly decomposed. Nevertheless, in the outcrop on the Moonee Ponds Creek shown in the figures, indications of columnar jointing can still be seen, and in places also of sphaeroidal weathering. Ironstone has accumulated along many of the joint planes, and it is iron from this source which has stained the underlying plant beds.

### *Alluvial Terraces*

Like the Maribyrnong River (Kebble and Macpherson, 1946), the Moonee Ponds Creek has a series of terraces in its valley, and on these Hall wrote a chapter (1906, chap. VI). As pointed out earlier, the Maribyrnong River and the Moonee Ponds Creek are twin streams flowing down the two sides of the lava flow in the old river valley. They have shared the same geological history, and so the same series of terraces are to be seen, although of course they are better developed on the larger stream.

The terraces immediately downstream from the figured section are about 20 feet above the creek bed, and are not reached by the waters of the creek. The terraces are very wide in places, and are paired. They are considered to be the equivalent of the Braybrook terraces on the Maribyrnong River described by Kebble and Macpherson (1946). In the Maribyrnong River valley, the Braybrook terraces are characterized by a diastem, or break in deposition, about half-way up the terrace. This can be readily seen at Keilor in the form of a strong furrow which runs round the terrace, due to differential erosion at the diastem. It is interesting to note this same feature in the terraces on the Moonee Ponds Creek valley, where it has been traced for a few miles from Moreland Road, Essendon, to above the leaf beds.

### LITERATURE REFERENCES.

- CHAPMAN, F., 1926. New or Little-Known Fossils in the National Museum, Pt. XXIX. On Some Tertiary Plant Remains from Narracan, South Gippsland. *Proc. Roy. Soc. Vict.*, n.s., vol. 28, pp. 183-191.
- COOKSON, ISABEL, 1946. Pollens of *Nothofagus* Blume from Tertiary Deposits in Australia. *Proc. Linn. Soc. N.S.W.*, vol. 71 (1-2), pp. 49-63.
- , 1947. On Fossil Leaves (*Oleaceæ*) and a New Type of Fossil Pollen Grain from Australian Brown Coal Deposits. *Ibid.*, vol. 72 (3-4), pp. 183-197.
- DEANE, H., 1902. Notes on the Fossil Flora of Berwick. *Rec. Geol. Surv. Vict.*, 1, pp. 21-32.
- GILL, E. D., 1942. The Bearing of the Tertiary Sub-Basaltic Deposits on the Palaeogeography of the Lilydale District. *Proc. Roy. Soc. Vict.*, n.s., vol. 54 (2), pp. 245-255.

- GILL, E. D., 1949. The Physiography and Palaeogeography of the River Yarra. *Mem. Nat. Mus.*, No. 16 (in press).
- HALL, T. S., 1906. *Victorian Hill and Dale*. 8vo. Melbourne.
- HALL, T. S., and PRITCHARD, G. B., 1894. On the Age of Certain Plant-bearing Beds in Victoria. *Rept. Aust. Assoc. Adv. Sci.*, Adelaide, 1893, pp. 338-343.
- HANKS, W., 1934. The Tertiary Sands and Older Basalt of Coburg, Pascoe Vale, and Campbellfield, Victoria. *Proc. Roy. Soc. Vict.*, n.s., vol. 46 (2), pp. 144-150.
- KEBLE, R. A., 1918. The Significance of Lava Residuals in the Development of the Western Port and Port Phillip Drainage Systems. *Proc. Roy. Soc. Vict.*, n.s., vol. 31 (1), pp. 129-165.
- KEBLE, R. A., and MACPHERSON, J. H., 1946. The Contemporaneity of the River Terraces of the Maribyrnong River, Victoria, with those of the Upper Pleistocene in Europe. *Mem. Nat. Mus.*, No. 14 (2), pp. 52-68.
- PATERSON, HELEN T., 1934. Notes on Some Tertiary Leaves from Pascoe Vale. *Proc. Roy. Soc. Vict.*, n.s., vol. 46 (2), pp. 264-273.
- PRITCHARD, G. B., 1910. *The Geology of Melbourne*, 8vo Melbourne.

---

### EXCURSION TO BACCHUS MARSH

Favoured with fine weather, a party of 23 members travelled by train to Bacchus Marsh on March 14 (Labor Day). On leaving the station, the party was taken to one of the excavations for extraction of brown coal, where a brief description of this and surrounding physiographic features was given by the leaders, Messrs. A. A. Baker and T. C. Bryan. Permission being granted by the management of the mine, we descended by the haulage track to get a close-up of the nature of this deposit.

Numerous logs of wood, up to two feet in diameter, were seen exposed in the walls of the open cut, mostly lying in prostrate positions, indicating deposition there from another source. Some of the wood stems contained a silvery white mineral called marcasite (disulphide of iron) which, when in solution, had penetrated the cells and cracks in the lignitized wood. Large lumps of dark glossy matter, found by some of the party, proved to be fossil resin (retinite). The cleanness of the wood structure, very little altered from living wood and occasionally found with attached bark, was a feature appreciated by the party.

Fossil pollen grains are plentiful in these brown coals, but it requires treatment for their separation and use of a microscope to see their structure.

The brown coal, which extends over a considerable area of the Bacchus Marsh district, in a southerly direction, has been found by bore to be 128 feet in thickness, which is rather thin when compared with the deposit in the Morwell area of 780 feet. Overburden at Bacchus Marsh is about 25 feet (the present workings are in valleys), and this allows for open cut working with mechanical plant. The coal contains over 50 per cent. moisture, and owing to the strong pressure of sub-water, equalling about 24 atmospheres, about 50 feet of coal has to be left unworked as a floor. The age of this coal deposit is considered as Oligocene, in the Tertiary period.

While one appreciates the convenience to the Metropolis of a vast quantity of fuel near at hand to offset the shortage of black coal, a rather depressing sight is the huge accumulation of overburden composed of Tertiary clays, sands, and gravels. Excepting on one dump, where

it has been terraced and planted with pig-face, the others are exposed to the disastrous effects of erosion by wind and rain. On one such dump, adjoining the railway line, the effects of erosion were clearly seen, and the possibility of this being continued over several years, eventually reducing the fertility of adjoining lucerne flats (some of the most valuable land in Victoria) as well as interfering with the river drainage system of the area, is a problem that warrants immediate attention. Evidence is not lacking from other districts where similar conditions have caused wholesale destruction.

During a discussion on the future of abandoned open cuts, the question was asked as to whether plant life would exist on the exposed coal surface after the workings had ceased. Upon investigation by Miss A. B. Adams, several species of plants were found to be firmly established in the coal, and others (water-plants) were thriving in the ponds of water, some of which were covered with oil derived from the mechanical equipment at the workings.

The remainder of the excursion, to Werribee Gorge, was necessarily rather hurried. The original plans were slightly altered, owing to lack of time and a heavy haze obliterating the physiographic features which it was proposed to explain. So a route was taken across paddocks, where a good supply of edible fungi was found, and we reached McFarlane's by the lower Gorge road. Here, on the bank of the Werribee River, we had a late lunch and afterwards made a hurried trip to the Gorge by way of the water channel.

Stopping at appropriate points, we examined the glacial tillite and, at the Gorge itself, the Hanging Valley syncline, Daintree's Cliff and the anticlines were pointed out. The structure of the area was briefly described, and the return trip made without loss of time. Mr. E. Hanks discovered an area of aboriginal flakes, which gave a new angle to the excursion; the birds of the area did not evade "spotting" by the ornithologists, while a "good day" was reported by the spider specialists, Messrs. A. P. and R. A. Dunn.

—A. A. BAKER

#### PLANTS FOUND AT BACCHUS MARSH "OPEN CUT"

As we looked down into the great black pit of coal at Bacchus Marsh, it seemed as though no green life ever could spring up in that inhospitable place. Some 200 feet below us were dirty pools of unhealthy looking yellow water where shiny patches of oil floated. Otherwise nothing but the powdery coal face was visible.

Yet in truth this was a very graveyard of living plants, for once, many millenniums ago, the sap rose buoyantly in great trees, and lowlier green things must have clustered round their bases. Now as we went down to the floor of the "cut" there appeared to be no sign even of lichen or moss. Then stepping over some crumbling coal, dry and lifeless, we spied a tiny speck of green — two courageous leaflets on a delicate white thread-like stem. Then, sight for searching eyes, green again was found amongst the hummocks, for over an area of about four feet *Polygonum aviculare* was spreading lanewise, while not far away two small clumps of *Typha angustifolia* grew from the side of a pool with one rather sickly plant of *Catula coronopifolia*. A few tiny blades of grass showed emerald nearby and in a further pool, out of reach, about six plumed heads of another grass could be seen. On the recently cut cliff face signs of a fungus also gave hope for the eventual regeneration of this man-scarred area.

—A. B. ADAMS.

**ROBERT BROWN'S GENOPLESIMUM BAUERI  
(ORCHIDACEAE)**

(*Prasophyllum Baueri* (R.Br.) Poir.; *P. Deaneanum* R. D. FitzG.)

By the Rev. H. M. R. Rupp, Northbridge, N.S.W.

The observations I wish to make concerning the orchid which has borne the above names, may best be prefaced by quoting R. D. FitzGerald's remarks accompanying his plate in *Australian Orchids*, Vol. II, Part 3. He says:

The genus *Genoplesium* (so named by R. Brown on account of its relationship to the genus *Prasophyllum*) has only been known from the very meagre description in Brown's *Prodromus*, said to be founded on a drawing by Bauer in the British Museum, and from the drawing itself, which is referred to in the *Flora Australiensis* as "representing an abnormal specimen, or one in which there had been some confusion between the petals and the lateral lobes of the column." J. Britten, F.L.S., kindly sent me a copy of this drawing for comparison with a plant I had supposed might be the original of the lost species, as I could not believe that Bauer would have made an inaccurate drawing, or confounded the parts, as supposed. The plant I imagined might be *Genoplesium Baueri*, proved to be distinct, and is now figured and described as *Corunastylis apostasioides*; but within a short period the veritable *Genoplesium* was rediscovered by my friend, H. Deane, F.L.S., at Gladesville, a few miles from Sydney, or, at least, a species so near it as to be separated from it only by minor details, as in the form of the labellum, the ovate-lanceolate petals (winched), acute bract, shorter sepals, etc. The new species I have named after the discoverer, but have also given a figure of Brown's *Genoplesium Baueri*, taken from the copy of Bauer's original drawing. Both species must be placed in the genus *Prasophyllum* to which they clearly belong. *Prasophyllum Deanianum* flowers in March. It was found growing under Tea-tree (*Kunzea*), would appear to flower very seldom, and must be extremely rare.

The last remark, as to the rarity of *P. Deanianum* (or "*Deaneanum*," as it is usually and correctly spelt), would doubtless be endorsed by all collectors since the days of FitzGerald. I found a specimen near the Lane Cove River in 1918, and did not see one again for nearly 25 years. Close by was a smaller plant which appeared to me to be *P. Baueri*. Between 1942 and 1948 I obtained four specimens in all, examination of which raised doubts as to whether *P. Baueri* and *P. Deaneanum* were really distinct species; but the material was too scanty for thorough investigation. In 1948 Miss J. Bowden brought in several specimens from the outer suburbs of Sydney, which served to increase these doubts; but there was still insufficient material for prolonged critical observations. But in the present year (1949), following on the bountiful rains of January-February, these curious little orchids have appeared in exceptional numbers—chiefly, but not exclusively, near the Pacific Highway from Asquith to Cowan, i.e., between Sydney and the Hawkesbury River. Consequently I have had under observation more than 60 specimens, collected by Miss

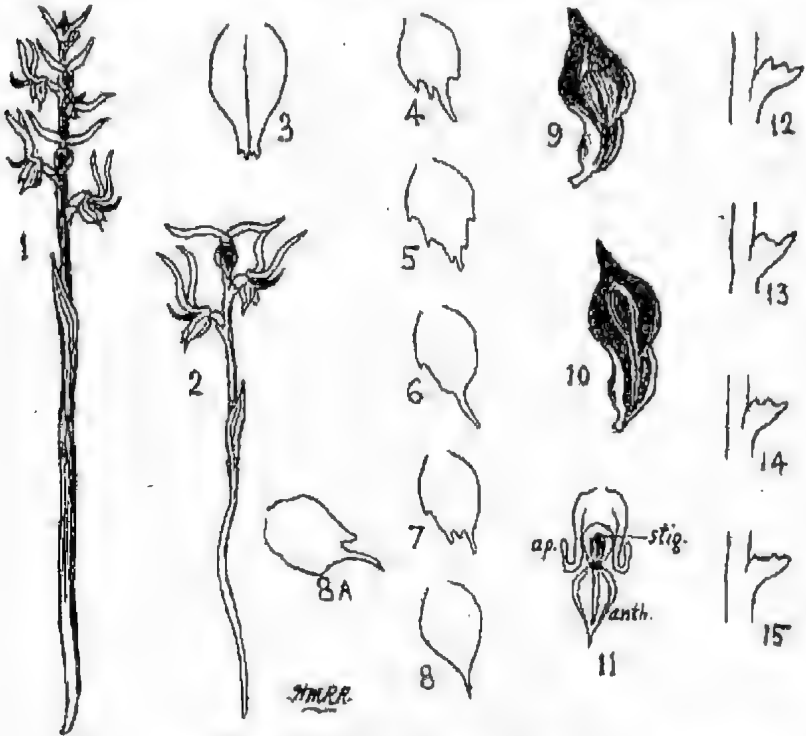
Bowden and Messrs. A. W. Dockrill and F. W. Schmidt. I am now thoroughly convinced that *P. Baueri* and *P. Deaneanum* are but a single species. I believe that this conclusion would have been reached long ago but for the fact that no one has had sufficient material to work on. The plants are very succulent and tender; and once dried, it is very difficult to restore them by any softening process to more than a semblance of their living substance. Formalin or spirits might have been used, but specimens have been so rarely found that they have usually been consigned at once to the press for herbarium purposes.

It is clear that FitzGerald had very little material. He had not seen the actual form figured by Bauer at all; and apparently he gave specific rank to *P. Deaneanum* on the evidence of Deane's Gladesville plant alone. But when a large series of living plants is examined over a considerable period of time, it is found that the distinctions drawn by FitzGerald cannot be relied upon. For example, in numerous flowers which otherwise correspond precisely with Bauer's, I found the labellum and column to agree more closely with those figured by FitzGerald for *P. Deaneanum*. In fact, after watching the development of a number of racemes, it appears to me that the labellum, from the time when the flower first opens to the time of its full maturity, gradually passes from the form shown by FitzGerald to that shown by Bauer!

The length of the lateral sepals varies considerably. In a number of small and slender specimens, they are often longer relatively to the size of the plant than in taller and stouter specimens; indeed, the longest pairs measured (almost 2 cm.) belonged to small plants like Bauer's; but in other small specimens they were much shorter. No rule could be formulated in this matter; but I think it may be said that generally, plants with the smallest number of flowers (which range from 2 to 7) develop longer lateral sepals than those with more flowers. As soon as the buds expand, the degree of divergence between these sepals is seldom less than an angle of 45°, but as the flowers mature this is often increased to twice that width. There is, however, no uniformity in the matter; sometimes the sepals are sharply reflexed from their union near the gibbous base, and stick up like a hare's ears.

*Bifid or irregularly notched petals*, like those shown by Bauer, are common in plants of all dimensions. On the other hand, entire petals such as FitzGerald shows for *P. Deaneanum*, are rare. In not a single instance could I find them in every flower of a raceme. In a specimen from Cowan with six flowers, one had petals almost exactly as depicted by Bauer, one had them sharply notched on both sides of the apex, and one had them similar to FitzGerald's. Sometimes, though there is no definite lobation or notching, the petal is abruptly contracted into a finely-acuminate or even filiform point, usually on one side of the apex proper.

In Asquith specimens collected by Mr. Schmidt, several flowers had the *dorsal sepal* notched like the petals. At first I thought this might be due to nibbling by insects, but examination under the bifocal microscope made it clear that this was not the case.



*GENOPLESIMUM BAUERI* R.Br.

(*Prasophyllum Baueri* (R.Br.) Poir; *P. Deaneanum* R. D. FitzG.)

1 and 2. Two plants, about two-thirds natural size. (All other figures enlarged.)

3. A dorsal sepal from Asquith, showing notched apex.

4 to 8. Varying outlines of petals.

8A. A petal as shown in Bauer's plate.

9, 10. Two labella.

11. A column.

12-15. Four floral bracts, each from a different plant.

The *floral bract* is surely unique, at least among Australian orchids. Here again, as with the petals, I found the simple bract depicted by FitzGerald for *P. Deaneanum* to be very rare. In only three specimens out of all those examined could I detect it! On the other hand, the very peculiar bract shown by Bauer was decidedly characteristic of the large series of plants under observation. It is difficult to describe this bract in botanical terms. It has



the appearance of having been irregularly "snipped off" before achieving an apex. It is so closely appressed to the ovary that separation is difficult, and is best accomplished in specimens that have begun to wilt.

The only serious discrepancy—if it be one—between Bauer's flower and those examined by me lies in the *stigma*. In the absence of any explanatory text, it is not easy to follow the details of Bauer's column; but the stigma appears to terminate a semi-tubular process, and I could not find this in any living flower. In all instances the column agreed pretty closely with that shown by FitzGerald, except that as a general rule the wings or appendages were curved *outwards* as depicted by Bauer. The discrepancy in the stigma may be more apparent than real; as Bauer's plant was not preserved, and Brown's description is very inadequate, this point must be left open.

But in view of *all* the above considerations, it seems to me beyond question that FitzGerald's first impression was entirely correct, viz., that his friend Henry Deane had "rediscovered the veritable *Genoplesium*," and that specific distinction between it and *P. Deaneanum* cannot be upheld.

It has been supposed that *P. Deaneanum* is consistently a red-stemmed plant, while *P. Baueri* is paler. Dark-stemmed plants were in a large majority among those observed by me, but some (both small and large) were light green.

The question still remains, whether Robert Brown was not justified in establishing the genus *Genoplesium* for this curious orchid, and separating it from the allied genus *Prasophyllum*. The question cannot be settled by protests about the undesirability of multiplying genera. Brown's opinion is entitled to respect and impartial consideration. My recent studies of the *Baueri-Deaneanum* plant strongly dispose me to support his view. They have entirely convinced me of this at least; if the plant must be left in *Prasophyllum*, it cannot be left in the same section as *P. rufum*, *P. nigricans*, and all the other species commonly known as "the *Prasophyllum* pygmies," but must be recognized as constituting a monotypic section. Bentham (*Fl. Austr.*, VI, 344) was of the opinion that Bauer had either figured an abnormal specimen, or had confused the petals with the column appendages; and he considered that the plant belonged to *P. rufum* R.Br. Hooker f. took the same view of Bauer's drawing, but included the plant in *P. brachystachyum* Lindl. (*Fl. Tasm.*, II, 13). With all respect to these great botanists, both views must be emphatically rejected. We know that Bauer's plant was no mere abnormality, and that he did *not* confuse the floral segments. Neither Bentham nor Hooker had seen a specimen; in fact, from Bauer's time (1758-1840) the plant was completely "lost" until its rediscovery by Deane in 1885. Actually, it has no resemblance at all to either

*P. rufum* or *P. brachystachyum*. Many of the "pygmy" species of *Prasophyllum* do resemble each other so closely that a powerful magnifier is required to reveal the morphological differences. But there is not one of them with which, in the living state, Bauer's plant could be confused for a moment, even with the naked eye.

I am quite open to conviction if I am wrong; but my view of the matter is that we ought to restore Brown's genus *Genoplesium* for this orchid. If the flowers were not reversed, I question whether anyone would have challenged its establishment; and after all, *Prasophyllum* is far from being the only genus with reversed flowers. Bauer's plant seems to me to differ from *Prasophyllum* at least as importantly as *Adenochilus* from *Caladenia*, or *Poerhonia* from *Acianthus*. Here are my reasons for such an opinion:

1. The very succulent, brittle and tender substance of the whole plant has no parallel in *Prasophyllum*, least of all among the "pygmies."
2. The form commonly developed by the floral bract is unique.
3. No species of *Prasophyllum* can be cited with petals in any way resembling those shown by Bauer, which are characteristic of a large series of plants examined.
4. The labellum, whether judged by Bauer's form or by FitzGerald's, is unlike that of a *Prasophyllum*.
5. The same remark applies to the column appendages.
6. The leaf lamina shows no tendency to become terete.

But if this view be accepted, and Brown's genus be restored, what is to be done with the section *Genoplesium* in *Prasophyllum*, which has perhaps become better known than any other sectional group in Australia? Well, I fear we must alter the name; but was not that name adopted by Bentham on a false assumption, viz., that Bauer's plant, given generic status by Brown as *Genoplesium Baueri*, was really *Prasophyllum rufum*? And if we leave Bauer's plant in *Prasophyllum*, we shall have to call it Section *Genoplesium*, and to invent a new name for the section of the "pygmies," to which it does NOT belong. So whether the restoration of Brown's genus be accepted or not, I suggest that the pygmy group be in future known as Section *Micranthum*; for although no species of *Prasophyllum* has large individual flowers, those of this particular group are all very diminutive.

In conclusion, I should like to record two remarkable teratological specimens of—may I say *Genoplesium Baueri*?—found by Miss I. Bowden at Asquith. Both are about 6 cm. high. All the flowers (four on each plant) are similar. Each has four lateral sepals, two normal and two folded in front; two labella, united for about half their length; four petals, united for rather more than half their length, with notched margins. The dorsal sepal is almost obsolete; and the columns are so "mixed up" in their details that I cannot follow them. The discovery of "twin" abnormal plants like these seems worthy of mention.

## WHAT, WHERE AND WHEN

## General Excursions:

Saturday, August 11—Racking Stone at Lysterfield Hills. Subject: "Geology and History of Area." Round trip via Upper Ferntree Gully and return via Narre Warren. Nash's new blue bus, Batman Avenue, 3 a.m. Fare, 6/6. Bookings with Miss M. Rider, 17 Adelaide St., Mulvern, S.E.3 (Tel. U 1227) Leader to be appointed.

Sunday, August 14—World Bird Day excursion to Fishermen's Bend, at invitation of Bird Observers' Club, Garden City bus in Flinders St., 9.30 a.m. Leader: Mr. Roy Wheeler, R.A.O.U. Further details from Miss C. Jackson, 344 Glenferrie Rd., Hawthorn.

Saturday, August 27—World Bird Day excursion to Wattle Park. Subject: "Local Bird Life." Leaders: Miss M. L. Wigton and Mr. A. S. Chalk. Meet at Chalet at 2 p.m. (Wattle Park train from Batman Avenue.)

Saturday to Sunday, August 27-28—Bendigo. In conjunction with Bendigo Field Naturalists' Club and Wattle League of Victoria. Subject: "Hakea Wattle and Early Whitstick Flora." Train from Spencer St., August 27, 7.50 a.m. Fare: 2nd class single, 16/1. Return parlour bus from Bendigo August 28, 7.0 p.m. Single fare, 17/- Hotel accommodation at Bendigo, 17/6 per day. Two local trips: Saturday afternoon and all day Sunday—by Bendigo bus. Two picnic meals required for Sunday, 10/- deposit on hotel reservation required. Bookings with Mr. H. Stewart, 14 Bayview Ter., Ascot Vale. (Tel.: PU 022, extn. 467.) Members able to go by 6.40 p.m. train on Friday can arrange for extra accommodation.

Saturday, September 3—Snob's Creek Fish Hatcheries (by courtesy Mr. A. D. Butcher, Director of Fisheries and Game Dept.). 200-mile parlour coach excursion via Healesville and Buxton. Leave Batman Ave. 7.45 a.m., return to city about 9 p.m. Reserved seat bookings, 22/-, with Mr. H. Stewart, 14 Bayview Ter., Ascot Vale. (Tel.: PU 022, extn. 467.) Advance bookings must be confirmed on or before August 8, otherwise cancelled. Bring two meals.

Saturday, September 10—Langwarrin to Frankston. All-day spring walk (about 8 miles). Subjects: "Heathland Flora" and General. 9 a.m. trains from Flinders St. Fare: 2nd class return Frankston 2/0, and extension from Frankston to Langwarrin approx. 9d. Leader to be appointed.

## Preliminary Announcements:

Thursday, September 28—Show Day—All-day Club Picnic to Yea Yanga. Leader: The President. Nash's blue bus from Batman Ave., 9 a.m. Fare: 7/-. Bookings with Mrs. M. Pinches, 6 Thomas St., Brunswick. Further details later.

Saturday, October 8—Angelsea and Point Roadnight. Subject: "Botany and Birds of the Area," with special emphasis on Bristle Bird. Leader: Mr. Allan R. Henderson. Parlour coach from Batman Ave., 8.30 a.m. Fare: 17/6. Bookings with Mr. H. Stewart, 14 Bayview Ter., Ascot Vale.

## Group Features:

Saturday, August 20—Botany Discussion Group excursion to Mount Royal, Parkville. Subject: "Native Trees in Grounds." Meet main gates, 2.30 p.m. West Coburg or West Brunswick tram in William St. Leader: Mr. J. Ros Garnet.

Monday, August 22—Botany Discussion Group, Royal Society's Hall, 8 p.m. Subject: Discussion on the Saturday excursion. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris.

Thursday, September 1—Wildflower Garden Section, Royal Society's Hall, 8 p.m. Monthly meeting. Symposium on "Native Spring Flowers." Hon. Sec.: Mr. R. B. Jennison, 3 Linda St., Moreland.

Friday, September 2—Marine Biology Discussion Group, Royal Society's Hall, 7.45 p.m. Monthly meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont.

Tuesday, September 6—Geology Discussion Group, Royal Society's Hall, 8 p.m. Subject: "Geology Simplified," Part III, by Mr. A. A. Baker. Hon. Sec.: Mr. A. A. Baker, 68 Carlisle St., Preston.

Saturday, September 10—Geology Discussion Group excursion to Broadmeadows. Subject: Field Work of Part III, "Geology Simplified," 12.51 p.m. train to Broadmeadows. Fare: 1/6. Leader: Mr. A. A. Baker.

## Special Notices:

Mr. W. Day, 9 Narrarong Cres., South Canfield, S.E.3—tel.: MU 6881, extn. 32—would like to hear from any Club member interested in a four-day camp-out during week commencing October 22nd. Proposed area: Cathedral Range. Subjects: Botany and Geology, with special emphasis on a Fish Fossil locality.

JRAN BLACKBURN, Excursion Secretary.

# The Victorian Naturalist

Vol. 66.—No. 5      SEPTEMBER 7, 1949

No. 789

## PROCEEDINGS

The August Meeting of the Club was held at the National Herbarium on Tuesday, August 9, 1949. The President, Mr. Colin Lewis, presided over about 100 members, who learned with regret of the death of Mr. Harold Jenkins, a former committee-man, Mrs. H. P. Dickens and Mr. Robert Eadie, and stood in silence for a moment as a mark of respect to their memory.

The President cordially welcomed Mr. and Mrs. Singleton, of Sydney, and other visitors present. A letter had been received from Mr. Stan Colliver (Brisbane), extending greetings to fellow members.

The "Save-the-Forests" Campaign Committee had asked for the Club's assistance in staging an exhibit at the Royal Show similar to that of last year, and the Secretary called for volunteer helpers, principally as stewards in attendance.

Enquiries have now elicited that the area in St. Kilda Gardens once reserved for planting by the F.N.C. has been incorporated in the Rose Garden planned as a memorial to the late Mr. Alistair Clark. Mr. Miller suggested that the Club ask for another plot of ground, and Council will further consider this matter.

Advice had been received that Ararat F.N.C. was arranging a Wildflower Show to coincide with "Back to Ararat Celebrations" on October 11 and 12, and would be glad of a Speaker from the Melbourne Club for Tuesday, October 11. A Red Cross Show would be held in Sydney from September 21 to 24, and co-operation in sending native flowers was again invited from members of the F.N.C.V. Anyone who can help either of these shows is asked to communicate with the Secretary, Mr. Preston.

At the last Council Meeting approval had been given to the formation of a new Group devoted to "Wildflower Preservation." Miss W. Waddell has been the driving force behind this movement, and it is hoped that all interested members will actively participate, preservation being of immediate and vital importance. A small, special subscription, possibly 5/-. will be payable. An inaugural meeting will be held at Miss Waddell's home, 3 Denham Place (off Commercial and between Kooyong and Glenferrie Roads), Toorak, on September 14, at 8 p.m., to formulate a programme.

The following were elected as Ordinary Members: Dr. W. D. Chapman, Miss S. L. Bayley, Mr. E. Dien and Mr. I. F.

McLaughlin; as Country and Interstate Members Mr. J. Watson and Mr. J. Ponder; as Junior Member; Master K. Sargant. Mr. Graham Jarrett of Fairfield was a nominee for membership.

#### THE STORY OF A TAP

It was regretted that Mr. J. C. Jessop, Chairman of the Melbourne and Metropolitan Board of Works, was unable to give the lecture: but his place was ably taken by Mr. Seeger who showed a series of excellent films, beginning with a colourful prologue of aborigines in dry country—living from day to day, and from soak to waterhole. From there we were shown the methods adopted to provide Melbourne's  $1\frac{1}{2}$  million inhabitants with an adequate water supply. Beautiful pictures portrayed the three main reservoirs, Yan Yean, Maroondah and O'Shannassy, in their setting of wooded ranges, and the tree-lined network of channels that converge toward the thirsty sponge that is the city. To these reservoirs will soon be added the Upper Yarra storage basin which will have a capacity greater than the other three combined. Nearer the city, we saw the methods adopted to test and purify the water, before reticulation through suburban mains. At the end of the films, and after listening to our speaker's enlightening comments, members felt confident that Melbourne's water could be ranked with, if not actually, "the best in the world."

A vote of thanks was moved by Mr. I. Hammet, seconded by Dr. Margaret Chattaway and passed with acclamation.

#### NATURE NOTES

Mr. A. J. Swaby has had two sea-anemones under observation. Recently he offered each one a morsel of lamb chop, and watched their reactions. The tiny red one (found under a flat rock, from which position it would have to grab its food as this floated fortuitously under the rock) snatched in the meat the instant it contacted one of the tentacles. The other anemone (a larger green one, found in very calm water where it did not need to grab), made no attempt to take the meat: however, when food was placed nearer, it "poured" its stomach out, covered the meat and drew stomach and meat back within the central body cavity.

Mr. Miller reported seeing an albino sparrow in a tree along St. Kilda Road. About a year ago he had seen a partial albino not far from the same place.

#### EXHIBITS

Mr. R. D. Lee: Photos of Orchids—*Colactonia latifolia*, *Diris alba*, *D. palochila*, *Lycoranthus virgicans*, *L. suarcolens*, *Pterostylis cucullata* and *Thelymitra antennifera*.

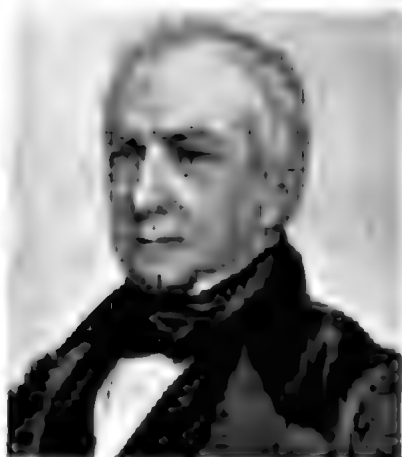
Miss J. W. Raff: Flower of Fire-wheel Tree *Stenacarpus sinuatus* from Maranoa Gardens.

Mr. J. S. Seaton: *Cressilea lavandulacea* (Black Range form), *Leptospermum scoparium* vars. *Keatleyi* and *Lambethi*—both garden grown

**BOTANICAL PIONEERS IN VICTORIA—I**

By J. H. WILLIS, National Herbarium of Victoria.

Has not some historian said that there were *no* Australian pioneers after 1850? Such an arbitrary date-line could hardly be applied to the fathers of Victorian botany, for it would exclude the greatest pioneer of all—Baron Sir Ferdinand von Mueller, before whose arrival here (in 1852) the foundations of the science had not even been laid.



ROBERT BROWN (1773-1858)

First Botanist to collect in Victoria.

[Facsimile of illustration in J. H. Maiden's *Sir Joseph Banks, The "Father of Australia"*, 1909, p. 101 (from a lithograph in Maguire's Ipswich series about 1850)—rephotographed by H. T. Reeves, April, 1949.]

Throughout the present discourse, my concept of a "botanical pioneer" envisages *only* those who have unveiled the plant life of our State by published descriptions, accurate lists of species, or extensive collections which have been used and cited in important works of reference by other botanists. No attention has been given to plant breeders, horticulturists, gardeners, painters or mere flower fanciers who made very little impression on botanical science, nor to pastoralists who may have done some incidental collecting,

The science of botany a century ago was very largely concerned with the discovery and description of living plants—the preparation of territorial floras. From this old floristic bias, modern botany has branched out in many different

directions: palaeobotany, embryology, ecology, pathology, physiology and genetics are a few important branches, while forestry, agricultural and medical botany exemplify an industrial approach to plant science. There are pioneers in *all* these subsidiary sciences, some of them still alive and actively working; but to deal with the whole would require much more time and space than we can now afford. Again, our term "botanist" must be largely confined to the systematic worker.

My heading "*Botanical Pioneers in Victoria*" has been deliberately chosen. To include overseas botanists who examined and described Victorian plants from dried specimens, *without ever*

visiting this Colony, would mean adding a host of names that are unfamiliar and unimportant—except to a taxonomical expert who, moreover, often wishes that the enthusiastic foreigner had left our plants well alone! Even with the plant hunters who lived and worked in Victoria, it has been impracticable to say much about the interesting details of their lives or personalities; for the sake of brevity, we are chiefly concerned with when and where they worked, the plants they found, and their major contributions to botanical knowledge in recorded form.

Thus narrowed down, I am recognizing three categories of pioneer botanists, viz.: the *General Pioneers* whose tastes were catholic, embracing all kinds of plants wherever these could be found; the *Specialist Pioneers* who concentrated on particular families or sections of the flora (orchids, ferns, fungi, etc.); and the *Local Pioneers* who botanized intensively over circumscribed regions, such as the Grampians or Alps. Obviously, certain names would fit into two or all three categories.

### I—GENERAL PIONEERS

**Robert Brown** (1773-1858), naturalist to Captain Matthew Flinders' voyage of discovery in the "Investigator", was actually the first botanist to set foot on Victorian soil (April 26, 1802). He climbed Arthur's Seat and, during the week that Flinders remained within Port Phillip Heads (until May 3), doubtless made several exploratory trips about the southern coasts of Mornington Peninsula. Brown sailed across from the Tamar (Tasmania) on January 18, 1804, and spent another week in the vicinity of our present Sorrento, during the final abandonment of Collins' unsuccessful settlement there; he left for Hobart on the *Lady Nelson*, with the last party of evacuees on January 27.

We are not sure how many plants Brown collected during his two brief visits to these shores, but Bentham (in *Flora Australiensis*, 1863-78) cites at least 78 species which bear the locality "Port Phillip" in the Brownian Herbarium. Of these, 18 became the types of new species (described in *Prodromus Floræ Novæ-Hollandiæ*, 1810); 8 were *exclusively* from Port Phillip, others being syn-types with specimens variously from Port Jackson, South Australia and Tasmania.

The genus *Brunonia* ("Blue Pincushion" which he gathered here in Jan., 1804) is a latinized form of Brown's name. Among Victorian species, the epithet *Brownii* honours the great botanist in the genera *Eragrostis*, *Carex*, *Rumex*, *Haloragis* and *Dampiera*. Six of Brown's Port Phillip types are now preserved in the National Herbarium of Victoria, South Yarra, viz. *Eriochilus autumnalis* [= *E. cucullatus*], *Hibbertia sericea*, *Pimblea octophylla*, *Wilsonia humilis*, *Lycopus australis*, *Goodenia humilis*, together with several heaths collected by him near Arthur's Seat,

**Allan Cunningham** (1791-1839) came to Sydney as King's Botanist and Collector for the Royal Botanic Gardens at Kew and spent 22 years in constant collecting trips around Australia and New Zealand. Apparently he did not botanize on Victorian terrain, and yet there is a puzzling specimen of *Melaleuca pubescens* in the Melbourne Herbarium, collected by Cunningham during his first voyage with Captain King in December, 1817. It is labelled "Bass Strait" and must have come from somewhere on the Victorian coast between Wilson's Promontory and Cape Otway, because the species does not occur on any island in the Strait, nor in Tasmania. [Commemorated by several Victorian plants, viz. in the genera *Cyathoa*, *Muehlenbeckia*, *Pultenaea*, *Bertya*, *Epaltes* and *Helichrysum*].

There are no records to show that any botanical collecting was done during Surveyor-General Grimes' investigation of Port Phillip (extending over three weeks early in 1803), during Hume and Hovell's overland journey to Corio Bay late in 1824, or, soon after, during Wright and Burchall's temporary occupation of Western Port Bay at Corinella. In J. D. Hooker's "Introductory Essay" to the *Flora Tasmaniae I* (1860), p. cxxv, we read that "Mr. John Lhotsky visited New South Wales, the alps of Victoria and Tasmania" in 1830, but just where Lhotsky penetrated the Victorian mountains and what he found there, I have no way of determining—"his collections are dispersed," to quote Hooker again.

**Ronald Gunn** (1808-1881) successively held the offices of Superintendent of Convicts in Van Diemen's Land, Police Magistrate, and Member of Parliament. He was interested in the comparative floras of the opposite shores of Bass Strait and was described by Sir Joseph Hooker as "the most eminent botanist of Tasmania."

According to J. H. Maiden (*Papers & Proc. Royal Soc. Tas.*, 1909, p. 15) Gunn "made an expedition to the mainland, visiting Port Phillip, Western Port, and Port Fairy" during his appointment as Police Magistrate at Circular Head, Tas., between 1836 and 1838. In the *Tas. Journ. Nat. Science, Agriculture, Statistics*, etc. (Vol. 1, No. 3, p. 207, 1842), Gunn himself, after making "observations on the flora of Geelong" from specimens sent by a correspondent there, refers to his "own collection during a short visit to the south coast of New Holland in March, 1835." Why did he not refer to the more extensive trip from Circular Head a couple of years later? It would seem that either Gunn's memory was at fault or Maiden's dates are unreliable. Sir Joseph Hooker (*Flora Tasmaniae I*, cxxv) credits Gunn with having visited Wilson's Promontory also.

Bentham (*Flora Australiensis*) cites 30 species as having been taken by Gunn at Port Phillip. Several of these (notably the six



orchids) would certainly *not* have been in bloom when he paid his autumn visit of 1835, and must have been the result of a subsequent trip, or else—what is more likely—they were a portion of the Gunn Herbarium that had been contributed by his aforementioned correspondent at Geelong. Such a probability is heightened by the fact that some of the species which Bentham cites are basalt-loving plants which could have come from the plains around Geelong, while one is now restricted to the Otways. J. G. Robertson of Wando Vale also corresponded with Gunn, sending him plants from the south-west of the Colony.

Wherever Gunn may have gone, his observations were restricted to the coast, and thus his association with Victorian vegetation is slender, having contributed very little toward its elucidation. [Commemorated by species in many Victorian genera, viz. *Cyperus*, *Cladium*, *Carex*, *Chiloglottis*, *Ranunculus*, *Pultenaea*, *Phyllanthus*, *Baeckea*, *Asperula* and *Olearia*, as well as by two common and interesting fungi—*Hexagona Gunnii* and *Cordyceps Gunnii*—also several algæ and bryophytes]

**Thomas Mitchell** (1792-1855), a soldier and latterly Surveyor-General of New South Wales, has left an imperishable mark upon the history of East Australian exploration, especially in the mapping of inland river systems. From the time of Brown's initial collectings, Victoria yielded no further type material until Major (later Lt. Colonel Sir Thomas) Mitchell made his epic overland journey through *Australia Felix* in 1836. In the account of this exploit (*Three Expeditions into the Interior of Eastern Australia*, Vol. II, pp. 127-301, 1838) we learn that four months—from June 13 to October 19—were spent on Victorian soil, and 34 new species of plants described therefrom by Lindley, 22 of these are still valid, the remainder having been since relegated to synonymy, and the great majority are from the Grampians sandstone area where a high endemism is apparent.

Tracing Mitchell's route from where he entered Victoria at Boundary Bend (near the Murrumbidgee confluence) to where he re-crossed the Murray (near Wodonga) on leaving, we find that approximately 1,100 miles were covered. The itinerary was: up the Murray past Swan Hill to near the present Gunbower; thence through Pyramid Hill on a fairly straight course over the Loddon, Avoca, Richardson and Windmerra Rivers to the northern Grampians, with a detour to climb Mt. William (the highest peak, 3,800 feet); around Mt. Zero and the north-western outliers of the Grampians (Mt. Arapiles, etc.) to the Glenelg and down that stream to the sea; across to Portland, then back through the Pyrenees, Mt. Alexander (with detour to Mt. Macedon), and Fuller's Range.

In the narrative, 57 plants are specifically mentioned and eleven

others are given vernacular names that we can now readily identify with species still growing in the localities through which the Major passed. He doubtless collected further species here, without mentioning every entity, and reference to sets of his specimens in Kew, British Museum, and elsewhere would probably give a good cross-section of the central and south-western flora of this State.

Mr. C. Daley (*Vic. Nat.* LIII, p. 118) attributes a number of other plants, e.g. the unusual orchids *Burnettia* and *Spiranthes*, to Mitchell's Victorian journey, though upon what authority I am at a loss to suggest—there are certainly no references to these in any literature that I have seen, and Bentham would surely have cited specimens had they been extant. [Commemorated by Victorian species in the genera *Neurachne*, *Panicum*, *Conospermum*, *Acacia*, *Bertya* and *Eucalyptus*.]

**James Backhouse** (1794-1869), a nurseryman and Quaker missionary, was, according to Honker (*Fl. Tas.* I, cxxv), a good collector and observer who visited Port Phillip between 1832 and 1838. Maiden gives the period as 1838 to 1841; but from Backhouse's own account (*Narrative of a Visit to the Australian Colonies*, 1843) we learn that he landed at Point Nepean on November 9, 1837, reached Melbourne village the next day, and remained in the environs for 10 days, sailing again for South Australia on November 19. A few local plants are mentioned incidentally, e.g. Drooping She-oak, Silver Banksia, Swamp Paperbark at the mouth of the Yarra, and Goodenia species, but whether he took any specimens back to England I have not ascertained. His impact on Victorian botany was practically nil. [Commemorated by two species in Victoria, viz. the coastal *Wilsonia Backhousei* and alpine *Helichrysum Backhousei*.]

**Ferdinand von Mueller** (1825-1896) occupied the position of Government Botanist of Victoria for 44 years. He was, as Maiden remarks, "not a Victorian botanist, but an Australian one." The Brown and Mitchell collections, while very important, had made known barely 200 species of flowering plants from within the present boundaries of Victoria, where at least eleven times that number are now recognized. It remained for a great botanist to reside in this Colony and thoroughly to explore the whole, and that person arrived from Adelaide during 1852; Dr. Mueller later became Baron Sir Ferdinand von Mueller—the most famous scientist in the Southern Hemisphere and most decorated man in the British Empire (20 knighthoods, five doctorates, and membership of some 150 scientific societies throughout the world).

Mueller began here with very little—not even the Brown collections from around Arthur's Seat were known to him—but, before he had been in Victoria three years, this amazing man had collected

and named some 1,700 flowering species and about 800 cryptogams: too. In the same period he had travelled nearly 5,000 miles throughout the Colony—in Mallee deserts, heavy rain forests, remote and lofty mountains, jungles, and along the sea coasts. Papers on botanical subjects flowed from his facile pen, the published works exceeding 800 in number to the time of his death.

He was the pioneer botanist of Victoria in its truest sense and contributed so much to our knowledge of the flora during his long term of office (1852-96) that he left surprisingly little for others to discover. The location of many endemic forms and plants with very discontinuous range were probed so thoroughly by Mueller that most of the State's novelties introduced by subsequent workers have been rather the result of "carving up" old species than in discovering entirely new entities which he missed. [The Baron is commemorated by so many Victorian plants (including many algæ and mosses) that it would be impracticable to mention them all here; suffice it to instance that noble, useful tree *Eucalyptus Muellertiana* which is featured on the Mueller commemorative postage stamp of September 13, 1948.]

Contemporaneous with the Baron and assisting him by the collection of a vast amount of material over a wide area, the following botanists are worthy of mention as pioneers:

*J. Dallochy* (1820?-71) who was Curator of Melbourne Botanic Gardens from 1849-57, then a paid collector of the Gardens, largely in North Queensland; *S. Hamaford* (1828-74), a journalist who resided at Warrnambool and Geelong before removing to Tasmania in 1863; *C. Walter* (1831?-1907), a countryman of the Baron's and collector throughout Victoria for many years.

During 30 years before Mueller's death, his right hand man had been another German, *J. G. Luehmann* who succeeded him as Government Botanist in 1896. For the ensuing 8 years until his own death, Luehmann endeavoured to maintain the Mueller tradition. He was a sound botanist, but very modest, and was overshadowed during practically the whole of his departmental career by the genius of his superior; he left comparatively little published work, mostly descriptions of a few new species in the *Victorian Naturalist* and a key to Victorian eucalypts (*Proc. Aust. Assn. Adv. Sci.*, VII, 1898).

**Professor A. J. Ewart** (1872-1937) may be considered the last of the General Pioneer botanists. He came to Australia early in 1906 to act in the dual capacity of Government Botanist (in succession to Mr. Luehmann) and Professor of Botany at the Melbourne University; but in 1921, the Chair of Botany was made a full-time appointment and Professor Ewart had then to relinquish his Herbarium office.

From the time of his arrival here, Ewart was remarkably

active, publishing 133 books and articles on a variety of botanical subjects. Primarily a physiologist, he was involved also in forestry, weed problems, poison plants, and taxonomic matters upon which he wrote at length. He was *not* a collector; but four of his books (whatever their imperfections) broke soil that had never been turned over before, viz. *Weeds, Poison Plants and Naturalized Aliens of Victoria* (1909), *Flora of the Northern Territory* (1917), *Handbook of Forest Trees for Victorian Foresters* (1925), and *Flora of Victoria* (1930)—the first handbook of the State's vascular vegetation based on the Englerian system, and the only complete, full-length flora of Victoria extant. [Commemorated by the alpine genus of daisies *Ewartia* Beauv.]

(To be continued.)

#### ADDENDUM TO THE BIBLIOGRAPHY OF J. A. KERSHAW, F.R.E.S., C.M.Z.S.

By RON. C. KERSHAW, Tasmania.

1917. Kershaw, *Emu*, XVI, No. 2 (Oct.), pp. 107-108. New and Rare Victorian Birds from Mallecoota.
1918. Kershaw, *Emu*, XVII, No. 1 (July), p. 2. Australian Green-backed Finch (*Erythrura trichroa* = MacGillivray).
1919. Kershaw, *Emu*, XVIII, No. 4 (April), p. 239. A New Pigeon recorded for Australia—the Red-eared Pigeon (*Globiceera rubricera*).
1929. Kershaw, *Emu*, XXIX, No. 2 (Oct.), p. 112. The Lesser Frigate-bird: An Unusual Occurrence.

Through the kindness of Major H. M. Whittell (Bridgetown, W. Aust.) my attention was recently drawn to the regrettable omission of the above papers from the Bibliography published in this journal last November (*Vic. Nat.* LXV, p. 169), and thanks are due to this enthusiastic bird lover.

#### GIANT ROCKS

The remarks recorded in the *May Naturalist* on page 2, in connection with Mr. Bechervaise's address, have moved me to mention a very remarkable giant rock in New South Wales, which perhaps forms an even more striking feature of the landscape than the You Yangs rock in Victoria referred to by Mr. Miller, since the latter is, after all, in the midst of a very rocky environment. About 14 miles from the village of Blandford, near Murrurundi, N.S.W., towards the head of a valley in the Liverpool Range, is the Wallabadah Rock, an immense mass of conglomerate rising from the head of the valley like a huge dome. I do not know the actual measurements; but from below, the summit appears to be not far short of the level of the top of the range. On the occasion of my visit in 1947, my companion and I estimated that the circumference of the rock was between three and four miles. Moving round along the western side, it is seen that the rock is cleft about the middle into two nearly equal parts, but from the southern approach this division is invisible. The environment is typical hilly pastoral country, lightly timbered with eucalypts. Such an environment undoubtedly adds to the impressive appearance of the gigantic dome of Wallabadah.

—H.M.R.R.

## WAYSIDE FLOWER SANCTUARY AT TALLAROOK

By W. WADDELL, Melbourne.

In securing for the Hume Highway a patch of the delightful blue orchid, *Caladenia corulea*, our Country Roads Board has made a garden of considerable interest, fortunately fencing in also a good specimen of the attractive small-leaved local form of Hickory Wattle (*Acacia pumiliifera*) and a patch of another local, the endemic bush-pea, *Pultenaea Vrolandii*.

At 82 miles from Melbourne, an area 100 yards by about 20 yards is now thoroughly protected from stock and rabbits; weed introductions are negligible, so, with co-operation from man, it should remain for the future a sample of the countryside as Nature made it. The following census of the enclosed plot was made early in July, under very adverse weather conditions:

*Chellanthus tenuifolia*, *Themeda australis*, *Lepidosperma filiforme*, *L. laterale* var. *angusta* (6"), *Burchardia umbellata*, *Bulbine bulbosa*, *Phymatulus tuberosus*, *T. Patersonii*, *Dichopogon strictus*, *Tricoryne elatior*, *Chamæscilla corymbosa*, *Lomandra multiflora*, *L. filiformis*, *Dianella revoluta*, *D. laevis*, *Caladenia corulea*, *Diuris pedunculata* (and two other species), *Thelymitra rubra* (and another species), *Prasophyllum nigricans*, *Eriochilus cucullatus*, *Dracera peltata*, *D. auriculata*, *Cheiranthra linearis*, *Acacia pumiliifera* (local form), *A. implexa*, *A. Mitchellii*, *Pultenaea laxiflora*, *P. Vrolandii*, *Dillwynia floribunda*, *Hemca heterophylla*, *Hibbertia stricta*, *Pimelea humilis*, *Eucalyptus polyanthemus*, *E. tereticornis*, *Calytrix tetragona*, *Halaragus tetragyna*, *Hydrocotyle hirta*, *Astroloma humifusum*, *Melicthrus urenlatus*, *Wahlenbergia* spp., *Gonдения lanata*, *Lagenophora Gouanii*, *Helipterum albicans*, *Helichrysum apiculatum*, *Leptorhynchus squamatus*—at least 50 species.

The writer will be very grateful for additions from any whose knowledge enables them to identify at sight. Until the Sanctuary has had a year or so to itself, regeneration is much more important than identification and this tiny area is no more there to be trampled on than is any other garden; in some cases specimens for identification could be procured outside the Sanctuary. The chief omissions are grasses and small seasonal plants not usually seen in flower during July.

The local Council has been most co-operative in securing reservation of this fascinating roadside area. Why could not similar interest be stimulated in many municipalities of our State where the indigenous flora must otherwise inevitably disappear?

## YARRA RIVER TRIP

On Saturday, February 19, in favourable weather, the launch *Lacونا* set out down the Yarra, with a party of field naturalists. As they passed the spot where Batman landed in his quest for fresh water, some wondered how he found it for the river here is tidal now, and brackish. But it was fresh before the removal of a rocky bar with falls, and there Batman decided was the "spot for a village."

At the North Queen's Wharf the party saw motor boats that had rattled Hobson's Bay for mines during the war. Then the launch's fore mast was lowered as we passed under Spencer Street bridge, past the dry dock, the "Endeavour" crane and a fleet of trading vessels too many to name; and so out to Port Melbourne, to see the *Athoric*, on which the Governor and Lady Dugan were sailing to England.

During the trip across the bay some of the juniors were baptised with sea water and finally, after enjoying the yacht racing and a cup of tea at Williamstown, we returned to Melbourne to the accompaniment of songs and sea-chanties. So ended a very enjoyable trip.

H. P. DIERING.

## THE GENUS *MICROTIS* (ORCHIDACEAE) IN VICTORIA

(With Descriptions of Three New Species.)

By W. H. NICHOLLS, Melbourne.

The genus *Microtis* R.Br. is at present represented in Victoria by five valid species, viz.: *M. unifolia* (Forst.) Reichb.f., *M. parviflora* R.Br., *M. oblonga* Rogers, *M. orbicularis* Rogers and *M. atrata* Lindl. These species are all widely distributed and the discovery of three additional ones is most interesting and somewhat surprising; it is not often that such a small genus as *Microtis* becomes substantially enlarged from a comparatively small and botanically well-combed area like Gippsland.

Two of the new species were discovered by Mr. Norman Holmes of Moe (late of Portland), who has done considerable work in collecting and classifying the orchidaceous plants of his district.

The other new plant was found by Mr. P. F. Morris of the National Herbarium on Quail Island at the north-west corner of Western Port Bay, during a visit to the Koala Sanctuary there in 1943.

In view of the minute floral anatomy obtaining in *Microtis*, it has been thought convenient to give a brief summary (helped with line drawings) of the salient features of all Victorian species, followed by full descriptions of the new ones. Thus a reader may the more readily distinguish between them, and be able to appreciate their definite characteristics.

1. *M. UNIFOLIA* (Forst.) Reichb.f. [*M. parvifolia* (Sw.) R.Br.].

A well defined, usually robust species with comparatively large flowers in a dense spike. Labellum margins crisped; two basal glands and one towards the truncated tip.

All Australian States, New Zealand, New Caledonia and Eastern Asia. [Figure M.]

2. *M. PARVIFLORA* R.Br.

Often misrepresented as "an ill-defined species"; but a critical examination of innumerable specimens from many areas, over a lengthy period of time, proves it to be quite as well-defined as *M. unifolia*. Two of the new entities herein described may have been included here by some authors.

The chief characteristics of Robert Brown's species are the small flowers—either loosely distributed on the spike, or in a dense spike (*var. densiflora* Rogers). Dr. R. S. Rogers (*Trans. Roy. Soc. S.A.*, xxxvii, 1913, p. 129) describes the labellum as having "two basal calli and one at the tip"; but, in a later description by the same author, (*Fl. S. Austr.*, 1922, p. 123) ~~no~~ reference is made to a third callus plate. This latter description is a faithful one. In individual specimens minute raised granulations (but no true callus) do sometimes occur.

All States of the Commonwealth. [Figures N., O.]

3. *M. OBLONGA* Rogers.

A very slender species possessing a widely expanded dorsal segment and a labellum approximately the same length as the ovary. Labellum margins are crisped and there are 3 glands (2 basal, one towards the

truncated tip). Flowers in a loose, often attenuated spike and distinctly fragrant.\*

Recorded from South Australia, Victoria, New South Wales and Tasmania. [Figure P.]

4. *M. ORBICULARIS* Rogers.

A water-loving species originally found in South Australia, later in Victoria at Wonthaggi and Portland. In Western Australia, however, it occurs in myriads over extensive areas—chiefly in swamps. The whole plant is usually prune-coloured, the labellum orbicular in outline and hiding the sepals. The stem is angular below the leaf-lamina. [Figure Q.]

5. *M. ATKATA* Lindl. [syn. *M. minutiflora* F. & M.]

A minute pale yellowish plant favouring margins of swamps or actually in water. The specific name applies to the black colour assumed in dried specimens. Labellum oblong or somewhat quadrate, margins entire. In Western Australia it is at its best and exceedingly plentiful where plants 6-9 inches or more in height are not uncommon. Recorded also from South Australia, Victoria and Tasmania. [Figure R.]

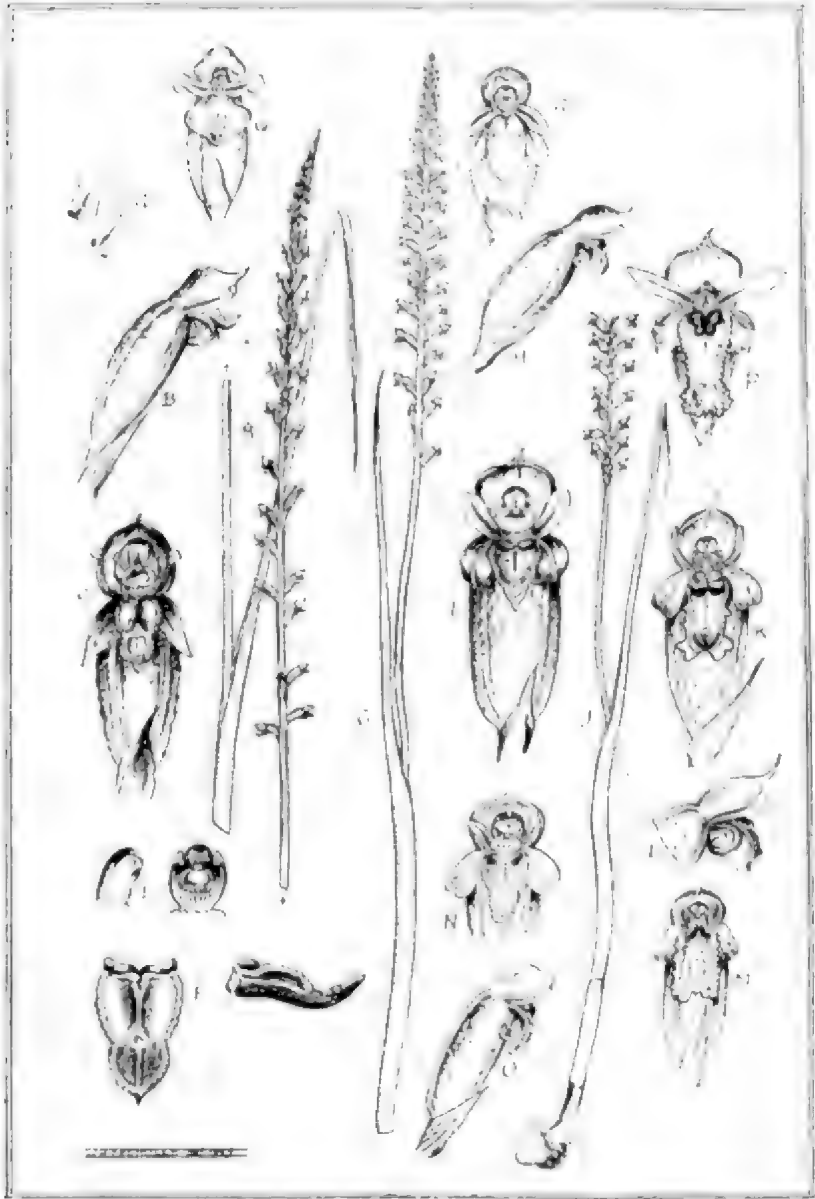
6. *MICROTIS BIPULVINARIS* sp. nov.

*Planta gracilis, circa 25-40 cm. alta. Foliolum basi vaginans; lamina elongata. Inflorescentia circa 12-15 cm. longa, laxa multiflora. Flores virides, subsessili, satis pedicellati, suberecti. Sepalum dorsale erectum, latum, concavum, globosiusculum, minute apiculatum, circa 2 mm. longum. Sepala lateralia lanceolata, libera, divergentia vel subrecurva, circa 2½ mm. longa. Petala erecta, late linearia, acuta vel obtusa, apices aliquando reflexa, 1½ mm. longa. Labellum sessile, linguiforme, cuneolatum, apiculatum, circa 1½ mm. longum, marginibus, laterolobis integris vel subcrenulatis; apicem versus granulosum, subelevatum; basi duobus callis inconspicuis, horizontalis, lamina anterior bipulvinatis. Columna teres, Anthera semiglobosa, obtusa, auriculis conspicuis.*

A slender plant about 25-40 cm. high. Leaf sheathing at base; lamina varying in length, but usually long. Inflorescence in a somewhat lax spike, about 12-15 cm. long; flowers numerous, green, the pedicels moderately long, suberect. Dorsal sepal erect, wide, concave over the column, somewhat hemispherical, with a minute point, about 2 mm. long. Lateral sepals free, lanceolate, divergent on each side of the labellum, or somewhat recurved, about 2½ mm. long. Petals erect, oblong-linear, acute (or obtuse in some flowers) the apices sometimes reflexed, 1½ mm. long. Labellum sessile, linguiform, channelled, apiculate, about 1½ mm. long; the lateral margins entire or somewhat crenulate; lamina marked near the tip with a slightly-raised mass of granulations, and bearing towards the base 2 conspicuous cushion-like-elevations, at the extreme base with 2 inconspicuous horizontal glands (in a few flowers examined these glands were obsolete). Column very short, terete. Anther somewhat hemispherical, obtuse, the auricles conspicuous.

*Flowering*: September, October. *Habitat*, Quail Island (NW. corner Western Port Bay, Victoria); *leg.* P. F. Murriss, Sept., 1943. HOLO-TYPE in National Herbarium, South Yarra. [Figures A, to F.]

\* All species of *Microtis* are more or less fragrant, but in the majority the scent is hardly perceptible.



(Plants of the wild (A) and (B) cultivated with  
fruit of (C).)

For explanation, see page 95.



The specific name has been given in allusion to the prominent cushion-like elevations on the labellum-lamina. The nearest ally is *M. parviflora* which lacks these cushion-like swellings, but has conspicuous glands at the base of the labellum—unlike the new species in which they are much reduced.

7. *MICROTIS HOLMESII* sp. nov.

*Planta robusta vel subrobusta, circa 25-30 cm. alta. Folium basi vaginans; lamina anguste-linear, circa 9-12 cm. longa. Inflorescentia compacta, circa 8-12 cm. longa, multiflora. Flores submagnis, virides. Pedicellis brevibus. Sepalum-dorsale erectum, concavum, minute apiculatum, circa 2½ mm. longum. Sepala lateralia oblongo-lanceolata, arte revoluta, circa 3½ mm. longa. Petala oblongo-linear, erecta; apices aliquando libera, circa 2 mm. longa. Labellum sessile cordiforme, recurvum, circa 2½ mm. longum; marginibus integris undulatis; basi bicallatum, prope apicem callo unico minuto. Columna brevissima. Anthera obtusa. Auriculis comparate prominentis.*

A more or less robust plant from 25-30 cm. high. Leaf sheathing at the base of the lamina; lamina slender about 9-12 cm. long. Inflorescence in a compact (though not crowded) spike of about 8-12 cm. Flowers numerous, with rather large ovary, green, the pedicels short. Dorsal sepal erect, concave, minutely apiculate, about 2½ mm. long. Lateral sepals oblong-lanceolate, tightly revolute (in many flowers), about 3½ mm. long. Petals oblong-linear, erect, apices obtuse or somewhat acute, often concealed within the dorsal hood, or quite free and prominent, about 2 mm. long.

Labellum sessile, cordate, recurved, about 3 mm. long; the margins entire, undulate; 2 dark green calli at the base, and a minute pale green one at the tip. Column short. Anther obtuse, the auricles comparatively large. Viscid disk prominent.

*Flowering:* November, January. *Habitat:* Moe, Victoria, leg. Norman Holmes, 1946. TYPE in National Herbarium, South Yarra. [Figures G. to I.].

I have named this outstanding addition to *Microtis* after its discoverer, Mr. Norman Holmes of Moe, Gippsland. Some of his specimens were remarkable for their splendid symmetrical spike of flowers. *M. Holmesii* is quite a late-flowering species, being in bloom when flowers of both *M. unifolia* and *M. parviflora* are withered in the same association. With the following new species (*M. biloba*), it was found along the railway enclosure on the western outskirts of the town, in grey and rather clayey soil.

8. *MICROTIS BILOBA* sp. nov.

*Planta gracilis, circa 20-25 cm. alta. Folium anguste-lineare; fistula circa medium; lamina 10-15 cm. longum. Inflorescentia brevis (4-5 cm.). Flores viride-flavus. Pedicelli brevibus. Sepalum-dorsale erectum, concavum, acuminiatum, circa 3 mm. longum. Sepala lateralia oblongo-lanceolata, obtusa, arte revoluta, circa 3½ mm. longa. Petala erecta, linear, obtusa, circa 2½ mm. longa. Labellum oblongo-quadratum, 3½ mm. longum; lamina virides; marginibus irregularis, luteis; apex bilobus, lobis angulari; basi duo callis magnis ovalibus, et unico minuto prope apicem. Columna brevissima. Anthera obtusa. Auriculis parvis.*

A small (or comparatively small) species up to 25 cm. high, similar in habit to *M. unifolia*. Inflorescence rather short (4-5 cm.) Dorsal sepal erect, concave, with a prominent acuminate apex, about 3 mm. long. Lateral sepals free, revolute on each side of the labellum, oblong-lanceolate, obtuse, about  $3\frac{1}{2}$  mm. long. Petals erect, linear, obtuse, about  $2\frac{1}{2}$  mm. long. Labellum oblong-quadrate,  $3\frac{1}{2}$  mm. long; lamina green, margins irregular, pale yellow; apex prominently bilobed, the lobes angular; 2 large dark-green calli at the base and a minute one near the tip. Column short. Anther obtuse. Auricles small.

*Flowering*: December. *Habitat*: Moe, Victoria, leg. Norman Holmes, 1946. Type in National Herbarium, South Yarra. [Figures J. to L.]

Characteristic features of this species are the yellowish tinge pervading the whole plant, and the curious bifid labellum from which it derives its name.

#### KEY TO ILLUSTRATION

Figure A.—*M. bipudinaris* sp. nov.—Inflorescence, leaf, etc. B.—Flower from side. C.—Flower from front. D.—Petals (2 forms). E.—Column from side and front. F.—Labellum from above and side.

G.—*M. Holmeati* sp. nov.—Inflorescence, leaf, etc. H.—Flower from side. I.—Flower from front.

J.—*M. biloba* sp. nov.—Typical plant. K.—Flower from front. L.—Upper part of flower from side.

M.—*M. unifolia* (Marsl.) Reichb.f.—Flower from front.

N.—*M. parviflora* R.Br.—Flower (upper part) from front. O.—Flower from side.

P.—*M. oblonga* Rogers.—Flower from front.

Q.—*M. orbicularis* Rogers.—Flower from front.

R.—*M. atrata* Lindl.—Flower from front.

Note: Figs. A, G, and J about one third natural size. All others much enlarged.

#### NATIVE PLANT RESEARCH

Many species of our native flora reveal astonishing variations in the wild and it is regrettable that so little has been done to seize on promising strains with a view to obtaining improved and reliable varieties for garden culture. A few private enthusiasts have been cultivating superior forms of some species for years, but, outside this circle, their existence is practically unknown.

The species with greatest variability and geographical range are those most eligible for selection and hybridization and offer the best chance of success. In order to survive, many of our native plants must have the power to fight for self preservation and to vary strongly; so the hybridist has a wonderful field to explore.

So great are the variations in form, foliage and flower with some species that, by selection alone, vastly improved types could be derived for the garden. In this respect several outstanding species come to mind, notably: *Micromyrtus ciliatus*, *Briostemon abovolis*, *Correa rubra* and *Gracillia alpina*. All these would prove excellent subjects for selective propagation.

It is pleasing to know that attention at last is being focused in this direction and experiments are to be carried out on a number of the most suitable species. With the development of improved and reliable types and their availability to the public it will be only a matter of time before their popularity will equal, if not surpass, the best known exotics.

—J. S. SEATON.

## "BY THEIR FRUITS"

(A Book Review by REV. H. M. R. RURY.)

It was a long time in coming; but here it is at last—a really adequate tribute to the life and work of Australia's greatest botanist. It was certainly worth waiting for. Mrs. Margaret Willis has written the story of Ferdinand von Mueller with admirable judgment, exhibiting the man's genius, his amazing achievements as explorer and botanist, his lovable personality; yet not attempting to conceal his faults and eccentricities, and those ineradicable traits of racial character which to the end of his days led so many people to think of him as "a foreigner." Foreigner he was not, save for his German origin and accent. He was Australian through and through; he loved his adopted country passionately, and not even the scurvy treatment he received from certain bureaucrats and politicians abated one jot of his intense loyalty to our traditions. I love that little story Mrs. Willis tells on page 19, because it is so thoroughly characteristic of the man. He was returning from an exploring trip with a friend, when they saw the State Governor's carriage approaching along the road.

"Mr. Potter suggested that they step behind a hedge, as they were wet, muddy, and a comical sight in gum-boots, macintosh, and sou'westers. 'Vat!' said the Baron, 'turn our backs on the Queen's representative? Never!' So they stood and saluted while the carriage passed."

Mrs. Willis lightens her story of the Baron with a number of equally cheerful anecdotes, and they are very welcome. For notwithstanding the records of great things achieved, and of innumerable honours received from many lands where the greatness of the Baron's work was appreciated, there is a vein of tragedy running through the tale. The dread of tuberculosis, which had claimed as its victims his parents and other members of his family, seems to have haunted Mueller throughout his life. It was responsible, indeed, for the frustration of his one romance, the story of which will probably be new to most readers of this book. Mrs. Willis tells it with delicate tact and understanding. But even more tragic than the fear of tuberculosis, in my opinion, was the consistently shabby treatment dolled out to the distinguished Government Botanist by his official superiors. Let it be granted that he was eccentric, and sometimes "difficult." What man of genius ever lived who was free from such idiosyncrasies? Here was a world-famous explorer and botanist, honoured in every land overseas where the value of scientific research was recognized, but treated by his own Government with almost incredible meanness and lack of consideration. This part of the story makes sad reading.

Mrs. Willis deals skilfully and fairly with the two great disappointments of Mueller's botanical career. These were (1) his loss of the post of Director of the Melbourne Botanical Gardens, and (2) the decision by English botanists to entrust to George Bentham the projected comprehensive work on Australian Plants, *Flora Australiensis*. It is clear that Mueller never quite ceased to feel that he had been unjustly treated in these matters. But Mrs. Willis shows that in regard to the Gardens there was much to be said for the Government's decision, though it could have been carried out with a good deal more tact and courtesy. As for the *Flora Australiensis*, it was justly impressed upon Mueller by Hooker and others, that if he undertook the work, it was imperative that he should visit England and study at first hand what had been done by earlier botanists. Otherwise serious mistakes and omissions would be inevitable. As he could not go, Mueller reluctantly gave way, and placed his herbarium and notes at Bentham's disposal. Obviously, without this co-operation Bentham, as he acknowledges, could never have produced what has ever since been recognized as the outstanding "classic" among publications on the Australian flora.

Stories of the Baron's simplicity of life and kindness of heart are

innumerable, and Mrs. Willis has made a pleasant selection of them. He died rather suddenly on October 10, 1896. Distinguished scientists and many other people attended the funeral in St. Kilda Cemetery. The Government of the day was represented by one of its Under-secretaries. Like Mrs. Willis, I forbear further comment upon that.

The book is attractively produced by Messrs. Angus and Robertson; there are three portraits of the Baron and one of the lady of his romance, several reproductions of drawings, and two maps illustrating the Baron's explorations. The author gracefully dedicates the volume to her brother-in-law, Mr. J. H. Willis, whose assistance is acknowledged in the Preface.

### WILD FLOWER PRESERVATION GROUP

Unless members of the F.N.C. are importunate in their endeavours to preserve samples of the Victorian countryside AS NATURE MADE IT, no one else will be—why should they?

Rabbits leave few orchids or seedlings of choicer shrubs (in the far north-west they are leaving nothing at all, except weed pests) and bush that has not been burnt is rarely seen, most forest and scrubland has been the victim of successive, very often devastating fires, and there is little in the tangle of unnatural growth that follows fire to suggest that any steps toward preservation are worth money or trouble.

Money is necessary, hence the minimum subscription of 5/- proposed for the new Group. A Board or Committee is much more likely to make a suggested enclosure if those who do the suggesting, show, in the only way that can be effective, that they consider the enclosure well worth while.

Results in the very few areas already proofed against rabbits and man are most encouraging. Possibly, after the establishment of one or two, Flower Sanctuaries will come to be regarded as natural, desirable adjuncts to Parks and Recreation Reserves.

Another function of the Wild Flower Preservation Group will be the channel for acceptance of money and properties left specifically for the preservation of flora and fauna. In the past there has been no body that could accept such gifts and guarantee the donor that adequate measures would be taken for perpetual protection. But after the Club's Incorporation is effected, this new Group could deal with property (if clean and otherwise acceptable) and it is unnecessary to say what it could do with monetary bequests.

A preliminary meeting will be held at 3 Denham Place, Toorak (off Commercial Road and between Kooyong and Glenferrie Roads) on September 14th, at 8 p.m. Intending members who are unable to attend are asked to let me have their names. Any suggestions would also be welcomed.

WINTFREN WAMBELI.

### A JUMPING LIZARD

Many small lizards (*Lygosoma macleishianum* or *L. prolixum*) live in the rock wall in my garden. One suns himself on a box, about three feet above ground and six or seven inches away from a lattice partition over which honeysuckle grows. When I disturb him he jumps across to the honeysuckle—clinging to the stalks with all his feet and swinging around so that his silvery-grey underneath is uppermost. When he recovers his balance, he will pause right side up, and then jump to a higher branch, where the performance is repeated until he reaches the strong horizontal beam of the lattice, along which he quickly runs to his hide-out.—L.Y.

### WHAT DID YOU DO IN THE GREAT WAR, DADDY?

The old question was put in new dress when an older member was asked to list his contributions to the bibliography of Australian Orchidaceae. The shock was so severe that it started him thinking. He had trampled over the whole field of nature, scratching here and there, tilling nowhere. He had enjoyed the wild fruits; but had cultivated none for export.

It is feared that the same might be said of other Club members. Few are now doing definite original work. Of these, still fewer are leaving any record. It is not healthy. Can something be done to revive the activity of early years? Please think over the following suggestions and improve upon them.

1. Nobody can cover the whole field. So let us each take a very small corner and work it thoroughly.

2. The work can have no value to science unless it is communicated. Let us keep a systematic record, with dates and localities.

3. Records demand illustration. Nothing can compare with the line drawing for this. Let us cultivate the art of illustration.

4. Space cannot always be found for published records; but we could adopt a standard sheet and file records with an index.

5. Where can we begin? We still have a few active members. Shall we ask them to tell us of unexplored nooks they know of? One thing will lead to another.

6. What is there left to study? Everything. Enough is published to establish most species of plants, birds, mammals and reptiles; but that is merely putting on labels. There is a library of periodicals full of wonderful work—quite unthumbed. Go along early to a group meeting and have your eyes opened.

7. We are sadly lacking in the means to attain our objectives. Could not a score of members make a special study of National Parks and be prepared to address meetings on the subject?

8. We profess interest in the spread of appreciative study of nature in the community. We have a committee for contact with Youth Movements. What have we done to assemble and equip members who will prepare to understand the nature of such movements as Scouts and Guides? Both value nature study as an important part of their training, but they can never find the people who can give them any simple help.

It should not require much imagination to picture the potentialities in scientific observation of an army of young people spread over Australia ready to collect data.

Well, what are you about to do in the great adventure?

—"JEREMIAH"

### NATIVE BIRDS IN GLENHUNTLY

At noon on December 17th I watched a young Pallid Cuckoo being fed by its foster parents, a pair of "Greenies" (White-plumed Honeyeaters). The young cuckoo perched mostly on our home-made rotary clothes line. Its immature plumage had a speckled black-and-white appearance, with feathered legs.

The honeyeaters frequently returned to a Silky Oak tree (soon after in flower) and fed the cuckoo with white grubs. These birds were about the garden for three days.

A. W. MCKENZIE.

## A REMARKABLE HAILSTORM

On Tuesday, November 16 last, a cyclonic storm of unprecedented violence swept the western Goulburn Valley, leaving such a trail of ruin that, had the calamity befallen suburbia, would have undoubtedly made headlines in all the daily papers.

This much I learned recently from my friend, Mr. Bert Fairman of Nathalia, and, since the Goulburn Valley was a pet botanical stamping ground twenty years ago, I was curious to follow up his report by reference to the *Nathalia Herald* (Nov. 23, 1948). The printed account is of sufficient interest to a naturalist to be worth abstracting and recording in our journal, so here are the facts:

Travelling easterly on a front varying from one to three miles wide, the cyclone struck Picola West at about 4 p.m. and passed on through Yielena and Yalca South. Mr. Fairman describes the approaching storm as "like a black cloud of smoke travelling over the ground, with a white curtain on either side of it," while all around was an uncanny stillness. In a quarter of an hour, a 360-acre crop on his property was completely destroyed and the storm cut a straight swathe across another.

Hailstones as large as golf balls covered the ground and were piled up 9 inches deep around his house; some were irregular lumps of ice 5 inches wide. The hailstones were still lying about at 9 o'clock next morning (17 hours later) and the whole summer-morning landscape presented a strange wintry appearance. Gum trees were completely stripped of their leaves; pine trees estimated to be 80 years old had been lifted bodily from the ground, while hundreds of rabbits, crows, magpies and cockatoos were lying dead about the paddocks—killed by the impact of the hail.

One man, on his way to market, was caught along an open road when the hail came. After receiving several hits, he quickly emptied out a case of eggs and put the empty box over his head for protection; his horse nearly bolted in panic. Damage to the whole district in this part of the Goulburn Valley was estimated at £80,000.

—J.H.W.

## CORRIGENDA

1. In *Vict. Nat.*, Sept., 1948, p. 110 ("Contrib. Flora S. Aust.—1"): The words "ens. Gauba" should be deleted from the heading *Corynotheca lateriflora* (R. Br.) E.v.M. They should have appeared at the end of the succeeding line, "*Diagnosis nova completa*," but are better omitted altogether. Clearly, it was the description that was intended to be emended, not the name of the species. E. GAUDA.
2. In *Vict. Nat.*, Jan., 1949, p. 208 ("New Bees and Wasps—VIII"): The omission of the prefix "a" in the typescript of the specific description of *EXONEURA ASIMILLIMA* Raym. was unfortunately overlooked when the author was correcting galley-proofs, and the name was printed as "*Exoneura similima*." The latter name was given to a species described by the author in 1935 [*A Cluster of Bees*, p. 735].
3. In *Vict. Nat.*, Mar., 1949, p. 250 ("New Bees and Wasps—IX"): In the explanation below the Plate, No. 3 should read "Larval appendages of *Exoneura marjoriella*, sp. nov." (not *Exoneura roddi*). The above errors 2 and 3. are due to the typist, and not to the editor. I. RAYMENT.
4. In *Vict. Nat.*, Apr., 1949, p. 270 ("Add. Orchid W.A.—III"): In second line, read "*stat et comb. nov.*" (not *stat. and comb. nov.*). W.H.N.

**WHAT, WHERE AND WHEN****General Excursions:**

Saturday, September 10—Langwarrin to Frankston. An all-day spring walk of about 8 miles. Subjects: Heathland flora and general. 9.00 a.m. train from Flinders Street. Fare: 2nd class return Frankston, 2/9, and extension from Frankston to Langwarrin, approx. 9d. Leader: Mr. Colin Lewis.

Thursday, September 29—Show Day. All-day Club Picnic to the You Yangs. Leader: The President (Mr. Colin Lewis). Nash's bus from Batman Avenue, 9 a.m. Fare 7/-. Bookings with Mrs. M. Pinches, 8 Thomas St., Brunswick. Bring two meals.

Saturday, October 1—Afternoon excursion to Heathmont. Subject: District Plants. Leader: Mr. Thos. S. Hart. 12.54 p.m. train from Flinders Street. Book 2nd return Heathmont.

Saturday, October 8—Anglesea and Point Roadknight. Subjects: Botany and Birds of the Area, with special emphasis on the Bristle Bird. Leader: Mr. Allan R. Henderson. Parlour Coach from Batman Avenue, 8.30 a.m. Fare 11/-. Bookings with Mr. H. Stewart, 14 Bayview Tce., Ascot Vale. (Tel. FU 022, extn. 457.)

**Preliminary Announcements:**

Saturday, Oct. 29 to Tuesday, Nov 1—Limited party for Corryong and district. Members interested book early with Mr. H. Stewart, 14 Bayview Tce., Ascot Vale, as hotel accommodation is limited.

Tuesday, November 1—Pyrete Ranges, via Gisborne. Excursion of wide interest. Leaders: Mr. J. Ros Garnet and Mr. G. Lyell. Nash's bus from Batman Avenue at 8.30 a.m. Fare: 7/6. Bookings with Miss M. Elder, 17 Adelaide Street, Malvern, S.E.3. (Tel. U 7207.)

**Group Fixtures:**

Wednesday, September 14—Wildflower Preservation Group. Inaugural meeting at home of Miss W. Waddell, 3 Denham Place, Toorak (off Commercial Rd., and between Kooyong and Glenferrie Rds.) at 8 p.m. Intending members welcome.

Saturday, September 24—Botany Discussion Group, excursion to St. Albans and Maribyrnong River. Subject: Mallee Flora pocket. Train: 1.39 p.m. from Flinders St., and book 2nd return to St. Albans. Walking distance: 5 miles. Leader: Mr. R. B. Jennison. General members cordially invited.

Monday, September 26—Botany Discussion Group. Royal Society's Hall, 8 p.m. Subject: Discussion on the Saturday's excursion. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris.

Tuesday, October 4—Geology Discussion Group. Royal Society's Hall, 8 p.m. Subject: "Fossils for Fun", by Mr. E. D. Gill, B.A., Palaeontologist, National Museum. Hon. Sec.: Mr. A. A. Baker, 53 Carlisle Street, Preston.

Thursday, October 6—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mr. R. B. Jennison, 3 Linda St., Morland.

Friday, October 7—Marine Biology Discussion Group. Royal Society's Hall, 7.45 p.m. Monthly Meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont.

Saturday, October 8—Geology Discussion Group excursion to Killara. Subject: "Fossils." Leader: Mr. E. D. Gill, B.A. Transport details at October meeting of the Group.

JEAN BLACKBURN,  
Excursions Secretary.

# The Victorian Naturalist

Vol. 66.—No. 6

OCTOBER 6, 1949

No. 790

## PROCEEDINGS

The Monthly Meeting of the Club was held at the National Herbarium on Monday, September 12, 1949. The President, Mr. Colin Lewis, presided and about 120 members were in attendance.

With regret news was received of the death of two esteemed friends and fellow-members of the Club—Mr. A. J. Tadgell, who joined in 1920, and Mr. Walter Parr. Mr. P. F. Morris spoke appreciatively on the important botanical work Mr. Tadgell had done, particularly as an agrostologist. Mr. H. C. E. Stewart told members of the geological work Mr. Parr was doing up to the time of his death on the forminifera. As a mark of respect to their memory, members stood in silence for a minute.

The President had been in correspondence with the Country Roads Board regarding burning-off operations along roads. The Board informed him that, under the present Law, nobody can burn-off on roadsides without its sanction. Wherever indiscriminate burning occurred, with damage to trees, etc., the Board should be advised at once.

Mr. Garnet gave notice that a Deputation would wait on the Premier on September 22, in connection with National Parks. Mr. Crosbie Morrison would be the principal speaker, and three or four other members of interested bodies would also speak. Members were invited to attend, if they so desired.

Mr. P. F. Morris referred to the Sixth Anniversary of the Hawthorn Junior Field Naturalists' Club. He praised the splendid work that Mr. and Mrs. Fream were doing there, and thanked them on behalf of the Club for their unsparing efforts to educate young people in the principles and ideals of a good naturalist.

The Secretary drew attention to a resolution passed at the last Council Meeting, viz. that as protection was one of the main objects of the Club, the picking of wildflowers and the digging up of plants on Club excursions must be banned. It is felt that our Club should set a strict example in this regard.

A suggestion had been received from some members that we should attempt reversion to the old style of conducting Meetings, where reports of excursions and exhibits were given much more time. The December Meeting will therefore be entirely directed to this end.

The following were elected: as Honorary Member—Miss J. W. Raff, who completed 40 years' with the Club in May; as Ordinary Members—Dr. E. Marks, Mrs. V. G. Marks, Mr. G. Jarrett, Mr.



F. Roy Chandler; and as Country Members—Miss E. Walling and Mr. C. Begg. The President congratulated Miss Raff on her long membership, and extended a cordial welcome to all new members. A nomination was received on behalf of Mr. Ron Ferguson, Albert Park, (Miss Adams/Miss Wigan).

#### FROM GRASS GROWS MAN

Mr. P. F. Morris, introducing his subject, reminded us that all animal life ultimately depended on grass for its very existence, and by slides he showed the unsuspected beauty of grass flowers. Our own native *Gramineæ* have in many places been almost completely ousted by imported species, and little experimental work of a scientific nature has been done on them. This is lamentable, because many native grasses, especially perennial types, would be of inestimable value as fodder plants in dry areas.

Barley, oats, wheat, and sugar-cane are all important factors in our national economy. In Eastern countries bamboos are of the greatest economic importance, providing the essentials for house and bridge construction, water conduits, furniture, food and a multitude of other uses.

The President conveyed the thanks of the meeting to Mr Morris for his stimulating address.

#### EXHIBITS

Miss L Wigan: Postcards showing exhibits in the Natural History Museum at South Kensington, London, bought at the Museum; also *Correa rubra* and *C. alba* from Hedley, S.A.

Mr. R. Savage: Various garden-grown native flowers, including *Grevillea alpina* (3 forms), *G. buxifolia*, *G. confertifolia*, *G. Hookeriana*, *G. ilicifolia*, *G. lavandulacea*, *G. parviflora* and *G. rosmarinifolia* (Hurstbridge form).

Mr. J. S. Seaton: *Leptospermum scoparium* var. *Lambethi* (cultivated).

Mr. Ken. Atkins: Cultivated Australian flowers from Botanic Gardens, including *Anigozanthos Manglesii*, *Lhotskya alpestris*, *Phacelium squameum* and *Oscaria Graminea*.

#### WAYSIDE FLOWER SANCTUARY—A CORRECTION

The editor accepts full responsibility for an unfortunate mis-statement in the September number of the *Naturalist* (p. 90). Obviously, the 82-mile post is nowhere near Tallarook, and the reserve described is situated near Longwood on the Home Highway. The final paragraph actually refers to a second sanctuary which it is proposed to declare at Tallarook. Miss Waddell drew attention to the mistake in time to have it corrected in some copies of the *Naturalist* before dispatch, but the bulk of the issue had already left the printers—in these copies the words "AT TALLAROOK" should be deleted from the heading and the concluding paragraph omitted.

#### MEETINGS OF NEW GROUP ON FIRST MONDAY

November 7—Native Plants Preservation Group. Monthly meeting at 3 Denham Place, Toorak. Chairwoman and correspondent: Miss W. Waddell, 3 Denham Place, Toorak, S.E.2. Treasurer: Mr. F. Lewis, 2 Denham Place, Toorak, S.E.2.

**BOTANICAL PIONEERS IN VICTORIA—II**

By J. H. WILLIS, National Herbarium of Victoria.

**II—SPECIALIST PIONEERS**

Although Mueller was an authority on the Victorian flora as a whole, he could not hope to be a specialist on every group of plants, particularly among the smaller and difficult cryptogams; so he delegated his algal, fungal, and bryological problems to experts overseas. Later on, various local botanists were to arise and equip themselves for critical work in these fields, also to intensify the researches that the Baron had begun in several higher groups of more than ordinary interest, e.g. the ferns and orchids. We shall now deal with a few representative groups upon which more recent "pioneers" have left their mark:

**ORCHIDS**

These quaint, fascinating flowers have never lacked their devotees and, among our principal Victorian informants on the subject, one must consider the following:—

**C. French Sen.** (1840-1933) was originally a plant propagator under von Mueller at the Melbourne Botanic Gardens, then for many years Government Entomologist. He travelled all over Victoria, making ferns and orchids his chief interest. After Benthams treatment of *Orchidaceæ* in *Flora Australiensis* (Vol. VI, 1873), it was Mr. French who first brought together a description of every species then known to occur within the Colony—published in 11 parts of the *Victorian Naturalist* (1884-87) under the title "Victorian Orchids". The information was incorporated the next year in Mueller's *Key to the System of Victorian Plants* (1888) wherein 78 species are recognized. [Commemorated by *Prasophyllum Frenchii* F.v.M.]

**A. B. Braine** (1854-1945), as a country school teacher stationed at Cravensville (25 miles S.E. of Tallangatta), gave us probably the first orchid survey of north-eastern Victoria—a series of chatty articles in the *Chiltern Federal Standard*, 1917-18. It is a pity this "In Quest of Orchids" had not been published as a separate, for it is a valuable district record embracing 53 species. [Commemorated by *Prasophyllum Brainsi* Rogers.]

**J. N. McKibbin** of Maryborough may be noted as another district orchidologist; he wrote a paper for Wing's *Southern Science Record*, III, p. 100, (1883), describing 31 "Orchids of the Loddon Valley". [Commemorated by *Thelymitra McKibbinii* F.v.M.]

**E. E. Pescott** (1872- ) is another educationist who has travelled extensively in Victoria. He contributed "Orchids of Victoria" in 9 parts to the *Victorian Naturalist* during 1926-27,

thereby supplementing French's pioneer work in the same journal 40 years before. This time the treatment was enhanced by many photographic illustrations and the whole was republished in book form the next year (1928). The orchid flora of our State had attained the astonishing figure of 150 species! [Commemorated by *Chiloglottis Pescottiana* Rogers.]

**W. H. Nicholls** (1885- ), first as a bookbinder and now as horticulturist, developed an enthusiasm for orchids later in life. His first paper was on the "Propagation of our *Pterostyles*" (illustrated in *Vic Nat.* XLII, p. 187, Dec. 1925), but there were seven contributions in the next volume of the *Victorian Naturalist*. Up to the present, he has published numerous articles in half a dozen different periodicals and added at least ten new orchids to the Victorian list, besides amending the names and descriptions of many others. He is engaged on a monumental project to supplant Fitzgerald's *Australian Orchids* (1875-92), i.e. the colour delineation of every orchid indigenous to the Commonwealth. [Commemorated by *Prasophyllum Nichollsianum* Rupp.].

[The years 1926-30 will always be regarded as a golden age in Victorian Orchidology; for the trio, Mrs. Edith Coleman—Pescott—Nicholls, were all actively working and publishing a veritable avalanche of beautifully illustrated articles in the *Victorian Naturalist*, the lady member giving special attention to the pollinating agencies and devices in several orchid species. The popularity of this hobby expressed itself in the foundation of a special Orchid Section of F.N.C.V. during June, 1926, but the section was unfortunately very short-lived and Mr. Nicholls, alone of the trio, has maintained the pace and continued to publish taxonomic matter. N. A. Wakefield in the far East, C. Beaughole in the south-west and E. Muir in the western Wimmera have made very complete, modern lists of their district orchid floras.]

## FERNS

As with the orchids, Mr. C. French prepared the first treatise on all then known Victorian pteridophytes. His descriptive notes on "Victorian Ferns and their Habitats" commenced as the initial paper in the first number of Wing's *Southern Science Record* (1880)—a precursor of the *Victorian Naturalist*—and continued for 7 parts; 66 species were dealt with.

**H. B. Williamson** (1860-1931), a school master in several country districts; was also a keen, discriminating botanist who visited practically every part of the State—from the sea coast to the Mallee and to the highest, remotest alps. His very extensive herbarium of Victorian plants (probably the largest private one ever amassed) is now safeguarded at the National Herbarium, South Yarra. Many important contributions from his pen appeared in the *Victorian Naturalist* (illustrated guides to our lilies, aquatic plants, etc.), but none more important than "Victorian Ferns" which

ran in 9 parts from January to September, 1926. Lucid line drawings accompanied the descriptions of every species—to the number of 76, an addition of ten to French's list of 1880-82.

[Mr. Williamson will be best remembered for his critical researches among members of the great Pea family, especially the Bush-peas (*Pultenaea* spp.). During 1920-28, he published a monographical work, "Revision of the Genus *Pultenaea*" that ran to 5 parts (with line drawings) in *Proc. Roy. Soc. Vic.* and included descriptions of 16 new species. He was the principal worker behind the revised F.N.C.V. *Census of Victorian Plants* (1928) and prepared the whole section on *Leguminosae* for Ewart's *Flora of Victoria* 1930. Williamson's fern papers were combined and elaborated, with several re-shuffles of names, additions of a couple more species and considerably more illustrations, by R. W. Bond and C. L. Barrett in a F.N.C.V. handbook, 1934. He is commemorated by *Grevillea Williamsonii* F.v.M. and *Pinetea Williamsonii* J.M.Black].

**N. A. Wakefield's** ascendancy as a fern "pioneer" is extremely recent, his first paper ("The Victorian Rasp Ferns") appearing in the *Victorian Naturalist* of February, 1940. A teacher in charge of small country schools, he has chosen Croajingalong as his stamping ground and, since 1940, has completely straightened out the nomenclature of all Victorian *Pteridophyta*. Many errors of determination had been perpetuated from book to book for several generations, and only critical studies of living plants, type material and original diagnoses could unravel the confusion—a pioneering job which Mr. Wakefield accomplished, at the same time adding 16 pteridophytes to the Victorian flora and bringing the State list up to 90 ferns and 16 club-mosses.

#### BRYOPHYTES and LICHENS

Baron von Mueller found the determination of these lowly plants too time-consuming and referred his findings to experts in Germany. Over a period of nearly 30 years he sent copious collections of mosses to Hampe, later to C. Müller and Geheeb.

**D. Sullivan** (—1895) was an active collector of mosses on and about the Grampians in the 1870's and 1880's, his material going to C. Müller who named several species after him. Using Müller's determinations, Sullivan wrote "Mosses of Victoria, with Brief Notes" (*Vic. Nat.* iv, p. 106, Nov. 1887) wherein he mentions having collected 200 species from different parts of the Colony.

**F. M. Reader** (?1850-1911) applied his zeal to our moss flora about the turn of the century, and his collections were dealt with by Brotherus in Finland, some receiving the epithet *Readeri*. [R. A. Bastow, who had done good work with the mosses of Tasmania, came to live in Victoria during the 1890's and from then on until his death in 1920 he collected and named the musci in our State.—see later note.]

**Rev. W. W. Watts** (1856-1920) was probably the greatest moss authority of New South Wales, writing many articles for the

*Proceedings of the Linnean Society of N.S.W.* during the years 1900 to 1918. His most noteworthy, if unfinished, contribution was a "Census of Australian Mosses", 1902-05, in collaboration with T. Whitelegge. Rev. Watts made several collecting trips to Victoria and, four years before his death, was transferred (1916) to Wycheproof in this State—a very poor locality for mosses. The principal bryophyte specimens accumulated by Watts and Whitelegge are housed at the National Herbarium, Sydney.



RICHARD A. BASTOW  
(1840-1920)

Pioneer among the Mosses and  
Hepatics of Victoria.

Photo: By courtesy D. J. Fowler (grand-  
son), rephotographed by R. D. Lee.

As to the elucidation of her hepatic flora, Victoria has suffered rather badly and there are still plenty of unrecorded species in places as near Melbourne as the Dandenongs.

**R. A. Bastow** (1840-1920), architectural draughtsman, had a flair for cryptogamic botany and claimed that his illustrated "Victorian Hepaticæ" (*Vic. Nat.*, Sept., 1914) was the pioneer paper in this field for the

State. Mr. P. Bibby of the National Herbarium, South Yarra, is at present revising our knowledge of these neglected but very fascinating and often highly odorous plants.

Concerning lichens, big early collections went from von Mueller to Gottsche, but the **Rev. F. R. M. Wilson** (1832-1903)—a Presbyterian minister stationed at Kew (Melbourne) for many years—must be regarded as our pioneer lichenologist, and probably the pan-Australian expert also. Between 1887 and 1900 he wrote no fewer than 20 authoritative articles for eight different journals, six of the earliest being devoted to Victoria (*Vic. Nat.*, with descriptions of many new species). His last paper was on Kerguelen lichens for the French journal *Mém. de l'Herbier Boissier*, 1900. It is unfortunate for Melbourne lichenologists that the Rev. Mr. Wilson's considerable herbarium was purchased by the National Herbarium, Sydney.

Bastow wrote an illustrated guide, "Notes on the Lichen Flora of Victoria" (*Vic. Nat.*, Feb., 1914), and Mr. Bibby has recently specialized also in this group—he is probably the only local botanist capable of naming lichen specimens at the present time.

## FUNGI

Victoria never wanted for enthusiastic collectors of the fungi; yet there have been few in the State's history competent to identify their finds. Mueller relegated immense collections to Rev. J. M. Berkeley in England over a long period of years, including the types of many new species that are now preserved at Kew. Berkeley's various publications were brought together by M. C. Cooke in his *Handbook of Australian Fungi* (1892)—the first and only text-book on the entire fungus flora of the Commonwealth. Unfortunately Cooke's handbook is very inaccurate and, to quote C. G. Lloyd's contemptuous remark, had "about as much truth in it as 'Gulliver's Travels'". Probably two thirds of all the species described would not stand the test of a critical review and would thereby find their way into synonymy.

**Mrs. Flora Martin** (née Campbell) was an indefatigable collector of fungal specimens, making accurate notes and drawings and sending much material to Cooke for incorporation in his handbook; she also forwarded material to F. M. Bailey, Queensland Government Botanist. Mrs. Martin died at her Drouin farm in 1923.

**H. T. Tisdall** (1836-1905), a school teacher until 1894, was subsequently appointed lecturer in botany and general nature study at the Teachers' College. He resided in the Walthalla district for a number of years and, while botanizing east of the Baw Baws, he contributed a dozen articles on North Gippsland fungi to the *Victorian Naturalist*. When established in Melbourne, his interests spread to the sea-weeds also, and several good algological papers, e.g. "The Algæ of Victoria" (with complete list to 1897, in *Proc. Aust. Assoc. Adv. Sci.*, VII, pp. 493-516), were published. Tisdall will always be remembered for his informative brochure on elementary botany—"Students' Botanical Notes" (illustrated, 1900).

**D. McAlpine** (1849-1932) came to Australia in 1884 as lecturer in biology and botany at Ormond and the Pharmacy Colleges respectively; but his remarkable talent later found expression as Vegetable Pathologist to the Department of Agriculture. He was undoubtedly the greatest figure in Victorian mycology, publishing about 230 books, bulletins, and pamphlets. Several excellent papers appeared in the *Victorian Naturalist*, including a "Romance of Plant Pathology", 1910; but McAlpine's masterpiece was the "*Systematic Arrangement of Australian Fungi*" in tabular form, 1895. This book probably perpetuated most of Cooke's errors; but it simplified the presentation and gave added information, especially on plant disease fungi and their hosts. The tabulation is still of use to pathologists and is not likely to be superseded.

McAlpine's work does not seem to have earned the appreciation it deserves in Australia; even his departmental life was a struggle.

Like so many genii, he just retired to fade out of public notice and die in obscurity. I have sifted through periodicals that one would expect to be loud in praising his worth, but the only tribute I can find is in the *Australasian Journal of Pharmacy* for October and November 1932 (n.s. XIII, pp. 933 and 1037). He was succeeded by C. C. Brittlebank, a very fine pathologist and skilled artist. [Commemorated by *Stipa McAlpinei* Reader].

**Rev. J. Wilson** (1855-1937), a Congregational clergyman, also gathered fungi, establishing many new Victorian records. While stationed at Beechworth he made several first recordings for the north-east, submitting his specimens to von Mueller. Latterly he dwelt among the Beaconsfield hills and forwarded many local specimens, including material of types, to C. G. Lloyd—the world famous mycologist at Cincinnati, Ohio.

Of quite recent times several lady mycologists—Dr. E. I. McLennan, Dr. E. Fisher, and Miss S. M. Fawcett—have specialized in certain neglected groups; their respective researches among the *Ascomycetes*, "Sooty Moulds", and *Clavariacea* are recorded in the *Proceedings of the Royal Society of Victoria*.

#### ALGÆ

Phycology began in Victoria, and very soundly, when the world expert, **Professor W. H. Harvey** of Dublin, collected along our shores for more than four months during 1854-55 (he also visited Sydney, Tasmania and south-west Australia). The fruits of his labours out here are embodied in *Phycologia Australica* (1858-63)—a magnificently illustrated sea-weed flora in five volumes. Mueller rendered invaluable assistance while Harvey was in the Colonies, and continued to send him dried material for many years thereafter. Mrs. Barker of Cape Schanck, Mrs. Mallard, and Dr. Curdie of "Tandarook" (near Camperdown) were also active in collecting for the great algologist. (See Harvey correspondence in "A Pioneer Botanist in Victoria" by A. H. S. Lucas, *Vict. Nat.*, I, Dec., 1933, p. 186). [Commemorated by *Sarcopetalum Harveyanum* F.v.M. and *Seseli Harveyanum* F.v.M.—both flowering plants of far eastern Victoria.].

**J. B. Wilson** (1828-95) became headmaster at Geelong Grammar School in 1863 and held this responsible position for 32 years until his death. In those three decades he was an assiduous dredger and collector of sea-weeds in the vicinity of the Heads, adding much to our knowledge of the marine flora. His "Catalogue of Algae collected at or near Port Phillip Heads and Western Port" (*Proc. Royal Soc. Vic.*, n.s. iv, p. 157, 1892) consummated the work of half a life-time. Wilson's algal collection is now in the Victorian State Herbarium—excellent, named material, and a model

of tidy mounting. One of his notable publications was the useful little handbook, "Excursions near Geelong in Search of Plants or *Florula Corioensis*, with a List of Those Collected by J. Bracebridge Wilson".

**Professor A. H. S. Lucas** (1853-1936), science master, educationist, and co-author with Professor Dendy of the popular *Introduction to Botany* for school use, was first editor of the *Victorian Naturalist* (1884-92). He wrote numerous articles for this nature journal, e.g. "Caulerpas of Victoria", Sept., 1931, and was a leading informant on algae for more than half a century. Lucas's crowning work, "*Seaweeds of South Australia, Part I*" came from press the year he died (1936) and was a pioneer venture for that State; most of the species described are natives alike of Victoria and were collected here by Lucas.

**H. Watts** (1828-89), while contributing marine algae to Professor Harvey from Warrnambool, was a good microscopist and probably the Colony's earliest exponent on freshwater forms; 1864 witnessed a short paper, "On the Freshwater Algae of Victoria", listing species and localities known to him (*Trans. & Proc. Royal Soc. Vic.*, p. 67). [Commemorated by *Acantho Waltziana* F.v.M., and several algae.]

This century, Mr. A. D. Hardy (erstwhile draughtsman to the Forests Commission) has cut new ground with the microscopic freshwater kinds, his articles appearing in the *Victorian Naturalist* and elsewhere.

[Of other specialist pioneers, one may mention: W. H. Bacchus, who was probably the Colony's first agrostologist (q.v. his line-drawings of over 50 grasses in the *Second Annual Report for the Secretary of Agriculture*, 1874); A. W. Howitt (1830-1908) who, as Police Magistrate on the Gippsland goldfields, gave much time to the genus *Eucalyptus* (q.v. "Eucalypts of Gippsland" in *Trans. Royal Soc. Vic.*, 1890, p. 81); Dr. R. T. Patton for his modern work on ecology (seven major Plant Associations described in *Proc. Royal Soc. Vic.* between 1933 and 1944); Dr. Isobel Cookson for palaeobotanical researches, and Dr. B. Grive for studies in genetics and virus diseases.]

(To be concluded)

#### WILDFLOWERS FOR RAILWAY STATIONS

Committee members of the Native Plants Preservation Group interviewed Mr. Harvey in connection with the suggestion that some station gardens might be made representative of the local flora. Mr. Harvey explained some of the difficulties in the way of such a scheme, but asked for a list of stations where good opportunities are known to occur, with specific information as to the area suggested.

The Group particularly asks for information from anyone who may know a suitable area, before it meets again on November 7.—W.W.



## EASTER AT TALLANGATTA

By H. C. E. STEWART,

Two decades have elapsed since a benefaction to the Club enabled Mr. H. B. Williamson to investigate the Upper Murray flora, beginning at Tallangatta. Mr. Williamson travelled over 630 miles, collected extensive material for the National Herbarium, Melbourne, and published in detail his botanical observations.<sup>1</sup> Accounts of other excursions by Messrs. Charles Daley<sup>2</sup> and W. H. Nicholls<sup>3</sup> have also been published. A party of ten Club members visited Tallangatta again during the recent Easter period. Situated at the junction of the Mitta Mitta River and Tallangatta Creek, just above the south-eastern limits of the Hume Reservoir, the township gives easy access to river terraces along the two watercourses; these are of considerable physiographic interest, with evidences of water action and silt deposition, especially at the many bends. Continual processes of lateral abrasion, with the swirl of sands and pebbly material, cause shifting from one terrace to form detritus at another lower down, when the floods occasioned by the melting snows of the highlands cause the rise of water and accelerate the speed of currents. Because of the low river levels, autumn is a favourable time not only to note the fresh deposits left by previous flood seasons, but also to examine the contents of the many residual billabongs.

Although many mature River Gums still remain along the river flats, the years of settlement have obviously denuded much of the original native flora. The low-lying expanses have been closely grazed by stock, the higher land cleared and cultivated, and only here and there, occasional vestiges of the former vegetation, could be seen, with Swamp Gum, Tea-tree, Blackwood, Silver Wattle, Tree Violet, Sweet Bursaria, and one solitary specimen of Ovens Wattle (*Acacia pravissima*). The most striking inhabitant of the still backwater pools was floating Red Azolla (*A. filiculoides*). With it were associated pond-weeds (*Potamogeton*), Water-ribbons (*Triglochin procerum*), Eel-grass (*Vallisneria spiralis*), three species of water-milfoil (*Myriophyllum pedunculatum*, *M. propinquum*, and *M. elatinoides*), and Swamp Lily (*Ottelia ovalifolia*) in flower. At the water's edge grew various rushes (*Juncus*, *Cyperus*, *Lomandra*), sedges (*Carex*), saw-edges (two species of *Gahnia*), and sword-sedges (*Lepidosperma*), besides a few representatives of *Restionaceae*. One muddy bank was thickly carpeted with Joyweed (*Alternanthera triandra*). Marsh plants in flower included the clear yellow Clove-strip (*Jussieua repens*), Water Plantain (*Alisma Plantago*), and an odd spike or two of the cosmopolitan Purple Loosestrife (*Lythrum Salicaria*) and Yellow Swamp Cress (*Rorippa islandica*).

Next morning, three of the party visited Mr. Granya, a distance of about twelve miles. As we mounted the range, magnificent panoramas of valley scenery were unfolded below. On the steeper granitic slopes the vegetation suddenly changed, and soon we saw shrubs of Grey Bush-pea (*Pultenaea Cunninghamii*). The area appeared as rejuvenated mountain forest and the principal eucalypts were Peppermint (*Eucalyptus radiata*), Long-leaf Box (*Euc. claephora*) and young "Eurabbie" or Victorian Bluegum (*Euc. bicostata*). Among the wattles, *Acacia burrifolia*, was predominant, with Hickory Wattle (*Acacia penninervis* var. *falceiformis*), not so abundant, yet attaining arboreal dimensions. Infestation by the Drooping Mistletoe (*Amyma pendula*) probably accounts for its diminution. Other shrubs listed were Cherry Ballart (*Exocarpos cupressiformis*), Mountain Correa (*C. Laxenrochiana*), Showy Guinea-flower (*Hibbertia linearis*, var. *obtusifolia*), Daphne Heath (*Brachyloma daphnoides*), Woolly Grevillea (*G. lanigera*), with promise of early flowers, Small-leaf Parrot-pea (*Dillwynia parvifolia*), Handsome Flat-pea (*Platylabium formosum*), and Slender Hop-bush (*Dodonaea attenuata*). Spent floral racemes identified two speedwells (*Veronica perfoliata* and *V. Derwentia*). The Urn-heath (*Melichrus urceolatus*) had already opened its short ivory bells. Among hebeaceous plants, the Rock Isotome (*Isotoma axillaris*) and a patch of deep pink "Parson's Bands" orchid (*Eriochilus cucullatus*) were still in flower—among granite rocks. The Spoon Rice-flower (*Pimelea spathulata*) was also noted; but *P. Treynoudii* of Williamson's list not observed; nor could we find any trace of the rare and handsome *Grevillea polybractea*, last seen in 1925.

Another outing was a motor run along the Mitta Mitta valley, over part of the route that Baron von Mueller traversed early in 1854, on his second and most notable journey of botanical exploration in Victoria.<sup>4</sup> On a timbered rise dipping sharply down to the river a halt was called to explore briefly the Silurian formation, with Peppermint forest carrying typical north-eastern undergrowth. Mitta Mitta township afforded opportunities for photography, but by then the fast-dipping sun warned us to commence the journey back. The outing had been most enjoyable—along a green valley bathed in sunlight, with high mountain vistas (even Gibbo and far Kosciusko) continually unfolding. Near Eskdale, glimpses were obtained through gaps in the local ranges of the massive bulk of Bogong High Plains. Exotic poplars, oaks and elms dotting the valley farmlands had already begun to assume their attractive autumn tints, while acres of Red Azolla carpeting the Mitta billabongs glowed intensely under a bright sky. The success of this excursion suggests that a more prolonged visit to the locality must be undertaken at some future date.

## REFERENCES:

1. *Vic. Nat.*, Vol. xlv, February, 1929—"Plant Hunting on the Upper Murray", by H. B. Williamson, pp. 259-264.
2. *Vic. Nat.*, Vol. xlii, June, 1925—"A Visit to the Upper Murray", by C. Daley, pp. 37-42.
3. *Vic. Nat.*, Vol. xlvii, January, 1931—"A Botanical Excursion to the Tallangatta Valley", by W. H. Nicholls, pp. 142-146.
4. *Vic. Nat.*, Vol. xxi, June, 1904—"Some Early Botanical Explorations in Victoria", by F. G. A. Barnard, pp. 19-20.

## BIRDS OF TALLANGATTA

By M. L. WIGAN

On our rail journey to Tallangatta members were very interested to see small flocks of Galahs (*Kakatoë roseicapilla*) from about 30 miles from Melbourne to our destination. We were delayed at Balmuttum, a little past Euroa, and this proved a pleasant interlude, as the train stopped directly opposite a small dam on the north bank of which rested a pair of Chestnut-breasted Shelduck (*Casarca tadornoides*). A few feet away paraded a pair of Australian Spur-winged Plover (*Lobibyx nova-hollandiæ*), whilst in the water were two little Pied Cormorants (*Microcarbo melanoleucus*), and one Little Black Cormorant (*Phalacrocorax ater*). A pair of Little Grebes (*Podiceps ruficollis*) were busily diving, and wading on the water's edge was a White-faced Heron (*Notophox nova-hollandiæ*). After Wodonga a Tawny Frogmouth (*Podargus strigoides*) was seen on a dead tree close to the line. As we approached the south-east arm of the Hume Reservoir birds became more numerous. In this area the following were readily identified: Black Swans (*Chenopsis atrata*), Australian White Ibis *Threskiornis molucca*), Straw-necked Ibis (*Threskiornis spinicollis*), White Egret (*Egretta alba*), Little Pied and Little Black Cormorants, White-faced Herons, Grey Duck (*Anas superciliosa*), Grey Teal (*Querquedula castanea*), mostly in large numbers on, or near the water's edge. In the air and evidently on the lookout for a meal, were Whistling Eagles (*Haliastur sphenurus*), Swamp-Harriers (*Circus approximans*), Brown Hawk (*Falco berigora*) and Nankeen Kestrels (*Falco cenchroides*).

The first bird call was heard next morning at 4.55, when the lovely melody of the Black-backed Magpie (*Gymnorhina tibicen*) came floating through foggy air, soon followed by the subdued chortle of the Laughing Kookaburra (*Dacelo gigas*). A few White-backed Magpies (*Gymnorhina hypoleuca*) inhabit the district

and the two species can readily be compared. Owing to fogs on the first two mornings, bird observing was not possible before 7.30 a.m. Not more than a hundred yards from the back door, of our hotel there was a willow-fringed pool, covered with Red Azolla, the upper surface lined in all directions as if scratched by some outsize pencil. A wait for a few moments and birds began to move for cover. They were Eastern Swamphens (*Porphyrio melanotus*), Dusky Moorhens (*Gallinula tenebrosa*), adults and birds in immature plumage, and Coots (*Fulica atra*), also with well-grown young. The opening in the Azolla made by the swimming birds was quickly closed, hence the lines. It looked heavy going for the birds.

A right-about-turn, and across the road another pond clear of Azolla and fringed with River Red Gums (*Eucalyptus camaldulensis*), in which Black-backed Magpies, Magpie Larks (*Grallina cyanoleuca*) and Pied Currawongs (*Strepera graculina*) were calling. In this pond two Little Pied Cormorants were diving, and a Little Black Cormorant sat motionless on the bank, with White-faced Heron a foot or two away, two pairs of Spur-winged Plovers and a White Egret.

On the first of these ponds were hundreds of Welcome Swallows (*Hirundo neoxena*) skimming over the surface. As they raced, wheeled and sometimes slightly hovered, they rarely touched the surface—presumably catching small insects on the wing. Returning to this pond later we were entertained by a family of Little Grebes and they were easily approached. A few minutes' walk away from this particular spot, we were watching White and Straw-necked Ibis, Ravens (*Corvus coronoides*), Pied Currawongs, Little Pied and Little Black Cormorants passing over our heads, all on the same line of flight. Whistling Eagles also circled round calling, and a swamp-Harrier came into view. Nearby was a party of twelve Blue Wrens (*Maturus cyaneus*), and all male birds were in eclipse plumage.

On or near our last pond, fringed with lovely River Red Gums, were Black-backed Magpies, Ravens, Pied Currawongs, Little Pied Cormorants, Magpie Larks, Willie Wagtails (*Rhipidura leucophrys*) and Restless Flycatchers (*Seisura inquieta*), the last mentioned giving a wonderful display of hovering. These ponds are a great feature on the outskirts of this part of the town, and afford the most delightful cameo studies. They are also excellent observation posts for resident birds.

An afternoon stroll along the Mitta Mitta river was interesting with close-up views of Black Swans, Whistling Eagles, Pied Currawongs, and White Cockatoos. A pair of Welcome Swallows were flying in and out of a hole in a large dead willow branch in the water, but we had no opportunity of finding out if they were using it for a home.

The trip to Granya gave us a glimpse of Wedge-tailed Eagles (*Uroaëtus audax*), Gang Gang Cockatoos (*Callocephalon fimbriatum*), and Rufous Whistlers (*Pachycephala rufiventris*), which were not seen elsewhere. On this motor-bus trip a short stay on the way to Mitta Mitta township revealed many of the smaller species, chiefly Thornbills, Pardalotes, Tree-creepers, and Wrens. Honeyeaters, other than the White-plumed Honeyeater (*Meliphaga penicillata*) were hard to see on the tops of the tall trees. The most numerous birds of the district were the Red-backed Parrots (*Psephotus haematonotus*), and it was quite possible to list between 40 to 50 species within a half-mile of the hotel.

Our excursion was one of sight observation, and although we have a list of nearly 70 species within a radius of 12 miles, no attempt has been made to give a list of species to be found in the area at this time of year.

#### BIRDS OBSERVED WITHIN 12 MILES OF TALLANGATTA

(Total: 67 species.)

Dusky Moorhen	Restless Flycatcher
Eastern Swamphen	Jacky Winter
Coot	Scarlet Robin
Little Grebe	Southern Yellow Robin
Black Cormorant	Rufous Whistler
Little Pied Cormorant	Grey Shrike-thrush
Australian Spur-winged Plover	Magnie-lark
Black-fronted Dotterel	Eastern Shrike-tit
Australian White Ibis	Black-faced Cuckoo-shrike
Straw-necked Ibis	Brown Weebill
Royal Spoonbill	Striated Thornbill
Yellow-billed Spoonbill	Little Thornbill
White Egret	Brown Thornbill
White-faced Heron	Chestnut-tailed Thornbill
Pacific Heron	Yellow-tailed Thornbill
Black Swan	White-browed Scrub-wren
Grey Duck	Chestnut-tailed Ground-wren
Grey Teal	Superb Blue Wren
Swamp-Harrier	Dusky Wood-swallow
Wedge-tailed Eagle	Brown Tree-creeper
Whistling Eagle	White-throated Tree-creeper
Brown Hawk	Spotted Pardalote
Nankeen Kestrel	Red-tipped Pardalote
Gang-gang Cockatoo	Grey-backed Silver-eye
White Cockatoo	White-plumed Honeyeater
Galah	Australian Pipit
Crimson Rosella	Diamond Firetail
Eastern Rosella	Zebra Finch
Red-backed Parrot	Red-browed Finch
Kookaburra	Australian Raven
Welcome Swallow	Pied Currawong
Grey Fantail	Black-backed Magpie
Willie Wagtail	White-backed Magpie

## BIRDS OF THE RAILWAY JOURNEY

(Total: 49 species.)

Dusky Moorhen	White Cockatoo
Eastern Swamphen	Galah
Coot	Crimson Rosella
Little Grebe	Eastern Rosella
Little Black Cormorant	Red-backed Parrot
Little Pied Cormorant	*Tawgy Frogmouth
Australian Spur-winged Plover	Kookaburra
*Banded Plover	Welcome Swallow
Australian White Ibis	*Pallid Cuckoo
Straw-necked Ibis	Grey Fantail
Royal Spoonbill	Willie Wagtail
Yellow-billed Spoonbill	Restless Flycatcher
White Egret	Scarlet Robin
White-faced Heron	Grey Shrike-thrush
Pacific Heron	Maggie-lark
Black Swan	Black-faced Cuckoo-shrike
*Chestnut-breasted Shelduck	Brown Thornbill
Grey Duck	Yellow-tailed Thornbill
Grey Teal	Superb Blue-wren
Swamp-Harrier	*Noisy Miner
*Australian Goshawk (?)	Australian Pipit
Whistling Eagle	Australian Raven
Brown Hawk	*White-winged Chough
Nankeen Kestrel	Black-backed Magpie
	White-backed Magpie

Birds marked with asterisk not seen within 12-mile radius of Tallangatta.

## TALLANGATTA—AN IMPRESSION

By A. M. BURTON

Perfect weather, the right environment, and the fellowship of folk with kindred interests, combined to make the last Easter trip a very delightful one. Travelling from Wodonga to our destination gave the foretaste of joys to come, for the train followed an arm of the Hume Reservoir, where birds were abundant.

Tallangatta is a basin nestling in the mountains, with the Mitta Mitta running alongside and, on the flats, teeming with bird life.

Our first walk on Saturday morning was around the nearby swamps, and there we saw the White-faced Heron and a White Egret, obligingly posing on a dead tree, whilst a Whistling Eagle soared above. Ibis flew in formation overhead, and in the water the Little Grebes turned lightning somersaults. Eastern Swamphens made for the land and ran along the bank, handsome fellows, their bright red beaks and legs in striking contrast with their dark plumage.

Sunday morning was free; some hied to church, some went botanizing, and a few for long walks. One chose a nearby pond, and sat quite still to see what would happen, and was well rewarded. A Pacific Heron rose from the water, very disgruntled and voicing his disapproval of the intrusion in no uncertain terms, as he

heavily winged his way to a quieter spot. Grass Parrots chattered in the trees opposite or foraged for breakfast on the ground at the base of the trunks, then presently with much fussing and fluttering came down to bathe. Such a happy party, splashing and chattering like a lot of children. A Willie Wagtail swayed in and out among them, and Welcome Swallows skimmed the water. Pied Currawongs filled the air with their liquid notes as they flew above. White Cockatoos screeched in the distance as they alighted on a dead tree and flowered its boughs with their whiteness. And then came the highlight of the morning. A little chap in a mantle of softest grey and brown, trimmed with cherry, perched on the rail of a fence and chirped 'good morning!' What a beauty! The loveliest grey breast with just a suggestion of a ruffle round the neck, olive brown back with wings and tail a little darker, bright red bill and red round the eyes, and a matching red patch just above the tail. He sat there so friendly and near. It was hard to leave, but the morning had gone.

In the afternoon we drove through the valley to Mitta Mitta township. The country was really beautiful, and the autumn was just tinting some exotic trees, which contrasted pleasantly with weeping willows and the native white-barked gums, making a picture to remember.

On Monday we turned home, well satisfied, with our week-end. The trip will hold many happy memories, but for one of us, the greatest thrill of all was the visit of the little Red-browed Finch, in his exquisite grey waist-coat and red trappings, who came so close and confidently.

### ACTIVITIES OF SPINE-TAILED SWIFTS

By JEAN GALBRAITH, Tyers.

While watching a flock of Spine-tailed Swifts last February I was interested by their limited area of flight.

On the comparatively rare occasions when we see them here in South Gippsland they are either wheeling high over a wide area or streaming steadily westward, but on this occasion a flock of about three dozen (their weaving flight made accurate counting impossible) flying at a height of twenty to thirty feet, continued, for the half hour that I watched them, to fly over an area of about 100 feet by 20 feet.

They were directly over a drive with a house on one side and a timbered paddock on the other, and I doubt whether they ever strayed more than a yard beyond those limits.

The trees in the paddock were Red Box, Butt Butt and Peppermint saplings, the latter still flowering, and the birds were flying level with the treetops, or sometimes rather higher.

Probably a swarm of insects, attracted by the peppermint nectar, were themselves attracting the swifts which could catch them only in the clear space above the drive.

Countless dragon-flies hovered about the fringe of the trees, constantly darting among the swifts which took no notice of them. Possibly they too were feasting on nectar-attracted insects invisible to me.

## MONTHLY NOTES FROM THE PORTLAND F.N.C.

By NOEL F. LEARMONTH

*Rediscovery of Ranunculus Robertsonii.*

Some of the interesting Botanical specimens collected by Cliff. Beaglehole have now been identified and particulars returned from the National Herbarium. While travelling to Horsham last September he saw thousands of yellow-flowered plants by the roadside at Cherrypool, on the upper Glenelg. These turned out to be the Slender Buttercup (*Ranunculus Robertsonii*) recorded only twice previously in Victoria and that many years ago, viz. at the Wando Vale type area near Casterton (also on Glenelg River) and at Melton. Around Cherrypool the dainty ferny-leaved buttercups grew by the acre on both sides of the river.

*Kulkyne Frankenia proves new to Victoria.*

Particulars are also to hand regarding a small *Frankenia* found in Kulkyne National Forest by Mr. Beaglehole in September, 1948. Samples were examined by Mr. J. M. Black of Adelaide who reports that they represent his own species of sea-heath, *F. crispa*, and constitute the first Victorian record. The locality for this interesting addition to our Census was a large salt pan in the S.W. corner of the Kulkyne reserve, Parish of Mournpoul. On the same day near the same salt-pan, Les. Chandler saw a golden Whistler (*Pachycephala pectoralis*) with nest—the first time this bird had been reported from Kulkyne forest. Also near here was the strange *Lhotskyia* (*Vict. Nat.*, Feb., 1949), six feet high in full and beautiful bloom.

*Moss new to Victoria.*

Another new Victorian record found by our young botanist is the small moss *Mittenia plumula*. This was covering several square yards of a drain in Gorae West, ten miles from Portland. Cliff. also had the fortune to find a second very rare moss *Ephemerum cristatum* while en route to Kulkyne; it was growing in the Western Wimmera.

*Sanctuary Bird List.*

Since the bird list of the Lower Glenelg National Forest and Sanctuary was published (*Vict. Nat.*, Aug., 1947) the following birds have been seen on the area:

Elegant Parrot (*Neophema elegans*), Curlew Sandpiper (*Erolia testacea*), Pink-eared Duck (*Malacorhynchus membranaceus*), Golden Bronze Cuckoo (*Lamprolaima phaeopus*), Pink Robin (*Petroica radinogaster*), Spiny-cheeked Honeyeater (*Acanthagenys refogularis*), Little Bittern (*Ixobrychus minutus*), White-capped Albatross (*Diomedea cauta*), and Fairy Tern (*Terna nereis*).

A "mixed grill"—sea, swamp, forest and scrub—the reservation embraces such varied terrain that 179 species have been reported to date.

*Cape Nelson Birds.*

The dense scrubs and heaths of Cape Nelson are ideal for many birds not often seen by the usual wanderer. In two hours of a mid-August afternoon I recorded, among 24 species, the following: 8 Rufous Bristle Birds (*Dasyornis broadbenti*), 6 Hooded Robins (*Melanodryas cucullata*), 3 Speckled Warblers (*Chthonicola sagittata*), a small flock of Emu Wrens (*Stipiturus malachurus*), and some Beautiful Firetails (*Zonaeeginthus guttatus*) which were feeding with a large flock of Red-browed Firetails (*Acygnus temporalis*). Some time ago Mr. George Mack (then Government Ornithologist) requested Club members to keep a special look out for the Beautiful Firetail which he thought was dying out in Victoria. I am pleased to report that the charming little bird is far more common and widespread in the Portland district than we had suspected when setting out on the quest. It is a lover of thick scrub and can easily be overlooked.

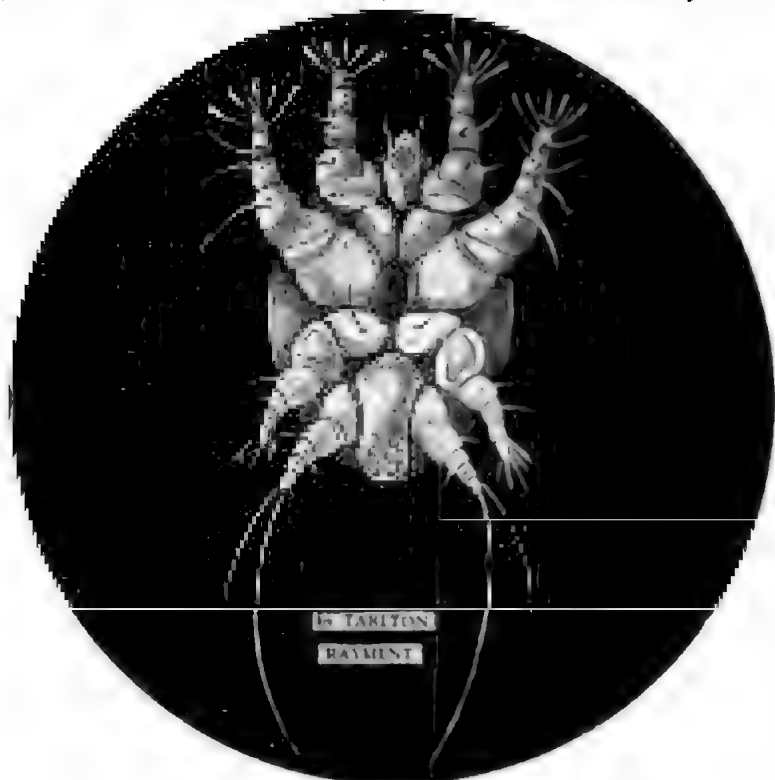


## MITES, "FRENCH MOULT", AND BEES

By TARTLTON RAYMENT, F.R.Z.S.

I was very interested in the June issue, 1949 of *Bird World and Pets' Digest*, p. 243, especially in the legend under a photomicrograph of a mite—"Tyroglyphus species. Found in feather material, but uncertain whether from outside or inside of feather".

The article does not indicate which species is meant by the term "Fodder Mite"; but, if *Tyroglyphus farinac* L. be the specific animal involved as the causal factor in "French Mould", then it would be safe to say that the



Ventral Surface of TYROGLYPHID MITE (*Deutonymph*)

Parasitic on a wild bee (*Asaropoda*).

—Viewed by dark-ground illumination, and greatly enlarged.

mite is ubiquitous, for *T. farinac* is found under extremely diverse circumstances, and most assuredly in and about the food materials and containers of domestic birds.

Acarid mites are present on a wide variety of hosts. About the middle of May, 1949, I removed a new species of Tyroglyphid (a deutonymph) from an Australian wild bee, *Saropoda*. This new mite is very near to *T. farinac*, but the scientific discussion and details will appear in another place. I have found mites of several genera on many genera of Australian bees; among higher animals, even the genus *Homo* is not exempt. It would be more than surprising if birds were not also infested.

During World War-1 the honey-bee was almost exterminated in England by a microscopic acarid mite that had learned to enter and breed in the tracheal tubes, thus bringing about death of the bee by suffocation.

Doctor M. D. S. Armour, who has recently investigated the disease "French Mould" in cage birds, puts forward the hypothesis that this disease is caused by a Tyroglyphid, "Fodder Mite", which burrows into the hollow shaft or quill of the feathers. If an infected feather be plucked out of a sick bird, and the thin soft base squeezed, a black liquid will be expressed. The entrance into the cavity of the shaft is analogous to the entrance of the mite into the tracheal tubes of the bee.

Early in 1949 I collected the European Tyroglyphid mite, *Tyrofagus tenuiclavus*, in the "nest" of another Australian wild bee (Genus *Exoneura*). Mr. H. Womersley, of the Adelaide Museum, S.A., informs me that this is the first Australian record for this mite. These microscopic animals, with their oval bodies, short stout legs, hooked feet and many spines, would be very repulsive and exceedingly frightful of aspect if they were as large as say, a saucer.

### PARENTAL SENSE IN CUCKOOS

In the *Vic. Nat.* for March, 1949, Mr. Noel Learmonth records having seen an adult Pallid Cuckoo feeding a fledgling of the same species, and inquires if there are any other records in affinity. Yes: observations on adult parasitic Cuckoos feeding young Cuckoos, either in or out of the nest, are described in *The Linn.* vols. 5/36, 10/240, and 14/166. Also in *The Ibis* for January, 1944 (p. 98), Mr. R. E. Moreau reports that three out of the four species of African Bronze Cuckoos have been shown to undertake parental care.

It may be added that Pliny, writing nearly two thousand years ago, laid it down that the Cuckoo knew itself to be hated by birds generally, and therefore made no nest in order that its young might escape notice. Commenting recently on this quaint theory, the *London News Statesman* said drily: "So, instead of being the wicked bird we had always imagined, the cuckoo may really be a model parent, determined at all costs to save its young from the ill-effects of its own unpopularity!"—A. H. Chisholm.

### TALLAROOK FLOWER SANCTUARY

A little wooded eminence, about four acres in extent, on the Recreation Reserve has been enclosed with a rabbit proof fence and is in the charge of the Reserve Committee. It will shortly be declared a Sanctuary by the Seymour Shire Council which has contributed towards expenses. The enterprise and determination of Mr. Boulton, President of the Reserve Committee, have secured for the future a delightful sample of north-central flora. The combination of blue *Bromelia* and large *Cheiranthora* with golden *Dillwynia* and *Helichrysum obcordatum* is spectacular in season. So far, excluding grasses, 76 species have been noted; but every visit leads to fresh additions. Here follows an abbreviated census of the flora:—

*Cheilanthes*, *Lepidosperma filiforme*, *Liliaceae* 9 (including *Lomandra multiflora*), *Hypoxis*, *Orchidaceae* 9 (including *Diuris sulphurea* and *Prasophyllum nigricans*), *Grevillea alpina*, *Exocarpos*, *Drosera* 2, *Cheiranthora*, *Bursaria*, *Leguminosae* 15 (including *Gompholobium Hueglinii*, *Eutaxia*, *Sphaerolobium*, *Dillwynia floribunda*), *Linum*, *Correa reflexa*, *Tetratheca*, *Hibbertia stricta*, *H. linearis*, *Pinetia humilis*, *P. curvispora*, *Eucalyptus* 3, *Eporchidaceae* 5 (including *Melicthrus* and *Brachytoma daphnoides*), *Scabae*, *Veronica*, *Galium*, *Wahlenbergia*, *Goodenia*, *Brunonia*, *Stylidium graminifolium*, *Compositae* 11 (including *Helichrysum obcordatum*).—W.W.

## WHAT, WHERE AND WHEN

**General Excursions:**

- Sunday, October 16—Beaconsfield. Subject "The Helmeted Honeyeater". Leaders: Misses N. Fletcher and A. Adams. Train: 8.50 a.m. to Dandenong, from Flinders St. Fare: 2nd Sunday excurs. Dandenong, 1/11. Special bus from Dandenong to Beaconsfield, approx. 3/6. Four to five miles walking. Bring two meals.
- Saturday, October 29—Tuesday, November 1—Corryong, Upper Murray, 750 miles tour for limited party only. Car from Melbourne, leaving 6.30 p.m. Friday, Oct. 28, and returning evening of Nov. 1. Leader: Mr. H. Stewart, 14 Bayview Tce., Ascot Vale. (Tel. FU 022, Ext. 457.)
- Tuesday, November 1—Pyrete Ranges, via Gisborne. Excursion of wide interest. Leaders: Mr. J. Ros Garnet and Mr. G. Lyell. Nash's bus from Batman Avenue at 8.30 a.m. Fare: 7/6. Bring two meals. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3. (Tel. U 7297, not U 7207 as shown in Sept. *Naturalist*).
- Saturday, November 5—Afternoon excursion. Subject: "Domain Eucalypts". Leader: Mr. P. Bibby. Meet outside Park St. Gate of the Botanic Gardens at 2.30 p.m.
- Saturday, November 12—Afternoon excursion to Keilor (Green Gully) for Geology Group and General members. Subject: Fieldwork of Part IV "Geology Simplified" (Fossils and Rocks). Leader: Mr. A. A. Baker. Train: 1.16 p.m. to Essendon (1/-) and 2 p.m. Keilor Bus from Essendon Rly. Stn. to Bridge over Saltwater River (2/7 return). Private cars meet at Bridge at 2.30 p.m.

**Preliminary Announcements:**

- Saturday to Sunday, November 26-27—Colac, Red Rock and Lake Corangamite. Subjects: Birds and Geology, but excursion will be of general interest. Leaders: Misses M. Elder and J. Blackburn. Local guide for birds: Dr. Graham Brown. ParLOUR Coach, leaving Melbourne 12.45 p.m. Sat. 26. Fare: 32/6. Part Hotel accommodation (limited) and part camp-out at Red Rock. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3. (Tel. U 7279.)
- Saturday, December 10—Mason's Falls via Whittlesea and Tommy's Hut. Returning via Kinglake and Hurstbridge, visiting Bald Spur en route. Subject: Forest Vegetation. Leader: Mr. A. Cobbett. Nash's Bus leaving Batman Avenue at 8.45 a.m. Fare: 8/6. Bookings with Mr. A. Cobbett, 137 Osborne St., South Yarra.

**Group Fixtures:**

- Saturday, October 22—Botany Discussion Group excursion to Botanic Gardens. Subject: "Rutaceae". Leader: Mr. A. Burke. Meet at Herbarium Gate of Botanic Gardens at 2.30 p.m.
- Monday, October 24—Botany Discussion Group. Royal Society's Hall, 8 p.m. Subject: Discussion on the Saturday's excursion. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris
- Thursday, November 3—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mr. R. B. Jennison, 3 Linda St., Moreland.
- Friday, November 4—Marine Biology Discussion Group. Royal Society's Hall, 7.45 p.m. Monthly meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont.
- Tuesday, November 8 (Date altered from 1st, because of Cup Day)—Geology Discussion Group. Royal Society's Hall, 8 p.m. Subject: "Geology Simplified". Part IV, by Mr. A. A. Baker. Hon. Sec.: Mr. A. A. Baker, 53 Carlisle St., Preston.
- Saturday, November 12—Geology Discussion Group excursion (see General Excursion for that date).

# The Victorian Naturalist

Vol. 66.—No. 7      NOVEMBER 9, 1949

No. 791

## PROCEEDINGS

The Monthly Meeting of the Club was held at the National Herbarium on Monday, October 10, 1949. The President, Mr. Colin Lewis, presided and about 160 members were in attendance. A welcome was extended to all visitors, particularly Miss Kaaten from Norway.

The President thanked all members who had helped in connection with our exhibit at the Royal Show. Mr. Lord reported on the recent Red Cross Show in Sydney. He said that the F.N.C.V. exhibit had created wide interest and was greatly commended. Particular admiration had been expressed for a bowl of *Eucalyptus caesia* from Mr. Hateley's garden near Stawell. Mr. Lord had been impressed by the large areas reserved close to Sydney wherein native flora could be seen flowering in great profusion.

Miss Raff was presented with a Certificate of Honorary Membership, and congratulated on her long association with the Club. The following were elected to the Club: as Ordinary Members—Miss Betty D. Jackson, Miss A. M. Leveridge, Miss K. G. Thomas and Mr. Ron. Ferguson; and as Interstate Members—Mrs. L. R. Messner and Mrs. A. E. Watson. A welcome was extended to them, particularly to Mr. Ron. Ferguson, President of the Bird Observers' Club.

Members were interested to hear that Miss Ina Watson is planning to return by the *Orion*, leaving Britain on January 26, next. She is now making a tour of Country Schools in England, lecturing on Australia. Mr. Leslie Woolcock, who recently celebrated his 21st birthday in Melbourne, has now returned to Canberra. His work there with the C.S.I.R.O. is concerned with the biological control of insects and weeds. Attempts are being made to control Cabbage Moth with the help of the parasites *Angitia* and *Diodromus*—two small wasps.

Mr. Henderson gave an account of the excursion to Anglesca, and a letter was read from Mr. Hart describing interesting features observed on an excursion to Heathmont.

## BIRD PHOTOGRAPHY AT THE YOU YANGS

Mr. J. Ponder from Geelong Grammar School reminded us that, although 150 species of birds have been seen at the You Yangs and nests of considerably more than half that number actually

found there, the area is still not widely known. For many years the Forests Commission has controlled these isolated granite hills and has planted large numbers of eucalypts. Boys of the Grammar School at Corio take a keen interest in photography, which is a splendid antidote to egg collecting, and spend as much time as possible hunting up possible—and at times it would appear impossible—subjects. Mr. Ponder's address was treely illustrated with photographs which were enjoyed by everyone. The President thanked Mr. Ponder sincerely for coming to speak.

### EXHIBITS

Mr. A. P. Dunn: Spiders, beetles, centipedes and millipedes collected during the Club Picnic at the You Yangs on Show Day.

SPIDERS—Red-and-black Spider, *Nicodanus bicolor*; Grey Huntsman Spider, *Isopeda inmanis*; Fawn Huntsman Spider, *Olios pictus*; a Wolf Spider, *Tarantula Godeffroyi*; *Stoerms formosa*; *Ixentens*, sp.

BEEETLES (identified by courtesy Mr. C. Oke)—*Tenebrionidae* *amarogninal*: *Chalcopterus cyanopterus* Hope; *Chalcopterus variabilis* Bless. *Halasinæ*; *Pterohalaeus peltatus* Brency; *Adelinoæ*: *Adelium angulicolle* Germ. *Elateridae*: *Lacan* sp.

MILLIPEDES—Mottled Millipede, *Dinemuloricus* sp.; Smooth Millipede, *Iulus* sp.

CENTIPEDES—Common Centipede (dull greenish colour), *Scolopendra morsitans*; Red-legged Centipede, *Ethmostigmus rubripes*; Ribbon Centipede, *Schizoribautid aggregatum*.

Mr. J. Ros Garnet: Four species of Mallee eucalypt growing intermingled at Hagshot, near Bendigo—*E. viridis*, *E. polybractea*, *E. Behriana*, *E. Froggattii*. Examples of the more showy flowering plants from the Bendigo "Whipstick" (Photographs taken on the F.N.C. Excursion of Aug. 27/28.)

Messrs. C. F. Lewis and J. Ros Garnet: Plants from Bendigo including—*Micromyrtus ciliatus*, *Calytrix tetragona*, *Prostanthera ospalathoides*, *P. denticulata*, *Eriostemon gracilis*, *Dampiera lanceolata*, *Olearia teretifolia*, *Boronia dentigera*.

Mr. B. E. Schubert. *Boronia heterophylla* (garden grown).

Dr. M. Chattaway: Exhibit of photos. taken on the Snob's Creek Excursion, September 3.

Mr. C. J. Gabriel: Marine shells from Ulladulla, N.S.W.—*Chlamys hedleyi* Dautzenberg, *Xenophora tatei* Hattris.

Mr. J. S. Seaton: *Vorticordia plumosa*, *Anigozanthos viridis*, *Leptosporium scoparium*, var. *Katleyi*, *L. scoparium* var. *Lambethi* (all garden grown).

Mr. V. Millar: Pot of Purple Diuris (*D. punctata*) which has been growing in the same pot for 12 years also *Cymbidium Lowianum*, *C. Alexanderi*, *Lycaste Skinneri*, *Epidendrum O'Brienianum*.

Mr. H. C. E. Stewart: Flowers from the Anglosea Excursion on October 8, including large blooms of *Pimalea octophylla*, *Daviesia ulicina* (dark red), *Dillwynia floribunda* and *Melolencia pubescens* (flowering two months earlier than usual).

**BOTANICAL PIONEERS IN VICTORIA—III**

By J. H. WILLIS, National Herbarium of Victoria.

**III—LOCAL PIONEERS**

From west to east, we shall briefly consider eight areas in which more intensive investigations have been, and are still being, carried out—

**LOWER GLENELG—PORTLAND AREA**

**J. G. Robertson** (1803-62) arrived at Portland in 1840 to take up a pastoral holding at Wando Vale near Casterton. He was an ardent collector until he left again for his Scottish homeland in the late 'fifties. Unfortunately for Victoria, this pioneer botanist of the Lower Glenelg terrain sent all his dried specimens to Kew, and we shall probably never know the extent of them—he left no regional Census of his findings. [Commemorated by *Calochilus Robertsonii* Benth.—a common, attractive "Beard-orchid"—and *Ranunculus Robertsonii* Benth.].

**W. Allitt** was curator of Portland's local Botanic Garden from the 'sixties to the 'eighties; he botanized between Darlot's Creek and the South Australian border and his collectings, remitted to Mueller, are available in the National Herbarium, South Yarra. [Commemorated by *Leucopogon Allittii* F.v.M.].

**J. Eckert** did some later collecting around the mouth of the Glenelg, and *C. Beauglehole* of Gorae West has, in the last year or two, made comprehensive lists of our far south-western flora, adding a few novelties to the State Census.

**GRAMPIANS**

After Major Mitchell's original penetration into the Grampians and discovery of its rich and varied flora, Mueller visited these mountains 17 years later, to be followed successively by *C. Wilhemi*—his assistant in the Melbourne Botanic Gardens—and *C. French* (Senior).

It remained for **D. Sullivan** (?-1895), in charge of Moyston School (near Ararat) for 27 years, to give us an adequate picture of Grampians vegetation. He combed the Ranges, compiling the first breviary of their flora, "Native Plants of the Grampians and their Vicinity"—ten papers in volumes II and III of Wing's *Southern Science Record* (1882-83). Mosses were also systematically collected (q.v.). Sullivan records an amusing circumstance connected with his location of *Aotus* on heathland at the foot-hills. Four suspicious men rode up on horseback to see what he was doing, and held a "pow-wow" on the best course of action. One thought him to be a surveyor, another an artist but the third and fourth maintained that he was a fugitive from the Kelly Gang

and an escaped lunatic respectively, and they were strongly inclined to take the poor botanist off to police headquarters. Happily the opinion of the first man prevailed! There are many Sullivan specimens in Melbourne labelled "Mt. William, 1872". [Commemorated by *Calytrix Sullivani* F.v.M. and several mosses].

**J. W. Audos** (1872- ), ex-Senior Botanist from the National Herbarium, made many trips to the Grampians between 1912 and 1927, including a complete circuit of these mountains. His book, *One of Nature's Wonderlands* (1925) gives a summarized account of the various journeyings and what they yielded. [Commemorated by *Caladenia Audasii* Rogers].

### WIMMERA AND LITTLE DESERT

**J. Dallachy** collected material for the Botanic Gardens along the Murray Valley (Mallee areas near Swan Hill) and in the Wimmera Mallee (Horsham to Underbool) during the springtimes of 1858 and 1860 respectively. His scrawling "Pine Plains" labels are familiar at the Melbourne Herbarium. [Commemorated by *Acacia Dallachiana* F.v.M.].



ST. ELOY D'ALTON  
(1847-1930)

Pioneer of the West Wimmera flora  
(Little Desert, etc.).

Photo: By courtesy, Miss H. D'Alton  
(daughter), re-photographed by R. D.  
Lee.

*Australasian*. [Commemorated by *Trymalium D'Altonii* F.v.M., and *Pultenaea D'Altonii* Williamson].

**St. E. D'Alton** (1847-1930), a migrant from Tipperary, was a shire engineer at Nhill and Dimboola from 1875 until after the 1914-18 War and he sent numerous exsiccatae to Mueller from the Little Desert and northern fringes of the Grampians. D'Alton published "Notes on the Plants Indigenous to the North-West Portion of the Colony of Victoria" in 1898 (*Proc. Aust. Assn. Adv. Sci* VII, p. 455), and a comprehensive "Botany of the Little Desert" (*Vic. Nat.*, Aug. 1913) but, strangely, he makes no mention whatever of Reader's outstanding achievements in the same area. During his retirement in Melbourne, he wrote of his rich experiences in the

**F. M. Reader** (1850-1911) had a chemist's business at Dimboola during the 1890's and first few years of this century. He was a first-rate botanist, collected ample material of every plant that came his way (including bryophytes and lichens), mounted and labelled all his trophies in the neatest possible manner, and accumulated a larger collection of Victorian xerophytic plant specimens than any other field man—these were purchased for the National Herbarium where they rank second only to Williamson's in point of size and importance. Between February, 1897 and August 1906 the *Victorian Naturalist* published 17 contributions by Reader on the flora of this State. He was an expert on local *Gramineæ*, describing several species; it is to be regretted that poverty dogged his declining years. [Commemorated by *Brachycome Readeri* Davis and several mosses, e.g. *Pottia Readeri* Brotherus].

### FAR NORTH-WEST

Apart from spasmodic records by visiting Melbourne naturalists, the vast Murray Mallee was not properly described until Chief Forester **W. J. Zimmer's** *Flora of the Far North-West of Victoria*, published by the Forests Commission in 1937. Mr. Zimmer worked the country from Hattah to the South Australian border and north to the Murray during his ten-year residence at Mildura; he has classified all his species (almost 500 vascular plants) on an ecological basis, the vegetational types being closely correlated with soil profiles.

### BENDIGO WHIPSTICK MALLEE

**D. J. Paton** (? -1941), for some years U.F.S. Dispensary chemist at Bendigo, gave us an admirable account of "Plants of the Whipstick Scrub" (*Vic. Nat.*, xl, Feb., 1924)—the first local flora for this district. Tadgell, Audas, and others have since augmented Mr. Paton's original and very authoritative list.

### MELBOURNE REGION

Apparently **F. M. Adamson**, who "formed very extensive and excellent collections" (according to Hooker) at Melbourne between 1840 and 1855, was our first metropolitan botanist but all his specimens went to Kew and are practically unknown to Australian workers.

Mueller's vast gatherings from Yarra Mouth, Prahran, St. Kilda, Brighton, Merri Creek, etc., give us a good cross section of Melbourne's original flora of which there are still considerable survivals at Fisherman's Bend and Studley Park. Reader (in *Vic. Nat.*, i, 1885) commenced an ambitious annotated checklist of Studley Park plants, but his removal to the Wimmera unfortunately precluded the completion of this project.



**Dr. C. S. Sutton's** "Notes on the Sandringham Flora" (*Vic. Nat.*, May, 1911) and "Sketch of the Keilor Plains Flora" (*l.c.*, Dec., 1916) are the most informative accounts we have of the sand-heath and basaltic vegetation [except Dr. Patton's recent ecological studies] that once clothed so much of Greater Melbourne. *J. W. Audas* has also published, largely for the benefit of local naturalists, a booklet flora of the Mitcham district (1937), typifying the sedimentary formation of Silurian age—third major vegetational unit in the Melbourne area.

### ALPS

Baron von Mueller's pioneer alpine collections and recordings were extended by **J. Stirling** (1852-1905), Lands Officer at Omeo and finally Government Geologist. Stirling visited many parts of the Australian Alps, sending specimens to the Baron for confirmation. His "Phanerogamia of the Mitta Mitta Source Basin" and "Cryptogamia of the Australian Alps" (published by the Royal Society of Victoria, 1884-86) were the principal contributions to our knowledge of highland botany. [Commemorated by *Helichrysum Stirlingii* F.v.M.].

**A. J. Tadgell** paid several visits to the high plains and adjoining peaks (between Mts. Bogong and Hotham), adding materially to Stirling's records and correcting some that were dubious. "Mt. Bogong and Its Flora" (*Vic. Nat.*, Aug., 1924) is an outstanding paper and the first one devoted exclusively to that impressive region—the highest land in Victoria. [Commemorated by *Wahlenbergia Tadgellii* Lethian—Mr. Tadgell, born 1863, died on Sept. 6, 1949].

### JUNGLES OF EAST GIPPSLAND

**E. E. Pescott** sent suites of specimens to Melbourne Herbarium while he was a school teacher at Orbost (from about 1900). These include valuable records of the jungles (now practically gone) which once covered the fertile Snowy River flats.

**T. S. Hart** (1871- ), one-time Principal of the Victorian School of Forestry, Creswick, and Science master at Ballarat and Bairnsdale Schools of Mines, has devoted a lifetime to taxonomic botany, making very accurate recordings of the district floras wherever his work has taken him. He gave a thorough account of the Creswick district eucalypts (two papers in *Vic. Nat.*, xxxiv, Oct./Nov., 1917), traced the occurrence of Yellow Box within the sand formation south of Melbourne and, while at Bairnsdale, made painstaking observations on East Gippsland plants—probably his most notable paper in this connection was "Botanical Notes about Bairnsdale and the Eastern Lakes" (*Vic. Nat.*, xl, p. 107, Oct., 1923). [Commemorated by *Prasophyllum Hartii* Rogers].

**W. Hunter**, a surveyor of Bairnsdale, has made valuable contributions to our knowledge of far East Gippsland plants; perhaps his most noteworthy achievement was a comprehensive checklist of the interesting Suggan Buggan flora [see *Vic. Nat.*, LVIII, p. 25, June, 1941].

**N. A. Wakefield** is giving serious attention to surviving jungle "pockets", as well as the general flora of Croajingalong, and hopes eventually to present a very complete report on the floristics of East Gippsland; he has already published papers on several small isolated areas, with special reference to the ferns therein.

### CONCLUSION

From these very incomplete notes on the botanical unveilings of our State, several interesting facts emerge. The really magnificent work done by country school teachers, who made botany their hobby, is at once apparent; we should have been infinitely the poorer, but for the collections and researches of such able field men as H. B. Williamson, D. Sullivan, H. T. Tisdall, A. H. S. Lucas, J. Bracebridge Wilson and others; their work is beyond praise.

Another fact is the pre-eminent rôle in furthering botanical science that has been played by the Field Naturalists' Club of Victoria, during nearly seventy years of endeavour. This body of amateurs has always been a champion of systematic botany, and it is hard to imagine what would have become of the science in Victoria had the F.N.C.V. journal, *Victorian Naturalist*, not been available as a medium of expression and interchange of information. For their willing and invaluable co-operation, a special word of praise is due to past editors—especially to Mr. F. G. A. Barnard who edited the *Naturalist* for 33 years (1892-1925) and himself contributed many articles and paragraphs on botany.

I have done my best to give a balanced picture of botanical beginnings in Victoria. Some deserving personalities have probably been overlooked and for any such omissions I apologize. Grateful acknowledgment is made for help derived from J. H. Maiden's "Records of Victorian Botanists" (*Vic. Nat.*, Nov., 1908, pp. 101-117) also for information supplied by Mr. E. E. Pescott.

### ADDENDA

On p. 103, it was stated that the orchid *Prasophyllum Frenchii* F.v.M. commemorates the late C. French, Sen.; but reference to the type description (*Vic. Nat.*, VI, p. 126, 1839) discloses that the person actually honoured is the late Mr. George French—a son of our veteran orchidologist, G. French, who kept a florist's shop in Queen St., Melbourne, and his brother Mr. C. French, Jun. (still with us) followed their father's footsteps in the botanical sphere and added materially to our knowledge of the State's orchid flora.

On p. 104, reference should have been made to the pioneering researches of our esteemed member, the Rev. H. M. R. Rupp, in connection with Victorian

*Orchidacea* Although not now resident in Victoria, Mr. Rupp is a native of this State and his early interest in orchids was awakened here during the 1880's. For many years he has collaborated closely with Mr. W. H. Nicholls and his numerous papers to the *Victorian Naturalist* are well known and widely acclaimed.

On p. 109, typographical slips are responsible for mis-spellings in the names of Dr. Isabel (not "Isobel") Cookson and Dr. B. J. Grievé (not "Grive").

#### WORLD BIRD DAY EXCURSION TO WATTLE PARK

Nearly 30 members and friends spent a very pleasant afternoon at Wattle Park on August 27. Red Wattle Birds (*Anthochaera carunculata*) were most numerous and nine nests were observed. Only two nests were low enough to allow the use of the mirror, and these each contained two eggs. The White-backed Magpies (*Gymnorhina hypoleuca*) were also nesting—four nests were noted, also one nest of the Magpie-Lark (*Grallina cyanoleuca*). Birds were not plentiful, but several interesting species were noted, including a pair of Tawny Frogmouths (*Podargus strigoides*), an Eastern Shrike-Tit (*Falcunculus frontatus*), some Dusky Wood-swallows (*Artamus cyanopterus*), returned from their usual migration, a remarkably tame Bronzewing Pigeon (*Phaps chalcoptera*), a party of Little Thornbills (*Acanthiza nana*), and several Eastern Rosellas (*Platycercus eximius*). During the whole afternoon 18 native species were observed in the Park.

ROY WHEELER, B.A.O.U.

#### MYSTERY EXCURSION

About 34 members and friends joined in the "Mystery Walk" from the Upper Beaconsfield-Officer Road to Beaconsfield reservoir on May 28. Most plants observed were those already well known in the district; but a noteworthy feature was the abundance of *Epacris impressa* in all shades from deep red through to white. Mr. Haase found five orchids in flower. (*Pterostylis parviflora*, *P. longifolia*, *P. grandiflora*, *Acianthus escurtus* and *A. veniformis*). Acacias noted were *Acacia myrtifolia*, *A. stricta*, *A. leprosa*, *A. armata*, *A. macronata*, *A. dealbata* and *A. Oxycodrus*. *Pultenaea Gunnii* was seen in sparse flower and *P. Keaderiana* was noted almost continually along the entire route of the walk.

Dr. Chattaway and Mr. E. Hanks saw a Helmeted Honeyeater in Swamp Paper-bark and eucalypt scrub, near a small creek on the Officer side of the hills and some miles south-east of the well-known Cardinia Creek haunt of this endemic species. When they returned later with other members of the party the bird was no longer to be seen.

On the homeward journey, Mr. C. Lewis escorted the party to see a curious eucalypt, superficially like *Idantra Gum* (*E. viminialis*), but differing in its juvenile foliage, the arrangement of the buds and in the fruits. A handsome mature tree of this unknown species stands on the road east of Officer, running parallel to the Prince's Highway and almost opposite post no. 1118 of the S.E.C. transmission line from Morwell.—D. S. Lewis.

#### FOOD OF MANTIDS

I once watched an immature Praying Mantis pounce on a bee, chew through its neck until the head dropped off, then devour the remainder "non-stop". Not a morsel was wasted and the whole feast lasted 20 minutes.

About the same time, a large mantis was let loose in a room with a grasshopper having wings like gum leaves; before long, the mantis caught and ate the grasshopper. Do mantids have any particular food preferences? —H. McKenzie.

**REDISCOVERY OF A LONG-LOST FERN**THE FORKED SPLEENWORT (*Asplenium pramorsum*)

By NOEL F. LEARMONTH, Portland.

In the "sixties" of last century William Allitt, who was the first curator of Portland Botanical Gardens, made collections of the plant life in Portland district, sending his dried material to Baron von Mueller for determination. Most of these specimens are still preserved in the National Herbarium, South Yarra, and include three ferns which have not been recorded from the south-west since Allitt's time, viz., Mocher Spleenwort (*Asplenium bulbiferum*) from the mouth of the Glenelg River, Common Filmy-fern (*Hymenophyllum cupressiforme*) from Darlot's Creek and Forked Spleenwort (*A. pramorsum*) from "Darlot's Creek, near the Grampians". Of this last fern the F.N.C. Handbook, *Victorian Ferns*, remarks, "a very rare fern in Victoria, being recorded only from Darlot's Creek, near Portland in the South-West".

Darlot's Creek (named after J. M. Darlot who rested 500 cattle there in January, 1838, while overlanding to Adelaide) is a short deep stream rising in Lake Condah and flowing south through basalt to join the Fitzroy River some five miles above its mouth. The whole length is only about 25 miles, but throughout this distance the creek is bounded, on one or other side by stony rises. In many places these basaltic barriers are exceedingly rough—just heaps of bare honey-combed rock, marking the flows from an old line of volcanoes stretching from Mt. Eccles far out to sea in Portland Bay.

There are thousands of acres of this country and it seemed optimistic in the extreme to expect to find a very rare fern last seen somewhere in the area, eighty years ago. But Mr. Cliff. Beaglehole had searched many times in the last ten years, and of late had been joined by other enthusiasts whose endeavours have occasionally been mentioned in this journal.

On September 4, Mr. Beaglehole and I went to Tyrendarra and picked up a local resident, Mr. C. Stanford, who acted as guide through the barriers, caves, swamps, and thickets that surround the Darlot's Creek—Fitzroy River junction, for we had a "hunch" that thereabouts the lost Spleenwort would be found. Our guide took us to several caves—really circular holes in the flat stony surface, resulting from subsidences. It is possible to get down onto the central heap of rocks in most of these caves and the surrounding walls are usually draped with various ferns, delicate and pale green in the subdued light of their cavernous home.

The first cave that we examined yielded the locally rare Delicate Rue-fern (*Anogramma leptophylla*), Blanket Fern (*Pleurosorus rufifolius*) and Necklace Fern (*Asplenium flabellifolium*).

Scrambling out, we were taken to a second "hole" containing more Rue and Necklace Ferns and a great quantity of Shiny Wood Fern (*Dryopteris Shepherdii*) which in the Portland district is known only from one other spot, on the Lower Glenelg. The next cave was occupied exclusively by Tender Brake (*Pteris tremula*) and another some distance away by Sickle Fern (*Pellaea falcata*). Rock Fern (*Cheilanthes tenuifolia*) was abundant everywhere, hundreds of acres of it as thick as the Common Bracken (*Pteridium aquilinum*) of which some very beautiful specimens were noticed in sheltered corners. In the centre of this volcanic region we came to a limestone outcrop where, on a wall facing the hot sun and northerly winds, grew plants of Purple Violet (*Viola botanifolia*)—surely an extraordinary situation for this wet-soil plant.

While lunching, we found that we were sitting close to some insignificant ferns—the little Adder's Tongue (*Ophloglossum coriaceum*). Thereafter we walked up a high barrier which runs in an unbroken line for many miles. The crest of it was split apart lengthways—a long jagged fissure in the rocks, six feet wide and twenty feet deep. Mr. Beaglehole jumped down to a ledge and suddenly cried out, "We've got the Forked Spleenwort!" There, surely enough, growing in cracks on the rock wall, was Allitt's fern. Little wonder it had not been seen in 80 years, for only special business would bring anyone to such a place. There were several clumps of the fern and Mr. J. B. Ponder's photograph (taken shortly afterwards) gives a good idea of its appearance. Up and down the cleft a number of smaller colonies and several single plants were noted.

The winters of 1948 and 1949 have been exceptionally dry and much of the Spleenwort is dead on the rock ledges, doubtless a result of insufficient moisture seeping through the barrier. Beautiful samples of Necklace Fern hung down the rocks and in one clump of Spleenwort grew two leaves of Kangaroo Fern (*Polypodium diversifolium*). This set us off on another quest, our guide remembering having seen similar ferns lower down the barrier. He was not mistaken, as we soon found a large colony clinging with ivy-like grip to damp rocks a few feet above the water-level of a dense reed and sedge swamp. Apparently Allitt missed this species, for there are no collections from Portland district in the National Herbarium. The habitat (on rock) is unusual in Kangaroo Fern which commonly affects the trunks and branches of trees and mossy logs in wet forest country; but at Cape Woolamal and on the eastern islands of Bass Strait it is known to occur in cracks of granite rock near the sea.

In the succeeding days, Mr. Stanford made a thorough search of the junction area, so that when we joined him again on September 18, he was able to show us many places where Forked

PLATE IV



FIG. 1. *Asplenium platyneuron* (L.) Oakes, *Sydney* & *McCulloch*, 1947.  
*Asplenium platyneuron* (L.) Oakes, *Sydney* & *McCulloch*, 1947.  
FIG. 2. *M. J. L. Oakes*.



Spleenwort was growing. For about a mile and a half south of our original discovery the fern is not uncommon in cracks and caves of the barriers. One of these cracks revealed it growing in conjunction with Common Filmy Fern (*Hymenophyllum cupressiforme*)—the other of Allitt's Darlot Creek records—so this was most probably the spot where he saw both (we walked within 150 yards of it in October, 1948). In a limestone cave, outside the volcanic belt, Mr. Stanford found a mass of Black Spleenwort (*Asplenium trichomanes*)—another fern that Allitt seems to have missed.

There is some uncertainty about the future safety of our Forked Spleenwort, because the authorities are even now surveying all the haudy basalt barriers for 10-ton rocks which within a few years will be tipped into Portland Bay to form an outer breakwater. It is hoped something may be done to reserve the small sector where the ferns flourish but, if the worst happens, we intend to move specimens of them into some suitable haven. Can the F.N.C.V. do anything to help?

[*Asplenium premorsum* Sw. is recorded from every State except Tasmania, yet it is a distinct rarity in all but Western Australia where it occurs amongst granite rocks in the high rainfall area of the south-west division, e.g. the Porongorups, and also as an epiphyte on the mossy limbs of the Karri forest sheoak (*Casuarina decussata*). In Queensland it is apparently restricted to waterfalls in the Bunya Mountains; in New South Wales to the Blue Mountains region, and in South Australia to the "South-East"—Mr. J. M. Black advises that Professor Tate specified "Mt. Gambier district" (probably in basalt caves there), but there is apparently no specimen extant by which to verify this old recording.—Ed.]

### SAW-FLIES PUPATING

While watching a pair of Noisy-miners building a nest, a movement on the ground attracted my attention. A large mass of Saw-fly larvae were all travelling in one direction. Being very fat, they moved very slowly and took numerous rests. Their method of progression was to raise their heads and thump them down and then crawl slowly forward about three inches. Then, as if exhausted, they slumped and remained still for a few seconds. This procedure was repeated several times, the larvae keeping in a compact mass. I was disappointed that I had to leave for lunch before they reached their pupating spot, which I suspected was the foot of the nearest tree, about twenty feet away. When I returned next day they had disappeared, but the sand (it was sandy country) at the foot of the tree, for which I suspected they were making, had been disturbed. On digging I found them all about one inch underground. About a hundred yards away, I found more disturbed sand, at the foot of another tree, and it proved to be the resting place of another group of larvae.—Marc. Cohn, Bendigo.

### RETURN OF LIBRARY BOOKS DESIRED

The Hon. Librarian wishes all Club library books at present out on loan to be returned, no later than December General Meeting, for annual stock-taking.



## AN ARBORETUM?

By W. R. STEVENS, Wanganui, N.Z.

During a recent trip to Australia my wife and I met many plant enthusiasts who were making commendable efforts not only to grow native plants, but also to interest other people to do so. We were privileged to inspect a few private collections, which were extremely interesting to us because the main object of our trip was to see as much of your native flora as our time allowed. Now after our return to New Zealand we have time to correlate our impressions and sum up our ideas. And here is the summary:

First of all, your flora is without doubt one of the most beautiful in the world, and unique. Secondly, it is practically unknown outside of Australia, and not very well-known inside it. Thirdly, it is almost impossible to secure plants and seeds from any commercial source, and therefore a potential overseas business remains unexploited. This is bad, both from a publicity point of view, and for the wider distribution of Australian species. Our fourth point is that the overseas visitor who is really interested in your plants, and comes to your country for no other purpose, has to travel great distances to see as many types as possible, and even then sees but a small percentage of your floral wealth. We think there is only one solution to all these difficulties and frustrations, and that is an *arboretum*! If it is not possible to have a national arboretum, the next best to it would be for each State to have an arboretum of all plants native to that State.

Before discussing this idea any further, we can say we know most of the criticisms that can be levelled against it, particularly the difficult one of finance. But other countries have had the same obstacle, and eventually have surmounted it. An instance for that is the Botanical Society of South Africa, who have established a national garden for all South African plants. This was begun in 1914, and is now well known throughout the world for its collection. Admittedly an arboretum is an expensive undertaking, and can be established only with government aid, and kept going by endowments. The Kirstenbosch Botanical Gardens have to a certain extent solved the problem of upkeep by issuing a list of seeds for sale every year. Also, gardeners all over the world are encouraged to become members, and for their financial support are entitled to so many packets of seed per year. This seed, collected in the gardens, has proved a boon to a great many gardeners, nurserymen, and seedsmen in all parts of the world.

So, what can be done in South Africa can be done in Australia—if there is a will to do it! Somebody, of course, is going to point out that all of your plants cannot be grown under the same

conditions. This objection is correct, but can be overcome by choosing a site which has as many types of soil conditions as possible.

Very often have we heard it said that "we must conserve our native flora, and hold it as a trust for future generations." Very fine-sounding words, but do they mean anything to us? The usual method is to declare certain areas national parks, which simply means that the public are not allowed to pick or interfere in any way with the flora in that particular region. But this has given nominal protection to the plants against only *one* pest. What about all the others, such as weeds, rabbits, fires, etc.? We have much the same position in New Zealand, where our national reserves are getting over-run with goats, deer, and opossums, and consequently it is necessary to employ trappers on a full-time job. This is very expensive and does not get us very far, as it is almost impossible to trap out an area, so that it is a recurring expense.

In an arboretum it should be possible to keep most of these pests down to a very low level. Picture the results for yourselves. All your native plants assembled together, for all to study and admire. The botanist, the gardener, the nurseryman, and the tourist, would have no need then to journey far into the bush to see them, and they would consequently become better known.

How many weary hours have your small band of enthusiasts spent grubbing up small plants to add to their collections? How many losses have they had? It is as well they are content to get a small percentage to grow. All credit to them—they at least tried to do something, and just here we should like to say how fortunate the people of Victoria are in having those enthusiasts. Apart from them, and one or two small nurserymen, who else is doing anything to save your flora? Your Botanic Gardens cannot be blamed for failing to do the job; they are not in a position to carry out this work, because they are not *botanic gardens* in the true sense of the word. Apart from their associated herbaria, they are as much public parks as botanic gardens, and they will never be able to progress very far towards an ideal botanic gardens until they are divorced from this hybrid purpose.

Maybe we are speaking out of turn, and should not criticize what does not concern us. But we say, it *does* concern us. Your beautiful flowering shrubs are far more appreciated and valued in New Zealand than in Australia, and we want more of them. Should any of your plant enthusiasts ever visit our city (Wanganui) we should have the greatest pleasure in showing them literally thousands of Australian native plants, all growing within the city area. Along the hills on both sides of the city, *Eucalyptus ficifolia* has been planted in quantity, and in January-February it

is almost impossible to lose sight of these colourful trees. In the winter-time these same hillsides present a different picture with hundreds of Banksias, Hakeas, and Acacias in flower. *E. leucocorylon* (rose form) has been planted in thousands to provide food for our native tui and bell birds.

On my own property, part of which has an area of some five acres of hillside, I have about 200 *Hakea laurina*, over 100 Banksias of various species, and large numbers of flowering eucalypts. These were planted about four years ago, and the majority have already begun flowering. I mention this fact because some of your readers may think I am dealing in theory, when I speak glibly of planting "thousands" of trees. Nearly all of these trees we raised from seed ourselves, and I may mention that little more than four years ago the whole of the five acres was covered with gorse to a height of over six feet.

But I digress! In speaking of establishing an arboretum I am well aware that I may be accused of having what the Americans call a "pipe dream," but has it not been known for dreams to come true? You have several big factors in your favour. First, you have an excellent herbarium in the Melbourne Botanic Gardens—it is known all over the world. Second, you are fortunate in having some really skilled botanists in your country. Third, you have several very good private collections from which you could probably obtain a huge amount of material, either in seeds, cuttings, or plants, thus enabling you to establish a substantial nucleus before starting to collect.

You are already able to take the overseas scientist to your collections of shells, insects, literature, aboriginal antiques, or whatever else he is interested in. You have made these things easy for him by amassing extensive collections. But you fail entirely for the plantsman—no living collections for him! So, if you have *real* vision, and *really* care for your flora, you can make this dream come true—why not initiate a worthy scheme in each State, so that visitors to your 1956 Olympiad will be gripped with the glories and potentialities of the incomparable Australian flora? *Now is the time to begin?*

---

#### ANTS' COW-SHED

While strolling through the bush, I came upon a Golden Wattle with what looked like Cottony-cushion Scale on one of the branches. Scale insects were there all right, but the white material was not made by them. Ants were carrying the material up the bush and covering the Scale with it. Wondering what they were using, I investigated. It was difficult to follow them through long grass, but at about fifteen feet from the Wattle I discovered that they were biting the cottony tomentum from *Erechthites quadridentata*.—Marc. Cohn, Bendigo.

## THE LATE ALFRED JAMES TADGELL

The subject of this memoir was born at North Melbourne on February 6, 1863, and his long, fruitful life closed on September 6, 1949. A. J. Tadgell always abounded in good works. His usual demeanour was that of mildness and gentleness, tempered with a strong degree of self-possession and determination. He was free from worldly vices, and his religious life found expression as a lay reader of the Anglican Churches in North Melbourne and Carlton before this century. He assisted in Bible classes and did not disdain the lowest offices, provided they were for the good of his fellow creatures.

Mr. Tadgell's ordinary vocation was that of accountant to the Estate of the Clarke family. He worked under both Sir William and Sir Rupert Clarke, whom he faithfully served for fifty-five years, before retiring in 1937.

I met him first in 1913 at the National Herbarium, when he was chiefly interested in Agrostology and pastoral problems. I soon learned, as did most naturalists of the period, that he was skilled in several branches of natural science. His membership with the F.N.C.V. dates from February 9, 1920, and at the very outset he showed a remarkable knowledge of the native and introduced plants of Victoria. He constantly inspired and taught "beginners" by his lectures, writings and leadership of excursions to near and far distant areas.

His journeys led him across the Bogong High Plains, of which he made a floristic survey, publishing results under the title "Bogong and Its Flora" (*Victorian Naturalist*, pp. 56-80, August, 1924.) Further alpine travels spurred him to write of "Mount Painter and Beyond" in 1926—a region at whose majestic peaks he had gazed in wondering silence from his beloved Bogong. "Wake up, Victorians, to your alpine beauty spots," he exhorted in his account of this trip with Mr. A. G. Hooke. In *Keeping Birds*, a humorous satire, he wrote: "How can a bird be kept in captivity and be made so unhappy?" It would take long to enumerate all his articles that appeared in the *Naturalist* and other periodicals.

He took an active interest in Club management, and had special meetings called to change the Constitution, on one occasion moving, unsuccessfully, that the secretary and treasurer should pay no fees but remain financial members of the Club!

In his botanical hobby, Mr. Tadgell was an untiring worker. He collected thousands of Australian plants and corresponded with leading botanists in Australia, England and America. This valuable collection, and most of his botanical literature, has been donated to, and will be housed in, the Melbourne National Herbarium—available for all time to countrymen who may wish to consult the specimens. There could be no more fitting repository for the Tadgell Herbarium, since it was largely through his interest and personal effort that Victoria came to have such a fine modern building in which to house the State collections of plants. This may be news to many naturalists, but through modesty Mr. Tadgell preferred to remain always "behind the scene."

He was also a very skilled horticulturist, and his garden was both a pleasure and a study: it contained a large number of Australian epiphytic and terrestrial orchids, but his favourite plant was the West Australian creeper, *Hardenbergia comptoniana*, which he had succeeded in growing around three sides of the house.

The words of his son, Mr. C. Reg. Tadgell, that "nothing in life thrilled him so much as occasionally to add something new to botanical science," aptly describes our esteemed and cultured member, who is survived also by another son, Mr. F. H. Tadgell. Mrs. Tadgell lived but a week after her husband.

P. F. MORRIS.

## "GEORGIE" AS A NEST-BUILDER

The pretty bird which we term the Painted Honeyeater (an inappropriate name for a species that subsists largely on mistletoe-berries), has become in recent years moderately common in certain parts of Victoria where it was formerly unknown. I have seen examples during the last ten years or so, in practically every spring and summer, frisking among the ironbark and box trees near Maryborough, Victoria, where, in fact, the ringing cry of "Georgie, Georgie" has become familiar to numbers of residents.

The bird's visits, governed by the fruiting of mistletoes, are strictly seasonal. Lyle Courtney, a keen young observer living a mile or so east of Maryborough, tells me that in the last breeding season he first saw "Painteds" on September 12 and did not see or hear them again after February 4. Where do they go and what do they feed upon during the cooler months? I raised these questions previously (see "Birds of the Mistletoe", *Pic. Nat.*, May, 1944) and have not yet been able to obtain satisfactory answers.

Most people who see for the first time the pendulous, cup-shaped nest of "Georgie" are apt to gasp with astonishment and ask how such a "flimsy" structure can be persuaded to hold the eggs. Actually, while it is true that the nest is distinctly lace-like and generally frail in appearance, the strands are woven together and attached to branchlets with considerable artistry, and so the structure generally is much stronger than might be supposed. Moreover, it has often seemed to me (as stated in "Guests of the Mistletoe" in *Bird Wonders of Australia*) that additional strength is given by the use of mucilage from mistletoe-seeds as "wall-plaster".

On December 11 last, Lyle Courtney showed me one of these nests which could just be discerned among slender leaves 30 feet or so aloft in a yellow box-tree, loaded with mistletoe, in the yard of his home. After breeding-time the nest was shot down—it was good shooting on the part of one of the Courtney lads to break that small branch with pea-rifle bullets—and a few months ago I acquired the trophy, brought it to Melbourne, and had it examined at the National Herbarium by Mr. J. H. Willis.

Mr. Willis's report should be placed on record. Here it is:

"I have spent considerable time on 'Georgie's' flimsy nest and have got as far as I can with the determination of the vegetable material used. That particular honeyeater gleaned a good deal of his (or her) material from someone's yard, for the following items were readily identifiable: 1. a strand of fine fishing-line; 2. several pieces of the dead fronds of *Asparagus plumosus*, an ornamental garden creeper; 3. several pieces of flax fibre which could have come from good string or twine. The bulk of the material consisted of various root and stem fibres which may or may not have come out of the bush—they are quite indeterminate without other evidence in the form of leaves or fruit.

"A few seeds of the box mistletoe (*Amymea Miquelii*) glued to one side of the nest suggest that the Painted Honeyeater may chew up and use the mucilage surrounding these seeds as a cement for fixing its nest to leaves, etc. There was also evidence that fibrous material, probably flax, had been more or less 'spun' by the bird's beak and deliberately wound round and round branches in order to secure the nest firmly."

In the light of this report, "Georgie" must now be acquitted of being a slipshod nest-builder. Indeed, we may well agree with Mr. Willis that "this amazing little creature seems to be possessed of considerable resourcefulness".

—A. H. SPENCER

## CLUB LIBRARY NOTES

Recent overseas publications, in exchange for *The Victorian Naturalist*, include two new notable additions.

*Pro Natura*, published in Switzerland, as the outcome of the Brunnen International Conference in July, 1947, is a superbly-illustrated journal dealing exclusively with Nature protection. The letterpress, in both French and English, contains articles by international nature writers. The first issues of Volume I have a variety of contributions, such as "Wild Life Conservation in Great Britain," an epitome of bird life of the Rhone delta marshes, and matter from places as widely separated as Iceland and New Caledonia. One writer expresses concern at the possible extinction of the Golden Eagle, in the Swiss Alps, now reduced to the known presence of 12 to 15 breeding pairs. Australians, generally, may not be aware that the European Bison still exists, thanks to the International Society formed for its preservation. Ninety-three pure-bred animals have been raised from the two issues' only that fortunately survived two world wars. These specimens are now distributed in special reserves and zoos, thus assuring the continuance of the species.

A high level of excellence marks the five volumes of *Insects of Hawaii*, by Elwood C. Zimmerman, sponsored by the University of Hawaii Press, Honolulu. With its outline of the ecology and complete biota, this work forms a comprehensive up-to-date survey of the considerable insect fauna of these Pacific Islands.

The journals are available on loan to Club members.

—H.C.E.S.

## EXCURSION TO MONBULK

The Slender Tree-ferns, *Cyathea Cunninghamii*, recently re-discovered near Monbulk were readily located by the small band of members who attended the Club excursion there on Saturday, May 7. With the close scrutiny given to the Dandenongs over the past 25 years by fern enthusiasts and others in the Club, it appears incredible that these surviving examples have so long escaped notice, flourishing as they do in an accessible position. Of the eleven specimens examined, all were conspicuous by contrast with the abundant Soft Tree-ferns, *Dicksonia antarctica*. Each grew near running water, and presented a picture with the graceful canopy of fronds and slender trunk, covered in several by Kangaroo Fern and other small ferns. It is understood that about 20 of the ferns still remain in this area, which constitutes the nearest natural occurrence of the species to Melbourne, and it is to be hoped the region will be jealously preserved as a National Monument.

Tracks along the creek pass through varied, characteristic fern gully vegetation. The dominant trees were Mountain Ash and Mountain Grey Gum, Blackwoods and Silver Wattles, with undercover of Austral Mulberry, Sassafras, Blanket-leaf and Musk. The moss *Dawsonia superba* was plentiful, while lichens and many species of fungi were noted. Lyrebirds were listened to, and scratchings denoted search for food earlier that morning. As we emerged on the main road again a flock of twenty King Parrots, attracted by nuts in a large Chestnut tree, provided vivid colour in their hieries of scarlet and emerald, against the cadmium yellow of the autumn Chestnut foliage.

—H. C. E. STEWART.

## NATURE IN A BACKYARD

The following is extracted from a letter (11/4/1949) from Mr. F. S. Colliver, of Brisbane, our former esteemed Secretary:

"I have been very interested in the wild life of my backyard. In weeding, I turn up ants by the million and large numbers of chrysalids. A big one about 2½-in long I kept inside recently and last week-end it came out as a very lovely dark velvety black Hawk Moth. However, I have to be careful of anything I wish to save as the Pec-wits are so cheeky they walk over my legs at times, and often I see a specimen, put to one side for examination, suddenly disappear inside one of the pair of birds that seem to own our backyard.

"Lately, both morning and night, we have regular concerts from a group of Jackasses. I counted eight last time, right outside the front door. Some of these nest close handy and come in to catch large grasshoppers that eat the citrus tree leaves. Incidentally, they make considerable noise in chewing the leaves. However, the Jackass gets a very bad time from Pec-wits, and is soon driven off. The Willie Wagtail is even more annoying to 'Jacky,' as I have often seen him land on 'Jacky's' back and tug at the feathers behind his neck. Although the bird population is shifting, I found a freshly-broken Dove's egg on Thursday last and yesterday watched an Indian Turtle Dove collecting nesting material and taking it to a nearby tree.

"A point of interest was a note from Mr. Barker (of Barker's Book Shop), a noted ornithologist, that recently at Tweed Heads he saw the first Jabiru he had noted in that district for twenty years. And quite near our place last week-end I found a large Blue-tongued Lizard which enabled me to demonstrate the tongue, etc., to a young English couple who have recently arrived to settle here."

—H.C.E.S.

## FURTHER RECORDS OF MELALEUCA PUBESCENS IN N.S.W.

With reference to Mr. J. H. Willis' article (*Vic. Nat.*, Aug., 1948) and later notes by Mr. C. T. White (*Vic. Nat.*, June, 1949) on the distribution of *Melaleuca pubescens*, I may mention that I have collected the species from 1936 onwards in the Ganoo Forest area, N.E. of Dubbo, N.S.W. I believe that *M. pubescens* will be found northward of my localities and also in the intervening country between my Dubbo records and the most northerly Lachlan River location (*Vic. Nat.*, Aug., 1948), along the fringe of the old inland-sea. I feel assured of its occurrence also in the Pilliga scrub (100 miles north) and shortly will make a detailed examination of that area. I have an unconfirmed report of the occurrence of Moonah in the Temora district, N.S.W.

The Ganoo Forest occurrence is 18 miles N.E. of Dubbo, on the Mendooran Road. Another isolated patch is on Ranter's Creek, 10 miles farther north. The trees are evidently long established and some show signs of extreme age. However, there are many shapely specimens, from 15 to 25 feet high. They occur in rather deep, reddish sandy loam in association with *Eucalyptus pilligaensis*, *Euc. viridis* and *Santalum acuminatum*, with *Phebalium glandulosum* (narrow-leaved form) as the prevailing undershrub. *Melaleuca uncinata*, *M. crubescens* and "*Calyxia gamoensis*" (prov. name) occur in a nearby unstable area, to the almost total exclusion of all tree growth.

—G. W. ALTHOFFER, Dripstone.



## ALBURY EXCURSION

During King's Birthday week-end, spent by nine members at Albury, two visits were paid to the Horseshoe Lagoon, about a mile westerly along the Howlong road, on the N.S.W. side of the Murray. This was the haunt of many water birds, which were excellently placed to observe at close range. The several flights in formation of Black Swans and White Ibis were specially enjoyed, together with flying Black Ducks and Plovers, while a lone Pelican provided entertainment by the leisurely manner of its landing on the water. On the first morning a dramatic episode was witnessed, with two Whistling Eagles causing consternation among smaller denizens of the swamp. A flock of what appeared to be ravens vocally resented the intrusion, and one courageous bird separated to attack the two eagles. The combat in mid-air was watched for several minutes, until the raven appeared to become distressed. It spiralled down, but managed to straighten out before disappearing from view.

A second visit on the Monday morning enabled us closely to approach White Egrets, Spoonbills, White-faced Herons and Cormorants (Little Pied and Little Black) perched in the trees. Swampheens and Banded Dotterels were disturbed along the water's edge. Coots, with an early brood of young Black Ducks, scuttled over the water, and Little Grebes dived. A fascinating sight was a very near view of a Scissor's Grinder, hovering and "sizzing" its notes, and the differences between this bird and the Willie Wagtail, also common hereabouts, were readily noted. Dusky Wood-Swallows were more than once observed flying or clustering on dead trees, confirming the species as a partial migrant in the district. Other birds common to Albury were Pied Currawongs, Black-backed Magpies, Noisy Miners, Kookaburras, White Cockatoos, Galahs, and Flame Robins. Rarer species included the Hooded Robin, Black-chinned Honeyeater and Speckled Warbler.

The Botanic Gardens of Albury, though restricted in area, contain some lovely native trees, among them: Queensland Kauri (*Agathis robusta*) and Lemon-scented Gum (*Eucalyptus citriodora*). Early flowers showed on some Firewheel trees (*Stenocarpus sinuatus*). Part of the slopes around the War Memorial are still happily clothed with the original native flora.

Some idea of the physiographic character of this part of the Murray basin was gleaned from two motor trips. One, to the Hume Weir, took up an afternoon, and next day was spent on a 75-mile tour through Yackandandah to Beechworth, with return via Chiltern. Stands of Red Cypress Pine (*Callitris calcarata*) around Beechworth and Red Ironbark (*Eucalyptus sideroxylon*) between Chiltern and Barnawartha were traversed on the latter trip.

Our country member at Albury, Mr. James Watson, kindly assisted the party in many ways. He escorted several members to places of nature interest in his car, while his knowledge of local bird-life proved invaluable.

H. C. E. STEWART.

## NO WILDFLOWER PICKING ON CLUB EXCURSIONS

Council feels that the action of members who remove plants or wildflowers during Club excursions does not set a worthy example and is, in fact, a negation of the ideals for which the F.N.C.V. stands. In this connection it has now ruled "that an absolute ban be imposed on the picking of native flowers or lifting of roots (whether of protected plants or otherwise) on any Club excursion; this ban does not exempt any member who may hold a permit".



## WHAT, WHERE AND WHEN

## General Excursions:

- Saturday, November 12—Afternoon excursion to Keilor (Green Gully) for Geology Group and general members. (Details were in *October Naturalist*.)
- Saturday to Sunday, November 26-27—Colac, Red Rock and Lake Corangamite. Subjects: Birds and Geology, but excursion also of general interest. Leaders: Misses M. Elder and J. Blackburn. Local guide for birds: Dr. A. Graham Brown. Parlour coach leaves Melbourne 12.45 p.m., Saturday, 26th. Fare, 32/6. Part hotel accommodation (dinner, bed and breakfast) and part camp-out at Red Rock. Campers provide four meals, others two. Bookings (to be confirmed by November 14) with Miss M. Elder, 17 Adelaide Street, Malvern, S.E.3 (Tel. U 7297). Enquiries after November 18 from Miss J. Blackburn, 4 Allenby Avenue, S.E.5 (Tel. MB 1637—before 5 p.m.).
- Saturday, December 3—Studley Park. Subject: Astronomy. Special observation of major planets. Leader: Mr. E. E. Lord. Meet at Johnston St. Bridge, 6 p.m. and bring picnic tea.
- Saturday, December 10—Mason's Pools, via Whittlesea and Toramy's Hat. Return via Hurstbridge, visiting Bald Spur en route. Subject: Forest Vegetation. Leader: Mr. A. Cobbett. Nash's bus leaves Batman Avenue, 8.45 a.m. Fare, 8/6. Bring two meals. Bookings with Mr. A. Cobbett, Flat 3, 127 Osborne St., South Yarra. (Tel. MU 8211—before 5 p.m.)

## Preliminary Announcements:

- December 26 to January 2—Christmas camp-out at Lake Mountain. Special features: Alpine flora, including sphagnum bog flora. Excursions to Echo Flat and other interesting localities. Party limited to about 14. Interested members contact Mr. W. F. Day, 9 Narrawong Crescent, Caulfield South, S.E.3 (Tel. MU 8681, extn. 32), by December 3 at latest. (Members able to provide own transport also welcome.)
- January 28-30—Australia Day week-end camp at Cape Patterson. Excursion of general interest, with emphasis on Geology. Leader: Mr. A. A. Baker, with local assistance from Messrs. J. Glover and G. Lynch, of Wonthaggi. Booking arrangements in *December Naturalist*; but, to assist transport arrangements, interested members please register their names with Mr. A. A. Baker, 63 Carlisle St., Preston, N.18.

## Group Fixtures:

- Saturday, November 26—Botany Group excursion to Seaholme. Subject: "Mangroves and Grasses." Leader: Mr. R. D. Lee. Train: 1.29 p.m. Williamstown train, change at Newport. Fare: Second class return Seaholme, 1/5½. General members cordially invited.
- Monday, November 28—Botany Group. Royal Society's Hall, 8 p.m. Monthly meeting. Subject: "Grasses," by Mr. P. E. Morris. All members cordially invited. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris.
- Thursday, December 1—Wildflower Garden Group. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mr. R. B. Jennison, 8 Linda St., Moreland.
- Friday, December 2—Marine Biology Group. Royal Society's Hall, 7.46 p.m. Monthly meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont.
- Monday, December 5—Native Plants Preservation Group. Home of Miss W. Waddell, 3 Denham Place, Toorak, 8 p.m.
- Tuesday, December 6—Geology Group. Royal Society's Hall, 8 p.m. Reminiscences Night; five minutes from each member. Hon. Sec.: Mr. A. A. Baker, 63 Carlisle St., Preston.
- Saturday, December 10—Geology Group excursion to Mont Park. Subject: Felsite Dyke, and Physiography. Leader: Mr. A. C. Frostick. Train: 1.20 p.m. from Princes Bridge. Book: Second class return to Rozanna, fare 1/5½.

LEAN BLACKBURN,  
Excursions Secretary.

# The Victorian Naturalist

Vol. 56.—No. 8

DECEMBER 8, 1949

No. 792

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, November 14, 1949. The President, Mr. Colin Lewis, presided and about 180 members were present.

An innovation this year is the printing of Christmas cards, attractively designed with the Club's badge on the front and a coloured picture of the Helmeted Honeyeater (Victoria's endemic bird) inside; these are available at 9d. each.

The President announced with pleasure that Mr. Coghill had donated £5 to the Club. The news was received with applause.

It was with regret that members heard of the death of their fellow-member, Mr. Grassick, and the meeting stood in silence for a minute as a mark of respect to his memory.

The following were elected as Ordinary Members: Mr. and Mrs. F. J. Seamons; and as Country and Interstate Members: Mrs. B. M. Forbes and Mr. C. H. Hamilton. Nominations for membership were received as follows:—Ordinary: Miss R. Griffin (Miss E. Chugg/Mrs. E. J. Chugg), Miss J. A. S. Adams (Miss D. Kidd/Miss J. Raff), and Miss M. B. Veal (Miss Kidd/Miss Raff); Country: Rev. A. Thomas, Yarram (Mr. G. H. Jennings/Mr. Lord).

## CENTRAL AUSTRALIA AND THE MACDONNELL RANGES

Mr. Fred Lewis took us through the "Red Centre" on the magic carpet of a film strip. Intense colour is undoubtedly a characteristic of Central Australia and this was abundantly evident in Mr. Lewis's superb pictures. From Alice Springs we visited Palm Valley; where tall *Livistonia* palms rear tousled heads above the symmetrical *Macrosamia* "palms". Difficulty was experienced in taking pictures of Standley Chasm, a great slit in the ochre-coloured rock and a mere 15 feet wide throughout its depth of 150 feet: only when the sun was in the meridian was there sufficient light. We stopped at Simpson's Gap and Emily's Gap, where a clear pool of water mirrored the intense colours of sky and surrounding rocks, and climbed into a mountain region of "ruined castles" as far as the eye could see.

The President thanked Mr. Lewis for his instructive and interesting talk and for the showing of his films.

As this number goes to press we regret to announce the death of Mrs. G. O. Singleton, wife of our esteemed member at Sylvania, N.S.W., to whom the sympathy of the Club is extended.

## EXHIBITS

Mr C. F. Lewis: *Calceana major* (Large Duck-orchid) in a pot, potted plant of eucalypt from Officer (referred to in November *Naturalist*).

Mr E. T. Muir, Dinboola: Fine drawings illustrating some of the native plants of the Wimmera, including the Slender Buttercup (*Fraxinellus robertsonii*); dried specimens of the Slender Buttercup, a rare species found only in western Victoria.

Mr. J. Ros Garnet: *Ixodia achilleoides*, garden-grown at West Brunswick. (Native to the S.W. coast and Grampians areas. When wet with rain or hoisted, the white ray-bracts fold over to protect the yellow disk florets.)

Mr. C. J. Gabriel: Victorian marine shells with egg capsules—*Cymatium spengleri* Chemn., *Eugyria subdistortum* Lam., *Fasciolaria australasiae* Perr. Mr. F. S. Colliver, Brisbane: Desert plants collected during August, 1949, at Glenormiston in the extreme west of Queensland, near Northern Territory border—*Calandrinia boltonensis* ("Parakeelia"), *Bremophila Freelingii*, *E. Latrobei*, *Craspedia chrysantha*, *Mentha australis*, *Isotoma petraea*, *Bassia bicornis*, *Mersilia hirsuta* ("Short-fruit Nardoo"), *Trichodesma zeylanicum*, *Trichinium alopecuroides*; *T. obovatum*, and *Sida fibulifera*.

Mr. H. Stewart: *Pultenaea Cunninghamii* ("Grey Bush-pea") in flower, from Mt. Granya: pure white variety of *Kunzea parviflora* ("Violet Kunzea") from near Walwa, Upper Murray: specimen of a large "Robber" or "Policeman" Fly, probably *Asilus* of the family *Asilidae*—collected on Corryong excursion.

Mr. G. C. Singleton, N.S.W.: Flowers of *Blandfordia grandiflora*, *Feijoa Sellowiana* and *Mangifera indica*.

## "THE WOOD ANATOMY OF THE PROTEACEAE,"

BY M. MARGARET CHATTAWAY

(Australian Journal of Scientific Research, Series B, Vol. 1, No. 3, 1948)

In this paper, Dr. Chattaway gives detailed descriptions of wood structure in this somewhat primitive family of flowering plants, which is so abundantly and widely distributed in Australia, as well as in South Africa and a few other countries. A map to show world distribution of the genera is given. After dealing with the structural features, with suitable consideration of the relatively enormous medullary rays common in most genera of the family, the relationship of wood anatomy to botanical classification is considered. Attention is drawn to the vascular tissue in rays of *Banksia* and *Dryandra*. The author then prepares the ground for a key to the genera on wood features by giving means of distinguishing between the *Proteaceae* and other woods with large rays. The use of such a key on the card system has been found practicable, and a specimen card is illustrated.

This is a thorough and valuable treatment of a specialist's subject, but closer to the systematic botanist's requirements than generally realized.

—R. W. BOND.

## POLLINATION OF THE ELBOW ORCHID

It is suggested that any observer who finds *Spirulica Huntiana*—not so rare as we once thought—should not pick it, but should stand by to wait developments. That "elbow", so delicately flexible, and the definite simulation of an insect in the strange tip of the labellum, point to some very special agent.

One could imagine a robber fly, hunting for insects. With its well known dash, it would carry the labellum tip to the waiting column. In the flurry after the collision, it is almost certain that pollen would be transferred.

Watch for it next January.

—A. J. S.

**NOTES ON THE COMMON HEATH (*EPACRIS IMPRESSA*)**

By H. T. CLIFFORD, Melbourne.

If a Victorian floral emblem ever be chosen, could we do better than select the Common Heath? Its attractive red or white bells grace the countryside from March almost to December and are known to most people, whether naturalists or otherwise. The reason for its general recognition and popularity is an abundance in those areas either closely settled or near centres of dense population. Heath is not really of widespread occurrence, as can be seen from the accompanying map. Within the Commonwealth

the absolute limits of distribution are also restricted—only in the south-eastern corner, and then usually confined to the coastal side of the main Divide, covering an area from the Clyde River in New South Wales to the Mt. Lofty Range in South Australia, also on the islands of Bass Strait and frequent in Tasmania.

Present Victorian distribution records indicate that the species is limited to the wetter foothill country, the coastal heath-lands and Little Desert scrub. In areas of greater annual rainfall than 50 inches there is an altitudinal limit of about 2,000 feet, whilst in regions of lower rainfall this is considerably raised. Because of the damp climate

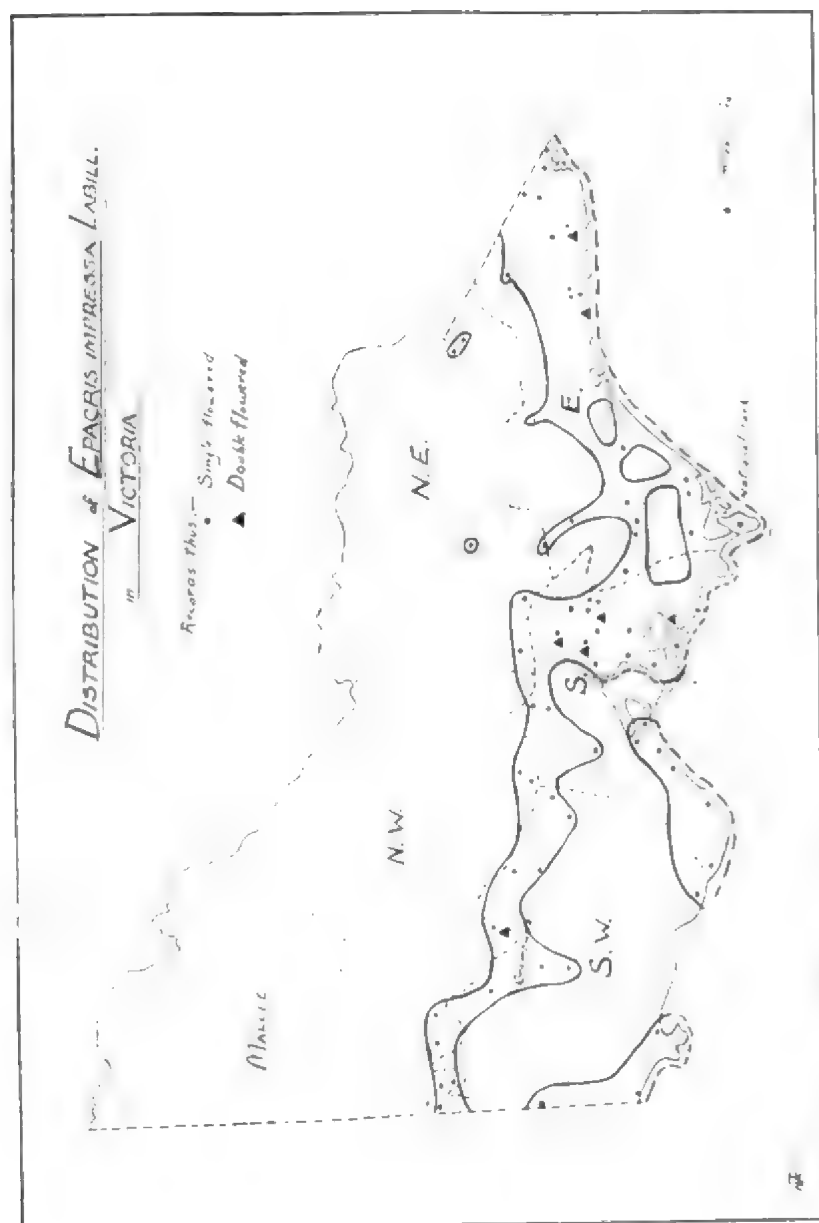
usually needed, valleys drier than the surrounding hills appear as fingers pointing out from the main centres of distribution. Such a projection follows the general course of the Thompson River north from Moe beyond Walhalla almost to Wood's Point.

Although frequently found on flat but swampy ground, heath is absent from all the plain tracts of the State—the basalts of the Western District, the torrent gravels of Gippsland, and the level expanses north of the Divide. It is almost entirely absent from the north-eastern sector of Victoria, although habitats which would appear suitable occur within that area. Possibly it is dryness which excludes the plant. In regions of higher rainfall, absence may be due to unsuccessful competition with those species which thrive in such situations.



Double red form of *Epacris impressa*  
(from Mt. Morton, near Belgrave,  
Vic.).

Photo: H. T. Clifford.



Leaving the distribution records, let us now look at its nomenclature and taxonomy. Systematically there are few difficulties: at the base of the corolla tube are five conspicuous indentations alternating with the stamens—a feature which immediately distinguishes *Epacris impressa* Labill. from all other epacrids and which was responsible for the specific epithet. However, in the days prior to the *Flora Australiensis*, our plant rejoiced under a

variety of names resting on slight differences of leaf form, flower colour and dimension. These segregates may prove to be particularly interesting.

On the islands of the Kent Group (Bass Strait), in the east of the State and also in Tasmania is a broad-leaved form. In the Grampians grows a form similar to the common local one but with leaves twice as large. Again, in the Grampians is a form with broad leaves but differing from the Kent one in that they are broadest in the *middle* and not at the proximal end. According to the "Age and Area" theory of Dr. J. C. Willis, these varieties ought to be younger than the parent species, since they occur only within a restricted area. Just as an area possessing a large number of indigenous species is regarded as the centre of origin of the flora, so a locality with a large number of varieties of a species may be the point of origin of the



Multiple double pink heath (from Dandenong Ranges, Vic., growing among ordinary red form)—see *Wild Life*, xi, p. 32, Jan. 1949.

Photo.: By courtesy Editor *Wild Life*.

species. Using this principle, attempts have been made to locate the native species from which some of our crop plants are derived.

A double-flowered condition is found occasionally in both the red and white forms; it is perhaps an abnormality rather than a variety. Although occurring throughout the entire range of the species in Victoria, it is really quite rare, existing always singly in a district (as noted by myself and on collectors' notes concerning specimens in the National Herbarium, Melbourne. That such

double-flowered plants do not set seed is almost certain, for in general neither stamens nor ovary ever develop. Occasionally anthers may be present, but, in the plants dissected, the ovaries were always distorted. An enlargement of a single double flower is figured, from which the potentialities of a handsome garden plant may be appreciated.

Finally, there is the relative distribution of red and white forms. In the central portion of the species' range, each colour shows a preference for certain habitats, the red for well drained slopes, the white for swampy soils. Since odd plants of either may occur in the normal habitats of the other, the decisive factor may not be soil itself, as with hydrangeas. Instead, the evidence suggests that colour is genetically determined and, along with it, a habitat preference. Some of the pink heath may be due to crossing of white with deep red. The pink is not common and is often confused with the faded red of old flowers. Deliberate crossing and growth of the seedling plants so obtained would prove interesting in this regard.

By noting how little is known of the distribution, varieties or cultivation potentialities of such a common plant as heath, it is comforting to reflect that, although our Victorian flower census may be approaching completion, the fields of discovery among the varieties are as yet little explored.

#### NESTING OF THE WEEBILL

Although the tiny bird known as the Brown Weebill, or Short-billed Tree-Tit (*Smicrorhynchus brevirostris*), is moderately common in dry forest areas in eastern and southern Australia, its nest is not often found; and it is well worth finding because of the artistry manifest in its construction—grasses and fibre are woven into a compact body about the size of a tennis ball, which has a side entrance to the warmly-lined egg-chamber. The wonder is that a bird with such a small beak—one adapted primarily for dealing with leaf insects—can weave such a neat little nest.

Sometimes the nest is suspended among pendulous leaves only a few feet from the ground; at other times it may be at the tip of a tree perhaps 30 feet high. When some of us were having a cup of tea in a quiet spot in south-western Queensland in November of '47, I saw one of these nests 25 feet up at the tip of a sapling, and when, a few weeks later, another party was having afternoon refreshment near Eltham (Victoria) I found another such nest at the tip of a 15-ft. sapling. Tea-drinking (and kindred activities) can be very useful to nest-sockets!

During the last breeding season I found three Weebills' nests near Maryborough, one (December 11) being situated 4 feet from the ground and having two tiny eggs, and the other two (January 2) being both full of fledglings. One of the January nests was not suspended, as is usual, but was built into a slight fork near the top of a 12-ft. sapling. In both of the later instances I was attracted to the nests by hearing at a distance the imperious piping of the babes. It is remarkable that such tiny creatures can make such a relatively loud noise, and remarkable, too, that they are indiscreet enough to do so.

A. H. CHISHOLM.

**NEW BEES AND WASPS — PART XII****A New Blue Bee and an Old White-Ant**By **TARLTON RAYMENT, F.R.Z.S.***Introduction*

Bees and "white-ants" seldom go together, for one invariably destroys the other; yet, for the second time, I have before me certain lustrous bees which are associated with the nest of termites. Oh, no, I do not suggest there is anything more than mere adventitious proximity.

The first occasion was back in May, 1936, when I found myself in a cold, wet fern-gully at Menzies Creek, near Emerald, which is some 1,100 feet above sea-level. I mention the elevation merely because high land is involved in each case, and the bees apparently favour such cold localities. Mr. E. F. Wilson, a well known coleopterist, found one of the species in the snow country of Mount Buffalo.



FIG. 1.—1, Section of "punk" wood, with cells of *Callomelitta picta perpecta* Ckll. 2, Nymphal form of termite, *Stoloterмес victoriensis*. 3, Cells of the bee. 4, Head of the termite (soldier caste).

Climbing over wet logs on a forest floor can be very tiring, and I was resting for a moment or two on a "big stick" that had fallen across another bole, and therefore was hardly as wet as the majority; the interior, however, was a mass of firm "punk" of even texture. Naturally, my eye ran over the surface, looking for anything of interest, and presently I perceived a few small holes with the diameter of, say, an ordinary knitting needle. Of course, out came the knife. It is a peculiar pleasure to excavate soft punk, that cuts as smoothly as new cheese, after laborious and often painful delvings in clay and sandstone, or even the sound wood of the red gum tree.

Presently I came upon several small oval cavities, and in each was a fully-developed, beautiful purplish-blue bee. It was the first



time I had found her "nest". Her lustrous colour, enhanced by a polished spot of blood-colour on the thorax, enabled me to recognize her quickly—*Callomelitta picta perpicta*, named by my revered mentor, the late Professor T. D. A. Cockerell.

The punk was bored through and through by a termite, *Stolotermes victoriensis* Hill, and it seemed that, sooner or later, the cells of the bee would be destroyed by the "white-ants".

Another "termite bee" is even more lustrous, more beautifully purple, with discs of scintillating gold, but this one belongs to quite a different genus. It came from a friend, Mr. C. E. Chadwick, and since he is the first to give an account of metamorphosis in the genus *Euryglossimorpha*, let him continue the story of a remarkable bee:

"On the 11th July, 1948, I was at the Scouts' Camp, Mount Keira, a few miles west of Wollongong, New South Wales, and, while excavating in the base of a termitarium built by *Coptotermes lacteus* Frogg., uncovered a couple of small earthen cells containing two larvae of a Hymenopteron. Each one would not exceed 1 cm. in length when extended, but they were curved, stout, and yellowish, tapering at both ends. They were legless, but possessed two mandibles with sclerotised tips, ill-defined labrum, and both had a brown line running transversely across the 'face'.

2/9/48.—The two larvae seemed to be unchanged two months later. They were put in an incubator that was fairly constant, day and night, in registering 82°-85° F., and the following table of development was recorded:

15/9/48.—The larger of the two larvae placed in incubator at 82° F.

8/10/48.—Larva has changed since yesterday into a completely white pupa; not a trace of any darker colour, so it has changed probably only very recently. 85° F.

12/10/48.—82° F. Larva today has slight tinge, somewhat pinkish, in eyes. No noticeable colour in eyes yesterday, but general colour slightly darker than on Friday.

13/10/48.—Eyes a trifle darker than yesterday.

15/10/48.—73° F. Gas out. Eyes still darker.

18/10/48.—85° F. Unchanged.

19/10/48.—84° F. Eyes purplish black, otherwise practically no colour change; pupa wriggled its abdomen quite vigorously.

20/10/48.—84° F. Unchanged.

22/10/48.—82° F. Unchanged.

25/10/48.—85° F. Eyes black, also tegulae; mandibles brown; one black mark on dorsal surface near side of 2nd abdominal segment; general colour darker, i.e., a very light brownish tinge all over. Quite active, and moves hind legs freely; forelegs can be moved slightly.

26/10/48.—85° F. Body darker than yesterday, dirty appearance; not at all active.

27/10/48.—Noticeably darker than yesterday, definitely blackish in appearance; pupa on its back. Legs lighter in colour; posterior margin of four abdominal segments whitish; edges of pleura also whitish on ventral surface. Dorsal surface of a fairly uniform blackish on thorax, but abdominal segments darker on posterior half. Wings light in colour. May quite well emerge today. Peculiar small yellowish pieces of flaky material in tube.

28/10/48.—87° F. Gas out. Legs now yellowish on tibiae and tarsi; white margins on abdomen as yesterday. Dorsal surface practically uniform in colour, likewise ventral surface, except for white margins. Capable of moving all legs.

29/10/48.—79° F. Gas out. One Hymenopteron has emerged as a bee. Purplish black nearly all over. A spot of golden hairs outside base of each antenna; another golden spot of hair behind each eye and in cavity between head and thorax. Similar hairs on front of and below tegulae. Had apparently only very recently emerged, as the exuviae were attached to the abdomen and to labrum. The small larva from termitarium is still alive and appears well.

2/11/48. 84° F. Hymenopteron appears to be a species of Hylaeid bee not represented in our collection.

11/11/48.—78° F. Gas out. The second larva from termitarium has pupated. The pupa has light brown eyes.

12/11/48.—Posted specimens to you."

Mr. Chadwick's bee has proved a very handsome lustrous-purple new species of *Euryglossomorpha*, and because of its exceedingly brilliant spots of metallic golden hair I bestow the name *aurcomaculata* and append a specific description.

*EURYGLOSSIMORPHA AUREOMACULATA*,  
*sp. nov.*

TYPE, Female—Length 11 mm. approx. Black with a metallic-blue lustre.

*Head* transverse, black, shining, coarsely punctured; face with two splendid golden maculae of hair between the scapes and the orbital margins; facial foveae large, deep and granular; frons with close pyriform punctures and a fine line reaching the median ocellus, a few white and a few black hairs; clypeus convex, polished with a slight median depression, and scattered irregular punctures, a very few large; a fringe of white hairs along anterior margin; supraclypeal area elevated, polished, impunctate; vertex closely punctured, a post-occipital fringe of conspicuous golden hair; compound eyes diverging below; genae coarsely punctured, shining, a thin beard of white hair; labrum polished black; mandibulae very long, falcate, highly polished black, deeply grooved; antennae black, submoniliform, obscurely reddish apically.

*Prothorax* not visible from above; tubercles black, with a conspicuous macula of golden hair; mesothorax polished, large scattered punctures, a few blackish hairs, scutal and parapsidal furrows distinct, anteriorly the punctures smaller and closer, a slight depression; scutellum similar to mesothorax; postscutellum smooth, with close small punctures on the margin; metathorax with an enclosed area shaped like a Moorish arch, polished, an excessively delicate sculpture, some white hair laterally, the plumosity of the hair hardly visible under a lens; abdominal dorsal segments sericeous, scattered coarse punctures, margins broadly

lighter, apically a fimbria of black hair, and a peculiar undulate plate; ventral segments closely punctured with white hair.

*Legs* black, rather slender, the white hair not dense; the smooth strigilis of the anterior legs quite unlike the serrated form of *Euryglossa*, approaching that of *Megachile*; tarsi black, the hair somewhat yellower; claws reddish; hind calcar black, long-pectinate; tegulæ black, polished; plate of axillæ finely punctured, black.

*Wings* hyaline; nervures brown, the cubitus sinuate and basal arched; large second cubital cell receiving first recurrent at its anterior fourth, second recurrent almost meeting third intercubitus; posterostigma blackish-brown; hamuli nine, strongly developed.

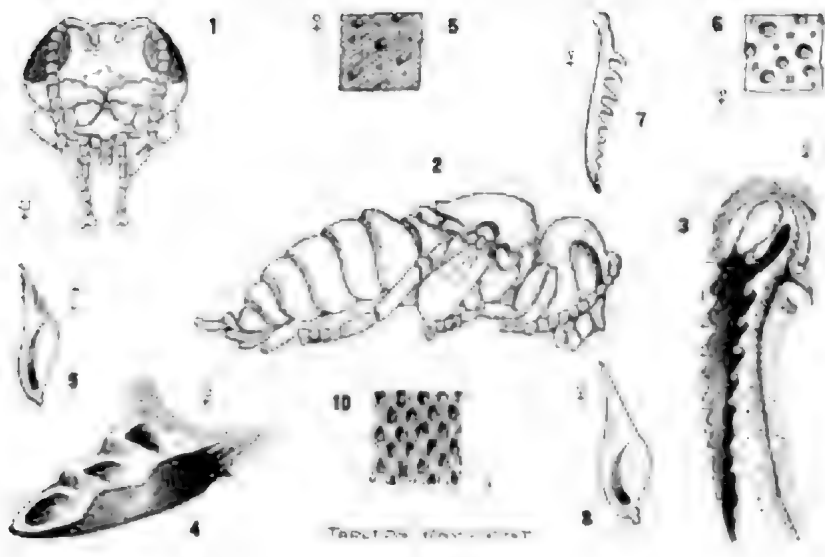


FIG. II.—1, Ventral view of mouth parts of pupa of *Euryglossimorpha aureomaculata* sp. nov. 2, Pupa with compound eyes coloured pink. 3, Patella and base of tibia of female. 4, Undulate apical plate of female. 5, Sculpture of the abdomen. 6, Punctate sculpture of the mesothorax. 7, Pectinate hind calcar. 8, Strigilis of the female (quite unlike that of *Euryglossa*). 9, Strigilis of the male (nearer in form to *Euryglossa*). 10, Sculpture of the frons.

*Locality*: Mount Keira, New South Wales. Oct. 24, 1948.  
*Leg.* C. E. Chadwick.

*TYPE* in collection of the Australian Museum, Sydney, N.S.W.

*Allies*: In the author's key (*Australian Zoologist*, Feb., 1948) the new species would fall between *E. ruficauda* Raym. and *E. nigra* (Sm.), but is easily separated by the splendid golden maculæ of the "face" and the "epaulettes" of hair near the tegulæ.

The collector sends the following particulars of this handsome bee, taken in unusual circumstances:

"I was digging out a termitarium when I found two apudous larvae in cells built in the outer walls of the termites' 'nest'. There was no opening to the cells, but I kept the larvae in a warm chamber, and they pupated in due course."

The pupa is typical of higher genera, being entirely without nodes and spines, although the mandibulae are large in the sole specimen before the author. On November 16, the compound eyes were dark-pink, and the final pellicle had become flaccid. It was shed on November 20, and the insect succumbed a few days later. It had evidently been unable to endure the shocks of transportation. The date would indicate one brood for a season. The biology of *E. nigra* (Sm.) was published by the author in the *Australian Zoologist*, p. 242, 1948.

#### "NOTE ON THE VASCULAR TISSUE IN THE RAYS OF BANKSIA,"

BY M. MARGARET CHATTAWAY

(*Journal of the Council for Scientific and Industrial Research*, Vol. 21, No. 4, 1948)

Following work on wood anatomy of the *Proteaceae*, Dr. Chattaway has brought to notice, and for the first time described, the vascular or conducting tissues found in the larger rays of the wood of *Banksia* and *Dryandra*, two peculiarly Australian genera of the family. These closely related genera often possess horizontal radially arranged xylem strands (without phloem) embedded in the wood parenchyma of the rays and linked with the stem xylem elements and the cambium, usually protruding beyond the cambium into the phloem and bark.

This unique feature of wood structure may be related to the strongly xeromorphic character of the genera, but no definite functional advantages can yet be assigned to it. It is also difficult to appreciate its occurrence in these two genera only, and absence in other xeromorphic forms such as *Lamatia*, *Telopoa* and others, except perhaps on the basis of their botanical placing into different sub-family groups.

This short paper is well illustrated with diagrams and plates, and should certainly be studied by all interested in the *Proteaceae*.

—R. W. BARR.

#### LICHENS IN A SUBURBAN STREET

How long does it take for lichens to clothe the rocks in soil? In Ludstone Street (off Hampton Street), Hampton, is a strip of concrete path twenty years old. Nine inches of it, on the north side, near the fence, is untrodde. It remained bare until the last four years or so. Now there is a continuous film of lichen. In dry weather, it is black and grey. Nobody would suspect any life there. With one shower, however, the whole strip is transformed. Green, grey, yellow and orange patches flash out to take advantage of conditions while they last. No mosses have appeared. Probably the film, with accumulated blown soil, is one thirty-second of an inch thick.

There is a galvanized iron fence at one part. Not a sign of lichen appears in its shade. Presumably, enough of zinc comes down with the rain to inhibit growth. There is, however, a green scum of algae.

—A.J.S.

## LAKE MOUNTAIN REVISITED

By J. ROS GARNET.

Many members of the Club will agree that Lake Mountain is a delightful place for enjoying a very satisfying vacation, but we hardly expected the succession of wet and cold nights nor the misty and rainy days that were our lot during a week on the mountain early last January. At least it was consoling to think that the cool weather would make for more comfortable walking.

On the upper slopes at the western side of the mountain, plant communities are characterized by the canopy of Alpine Ash—mostly young trees under fifty feet high which are replacing the whitened fire-killed giants of the past. Occasionally are seen groups of these ancient gums which have survived the forest fires—with trunks often four or five feet in diameter near the base and towering far above their companions.

Beneath the Ash there is little but alpine Tussock-grass and small plants like the big-flowered Ivy-leaf Violet, Mountain Woodruff, Small Poranthera and Mother Shield Fern, all abundant. Occasional colonies of the Mountain Greenhood and Common Bird-orchid are also to be seen. The greenhood, so abundant on our previous visit in January, 1948, was flowering much less freely this time, but the Bird-orchid, of which few had then been seen in flower, were now very plentiful. These flowers were not always easy to see, for the plants are well hidden in a thick mat of grass, all that is visible being the little gaping brown mouths of the flowers.

A few plants of Clematis, sprawling among the grass, were also found. The winter and spring snows probably prevent them assuming their usual climbing habit. Indeed, climbers are noticeably lacking amongst the vegetation of higher altitudes such as that of Lake Mountain—neither Dodder-laurel nor mistletoes have been recorded so far.

The frequent appearance of Star-fish Fungus (*Ascroë rubra*) on grassy slopes was another and very interesting feature of our excursion. This plant, of such curious shape, with brilliant red-coloured "tentacles", has a revolting odour. In its immature stage it resembles a sizeable puffball, and several were seen in various stages of development amongst grass or the debris of well-rotted logs.

Where other trees and shrubs grow beneath the eucalypts, there is almost always the same association of about twelve species—Long-leaf Waxflower, Fragrant Bush-pea, Rough Coprosma, Hickory Wattle, Derwent Speedwell, Cascade Everlasting, Elderberry Panax, Royal Grevillea, Otway Daisy-bush, Balm Mintbush, Fireweed Groundsel, and arborescent Bitter Pea—often more or

less intermingled but sometimes in almost pure stands. Many trees of *Daviesia* are infested with a cottony scale insect (possibly a species of *Eriococcus*, the Gum-tree Scale), but as far as could be observed the eucalypts appeared to be free from infestation.

Beside the roads and old timber tracks, and in the gullies (now bereft of living trees), the shrubs become more compact and floriferous. Here also other plants are conspicuous in the communities — Hawkweed *Picris* (introduced), Cotton Fire-weed, Forest Groundsel, Bottle-daisy, Grass Trigger-plant, Broad-leaf and Common Woodruff, Forest Speedwell, Forest Mint, Poverty Raspwort, Cut-leaf Cranesbill, Hairy Buttercup, Tasman Flax-lily, Prickly Star-wort, Forest Star-wort, Mountain *Cotula*, Creeping Fan-flower, Andean Carraway, Hairy Pennywort and Bidgee-Widgee. Some appear frequently and others rarely, the last-mentioned five being mat plants or low prostrate herbs which occupy occasional grassless areas.

The hillside soaks and morasses, whence emerge the tiny streamlets that flow into larger creeks, possess a vegetation considerably different from that of the drier slopes. In place of eucalypts are Myrtle Beech and a mountain form of Woolly Tea-tree—generally sucker growth or coppice shoots, little more than ten feet high, from butts of the old specimens that were destroyed in past fires. It is in such situations that many of the ferns, mosses and lichens occur, notably Alpine Filmy-fern, Rufous Hypolepis, Batswing, Ray-water and Finger Ferns—some on the Myrtle Beeches and Tea-trees, others on the sodden ground, and most of them thriving in the subdued light afforded by a canopy of trees. Where there is more sunlight, Southern Sassafras, Alpine Pepper and, more rarely, Waxberry or Australian Wintergreen (*Gaultheria appressa*) give shade to the prevalent Baw-Baw Berry (*Wittsteinia*—a genus endemic in Victoria) and Pretty Grass-flag, which frequently grows among the Sphagnum moss, Bottle Daisies, White Wood-sorrel, Hairy Willow-herb, Smooth Nettle, Common Bitter-cress, Alpine Water-fern, and even colonies of the Green Bird-orchid.

As these streamlets emerge into the creek stage a change can be seen in the type of plants, with Hard Water-fern taking the place of the smaller Alpine Water-fern, *Sphagnum* being replaced by the two Club-rushes (*Scirpus aucklandicus* and *S. inundatus*), while once again the Bidgee-widgee appears, associated with Buttercup, Bitter-cress, Forest Mint, and occasionally with Soft Tree-fern and the various shrubs previously mentioned.

An uncommon form of Creeping Wood-sorrel was found in the gullies. Instead of being the usual clear yellow, flowers of this variety were suffused with a delicate rose-pink colour, while the backs of the leaves were purple.

One bright sunny day was spent exploring the summit of the mountain. At this level the Alpine Ash is replaced entirely by Snow Gums, and a marked change in the character of the associated vegetation is observed. Violets, buttercups and woodruff still persist among the tussock-grass but, in addition, numbers of the white-flowered Mountain *Caladenia* are found, and numerous leaves of the Alpine Leek-orchid, also the only representative of the Heath Family to be seen outside the "hogs"—the Wheel-heath or Lilac Berry (*Trachocarpa Clarkii*), which is very similar in foliage to a species of *Acrotiche*. Several of the dozen regular associates are missing from the top. Balm Mint-bush is replaced by the dwarf Alpine Mint-bush, while Mountain Speedwell (and occasionally the Thyme Speedwell) almost supplants the Derwent Speedwell. Grass Trigger-plants become more common, and the sprawling Mountain Shaggy-pea really dominates the under-shrubbery.

A sphagnum bog of three or four acres extent on the north-eastern side of the mountain was new to us and provided a few items of botanical interest. On its margins the Alpine Pepper bloomed freely and, with Alpine Mint-bush, Rock Heath and Alpine Heath, gave some colour to the somewhat flat and dreary acres. Here we first located Shining *Coprosma*—a stunted, divaricate shrub up to two feet high. Its dead, defoliated branchlets so much resemble thorns that at first we were led to suppose we had come upon a stunted form of the Tree Violet—a species last reported for the Lake Mountain area by Morris and Rac (*Vict. Nat.*, XLVI, 1929, pp. 34-42). The eventual discovery of flowering plants soon showed it to be *Coprosma nitida*, a species whose insignificant flowers are mostly hidden beneath the dense shining foliage.

This small bog area contains more than forty of the plants already known to occur on Echo Flat. Notable for their abundance and charm were the Perching Lily, Woolly Tea-tree, Baw-Baw Berry, Alpine Heath and Rock Heath. Alpine Pepper, Alpine Water-fern, Sickle Rush, the two Club-rushes mentioned previously, Mountain Clubmoss and Sphagnum moss were also there; but equally notable for their absence were Plum Pine, Sky Lily, River Buttercup, Alpine Orites, Alpine Sundew, Mountain Phebalium, Hovea, Leathery Star-bush, Alpine Bottle-brush, Candle Richea, Billy-buttons and the "Morass Daisy"—a new species which has just been described by Mrs. G. L. Davis as *Brachycome obovata*, the type being from our F.N.C. excursion to Echo Flat during January, 1948. (See *Proc. Linn. Soc. N.S.W.*, LXXIV, Oct, 1949, p. 146.)

On a ramble to Echo Flat most of the species previously noted in this area were again recognized. The new Morass Daisy was

flowering in abundance, numerous plants of the Mountain Gentian were seen and the Mountain Clubmoss found to be much more abundant than was at first thought—growing not only in the boggy parts and in the shelter of granite rocks, but on the exposed rim of the depression, amongst Alpine Orites, Hovea and Alpine Mint-bush. On such slopes we found the Purple Violet, and it is interesting to note that this species, which in lowland places becomes quite robust and showy, is very small and stunted at 4,500 ft. The more humble Ivy-leaf Violet reacts in quite the opposite way; its alpine form is large-flowered, long-stemmed and now much sought after as an attractive garden plant.

One of the loveliest of the dozen or so alpine shrubs to be seen on the drier turfy slopes of Echo Flat is the Leafy Bossea; when in full bloom, as at the time of our visit, it adds much to the attractiveness of the natural alpine garden.

Farther from the bogs and rivulets a Snow Gum - Alpine Tussock-grass community becomes dominant, and one may find any one of thirty or more plant species, about half of which have a shrubby or arboreal habit. In this region the only plants not noted on the occasion of our previous visit (January, 1948) were a single specimen of Royal Grevillea, Shining Coprosma and Twin-flower Knawel; both of the last-named were seen in boggy places. The Knawel—a dwarf mat plant—is one of the eighteen species which, although known to occur on the Federation-Torbreck bogs, were thought to be absent from the Echo Flat system.

Echo Flat is unquestionably the most attractive area for botanising, but nevertheless the plant life in the immediate vicinity of the huts was of some interest. Here we found a commingling of indigenous and exotic species; but none of the aliens had overrun its indigenous companions. Grasses are the main cover, but other plants competed for a foothold and a place in the sun. Little mats of the lovely Alpine Fan-flower, with Andean Carraway, Bidgee-widgee, Hairy Pennywort, Mountain Cotula and Mountain Woodruff, were among the small herbs; these with Fireweed Groundsell. Derwent Speedwell and Hickory Wattle were the major associates of the grasses. Six of the eleven species of grass found in the vicinity of the huts are naturalized aliens and all of them appear to be well established.

So much for the plant life of Lake Mountain and Echo Flat. None of our party were entomologists, nor were we prepared for the task of collecting for those who could tell us something of the animal life of the region. Some beautiful swallow-tail butterflies were watched. We saw, often admired and collected some handsome spiders; the mountain seems to abound in them. Near the summit of Lake Mountain itself a delicately-coloured red spider, little more than 1 mm. in diameter, savagely attacked the writer.



The effect of its bite resembled the irritation caused by a Stinging Nettle but the sensation persisted rather longer, though not so long as that caused by some of the ants, which seem to vie with the spiders in their abundance.

One of the most noteworthy captures was a "Mountain Yabby," an aggressive-looking object about four inches long, in a crusty coat of bright red and blue; it was photographed and returned to the dew-wet grass on to which it had strayed. I am told that a pot of Mountain Yabbies makes a delightful dish, but would hardly care to cook and devour such handsome and inoffensive crustaceans.

Our previous experience on Lake Mountain was that birds were scarce, but on this occasion such an idea was scarcely justified. There was a solitary Blue Heron on Echo Flat, and a fledgling with brown and white speckles, which gaped at us from amongst the Richea and Rope-rush beside one of the pools. We could not identify this positively, but it may have been a young Grass Bird.

Flame-breasted Robins abounded and on the mountain-side we heard the calls of Lyre Bird, Coach-whip Bird, Bronze Cuckoo and Harmonious Thrush, and we saw a number of the last species. Crimson Parrots frequently came to the huts to browse and one misty morning several Black Cockatoos passed overhead on their way from the Federation Range. Pied Currawongs and Silver-eye honey-eaters were to be seen; one Wedge-tail Eagle was noted as it soared above the watch-tower on the mountain summit. We missed, however, the hearty, ill-raucous, laughter of the Kookaburra.

The only sign of large mammals other than the ubiquitous grazing cattle, and the footprints of horses, was seen in the numerous wombat burrows and scratchings. We saw no snakes, although the cover and moisture available in and around the bogs and grassy slopes would seem to furnish an ideal summer playground for them—especially for the Copperhead, which is not averse to high altitudes. Rabbits do not seem to have colonized this region yet, for during our several excursions we saw no sign of them.

Perhaps some day Lake Mountain, Echo Flat, Mount Torbreck and the Federation Range will all be embraced in a reserve for the conservation of wild life and alpine vegetation, where skiers may still enjoy their winter sports, where modest amenities will be provided for either the casual or earnest Rambler and where grazing interests no longer menace the natural vegetation. Here is a splendid resort for the summer Rambler who likes his journeyings to be exhilarating, and yet without the exciting hazards of razor-backs and precipices. It is, par excellence, a field for naturalists, as many of our Club members now can testify; may it long remain so.

## ADDITIONS TO THE RECORDED FLORA OF LAKE MOUNTAIN (JANUARY, 1949)

### I.—VASCULAR PLANTS

By J. ROS GARNET

The following list supplements that previously published by J. H. Willis (*Vict. Nat.*, LXV, May 1948, pp. 14-17) and records a number of plants now known to occur at or above the 4,500 ft. level on the Lake Mountain-Echo Flat system but which had not been observed there previously. The list embraces an additional 14 native species and 10 exotics in 16 further genera (of which 6 are indigenous) and 2 additional families. Where there was the slightest doubt as to identity, specimens were submitted to the National Herbarium (Melbourne) for verification. For details of the habitats of these additional plants, the reader is referred to the pages of the preceding article. Of the 18 species quoted by Willis (*ibid.*) as not hitherto collected on Lake Mountain, but recorded for the Federation-Torbreck area, four (*viz.*, \**Bromus mollis*, *Scleranthus biflorus*, *Pimelea axiflora* and \**Picris hieracioides*) are now known to exist also in the Lake Mountain area.

No particular significance can be attached to the occurrence of several alien species, as they were found in places subject to human interference, *i.e.*, adjacent to old timber camps.

Cattle-grazing on the grassy slopes and alpine flats is a long-established practice which must have caused some changes in the composition of the original plant communities; but such effects may be little more than an accentuation of what would normally have occurred had the indigenous herbivorous animals not been displaced by domestic stock.

The identity of climate and similarity in geological formation of the whole highland system in this region explain why much of the vegetation is common to Lake Mountain, Mt. Federation and Mt. Torbreck. No doubt a more intense study would extend the record of species shared by all three areas. The presence of the common blackberry at 4,500 ft. is noteworthy, but steps were taken to eradicate the one plant seen; thus its inclusion in the following list does not necessarily mean that \**Rubus fruticosus* has permanently established itself in this part of the highlands. At the present time the sheltered gullies appear to be free of the pest, and it would have been most undesirable to leave a single plant merely to confirm observations concerning the rate of spread of the species in alpine areas.

(The asterisk symbol \* denotes a naturalised alien)

#### GRAMINEÆ

- \**Briza minor*
- \**Vulpia bromoides*
- Glyceria dives*
- \**Holcus lanatus*
- \**Lolium perenne*
- \**Bromus mollis*

#### POLYGONACEÆ

- \**Polygonum aviculare*

#### CARYOPHYLLACEÆ

- Stellaria flaccida*
- Scleranthus biflorus*

#### RANUNCULACEÆ

- Clematis aristata*

#### ROSACEÆ

- \**Rubus fruticosus* [one plant]

#### THYMELÆACEÆ

- Pimelea axiflora*

#### LEGUMINOSÆ

- \**Vicia sativa*

#### GERANIACEÆ

- Pelargonium australe*

#### ONAGRACEÆ

- Epilobium junceum* [replacing  
"*E. Billardierianum* (?)"  
previously listed]

#### LABIATÆ

- Mentha laxiflora*

## SCROPHULARIACEÆ

*Veronica notabilis*

## RUBIACEÆ

*Coprosma nitida**Asperula euryphylla*" *scoparia*

## COMPOSITÆ

*Bractycome obovata* [*sp. nov.*]*Oct., 1949*—refers to the then  
undescribed species previously  
listed]*Cassinia aculeata**Senecio vellioides*" " *vagus*\**Sonchus oleraceus*\**Picris hieracioides*

## II.—CRYPTOGAMS (excluding algae and fungi).

By J. ROS GARNET and J. H. WILLIS

In the following systematic arrangement

(M) denotes a species collected by P. F. Morris, Jan. 1929.

(W) " " " " " J. H. Willis, Jan. 1948.

(G) " " " " " J. R. Garnet, Jan. 1949.

(Bog) " " " occurring in the moss-heds, pools, or along  
creeks that feed them.(Wood) " " " occurring on dead and decaying timber  
(logs, branches, stumps, etc.)—all other  
species were found on soil or rocks.

## LICHENS

## STICTACEÆ

*Sticta stipitata* (W—Wood)

## LECIDEACEÆ

*Lecidea cinnabarina*  
(W—Wood)

## CLADONIACEÆ

*Cladonia aggregata* (W, G)*Stereocaulon ramulosum*  
(W)

## PARMELIACEÆ

*Parmelia conspersa* (M)" *pertusa* (G)" *physodes*  
(W—Wood)

## USNEACEÆ

*Usnea barbata* (M—Wood)" *sp.* (W—Wood)[a curious sudiculous plant,  
unrepresented in Melbourne  
Herbarium]

## HEPATICÆ

## MARCHANTIACEÆ

*Marchantia cephaloscypha*  
(W, G)

## RICCARDIACEÆ

*Riccardia* [*Aneura*] *sp.*  
(W, G—Bog)

## FRULLANIACEÆ

*Frullania reptans* (forma)  
(W—Wood)

## EPIGONIANTHIACEÆ

*Nardia fragilis* (G—Bog)

## MUSCI

## SPHAGNACEÆ

? *Sphagnum cymbifolium*  
(M, W, G—Bog)

## POLYTRICHACEÆ

*Polytrichum commune*  
(W, G—Bog)? *Psilopilum crispulum*  
(G—Bog)

## GRIMMIACEÆ

*Rhacomitrium crispulum* (W)

## DICRANACEÆ

*Campylopus introflexus*  
(W, G)" *sp.* (W—Bog)*Ceratodon purpureus* (W)*Dicranoloma Billardieri*  
(W, G)" *Menziesii*  
(G—Wood)*Ditrichum elongatum* (G)

## ORTHOTRICHACEÆ

*Orthotrichum tasmanicum*  
(W—Wood)

## BRYACEÆ

*Bryum sp.* (*aff. B. tor-*  
*quescens*) (M, W, G)

## LEPTOSTOMACEÆ

*Leptostomum inclinans*  
(W, G—Wood)

## BARTRAMIACEÆ

*Bartramia papillata*  
(W—Bog)*Breutelia pendula* (W, G)*Conostonium pusillum*  
(W—Bog)

## HYMNODENDRACEÆ

*Hymnodendron areustum*  
(W—Bog)

## HEDWIGIACEÆ

*Hedwigidium imberbe* (G)

## HOOKERIACEÆ

*Pterygophyllum dentatum*  
(W—Bog)

## THUIDIACEÆ

*Thuidium furforosum* (W)

## BRACHYTHECIACEÆ

*Brachythecium salebrosum*  
(W—Bog)

## SEMATOPHYLLACEÆ

*Sematophyllum tenuirostre*  
(W—Wood)

*Acanthocladium extendatum*  
(W—Wood)

## HYPNACEÆ

*Hypnum* [*Stereodon*] *cupressiforme* (W, G—Wood)

*Isopterygium limatum*  
(W—Wood)

*Note:* All of these 39 cryptogams are known to occur also on the Bogong High Plains (N.E. Vic.), except the indeterminate lichen (*Usnea* sp.) and the following mosses: *Campylopus introflexus*, *Dicranella Billardieri*, *D. Menziesii*, *Ditrichum elongatum*, *Leptostomum inclinans*, *Hymnodendron areatum*, *Hedwigidium imberbe*, *Sematophyllum tenuirostre*, *Acanthocladium extendatum* and *Isopterygium limatum*; but the Bogong area has many other mosses and lichens (48 spp.) which have not yet been collected on Lake Mountain—further search will undoubtedly reveal some of these species.

## SOME SPIDERS OF LAKE MOUNTAIN

The following record of spiders collected on Lake Mountain and Echo Flat has been prepared from notes very kindly furnished by Mr. R. Dunn.

*Aranea fuliginata* L. Koch (Family *Epeiridae*) occurs abundantly throughout the region. Although it is a variable species, identification in the field is aided by the two distinct yellow spots underneath the abdomen. Generally discoverable not far above ground-level, amongst shrubs and bushes—especially near moist places, the web is inclined and almost concentric, but it is adapted to the foliage amongst which it is spun. A signal thread is always present.

Another common species found on Lake Mountain was *Aranea bradleyi* Keys. It is often called the Enamelled-back Spider and is a species well known in the Dandenong Ranges. Unlike its congeners, this spider seldom leaves its web during the day. The fact that a stabilimentum is constructed in the web suggests the necessity for a review of the spider's generic relationship.

On Echo Flat was found one specimen of yet another *Aranea* which Mr. Dunn has suggested may possibly be the hitherto unknown male of *A. promuba* Raub. This was found within a curled leaf of Alpine *Orites* and in respect of its habit resembles the Leaf-curling Spider (*Phonognatha wagneri* Raub.)

In this area was also a specimen, too immature for specific determination, of *Tarantula*—a genus in the family *Lycosidae*—and also one specimen of a species hitherto unknown in Victoria but recorded from Queensland, viz., *Larinia tabida* L. Koch (Family *Epeiridae*).

Near the huts on Lake Mountain is a bush-fire shelter—relic of the milling days. In this gloomy cave were found several small land shells which have been identified by Mr. Charles Oke as *Pylomera dandenongensis* Pettard, which, as the name suggests, was first described from specimens collected in the Dandenong Ranges.

Among the easily caught *Diptera* that inhabit Echo Flat was a species of large March Fly identified, again by Mr. Oke, as *Diatominera auriflua* Don—one of the numerous species of blood-sucking Tabanid flies.

J. ROS GARNET.

## WHAT, WHERE AND WHEN

### General Excursions:

December 26 to January 2—Christmas camp-out at Lake Mountain. Special features: Alpine flora, including sphagnum moss-beds; excursions to Echo Flat and other points of interest. Party limited to 14. (Members able to provide own transport also welcome.) Leader, Mr. W. F. Day, 9 Narrawong Crescent, Caulfield South, S.E.8 (Tel. MU 8681, extn. 32).

1950:

Sunday, January 8—Seaford. Subject: Entomology (Beetles, etc.). Leaders: Mr. C. French and Mrs. M. Piches. Train: 8.53 a.m. to Seaford. Book 2nd Sunday excursion, 2/8.

### Preliminary Announcements:

January 28-30—Australia Day week-end camp at Cape Patterson, with particular emphasis on the Geology. Leader: Mr. A. A. Baker, with local assistance from Messrs. J. Glover and G. Lynch, of Wonthaggi. Bookings with Mr. A. A. Baker, 53 Carlisle Street, Preston, N.18.

Saturday, February 11—Marysville. Parlor Coach trip via Warburton, Acheron Way, Black Spur and Healesville, leaving Batman Avenue at 7.45 a.m. Fare, 17/6. Bookings with Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale (Tel. PU 022, extn. 457).

(Group fixtures in abeyance during holiday period.)

J. BLACKBURN,  
Excursions Secretary.

## THAT PREDACIOUS KOOKABURRA

That our well-loved Kookaburra is something of a rogue can hardly be doubted. Poultry farmers accuse him of a fondness for chickens. His liking for nestling birds has been "sheeted home."

A family of five frequent our Healesville cottage and have learned to ask plainly for the meat doled out. In October last I watched one of them "killing" a bird by beating it on the bough upon which he was perched. Later his mate came and perched beside him, doubtless "back-seat driving." My chance came when, after some ten minutes, the prey was dropped during a specially vigorous flip.

I picked it up to examine. It was a young blackbird which had probably flown that day, or the day before. It was much crushed and mangled. It seemed a large bird for a Kookaburra to devour, unless it could be wedged in a fork and torn to pieces. The "killing" action seems instinctive. I have watched a pair jump up to a decayed sack which covered portion of a barbed wire fence. They tore off strips of the hessian, first "killing" them with a whip-like flip, before carrying them to a nesting hollow. I had not before noted lining in a Kookaburra's nest.

—E.C.

## SAWDUST "BALLOONS" ON GULLY SHRUBS

In Healesville district, gall-like lumps are often seen on Prickly Moses and Tree Everlasting. Upon closer examination they prove to be "balloons" of fine web covered with sawdust. Have any of our entomologists discovered what insect lives in the wood or how the protective cover is made? Obviously, it is there to allow the caterpillar or grub access to air without risk.—A.J.S.

# The Victorian Naturalist

Vol. 66.—No. 9

JANUARY 4, 1949

No. 793

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, December 12, 1949. The President, Mr. Colin Lewis, presided and about 100 members attended.

The Secretary had received a letter from Mr. F. S. Colliver conveying seasonal greetings to all members; he will be speaker at the January meeting.

Members were again reminded to report on any research work in which they were engaged; Mr. A. Swaby is keeping a record. Exhibitors were requested to hand any notes regarding specially interesting exhibits to the exhibit stewards for publication in the *Naturalist*.

The following were elected to membership:—As Ordinary: Miss R. Griffin, Miss J. A. Adams, and Miss M. B. Veal; and as a Country Member: Rev. A. Thomas.

## NATURE NOTES

Miss Elder reported having seen at Wilson's Promontory (on two successive nights) the Yellow-footed Marsupial-mouse, with family attached.

Mr. A. Dunn reported upon a Butcher-bird carrying off a blue-tongued lizard. The bird flew along in front of his car for a little way, but finally dropped the lizard.

Miss Parry stated that the Golden Bronze Cuckoo is around East Melbourne again this year. It has visited the locality about this time for the last three years, and has stayed for about three weeks each time.

Mr. J. R. Garnet noticed recently that Sugar Gums in Royal Park are invested with lerps; these eucalypts are also heavily galled. The cuckoos have been feeding on them consistently during the last two months.

## "CHRISTMAS COCKTAIL" (A SYMPOSIUM)

Seven members had been invited to address the meeting briefly upon a variety of subjects, each giving attention to some phase of natural history which appealed individually.

The opening speaker, Miss A. B. Adams, recounted some of her experiences of the wonderful bird-life around Rockhampton. She was followed by Miss Colline Chugg, who spoke on insects as

agents in the pollination of plants. Mr. V. Hansen illustrated his short talk on five of our common shore crabs with interesting mounted specimens. Mr. R. Dunn then introduced us to Whip Scorpions, with the aid of slides; it was previously thought that only one species was to be found in Australia, but two species have now been identified. Mr. Arthur Cobbett gave a brief précis of the volcanic activity which had contributed to the formation of our State as we know it. Mr. Neville Walters mentioned some of the fascinating legends associated with "Fairy Rings," and told some of his own experiences in searching for the responsible fungi in England and Australia. Finally, Miss Nancy Fletcher spoke of the illustrious people who attended Edinburgh's Ornithological Congress, and of the round of lectures and field excursions which were undertaken.

At the conclusion of these enjoyable lecturettes the President thanked the speakers and wished all members the compliments of the Christmas season.

#### EXHIBITS

Mr. Ivø Hammet: *Regelia grandiflora*, *Grevillea acanthifolia*, *G. leucopeteris*, *G. bipinnatifida*, *G. purdiana*, *Melaleuca gibbosa*, *M. pulchella*, *Eucalyptus incrassata* var. *costata*, *E. nitens*, *E. Oldfieldii*, *Hemiandra* sp., *Casuarina Muelleriana*, *Fusarium acuminatus*—all garden-grown.

Mr. T. E. George, Reservoir: *Callistemon rugulosus*, *Melaleuca incinata*, *M. decussata*—garden grown; also *Eucalyptus Steedmanii* from Yanac.

Mr. C. Gabriel: Series of "Multivalve shells" (chitons) from Victoria and other localities.

Mr. A. N. Carter: Anorthoclase basalt from the Leonard's Hill flow, Daylesford, with calcite and aragonite crystals in cavities.

Mr. J. Ros Garnet: Debris filtered from a 4-in. main of the metropolitan water supply, including pine needles, leaves, elytra of beetles, shells of molluscs and a crab. Also several shells, including a small fresh-water mussel sorted from the above-mentioned debris.

Mr. T. S. Hart, Croydon: Living plants of *Eryngium vesiculosum* ("Prick-foot"), to show remarkable variations in the foliage with age and development. (From wet ground in Allendale Estate, Croydon.) Also curious scaly bark of young *Eucalyptus Sieberiana*—pine-like in texture and appearance.

#### FUNGI AND CHARCOAL

The concluding words of the introduction to *Victorian Fungi* (by J. H. Willis) recently caught the eye. It had been read more than once, but the significance had not registered. Mr. Willis says:

"... yet it is curious that, while a few species flourish amongst charcoal, the charring of post and pole timber is actually practised as a deterrent against fungal attack."

Probably the difference can be explained as follows: The charred post may have a thin coat of charcoal, but beneath it there must be all gradations from charcoal to unchanged wood. With this would be a fair concentration of creosote. Charcoal would have been heated well above 230° C. and poisonous compounds thereby eliminated.

—A.J.S.

## A NEW AND REMARKABLE ORGAN ON A RESIN-BEE

By TARBTON RAYMENT, F.R.Z.S.

Four species of Australian bees possess certain morphological characters which warranted critical study. The insects are large (12, 17, 19 and 23 mm. in length) and black in colour, with a mass of white hair obscuring the metathorax and the base of the abdomen; the bees appear to be transversely banded with white. The smallest bee is *Megachile remeata* Cockerell, the second *M. semiluctuosa* Smith; but females of these two may easily be confused.

The third species, *M. cornifera* Radz., is the second largest, and the female may be recognized by a pair of prominent "horns" on the clypeus. In addition to this feature, the abundant hair of the "face" is golden; indeed, the male has his entire front masked by reddish-golden hair. The anterior tarsal segments of the three males are expanded into thin cream-coloured plates, those of *M. cornifera* being ornamented with a number of small black dots; the two other males have only one or two larger black maculae. The area of the metathorax is highly polished.

The bee discussed here is widely distributed, and the fifth sternum has few of the "arum lily" structures; like all the species which have a parallel-sided abdomen, it builds cells of resin. Meade-Waldo placed this species in *Eumegachile*, next to the largest *M. monstrosa*, and the two females are exceedingly close; but the male of *M. monstrosa* is unknown. It is possible that the male "*semiluctuosa*" of Smith is really the male of *remeata*; the two males cannot be separated by Smith's inadequate description.

The male of *M. remeata* is, however, very distinct from other *Megachilidae*, by the structure of the fifth sternum of the abdomen, which has a gradulus shaped like an abscissa. Externally, the fifth sternum is amber-coloured on the posterior half, with a delicate, irregular hexagonal sculpture. It appears to be minutely punctured, but critical study reveals a number of organs, approximately 325. The area thus differentiated measures 1,000 microns along the longitudinal line, and 2,250 across the transverse line.

Covering this area on the fifth sternum are about 38 rows, more or less radiating, of unique organs resembling microscopic arum lilies; there are only four or so in the first few lateral rows, but the other rows contain about 9 in each, making a total of about 325 organs distributed over the area.

Each individual "lily" has a diameter of about 60 microns; the more leaf-like ones measure 60 mic. in length, with a width of 45 mic., the stalk averaging in length about 40 mic. Posteriorly and laterally there is a number of strong lanceolate setae, and these become progressively shorter and broader until a circular form is approximated.



During the processes of mounting, several of the "stalks" were inadvertently broken off, revealing clear circular perforations in the chitin of the sternum, thus demonstrating that the pores of the interior surface are invaginations of the "stalks" or ducts of the "arum lilies" on the external surface.

The organs are disposed in a characteristic pattern, the tip of the "spathe" of one overlapping the insertion of the "stalk" of another (see fig. 12 of the illustration); the cylindrical "stalks" or ducts are separated by about 80 mic. and are bent at a right-angle to the "flower".

Many of the "lilies" on the sternum of one specimen showed what appeared to be a "nucleus". Sixty-six had the mark on the right, 30 on the left, 10 on the tip of the "spathe"; 109 were devoid of any such mark; one "lily" had two spots. At a magnification of 560 the "nuclei" were resolved as oval clusters of cells; each group measured 40 mic. at the long axis and 20 mic. at the short. Viewed laterally, the cells appeared to rise as a number of short cylinders, otherwise they seemed to be more or less disc-like, perforated with a neat circle about 4 mic. in diameter.

By transmitted light the circles had the aspect of holes cut through the chitinous "spathe" of the "lily"; by oblique lighting they resembled short cylinders on a wider base; by dark-ground illumination the "nuclei" appeared to be brilliantly shining cream-coloured ovals, while the "lilies" were seen only as faint dark shadows.

The regularity of size and structure precluded the "nuclei" from being mere accidental accumulations of debris and, in all probability, represented some kind of cellular colonies, but as the sternum had been prepared for other studies an exhaustive examination could not be made, and their incidence, if any, on the biology of the bee is unknown. The cells are probably 'forula (yeasts).

It is, however, evident that the circular "drum-lilies" have developed from the strong lanceolate setae, for all stages of transition are present on the one sternum, and there is no doubt they are organs, probably playing an important role in the sexual life of the bee.

There are numerous more or less similar structures on the eighth sternum, which, together with the simple ninth sternum, are now completely invaginated, and undoubtedly form part of the genitalia. The "lily" organs are analogous to the wax-glands of *Apis*, the honey-bee; but the latter, however, are on the basal half of the sterna.

The specimens were not specially prepared for the study of the associated nerve and cell structures—the bees were old and desiccated when the author received them—yet it is possible to make out under the wall of the body chitin a few faint slender attachments.

The "arum-lily" is certainly not an organ of the simple sensillum type, consisting of a distal enveloping cell, a proximal enveloping cell, a sense cell, and proximal nerve prolonged through a vacuole into the seta. Only stained sections, prepared from fresh material, could reveal their true structure. The extraordinary modification suggests that the "lilies" are a new type of organ, and it is postulated that they function as scent glands, for bees possess a singular sensitivity to the odours of the sexes. They may be olfactory in function.

The author has not been able to find a homologous sclerite (No. 26 in illustration) in *M. cornifera*, but the small lateral process at "A" is very conspicuous, and consists of a cluster of recurved spatulate organs which are confined to this area. In *M. remeata* a modified form of these organs covers a large area of the two sterna.

The author's researches in Australian Hymenoptera are assisted by a grant from the Trustees of the Science and Industry Endowment Fund.

#### LOCALITIES

The material for this study was obtained from the following localities:

##### *Megachile remeata* Ckll.

One male a trifle smaller than the Allotype—Kalgoorlie, W.A., Nov. (?). *Leg.* L. J. Newman.

A long series of typical males and females—Orroroo, S.A., Dec. 24, 1938. *Leg.* James T. Gray.

A short series of males and females larger than Type—Bolgart, W.A., Dec. 18, 1947. *Leg.* Rica Erickson. (Females on flowers of *Mirbelia ramulosa*; males on garden Forget-me-not). Also from same collector, Aug. 25, 1949. (Females on flowers of *Baeckea camphorosmae* and *Diuris longifolia*.)

##### *Megachile cornifera* Radz.

A large series of typical males and females—Edungalbe, Q., Dec. 6, 1947. *Leg.* Ernest E. Adams.

##### *Megachile monstrosa* Sm.

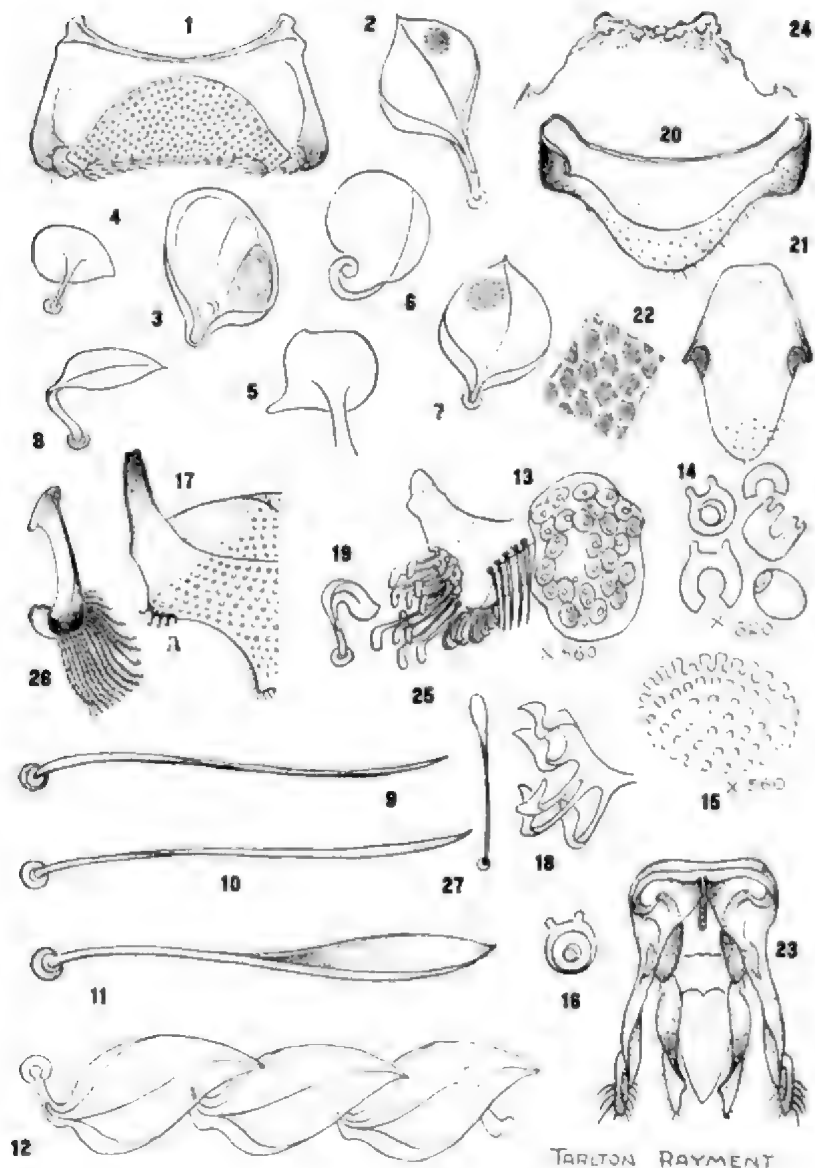
A rather small female—Bogan River, N.S.W. Presented by Cedric Deane.

##### *Megachile semiluctuosa* Sm.

A series of typical females in resinous cells built in wood of *Acacia aneura*—Broken Hill, N.S.W., July 28, 1940. *Leg.* J. Fraser Patterson, F.R.A.S.

A series of females, smaller than the Type—Broken Hill, N.S.W., Sept., 1940. *Leg.* Royce H. Mew. (On flowers of *Eremophila maculata*).

A large female—Swan River, W.A. *Leg.* L. J. Newman.



TARLTON RAYMENT

## MEGACHILE REMEATA Ckll.

[Ann. Mag. Nat. Hist. (8), xi, p. 583, 1913.]

ALLOTYPE, Male—Length, 12 mm. approx. Black, with much white hair.

Head large, closely punctured, face with much long white hair; clypeus with coarse punctures; supraclypeal area with smaller punctures; a few black hairs on vertex; genae rugoso-punctate; labrum and mandibulae black; antennae capitate, apex compressed.

Mesothorax with contiguous large punctures; scutellum similar; postscutellum rougher; metathorax finely rugose (tessellate in *semihuctuosa* and highly polished in *cornifera*); abdomen with much long white hair, a white bar laterally on segments one, two and three, others with black hair; pygidial plate large, hardly emarginate, sub-tuberculate; ventral segments black (light margin in *semihuctuosa*), much white hair.

Legs black with irregular reddish areas, long white hair; anterior coxae with long spines; tarsi black, with more or less reddish, anterior expanded, cream-coloured, with a fringe of long golden hair; claws red; hind calcar reddish-black; tegulae shining black.

Wings clouded apically, a dark area along radial cell; nervures blackish; cells normal; pterostigma blackish; hamuli 14, strong.

Locality: Bolgart, W.A., Aug. 8, 1949. Leg. Rica Erickson.

## KEY TO ILLUSTRATION

1. Fifth abdominal sternum of male bee, *Megachile remeata* Ckll.
2. One of the spathe-like organs with a colony of cells.
- 3, 4, 5, 6, 7, 8. Various views of the organs.
- 9, 10, 11. Setae showing the progressive modification from a lanceolate to a spatulate form.
12. The characteristic arrangement of the overlapping spathes of the organs.
13. One of the cell-colonies magnified by 360.
14. Several of the cells magnified by 620. They are probably *Torula* (yeasts).
15. Lateral view of one of the colonies of cells.
16. Viewed obliquely; the cells resemble short cylinders.
17. The eighth sternum also has a number of leaf-like organs resembling those of the fifth sternum. In the drawing the anterior portion is curved over and downward, forming a basin, with the organs on the inner surface.
18. The lateral process at "A" more highly magnified.
19. One of the organs of the eighth sternum showing the bent "stem" duct.
20. Sixth tergum of the male.
21. Ninth sternum of the male.
22. The hexagonal sculpture of the fifth sternum is due to the secreting cells of the hypodermis.
23. Genitalia of male *M. remeata*. (The genitalia of *M. cornifera* lack the vestiture of the gonocoxites).
24. The pygidial plate of the seventh tergum is almost tuberculate and subdentate.

25. The analogous process "A" of the sternum of *M. cornifera* Radz. has laterally a conspicuous development of the spatulate organs.
26. Lateral sclerite of the eighth sternum of *M. remeata* Ckll. has a tuft of plumose hair. It is reversed in the drawing, but when turned over is closely adapted to the long apodeme above A2.
27. One of the spatulate organs of *M. cornifera* more highly magnified

#### LEAF-NIPPING BY SHRIKE-TITS

In the *Birdlover*, October, 1948, I described the Shrike-tits' habit of nipping off leaves (and petioles) of our Lombardy poplars. Last year (in February, 1949) we again noticed the habit. I assumed that there might be something tasty at the base of the petioles, perhaps leaf-buds were the objective.

Recently my attention was drawn to some interesting notes on the Shrike-tit in an old *Emu* (October, 1915) written by Mr. A. H. Chisholm. He had observed this bird's habit of nipping leaves from above its nest. It was suggested to him that this would lessen the swaying of the slender branches at the ends of which was the bird's nest.

He refers to the Shrike-tit's habit of sleeping at the outermost ends of the branchlets. In this garden the birds also nip the leaves from tall, slender branches of a cherry plum.

—E.C.

#### "JOEY" POSSUM SURVIVES ELECTROCUTION

By P. F. MORRIS, Melbourne.

Chewed gum blossoms were strewn upon the ground and I examined a tree trunk in the Domain for tell-tale possum marks. Looking aloft, I espied the culprit—a brush-tailed possum—electrocuted on two nearby high tension wires, her fore feet on one wire and hind feet grasping the other to make a death-bridge.

The S.E.C. sent a truck with huge folding ladder and four men to the scene; children thought the fire brigade had arrived; six other men rushed up, gardeners from the Botanic Gardens came, and I remained within the growing circle. The ladder was extended by winch. Expert electricians, duly respectful of the wires, very carefully detached the body with long wooden poles, and the crowd watched me as I knelt beside the fallen corpse, feeling like some minister about to deliver the last rites. Several onlookers even bared and bent their heads!

"It's alive," I said. "Oh yeah! and *what's* alive?" sneered the crowd, pressing forward. "Give it air," cried one comedian.

"The 'joey' is still alive; look at it moving." I explained, pointing to a young possum about the size of a rat. It was still on the teat, with its rump extending from the pouch, but the tail and legs were folded up inside.

Our friends could advance no reason for survival; neither can I.

[In *Wild Life*, XI, June 1949, p. 282, Miss Daphne Hudson of Bowraville, N.S.W., writes of two female flying foxes that landed on electric wires above the fruit trees near her home. They were killed, but the electricity had no effect on two baby bats clinging to their mothers' warm furry bodies. There is an editorial explanation that the parental fur had acted as a perfect insulation against electricity in saving the young bats' lives; but with Mr. Morris's "joey" possum, still attached to the mother's teat, the insulating effect of fur would not apply.—Ed.]

## BARON VON MUELLER'S VICTORIAN ALPS

By N. A. WAKEFIELD, *Cann River.*

### *Introduction*

Soon after his appointment as Government Botanist of Victoria, Baron von Mueller made a number of long excursions into the then generally unknown areas of the colony. The Australian Alps fascinated him, and during his first journey in 1853 he ascended Mounts Buffalo and Buller, and the Cobboras Mountains during the second trip early in 1854. On his third journey, later in the same year, he traversed Mount Wellington, reached Mounts Loch and Feathertop, and then continued, early in 1855, to visit the summits of the Kosciusko Plateau in New South Wales. \*

In December, 1854, while on Mounts Feathertop and Loch, Mueller took bearings to many prominent points, some of which he named. Although these observations were carefully set out in a special report from Omeo on 16th December, it is to be greatly regretted that his names were not adopted except for one, now applied to a mountain for which it was not originally intended.

The accompanying map illustrates the country covered by Mueller's observations of December, 1854, showing some settlement and tracks of the Dargo and Omeo areas as at that time, the mountains and streams with their present names, and the general form of the Alps down to about 4,000 feet. The compass observations are marked by lines to the points concerned, and through Mounts Feathertop, Loch and Tambo are drawn arrows to indicate the apparent north of the compass while the respective readings were being taken.

The instrument used was a small pocket compass, which was remarkably accurate, however, and almost all the bearings are recorded to the nearest 5 degrees. Early calculations of magnetic variation in the general area are recorded as  $9^{\circ}45'$  on the Buckland River,  $9^{\circ}13'$  at Porepunkah,  $9^{\circ}39'$  on the Dargo River and  $9^{\circ}17'$  at Old Omeo. Applying a clockwise adjustment of  $9\frac{1}{2}$  degrees to Mueller's compass readings, it is found that none of his bearings is more than  $1\frac{1}{2}$  degrees from a perfectly accurate line to the point concerned. This is a truly remarkable record on the part of the observer, though it will be seen that a discrepancy occurred on Mount Loch, leading to confusion on the part of some later writers, including the Baron himself.

### "MT. HOTHAM" AND "MT. LATROBE"

Having observed Mount Bogong from the north and east on his second journey, Mueller made his way towards it from the south after visiting Mount Wellington in the course of his third journey later in the same year. From Omeo he wrote:

"I ascended the Mitchell, Wentworth and Dargo Rivers, crossing the Dividing Range near the upper part of the Cobungra. Thence I traversed a grassy tableland in a north-easterly direction, along the Cobungra downwards, until the country appeared practicable towards the north, to reach the highest part of the Bogong Ranges. On 3rd Dec. I ascended the south-east of the two highest mountains of the Bogong Range, and believe it to be nearly 7,000 feet high. The much more abrupt and yet higher summit of the north-west mount I ascended from the Upper Mitta, which skirts the base, on 6th Dec., unquestionably several hundred feet higher."

He proposed "to name the grandest of both Mt. Hotham, and the second in height Mt. Latrobe." He goes on to say: "One of the main branches of the Mitta Mitta has its source in Mt. Latrobe, and those of another, as well as those of the Ovens and Mitchell, lay in a lower range not far distant."


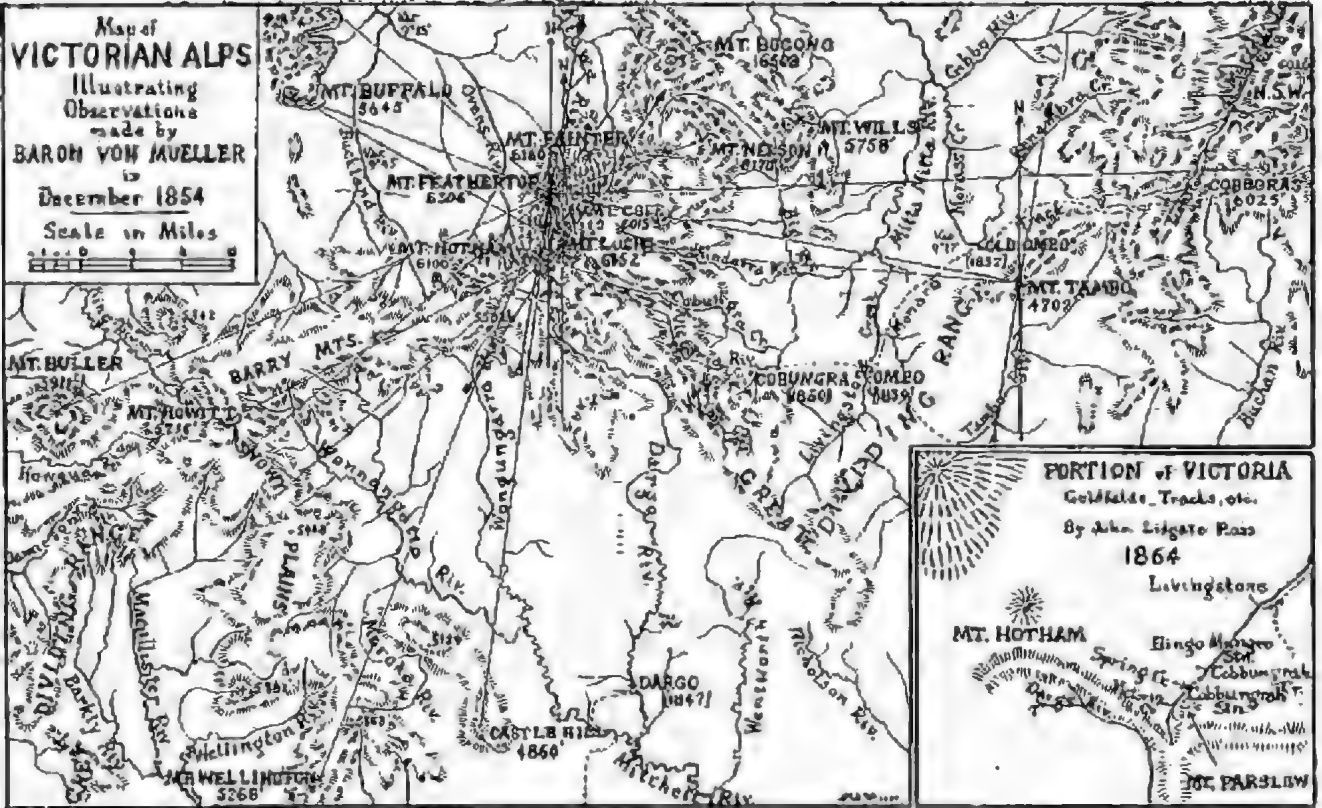
Mueller received assistance from Angus McMillan, of "Bushy Park," on the Avon River, and it is reasonable to assume that he "ascended" the rivers first mentioned by way of Foster's Dargo Station and McMillan's nearby "Quagnunjie" (each of which were taken up several years before the time in question), and thence across the Divide to the Cobungra Station, which dates back to 1850. The "Cobungra" is now *Spring Creek* and part of the *Victoria River*, which together have a general north-easterly trend. The country which "appeared practicable towards the north," and hence the explorer's most probable route to Mount Loch, would be between the present Cobungra Creek and Bundarra River.

"The much more abrupt and yet higher summit of the north-west mount" is an exact description of Mount Feathertop as seen from Mount Loch, and the "Upper Mitta which skirts the base" is certainly the west branch of the *Kiewa River*. "One of the main branches of the Mitta Mitta" would be the present *Cobungra Creek*, while the "lower range not far distant" can be no other than the *Hotham "hump,"* the highest part of which is about two miles away and about 50 feet lower, as it is the only place where branches of the "Mitta Mitta" (*Diamantina Creek* of the *Kiewa*), *Ovens* and *Mitchell* (Dargo) all have heads together.

Mueller's belief that Mount Feathertop was the highest summit of the Bogong Range was probably due mainly to an impression formed when on Mount Loch, from which that spectacular peak, 150 feet higher and less than five miles distant, is much more impressive and actually at a higher angle of vision than is Mount Bogong itself, nearly 20 miles away.

The smaller map shown is taken from an 1864 Lands Department map of Victoria, and it illustrates well the north-easterly trend of the "Cobungra," as well as the two peaks ascended by Mueller—the latter being probably positioned from his reports,

Map of  
**VICTORIAN ALPS**  
 Illustrating  
 Observations  
 made by  
**BARON VON MUELLER**  
 in  
 December 1854  
 Scale in Miles



though already his name "Hotham" is misplaced to its present approximate position.

Thus it is apparent that the "Latrobe" of Dec. 3rd is now *Mount Loch*, and the "Hotham" of Dec. 6th is *Mount Feathertop*.

#### OBSERVATIONS FROM MOUNT FEATHERTOP

Eleven bearings were reported from this point, six of which are to features which had previously been named, while the other five are to mountains upon which the observer bestowed names of his own invention. These will all be set out below; and a simple calculation, similar to that demonstrated in the case of the first, will enable the lines to be checked on the map, and will demonstrate with certainty the identity of each feature.

The observations from here covered a very great scope, 97 miles from Buller in the west to the Cobboras in the east, and 58 miles from Buffalo in the north to Wellington in the south. Of our nine highest mountains, one only, Mount Fainter, 6,160 feet high, was not included, probably because it is situated within the comparatively small triangle of its three superiors.

"*Mt. Aberdeen*, W  $10^{\circ}$  N." This is a magnetic bearing of  $280^{\circ}$  (clockwise from north), to which  $9\frac{1}{2}^{\circ}$  magnetic variation is added, thus obtaining a true bearing of  $289\frac{1}{2}^{\circ}$ . The mountain is now known as *Buffalo Peak* or *The Horn*, being 5,645 feet high and lying at  $291^{\circ}$  from Mount Feathertop.

"*Most Northern Peak of Buffalo Mountains*, W  $30^{\circ}$  N." See map.

"*Mt. Buller*, W  $35^{\circ}$  S." It is 5,911 feet high, at  $246^{\circ}$ .

"*Mt. M'Millan* of Townsend, or *Castle Hill* of Tyers, Due S." *Castle Hill*, 4,860 feet high, lies at  $188\frac{1}{2}^{\circ}$ .

"*The Cobboras*, E  $12^{\circ}$  N." 6,025 feet, and at  $88^{\circ}$ .

"*Mt. Wellington*, S  $10^{\circ}$  W." Though conspicuous from the south, Mount Wellington (5,268 feet) is hidden from Mount Feathertop behind a feature a few miles nearer and 95 feet higher, the bearing being  $200^{\circ}$ . But the name was probably used comprehensively.

"*Mt. Latrobe* (distance 8 miles), S  $25^{\circ}$  E." Mount Loch is situated only four miles from Mount Feathertop, and at a bearing of about  $169^{\circ}$ ; but at this short distance one hundred yards subtends approximately  $1^{\circ}$ , so the actual reading taken would depend on the exact spots concerned in the observation. Moreover, as well as agreeing in other respects, *Mount Loch* (6,152 feet) is the highest point anywhere east or south of Feathertop. The over-estimation of the distance between the two mountains was later compensated for by a bearing to each from Mount Tambo. The  $4^{\circ}$  difference at that distance subtends only three miles at right-angles to the line of vision.

"Mt. Leichardt, E 30° N." This is Mount Nelson, at 70° and 6,170 feet high.

"Mitchell's Plateau (about the distance of Mt. Buller), S 40° W." The usual adjustment indicates a line passing about three miles south-east of Mount Howitt, thus placing this plateau as our *Snowy Plains*, an extensive area over 5,000 feet high between the Wonnangatta and Macallister Rivers.

"Kennedy's Height (a rocky hill in the Snowy Tableland), E 5° S." This is an accurate description and an exact line for *Mount Cope*, 6,015 feet high.

"Hooker's Plateau (15 miles distant), N 25° E." At 15 miles this line passes within two miles, north-east of the summit, of *Mount Bogong*, 6,508 feet high. The Baron believed that he had ascended our two highest alps, so the height of the Bogong Hump must have deceived him, but there is no doubt that it is identical with his "Hooker's Plateau."

In the F.N.C.V. Census of Victorian Plants (1928), we find *Agropyron velutinum* and *Carex acicularis* (now regarded as *C. Archeri*) recorded as "N.E., Mt. Hotham." These are from Mueller's specimens collected on Mount Feathertop (the *Carex* at "7,000 ft."), so the records should be adjusted accordingly, although each species has since been found in other alpine localities in Victoria.

#### OBSERVATIONS FROM MOUNT LOCH

Mueller recorded only four readings as from his "Latrobe" on Dec. 3rd, and in doing so set a puzzle for future elucidation, and provided a stumbling-block for those interested in the identity of his mountains. At the same time, he records that clouds obscured his view of Mounts Buller, Wellington, M'Millan and other peaks.

"Mount Aberdeen, W 5° S." This is a magnetic bearing of 265°, which, with the 9½° variation added, gives an apparent true bearing of 274½°. However, Buffalo Peak lies at 298½° from Mount Loch, which indicates an error of 24° clockwise. This identical error is apparent also with regard to the following observations, so it seems that, while the readings were being taken, the compass needle was abnormally deflected. This mishap could have been caused by jamming due to a temporary internal mal-adjustment or to "dip", or to deflection owing to the near-presence of a metal article or even a ferrous lode. Whatever the cause, it is a fact that, at the critical stage, the compass needle rested at over 20° east of magnetic north.

"Mitchell's Plateau, S 15° W." Adding both the normal magnetic variation and the 24° compass error, we have again a line passing through the distant Snowy Plains, but about five miles to the left of the one from Mount Feathertop.

"*Clarke's Peak* (between Mitchell's Plateau and the Buffalo Ranges), S 30° W." Making both adjustments, we can identify this feature as *Mount Howitt*, 5,715 feet high, and at a true bearing of 242°. In support of this conclusion, it is noted that Howitt is the highest point anywhere west of the place of observation, except Mount Buller which was at the time obscured and in any case was well known to the observer.

"*Mt. Hotham*, N 25° W." As this is the correct magnetic bearing to Mount Feathertop, it is reasonable to assume that it was deduced as a back-bearing from the reading taken from that mountain to Mount Loch three days later. Probably the original bearing was discarded and replaced as soon as it was proved faulty by the other; and hence it did not enter into his considerations when the Baron said, 30 years later, that he had ascended Mount Bogong.

### THE QUESTION OF MOUNT BOGONG

Mr. F. G. A. Barnard, after discussing the subject to some length in "Some Early Botanical Exploration in Victoria" (*Vict. Nat.*, XXI, p. 17, June 1904), concluded that Mueller "really ascended our Bogong and bestowed that name (Hotham) upon it, while his Latrobe is either Mt. Wills . . . or Mt. Nelson," and he also mentions "wrong peaks being named for the bearings given." These contentions cannot be supported because the Baron made no errors of recognition, and, furthermore, from any peak other than Feathertop the main group of bearings given cannot be made to point to a set of prominent heights. Barnard says that "the grassy tableland in a N.E. direction along the Cobungra' cannot possibly refer to the 'Razorback,' the only possible approach to Feathertop from where he crossed the Alps from Gippsland." However, the "grassy tableland" came on the approach to Loch, not Feathertop, which was reached some days later by way of the Kiewa.

Mr. A. J. Tadgell, in "Mount Bogong and its Flora" (*Vict. Nat.*, XLI, p. 56, Aug. 1924), wrote that "Mt. Latrobe . . . 6,508 ft. . . now bears the name of Mt. Bogong." In this he would be following Mueller's own statement, in a letter of 18.10.1854, to Mr. J. Stirling, in reference to the latter's map of the Alps, when the Baron said: "What is called now Mt. Feathertop is my Mt. Hotham of 1854, and what is named Mt. Bogong I called then already Mt. Latrobe."

What Mueller had in mind when he wrote this letter will probably never be known, but most likely he had been attempting, as did others later, to fit his Mount Latrobe observations on to the map. Buffalo Peak, an unmistakable feature, is about W. 5° S. from Mount Bogong (true bearing): and, as has already been

indicated, the actual reading taken to his "Hotham" may have been discarded as erroneous right from the start. Also, seeing that a number of the mountains best known to him were not in sight when he was on Mount Loch, perhaps he considered that a reading had been taken to the Wellington area in mistake for Mitchell's Plateau, as the recorded bearing would first suggest, while Clarke's Peak was a new feature not indicated elsewhere, and hence of doubtful identity.

Thirty years had elapsed, but still Mueller could not have considered the matter thoroughly in the light of his own data as already set out in this article; for there is absolutely no doubt that on December 3, 1854, he surveyed the surrounding mountain systems from the summit of Mount Loch.

This is further verified by two bearings which he took soon after from Mount Tambo. "Mount Hotham" read Due W, and "Mount Latrobe" was W 4° S. Allowing for magnetic variation, these give accurate lines to Mounts Feathertop and Loch which are actually at 281° and 275° respectively.

"Bogong Range" or "The Bogongs" was first applied to the whole general area of the highest Victorian Alps—wherever the Bogong Moths swarmed. Mueller considered the name to be too loosely applied, and so discarded it and named afresh his "two highest mountains of the Bogong Range." While on his second journey he had been turned back by bush-fires from an attempt to ascend the true mountain.

Thus it was that *Carex cephalotes*, *Plantago Muelleri* (syn. *P. stellaris*), *Parantennaria uniceps* and *Abrotanella nivigera*, all restricted in Victoria to the region between Mounts Bogong and Cope, were not found by that meticulous collector except in the "Munyang Mountains" of New South Wales. And the intrepid botanist, who so enthusiastically sought out our alpine flora, did not ever know that he had been eluded by Victoria's highest mountain which had kept secret from him some of our rarest plants.

Summary:

*Victoria's Highest Peaks*

Bogong, 6,508 ft. . . . .	"Hooker's Plateau."
Feathertop, 6,306 ft. . . . .	"Mt. Hotham."
Nelson, 6,170 ft. . . . .	"Mt. Leichardt."
(Fainter, 6,160 ft.)	
Loch, 6,152 ft. . . . .	"Mt. Latrobe."
Hotham, 6,100 ft. . . . .	"Lower range not far distant" (from Loch).
Cobboras, 6,025 ft.	
Cope, 6,015 ft. . . . .	"Kennedy's Height."
Buller, 5,911 ft.	

## Other Alps

Howitt, 5,715 ft. . . . .	"Clarke's Peak."
Buffalo Peak, 5,645 ft. . . . .	"Mt. Aberdeen."
Wellington, 5,268 (5,363) ft.	
Castle Hill, 4,860 ft. . . . .	"Castle Hill or Mt. Townsend."
Tainho, 4,700 ft.	

## NOTES ON MARINE ALGAE AT PORTLAND, VIC.

By E. T. Muir, Dimboola.

During two visits to Portland, one in April, 1947, and the other in January, 1949, I was struck by the variety and form of the marine algae washed up on the beach. The colouration in some of the species is indeed beautiful. The construction, also, is most diverse and is equally as fascinating as that of land plants. In these two visits I collected 20 species of seaweeds and the marine flowering plant, *Cymodocea antarctica*, as well as many species of corals and allied animal growths of the marine world. These have not yet been determined, as I do not know whom to help me with the identifications. All the species collected were obtained by "beach-combing," not by gathering from the rocks as any experienced marine biologist would do. My list of algae is as follows (it is not arranged systematically, but the algae are grouped according to their colours):

## Green—

*Melanthalia obtusa*  
*Xiphophora chondrophylla*, var.  
*minor*  
*Codium Muellevi*  
*Hormosira Banksii* — *Bun*  
*Scaberia Agardhii*  
*Ulva lactuca*  
*Caulerpa hypnoides*

## Red-green—

*Nuloplegma Preissii*

## Red-brown—

*Phacelocarpus Labillardieri*  
*Pterocladia lucida*  
*Plocamium angustum*  
*Ecklonia radiata*  
*Sargassum Raoulii*

*Sargassum varians*

*Phyllospora comosa*  
*Gelidium glandulosifolium*  
*Lobospora bicuspidalis*

## Dark brown—

*Cystophora subfarinata*  
*C. siliquosa*  
*C. retorta*  
*C. dumosa*

## Marine flowering plant—

*Cymodocea antarctica*

## Coralloid organisms determined to date—

*Corallina Cuvieri* (alga)  
*Amphiroa stelligera* (alga)  
*Polysoa* spp.  
*Sertularia* sp.

The most fruitful locality was at the northern end of Dutton's Beach, near the lighthouse. Here nearly all the specimens were gathered. It would appear that a reef formation exists off-shore at this point which would yield many more species than I gathered, if it were possible to examine the reef itself. The two most common species seen attached to rocks were *Hormosira Banksii* and *Phyllospora comosa*. At this part of Dutton's Beach the genus *Cystophora* seems to be very well represented, as all four species can be gathered, growing more or less in mixed association—specimens of *C. dumosa* and *C. retorta* were collected attached to the same piece of rock and appearing to have a common base. *Melanthalia obtusa* is also washed up in large quantities at this same place. At Cappa Camp, Nelson Bay (the only part of Nelson Bay that I visited in an endeavour to catch some marine inhabitants on a hook), few seaweeds are in evidence. The giant kelp *Phyllospora comosa* is the commonest species and can be seen buffeted by

the very large waves of Nelson Bay, apparently relishing that rough, open situation, whereas the other algae (*Cystophora* spp. and *Hormosira Banksii*) occur only sparsely in more sheltered positions there.

The marine algae of Portland Bay seem to be quite often heavily encrusted with coral-like growths and other marine animals. The *Sertularia* species collected was of a delicate feather-like construction, light brown in colour and very attractive. One of the *Polysoa* species would seem at first sight to be an alga. It is very soft, and after being mounted on a card and travelling over 1000 miles through the post is still as soft to touch as when first washed up at Dutton's Beach. One point I did not notice at the time of gathering was that the *Polysoa* spp. and *Sertularia* sp., as well as other marine animals, seem to have a preference for algae in the Red and Brown groups. I noticed, after I had mounted the specimens, that algae in the Green group did not have a single colony of any marine animal attached to it—perhaps these green algae grow too near the surface for the growth of what might be termed "water epiphytes"?

On some future occasion I hope to explore the Portland sea coast more thoroughly and make a more complete list of species and their distribution than I have been able to do at present. My thanks are due to Mr. H. R. S. Womersley of the Department of Botany, Adelaide University, for his help in determining the species collected and mentioned in these notes.

#### NOTES ON BUDGERIGARS

That Budgerigars should eat leaves of the Sweet Pittosporum (*P. undulatum*) is not surprising, for both plant and bird are Australian. It came as a surprise to find that the leaves are relished by canaries. They nibble round the margins until little is left except the midrib. The leaves contain saponin and there is a sticky resin in the twigs, probably also in the leaf stalks which they nibble.

Two of our canaries have been killed by butcher-birds, but our budgerigars are never attacked. Why? Is it that birds of prey "pounce" on ground-feeding budgerigars, which is not the butcher-bird's method of capture?

—E.C.

#### TWO STRANGE LIZARDS

My son and I hunched one day in January, 1939, among rocks above Wartook reservoir in the Grampians. Lizards were there in numbers never seen before. They watched us with constant curiosity. Some even accepted flies and butter impaled on grass stalks.

Among them, much more timid than the rest, was a long smooth blue-black lizard. It would not come out for us to see the tail. At first we thought it was a snake. But the forelegs were clearly seen and, moreover, it closed its eyes. There was no variation in the clean rich blue-black colour. From the rather pointed nose to the legs, the width increased without any sign of a neck. What was it?

In January, 1948, on a dry top of a Silurian spur of Blue Mountain, Upper Myers Creek, an unusual lizard was observed. It does not appear to conform to any recorded species. The general form is nearer to *Amphibolurus* than to any other; but it is flatter and broader, while it has a distinct neck and broad head. The tail also is much shorter.

The ground colour is a faded rufous brown, and olive-green semicircular patches are irregularly arranged in one row on each side of the mid-line, curved sides inward. When still, it was so well camouflaged among the fallen leaves that three observers failed to locate it at all, even when its position was minutely described.

Has anyone seen it?

—A.J.S

### LYRE-BIRDS AND A MEMORIAL

[The following interesting note is contained in a letter from Mr. A. E. D'Ombraim, of Newcastle (N.S.W.), a son of the late Dr. E. A. D'Ombraim, sometime president of the Royal Australasian Ornithologists' Union.—A.H.C.]

You may remember that we had Dad's ashes sent to Victoria, where my uncle scattered them in a spot in Sherbrooke Forest. This was a wish of Dad's, as he had spent so many happy days in that lovely spot. I visited the forest recently before leaving Victoria for home, and, together with my uncle and Mr. Jeeves, went to the locality where the ashes were placed. On arrival there we saw three lyre-birds scratching nearby and a fourth was calling a bit over to the right. After we had moved quietly towards them, two ran off down the gully, but the third one stayed and went on with the business of scratching, or, rather, clawing the earth. I opened up with the camera from 20 yards in typical poor gully light, and as the bird did not worry about me much I tried to get closer.

Well, after some time we became friends, and I edged my way closer and closer until I had the bird at my feet, still working hard for his food. Hardly believing my good luck, I attempted two or three shots on a tenth at 3.5, and, as he had no objections whatever, I called to my uncle and Mr. Jeeves, to come along quietly. While they were working their way down, two white-browed scrub-wrens entered the arena and scratched around the lyre-bird's feet. Then a yellowbob joined in the party, sitting quietly on the side of a sapling a foot or so away from the lyre-bird. When the others arrived and had placed themselves alongside trees, I got down near the lyre-bird and started to help him scratch; but he was rather suspicious of this move and edged away. I stood up and held out my hand to him and he cocked his head and had a good look at it, no doubt seeing enough dirt on it to scratch in. I quickly aimed the camera by guess-work with the right hand and clicked the shutter.

When we had all had a good look at each other, I asked Mr. Jeeves where the tree was that he had marked. We wandered about looking for it while the bird went on with his scratching. Then, to my amazement, we found that the tree under which the bird had been scratching was the one Mr. Jeeves had marked with a little cross.

It seems remarkable that I should go all the way over to Victoria mainly to see this spot, and then find it the centre of activity by lyre-birds, the species which I am sure Dad looked on as the symbol of all bird-life in the Sherbrooke Forest.

---

### HAWK AND SNAKE

Two of my friends were travelling along the Camperdown-Lismore road on April 10 at about 7 a.m. when, to use their own words, they "saw three large 'trouser-leg' hawks perched close together on a fence by the side of the road." As they approached, two of the hawks flew off, but the third made a gentle swoop along the grass in a nearby paddock and then immediately began to soar up into the air. It had a large snake of greenish colour (probably a "Tiger") gripped firmly in its claws and, by the way the snake was squirming, it was obviously alive.

My friends watched the hawk until it was nearly out of sight and concluded that, upon attaining a sufficient height, it would release the snake, which would be killed by impact with the ground. I think that is the method usually followed by *koakaburras*.—R. CUMBY, Camperdown.

**HAKEA VITTATA, "BLACK" AND "WHITE"**

Some of us have been much puzzled by two hakeas of north-west Victoria, thinking they might be *H. vittata* and *H. leucoptera*. The flowers of *H. vittata* are always hairy and up to 10 in umbels, while those of *H. leucoptera* are nearly always glabrous and more than 20 in short racemes; but, when not flowering, the plants may be easily confused. The horned fruits of *H. vittata* are variable; those on young plants are not usually horned, while the seed-wing is sometimes as light as that of *H. leucoptera*.

*Hakea vittata* has a wide range in Murray country from the Nathalia-Picola area right to the South Australian border; its timber has achieved some fame in pipe manufacture. I do not think that *H. leucoptera* extends into the far N.W. Mallee at all, but a *Hakea* of the Red Cliffs area has sometimes been taken for it. This plant has whitish foliage, and is called "White Needlebush" by bushmen, who call typical *H. vittata* "Black Needlebush."

Mr. L. G. Chandler has been observing these hakeas for years, and seems to have solved the problem of "White" and "Black". The following observations are taken from his notes and were illustrated by specimens which, being in flower, could be positively identified as *H. vittata*.

*H. vittata* when young is a graceful bush, up to 8 ft. high, with many stems, some springing directly out of the ground. The needle leaves are hoary-white, making these bushes conspicuous from a distance.

As the tree approaches maturity, one strong trunk develops at the expense of the others which die off, leaving a single trunk about 20 ft. high, bearing dark green and usually quite hooked foliage. This is the stage known as "Black Needlebush," while immature specimens—bushy, silver-leaved and straight pointed—are the "White Needlebush" which has sometimes been confused with *H. leucoptera*.

Intermediate forms naturally occur. The tree occasionally retains its white foliage after all stems but the main one have died, and on one occasion Mr. Chandler found a plant still bushy and with dark needles, but his notes explain the baffling variation in herbarium specimens of *H. vittata*, and he may yet, by noting an immature tree over a period of some years, watch a "White Needlebush" actually turn into a "Black" one.

JRAN GALBRAITH (Tyers).

**JOURNAL REVIEW**

The Wild Life Preservation Society of Australia, whose headquarters are at Science House, Gloucester Street, Sydney, has from its inception fought valiantly for the preservation of our fast diminishing native flora and fauna. Its journal *Australian Wild Life* (the latest issue, Vol. 2, No. 1, to hand) epitomizes the many and varied activities of the Society toward effective conservation of wild life, especially in New South Wales, and brings before the public the necessity for increased effort in stemming further alarming encroachments, of which discriminating naturalists are only too fully aware.

Special attention is given in this issue to National Parks. Mr. David G. Stead writes on "The Tragic Story of National Park, N.S.W.," an unhappy experience which Victorian nature-lovers know is being repeated here. A note on National Parks in this State refers particularly to the despoliation of Wilson's Promontory. A heartening move, however, is the establishment by the N.S.W. Government of the Kosciuszko State Park, "far-and-away the most important move in wild life and native flora conservation that has ever been made in Australia." The journal stresses proper administration in regard to this park, if the primary objectives of the extensive reservation are to be made effective.

The Society's appeal for interested help is warmly commended.

—H.C.E.S.



## WHAT, WHERE AND WHEN

**General Excursions:**

- Saturday, Jan. 21—Fossil Beach (Mornington). Subject: Marine Biology and General. Leader: Mrs. J. J. Freame. Train: 9.00 a.m. Frankston (stops Caulfield, otherwise an express). Book: Day return combined rail and bus ticket to Mornington. Fare 5/1.
- Saturday-Monday, Jan. 28-30—Australia Day week-end camp at Cape Patterson. Subject: General, with particular emphasis on Geology. Leader: Mr. A. A. Baker, 53 Carlisle St., Preston, with whom definite bookings should be made by January General Meeting, when final transport arrangements will be notified.
- Saturday, Feb. 4—Metropolitan Golf Links. Subject: Native Flora. Special feature will be flowering Eucalypts. Leader: Mr. A. J. Swaby. Train: 1.35 p.m. to Oakleigh, or meet at gates of the Golf Links at 2.15 p.m.
- Saturday, Feb. 11—Marysville. Parlor coach trip via Warburton, Acheron Way, Black Spur and Healesville, leaving Batman Avenue at 7.45 a.m. Subject: Mountain Ash Forest. Leaders notified at January meeting. Fare, 17/6. Bookings with Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale (Tel. FU 022, extn. 457). Preliminary bookings must be confirmed at January meeting.

**Preliminary Announcements:**

- Saturday, Feb. 25—Healesville Sanctuary. Subject: Australian Fauna. Leader: Mr. J. Pinches. Nash's bus from Batman Avenue at 1 p.m., leaving Sanctuary on return about 9 p.m. Fare, 8/6. Bookings with Mrs. M. Pinches, 8 Thomas St., Brunswick.
- Saturday, March 18—Mt. Piper, near Broadford. Subject: Geology and General. Leader: Mr. A. W. Burston. Calderwood's coach leaving Batman Avenue at 8.30 a.m. Fare, 11/-. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3 (Tel. U 7297).

**Group Fixtures:**

- Saturday, Jan. 21—Botany Group excursion to Mount Morton. Subject: Flora of the area. Train: 9.18 a.m. Ferntree Gully. Bus to Belgrave Heights. Fares: 2nd return Upper Ferntree Gully, 3/1; bus, 1/1 each way.
- Monday, Jan. 23—Botany Group. Royal Society's Hall, 8 p.m. Monthly meeting. Subject: Symposium. Hon. Sec: Mrs. A. Osborne, 21 Renwick St., Glen Iris.
- Thursday, Feb. 2—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec: Mr. R. B. Jennison, 3 Linda St., Moreland.
- Friday, Feb. 3—Marine Biology Group. Royal Society's Hall, 7.45 p.m. Monthly meeting. Hon. Sec. Miss W. Taylor, 13 Jolimont Square, Jolimont.
- Tuesday, Feb. 7—Native Plants Preservation Group. At home of Miss W. Waddell, 3 Depham Place, Toorak, at 8 p.m.
- Tuesday, Feb. 7—Geology Group. Royal Society's Hall, 8 p.m. Subject: "Economic Minerals," by Mr. A. M. Cobbett. Hon. Sec: Mr. A. A. Baker, 53 Carlisle St., Preston.
- Saturday, Feb. 11—Geology Group excursion to Ringwood East. Subject: Minerals. Leader: Mr. A. M. Cobbett. Train: 2 p.m. Ringwood. Book 2nd return Ringwood East, alighting at Ringwood. Walk of 1½ miles.

# The Victorian Naturalist

Vol. 66.—No. 10

FEBRUARY 8, 1949

No. 794

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, January 9, 1950. The President, Mr. Colin Lewis, presided and about 120 members attended.

A cordial welcome was extended to visitors present, especially to fellow members from other States—Mr. and Mrs. F. S. Colliver, Mr. and Mrs. Noel Lothian, also to Mr. Eric Wood. Mr. Lothian brought greetings from the South Australian Naturalists' Club.

Seasonal Greetings had been received from Mr. P. Crosbie Morrison on behalf of *Wild Life*, the Bush Walkers' Club, and the Microscopical Society of Victoria.

A nomination for Membership was received for Miss M. D. Cairns (Mr. G. H. Fetherston/Mr. J. H. Willis).

## FAR WESTERN QUEENSLAND

As guest speaker for the evening, Mr. F. S. Colliver gave an amusing and interesting sketch of his recent travels in out-back Queensland. Accompanying Dr. Whitehouse, also of the Brisbane University, Mr. Colliver had flown to Winton in the far west of the State. This township is on the fringe of the great plain that extends northward to the Gulf country and is bounded on the west by the Simpson desert. Through the kindness of land owners, the party finally arrived at Glenormiston Station, travelling over difficult country that is practically roadless, with great areas channelled and rutted by the periodical overflows of the Mulligan and Georgina Rivers. Even more "axle-breaking" was the "gilgi" country—stretches of pot-holes, having an aerial appearance like the top of a crumpet. Fossil shells and cephalopods were found at the Little Toco Range and some particularly large fragments of cephalopod indicated that they must have been extremely large. The only other record of such type is from Greenland. Investigation revealed that certain other limestone beds were crowded with fragments of chitons. At the end of the address many slides were shown to illustrate outstanding features of the expedition; none were more interesting than those which depicted aborigines of Glenormiston Station in unique ceremonial attire—these natives, now almost extinct, are an isolated off-shoot of the Arunta Tribe.

The President thanked Mr. Colliver and members indicated their appreciation with hearty applause.

## NATURE NOTES

Miss Fletcher reported having recently seen in the Mt. Wellington country (between the 34th and 35th crossing of the Macallister River) honeyeaters similar to, if not identical with, the rare Helmeted species. Miss Blackburn also saw these birds at Lake Pali Karang. Mr. Colliver stated that a colony of bell-birds is to be found in Queensland at Maleny, apparently the most northerly extension of this species.

## EXHIBITS

Mr. G. Hooke: Spindle-shaped Volute (*Ericusa Sowerbyi*) inhabited by a Hermit Crab and collected on the beach at Tidal River, Wilson's Promontory. This attractive shell is also found on Tasmanian and New South Wales coasts.

Mr. J. Ros Garnet: Plant of *Brachycome multifida*, collected in the Bendigo Whipstick scrub on October 29 and since then grown in water. Two stages in the life-cycle of a myxomycete (or mycetozoon)—specimens found on the stump of a tree at Rosebud.

Mr. T. E. George: Pressed specimens from the Great Desert north of Yanac in the N.W. Wimmera (Vic.), including *Acacia microcarpa*, *A. lineata*, *A. trisetica*, *A. hakeoides*, *A. montana* and *A. pycnantha*.

## AUSTRALIAN POSSUM PEST IN NEW ZEALAND

It was rather surprising to read in Mr. W. R. Stevens' article in the November *Naturalist*, p. 133, that possums were linked with goats and deer as a major cause of destruction in New Zealand. But, if confirmation of his statement were needed, we have it in an authoritative paper by L. T. Pracy and R. I. Kean (Biological officers of the Wild Life Branch, N.Z. Department of Internal Affairs) published in the April number of the *New Zealand Journal of Agriculture* (Vol. LXXVIII, pp. 353-358)—"Control of Opossums an Urgent Problem." It appears that the Australian and Tasmanian *Trichosurus vulpecula* has bred so alarmingly as to become an important economic factor in two main respects: damage to crops, and destruction of trees and cuttings required for soil conservation purposes. In fact, the Poverty Bay Catchment Board describes it as "Pest No. 1 in this district."

Interesting details are given of the marsupial's life history and graphic photographs of defoliation caused in forests all over the Dominion. There are certain food preferences, *Fuchsia excorticata* (Kanini) *Metrosideros robusta* (Rata) and *Elaeocarpus dentatus* (Hinau) being high on the preferential list—leaves, fruits, bark, and sometimes flowers, are commonly eaten. Dr. R. A. Falla, Director of the Dominion Museum, says *inter alia*:

"In general it represents a serious dislocation of bird economy and must impose critical restrictions on their normal food and cover requirements. From the information supplied, the following birds are certain to be affected: pigeons, tuis, bellbird, kakas."

All Australian naturalists should endeavour to read this excellent and thought-provoking survey of the pest proportions assumed by one of our native animals when introduced elsewhere and apparently free from natural controls.

—J.H.W.

**FROM MELBOURNE TO THE MURRAY IN 1839**

(Extracts from the Diary of a Pioneer Naturalist, Dr. Edmund Charles Hobson)

By H. S. PARRIS, Melbourne

*Introduction*

Dr. E. C. Hobson's manuscript in the Public Library, Melbourne, is of interest as containing the first known observations on the natural history of Melbourne's northerly environs. It was presented to the Library by Mr. C. P. Hobson of "Clifton," Munro Street, Middle Brighton, 20/9/1909. Typescript copy was taken by the late Mr. A. S. Kenyon (18/3/1938 and 25/8/1941) and the present writer is indebted to the Trustees of the Public Library for permission to photograph and use his copy.

On April 4, 1839, Lady Franklin arrived in Melbourne in the brig *Tanar* from George Town. She was accompanied by Miss Cracroft, Captain Moriarty, Hon. Henry Elliott, Dr. Edmund Charles Hobson, two servants, and a policeman. A second mounted policeman was supplied by Captain Lonsdale. Sir John Franklin originally owned Station Barfold and Lady Franklin retained her interest after Sir John's death [see *Proc. Hist. Soc. Vict.* V, p. 34]. Lady Franklin spent some time in the Ovens district and ascended a range just south of the present Barnawartha Railway Station. This range now bears the name of Lady Franklin Mount.

Dr. Hobson's diary begins with his arrival in Melbourne on 4th April, and he immediately starts for Arthur's Seat, where his brother (Edward William Hobson) had a station: "Our meeting, I need not say, was agreeable, not having seen each other for nearly four years." On April 5 he writes, "'Kangerong,' the station which my brother has chosen at Arthur's Seat is distant 30 miles from Melbourne, . . ." and on the 6th: "On returning, arrived at punt on Yarra Yarra. There I learned from a passenger that Lady Franklin had sent her carts on, and would reach the Goulburn on the morrow (this proved to be not true). . . . Her Ladyship had started and got to Mr. Thorneloe's station on Saturday evening where she was to halt till Monday morning, which enabled me to overtake her."

*Biographical Notes*

Dr. Edmund Charles Hobson was born at Parramatta, N.S.W., on August 10, 1814. He studied for some years under Dr. James Scott, R.N., Colonial-Surgeon at Hobart Town, and then journeyed to England during 1837 to complete his studies, visiting also Paris and Germany; he returned to Van Dieman's Land in 1838, and was associated with Sir John Franklin in founding the Tasmanian Society (for the advancement of natural science).

Dr. Hobson was a nephew of Captain Hobson, after whom our Hobson's Bay is named, and who became the first Governor of New Zealand. As the climate of Van Diemen's Land did not agree with him, he came to Melbourne to live in 1840, and died at the early age of 34 on 8/11/1848, at "Currencurralk," South Yarra.

At the meeting held on July 15th, 1846, Drs. Hobson, O. Mullane and Godfrey Howitt (Hobson and Howitt being members of the first Medical Board of Victoria) were appointed medical officers to the Melbourne Hospital. Dr. Hobson then lived in a brick house on the north side of Collins Street [*Proc. Hist. Soc. IX*, p. 42].

Westgarth speaks of Dr. Hobson as a man of large and well filled mind, but of poor health and feeble physique—his untimely death in 1848 was an early grief to their small society. Hobson was a friend of Professor Owen, and supplied that famous scientist with data concerning the strange, and then scantily known, Australian fauna, and it is recorded that he established our anatomical museum and founded the Melbourne Hospital in Lonsdale Street in 1841. After his death, the public raised £100 to erect a monument in the old cemetery. As well as the inscription for Dr. Hobson, there were also on the monument the following words [see Selby, p. 377]:

John Edmund Hobson, accidentally drowned in Yarra 1870, aged 30.

Edward Grant Hobson, died 1860, aged 17.

Amy Elizabeth Hobson, died 1866, aged 17—sons and daughter of Dr. Hobson.

Margaret Hobson, died 1894, aged 84.

[Dr. Hobson had married Margaret Adamson of Watbrook, London, in 1837.]

*Lady Franklin's Visit to Melbourne* (Notes from "Victoria and its Metropolis, Past and Present," 1888)

Melbourne for the first time showed to the full how festive it could be on the occasion of Lady Franklin's visit in April, 1839. The wife of Sir John Franklin, the new and popular Governor of Tasmania, had in a year or two made herself singularly beloved by the colonists, and the Tasmanian settlers of Port Phillip were resolved to do her honour.

She was on her way to Sydney, but had called at Melbourne intending to go overland. On the evening when she landed the town was brilliantly illuminated, or at any rate, as brilliantly as the supply of candles would allow. Fawcner, at whose house the lady stayed, had his windows all ablaze, and having bought up all the fireworks in the place—no great matter as we may suspect—he entertained the town with the first display of that sort. Those who had in vain sought for fireworks to testify to their delight, were not to be found wanting in their expression of devotion; so they paraded the streets firing pistols and guns all night till far on towards the morning; whereas Lady Franklin must have felt singularly content, as in the dead of the night she tried to sleep off the weariness of a sea-sick voyage.

Next evening the blacks of the district mustered to give an exhibition of a corroboree, and for the last time, the streets of Melbourne were lit up to the leaping flame of their weird fires.

Lady Franklin held on the following day a public reception, and in the afternoon, when she started on her long drive to Sydney, her vehicle was attended for two miles along the sandy track by almost all the men of the place on horseback, who, having seen her well out into the country about Carlton, fired a grand salvo to bid her God-speed on her journey.

It is rather surprising to learn that during the first year of Sir John Franklin's administration in Tasmania, nearly 14,000 snakes were killed, and Lady Franklin paid nearly £700 for their destruction [see J. H. Heaton, *Dictionary of Dates* etc., 1879, p. 259].

*Dr. Hobson's Diary of the Journey*

April 7.—I started from Melbourne about half past 11 accompanied by my brother. I should mention that Mr. McNab was kind enough to lend me a horse as far as Mr. Thorneloe's. The country at the back of Melbourne is fertile and beautiful. It presents one extensive undulating surface of green. The high grounds consist of a light alluvial soil which seems to be well adapted to potatoes. The intervening low lands I understand are extremely wet in the rainy season. The soil is of a rich dark stiff argillaceous character well suited for wheat or oats. The country is very lightly wooded with mimosa, shea oak, gum and lightwood. The size of the latter is said here to be a good indication of the depth of soil. Ten miles from Melbourne we came upon the temporary stock station of Mr. Darlot where we parted with Mr. McNab who kindly rode out to put us on the branch road to Mr. Thorneloe's. I was introduced to Mr. Darlot with whom I had some conversation about the road and that gentleman was kind enough to give me a letter to Mr. Fowler of the Hume River. We proceeded on our road but the country between this station and Thorneloe's was inferior to that we had passed in the morning. A great deal of barren forest land covered with gravel and broken pieces of agate. Before arriving at the station we passed a creek where I heard the peculiar sound as if from a small bell. This was the note of the bell bird of N.H. It is never found anywhere save on the banks of rivers or large ponds of good water. On arrival we were kindly received by Lady Franklin and the party. From the lateness of the day and my brother's ignorance of the road if night should overtake him compelled him to return before he had taken any refreshment. Here I met the brother of my old and esteemed friend James Thorneloe. Before tea we made a strong party to the bell birds. The two ladies accomp. by Messrs. Moriarty, Elliott and Cobb sallied forth and in a half hour we arrived at the scene of action. I shot a very fine specimen of the bell bird. It has a yellowish green breast and a dark olive green back with yellow legs and bill, from its tongue I fancy it is one of the *Melliphagidae*. A beautiful specimen of the podargus was shot

by Mr. Elliott and an owl by myself identical with the small one of V.D.L. The water at this station is bad, having a sweetish saline taste which I suspect results from the solution of borate of soda. Our evening here was spent in skinning the specimens we had taken.

April 8.—Our camp was put in marching order and we were on the way by half past 7. Our party consists of Lady Franklin, Capt. Moriarty, Hon. H. Elliott, myself, two mounted police, a woman and man servants (Mr. and Mrs. Marshall); the driver of the cart (Sheldrake) a constable we brought from Hobart Town to look after horses and also Messrs. Thorneloe and Cobb gave us their escort. The country between this station and Mr. Thom's is a good grazing country—very lightly timbered with banksia, lightwood, shea oak and gum. The rising grounds are stony—the lowlands present that stiff dark soil which from its irregular surface (or dead men's graves) appears to be very wet in the winter. We arrived at Mr. Thom's by 11 o'clock a distance of 9 miles—here we baited our horses. Mr. T. is a rough hospitable Scotchman, Mrs. appears to be a well informed woman and very kind. It was at this place I first observed the luxuriant crop of parasites supported by the lightwood. I found two species of which specimen now preserved. At this station there is abundance of good water from a very strong spring surrounded by a tea tree scrub. The luxuriance of this tree seems to be a good indication of the presence of water. Mr. T. has sheep and cattle and has cultivated sufficient corn for his own consumption. Both oats and wheat succeed admirably. Of the latter he had 50 bushels to the acre. Mr. Thorneloe left us now and after having fed our horses we again started. Near the house I obtained a beautiful species of magpie, half the size only of our white magpie with a blueish black satiny back with white stripes from the eyes down to the neck. A little further on the road I shot another bird evidently related to the 'pies. From this point the character of the country begins to change. We see no more of the undulating ground clothed with the oak and lightwood. The eucalypt usurps the place of these. The stringy bark (*E. robusta*) forms a complete forest about 5 or 6 miles on the north side of Thom's. At 5 miles from Thom's we came to a range of hills that are visible from Melbourne. The road though steep is not by any means bad. This range consists of light alluvial red soil. The pasture is green and thick. After descending the hill we came into a flat country neither possessing water grass or a good soil and from the stunted character of the trees I should say cold and wet in the winter. The face of the country on this side of the range is parched up, whilst the other is covered with good sward. The shepherds over the range say that it often rains for days together even on the summit and yet

comes no farther. This seems to be born out by the appearance of the country. We continued our journey and arrived at the station of Messrs. Powlett and Green—here we were kindly received. Lady Franklin suffered a little from the jolting road. The evening was spent in skinning our birds and preparing them.

April 9.—Two of our horses broke the tether and were seen by Mr. Green's shepherd posting back as fast as possible. A man dispatched and soon overtook them. The delinquents were brought back. This accident delayed our starting. We passed by the side of a creek, or rather now a chain of ponds. Many even of the very deep holes are perfectly dry. The soil here seems to be based upon pumice. In every hole I found the same volcanic product—except in one, where there was a rising of clay slate at an angle of about  $40^{\circ}$ . The country here is completely parched up. The trees on the road to-day were principally eucalypti. About 11 o'clock we arrived at the station of Mr. Mundy—he is on the same chain of ponds as Powlett, but the water is more abundant and better. Mr. M. has a very comfortable hut furnished in the true baronial style. The hut is covered with the bark of the box (*E. . . . .*) the same species we call in V.D.L. swamp gum. He has also an excellent dairy dug out in the bank covered with the same material. After dinner I went accompanied by Mr. Cobb in search of duck. We soon saw 2 black and 3 wood. I had a shot, winged one, he dived and stuck in the reeds at the bottom. On my return the cats had gone on to Mr. Hamilton's which is on the same chain of ponds about 4 miles farther on. I walked down the creek and had two or three shots at the duck but only succeeded in finding one of the two I killed. Whilst walking along the creek I observed a large snake luxuriating in a small quantity of water in one of the large holes. I threw two or three sticks at him but contrary to my expectations he remained fixed and determined to dispute with me his right to the bath. I threw a second and third—he erects his head about a foot from the ground and as all the poisonous snakes do he expanded his head to double or more the original breadth. The evening was closing in, and I had got off the road so that I had no time to watch more of this creature's habits. I therefore discharged my gun at him. He was fully five feet and very thick for the length. His upper jaw terminates in the tubercle and supported the poison fang. His skin was a yellow ground with dark spots—irregularly dispersed over the body. I arrived at Mr. Hamilton's just before dark. Mr. Elliott had also shot a duck (black). After tea the cat caught a fine "rabbit rat." This beautiful little animal is of a silver grey colour on the back, whitish belly long hairy and tail tufted with white at the extremity. Its habits are similar to the domestic rat of Europe. It was not marsupial that is the male had no marsupial bones. The ears were large and



expanded, were like those of a rabbit. Hence its name amongst the colonists. Very few birds were seen during this day except the green parrotquet so common in V.D.L. A few lorys flew over but they appeared to be young birds. The lory is gregarious, that is the brood form a flock until they are old enough to pair.

April 10.—I took my gun before breakfast intending to go in search of duck, but I was delighted to see perched on a tree over a hole close to the house a beautiful crane. I succeeded in killing him without doing any injury—the body was a beautiful slate blue, the neck and head down to the furcular bone was of a fine cream color with a few black spots on the front of the neck, the upper part of the breast and coverts were clothed with fine plum colored plumage. I shot a crow and I think it is much smaller than the crow of V.D.L.—its iris is white and the bill less curved and shorter. We travelled over a very poor soil covered with eucalypti. On some of the high ground there was not the slightest bit of grass. The surface was covered with fragments of irregularly crystalized quartz. We halted about 10 miles on the road at some ponds—the only place to water between Hamilton and the Goulburn. We dined off the two ducks Mr. E. and I had shot last evening. I saw in one of these ponds one of those beautiful little emydes that inhabit the pools in this part of the country but their quickness in sliding from the log prevented me from getting a shot. I saw at Melbourne three carapaces. They were evidently of two species, the native names of which are Tarewille and Naranquilong. I expect there are many other species of the stagnant ponds never searched. On our route to-day we observed most of the eucalypti to be coated with parasites (specimens preserved). The parasites in some cases were the only green parts of the tree. These blood-suckers had completely supplanted the rightful owner of the nutrition. The leaves were not impregnated with the essential oil of the gum. The same parasite as fixes upon the lightwood is found on the *Mimosa decurrens*. We arrived at the Goulburn about 5 and encamped on the bank. It is a fine stream about 80 yards wide. In the present low condition of the water the banks are high and perpendicular. It consists of red loam with interposed layers of gravel, no doubt fresh water deposits. There is a punt and ford at Mr. Clark's. The river contains fish—some they call perch which I fancy are *Gristes Peelii*—, lobster (*Astacus fluviatilis*) and the emydes. The water is good—tasting slightly of the weed, from the long drought which they say has lasted seven months. The river flows west and joins the Humie. After their confluence they are called Murray.

April 11.—This day we halted to give our horses refreshment. The Goulburn is about 50 yards wide—in some parts very rapid

in others dilating into still smooth pools. The banks of the river were covered with gum whilst all above the bank was box. Swan, ducks and ornithorhynchus are numerous. The soil in the neighbourhood of the river is of a rich alluvial character. The heat to-day was very oppressive. Therm. midday 84, evening 64. Mr. Elliott shot a swan in the river which is no small addition to our larder. My day was spent in making notes and the evening I devoted to skinning the beautiful specimen of the crane and in writing a letter to my dear [wife] Margaret. We had intended to cross our goods and chattels over the river this evening to be in readiness to start in the morn but the intent was not carried into effect from the lateness of the hour.

April 12.—At daylight our preparations were made for crossing our baggage and carts and horses—the baggage we crossed in Mr. Clark's punt. The river being fordable, the horses and carts were crossed over by the ford—the carts were reloaded and we started at eight, the day beautifully clear. The country through which we passed was flat and barren, and at the present time perfectly devoid of pasture. From the appearance of the soil it looks as if the land was wet in winter. The forest through which we passed was of eucalypti (box). I saw a few *Mimosae* and *Casuarinae*. The road to-day has been intersected with several dry creeks, but all the water appeared to have long evaporated. So that till we arrive at the Seven Creeks, a distance of thirty miles, there was not a drop of water on the road. I saw several new species of honey birds and wattle, but from the large size of my shot I did not shoot them. A very large eagle passed over to-day. We arrived about half past 7 at the third of the Seven Creeks where we bivouached for the night. Very soon after our tent had been put up it came on to rain and, to our great annoyance, the sail cloth was not long enough to cover the rugs so that our feet were enclosed the whole night between two wet opossum rugs.\* Before arriving at this station I was in considerable danger of being lost. The light cart having gone on considerably in advance of the baggage cart, I followed on foot; but, on coming within a few miles of our halting place, I

\* The year 1838 was extremely dry, and 2nd November was a Day of Humiliation on account of the drought. In February, 1839, Cowpasture River ceased to flow for the first time since discovery, 48 years before, while the Hunter was salt at West Maitland.

From the *Gazette* of 28th March, 1839, we learn that—

"The present year must be looked upon as one of the most calamitous the Colony has ever experienced—occasioned by the long continued drought. At Port Phillip the grass is completely burnt up, and great difficulty is experienced in obtaining food for the cattle; the rivers have become nothing but a chain of ponds."

The rain on 12th April was general, and ended this terrible drought.

—H.S.P.

was fearful of being benighted so moved on at a rate so rapid that I found it impossible to keep up and, as the natives were seen here yesterday in a very considerable body, I felt myself in rather an unpleasant condition especially when I remembered that this tribe are the most sanguinary and cruel of any natives in New Holland. They also move at night which is a feature in their character marking at once their superior courage. I accordingly prepared for exigencies, loaded my gun with buck shot, put in new flints and made the best of my weapon. It soon became pitch dark and as the track was very narrow I found it exceedingly difficult to keep it and on several occasions actually lost it but I found the darkness become so intense that I was actually obliged to feel for the track and in this uncertain condition I travelled several miles. At last, as a *dernier ressort*, I fired my fowling piece and had the satisfaction to hear it answered by Mr. Elliott. In a few minutes after I caught the glimpse of a distant fire which I knew to be that of the postman. I soon came up with my friends and had the satisfaction of putting them on the road which they had strayed from. I was welcomed by my companions, especially the ladies who were afraid I had lost myself and perhaps fallen into the hands of the Blacks. -

(To be continued)

### SAMPLES OF VICTORIA

(To the Editor)

Sir,—May I make a supplementary suggestion to the one from New Zealand of an arboretum for Victorian plants (*Vict. Nat.*, Nov., 1949, p. 132)? The very high degree of specialization attained by a flora so long isolated as ours requires, for real success, that the plants must be in the place to which they are adapted. Samples of the country as Nature made it, in the places *where* they were made, are surely more interesting and much more likely to endure than the most successful native garden.

Within 40 miles of Melbourne are many small areas which, even now, only need protection and cleaning up—results of the many ways in which Nature's balance has been upset necessitate the latter treatment. Only on the basis would such a sanctuary have to be re-stocked. [A suggestion has already been made to the postal authorities that Sydneyham Radio Station might be made representative of that "lost garden."]

With the aid of Herbarium records, even the numerous odd corners within Greater Melbourne—at present largely covered with rank-growing weedy introduction—might be clothed again with the more hardy of the original plants.

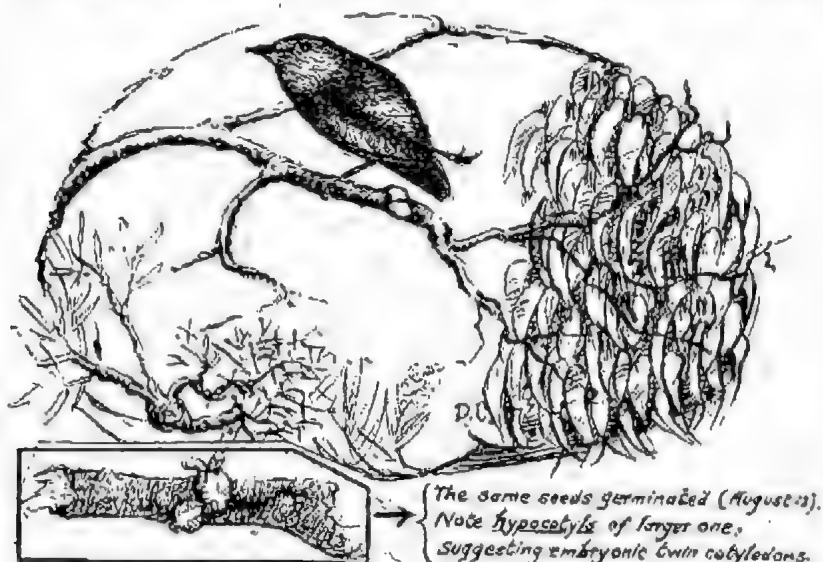
Our New Zealand writer says that dreams have been known to come true. By all means let us have conveniently situated arboretums, but *first* let us see to it that traces, at least, of the original beauty are retained in this State. For such a dream to materialize naturalists *must* give a lead now in spending money and trouble—another generation will have little knowledge of the beauty that is vanishing.

—WINIFRED WADDELL, Toofak

## FURTHER NOTES ON THE MISTLETOE

By EDITH COLEMAN, Blackburn.

During three weeks spent at Sorrento in July and August my daughter and I were able to confirm and extend her observations on a Mistletoe Bird (*Vict. Nat.*, June, 1949, p. 28). At Sorrento two species of mistletoe (*Amyma Preissii* and *A. pendula*) were abundant on the Wirilda Wattle (*Acacia rhotinodes*). The former was in fruit, but there were still some flowers; the latter was in full flower, with many early fruits, and beautified almost dead



A Mistletoe Bird "plants" two mistletoe seeds (August 1st). Note movement of bird's foot as it voids seeds while perched on a dead twig of a wattle—it flew from flowering tuft of *Amyma pendula* (right); fruiting tuft of *Amyma Preissii* indicated at left-hand side.

trees. The trees were probably dying of senility, as wattles so often do at a comparatively early age, and not from infestation. There were no adventitious roots in either species, the parasite forming tufts with the characteristic swellings. Frequently the two mistletoes were on the same host tree, and in both auto-parasitism was common.

There were many germinating seeds on both species, two to four, and even five, adhering by their viscid covering to each other, as well as to the host tree. There were many young mistletoe plants in all stages of growth. Honeyeaters frequented the flowering tufts. The Mistletoe Bird, often heard, was seen less frequently.

On August 1, a sunny day, one male Mistletoe Bird flew from the tuft we were examining, alighted on a dead branch two feet above us, and voided two large seeds of, I think, *A. pendula*. At the same time it drew its left foot swiftly backwards twice or thrice, as if to wipe off the seeds, as they were voided—quite unnecessarily in this instance, because they had dropped on to a branch.

The previous incident was made clear to both watchers when another bird flew from a mistletoe tuft, defecated, flung a foot backward and, apparently, caught the dropping on its leg. It then pecked it off the leg and wiped it on a bough.

The first incident suggests that excrement was wiped off the feathers with a leg. In both cases, movement of the foot was instantaneous. If it were not, the viscid seed-covering, becoming more tenacious on exposure to the air, would adhere too firmly to the feathers for easy removal.

Apparently the foot is used instinctively (inherited experience) while the seed-covering is moist, and doubtless the seeds frequently adhere to a leg.

Two things were impressive: the large size of the seeds, and the small amount of viscin which had been absorbed during their passage through the bird's body—an advantage to the plant in the greater number which must be swallowed to yield sufficient nutriment to the bird. The fleshy viscin is surrounded by a sweetish fluid, and this, perhaps, supplies some nutriment.

Those who know the quicksilver movements of the Mistletoe Bird may express surprise that one should have paused long enough for its actions to be seen so clearly. This is probably the only time the bird is still, except when brooding. The pause is understandable from the large size of the seeds voided. Watching an Eastern Honeyeater leave the flowers, we noted how swiftly excrement of a different nature was voided, to fall on the ground.

At Healesville and Blackburn, where mistletoes grow on taller trees, the Mistletoe Bird is rarely seen at such close quarters; but the wattles are not tall trees. With his rosy breast just above us, and a blue sky behind him, the lovely bird made a picture the watchers will not soon forget. While it may not be safe to generalize on the behaviour of the two birds, the action in each instance was so purposive, so "practised," that there seems only one deduction—the now almost involuntary movement of the foot has developed with the bird's taste for intensely viscid seeds, so that plant and bird are now mutually beneficial.

The two seeds voided on August 1st germinated, but even on August 20th they seemed remarkably large for such a small bird to swallow. That there are still so many wattles free from the parasite may be due to the preference of the birds for wattles

already bearing mistletoe. We saw many healthy trees in close proximity to infested ones. On the latter were many seeds which had been voided "en masse," probably of the smaller-seeded *A. Praisii*. Numerous hollow fruits showed that the "cap" had been squeezed off, and the seed extracted.

That many seeds are lost is evident in the few plants seen when compared with the large number of fruits produced. We must ascribe this to the bird's habit of perching *across*, not along, a bough. Masses of voided seeds on the ground beneath the trees were proof that the bird does not "plant" every one it swallows. Almost all the seeds had germinated, to die in the absence of a suitable host. Four seeds were attached to a leaf of Bower-spinach (*Tetragonia implexicoma*), a native creeper that is smothering many lovely shrubs.

At McCrae, on our return journey, we saw *Phrygilanthus eucalyptifolius* on Tea-tree (*Leptospermum*). Auto-parasitism was again very evident, and there were abundant adventitious roots, even on very small plants.

Mr. T. S. Hart, to whom I sent specimens of the two Sorrento species, ascribes the larger one to *Anyema pendula*, but in a form not quite so rusty as usual, and frequently with four flowers to each group, the extra one nearly stalkless, distinctly differing in this from the other three.

Acacias appear to be favourite mistletoe hosts in all the States, as they are in Eastern countries. According to H. Lyell (1947), the Cassie-flower (*Acacia Farnesiana*) grows abundantly in the valley of the Dead Sea, where it is covered with a brilliant scarlet-flowered mistletoe that gives trees in the distance an appearance of being on fire—could it be the prototype of Moses' "burning bush"?

For seven interesting papers on the *Loranthaceae* by W. F. Blakely (*Proc. Linn. Soc. N.S.W.*, 1922-1928) I am greatly indebted to Mr. F. G. Ludowici, and for Part V to Miss Joyce Vickery. In these papers Mr. Blakely cites interesting notes on the history of mistletoes:

James Britten (*Botany of Cook's Voyage*, 1905) described and depicted three species of *Loranthus* collected by Banks and Solander during Cook's voyage in the *Endeavour* in 1778; but the first purely Australian species was described 145 years ago by Labillardiere. Blakely gives, as a distributing agent, winds which dislodge seeds when ripe. He states that in Victoria *Loranthus* was a proclaimed plant pest in 1904, and that this accounts for its absence in some districts. In Bendigo it was said to have been stamped out. That destruction of trees by the pest is slow (except in the case of the Grey-mistletoe) has been noted by many authors.

From Mr. Harry Parris (Hawthorn) I received a photograph of a tall White Box at Murchison known to have been infected for over 60 years. I am also grateful to Mr. Parris for drawing my attention to an extract from the diary of Dr. Edmund Charles Hobson, who travelled across Victoria with Lady Franklin in 1839—the relevant notes are published on p. 188 of this journal under Dr. Hobson's entry for April 10th and refer to the road near Michelstown showing serious infection at that time. That he was Victoria's first field naturalist adds a special interest to this diary. (q.v.)

### ANGLESEA EXCURSION

A few miles on the Geelong side of Anglesea, a little to the south of "Bellbrae," lies the Anglesea forest country, which is rich in native flora, and here a party of field naturalists, bound ultimately for Point Roadknight, alighted to search for "treasure" on October 8th.

The spot proved very fruitful for botanists and members quickly spread themselves over the area. Exclamations of delight at the many and varied species soon came from all sides. Two beautiful sun-orchids were located, one a magnificent specimen of *Thelymitra grandiflora*, tall and blue-flowered, the other a fine example of yellow Rabbit-ears (*Thelymitra autumnifera*). Many different legumes were in flower; but few plants only were located of *Gompholobium minus* (Dwarf Wedge-pea), a striking plant with brilliant scarlet flowers. Here the *Hibbertia stricta* (Guinea-flower) was profusely covered with its yellow blossom; it was also prolific at Point Roadknight. Parrot-peas, flat-peas, globe-peas and Bossiaea were all seen in bloom.

The time allowed at this spot was far too short, but further delights were in store at Point Roadknight, where the flowers were particularly good. Walking up the path to Mr. Henderson's house one's attention was caught by the scarlet pea-flowers of *Kennedya prostrata* (Running Postman) peeping through the grass. We learned later that this showy little legume was being cultivated on the property. *Kennedya rubicunda* was also planted there. Several beard-heaths were located and a Yellow Robin's nest nearby had the outside decorated with leaves of Coast Beard-heath (*Leucopogon parviflorus*).

Mr. E. Dakin had an interesting find here in the pale heliotrope "Paper-flower" (*Thomasia petalocalyx*). Of rice-flowers, *Pimelea clachantha* was common at Point Roadknight, *Pimelea humilis* was found growing in the hard surface at the side of the road, while some fine specimens of the deliciously scented Downy Rice-flower (*Pimelea octophylla*) were also observed.

On the way home we skirted Torquay and observed along the coast robust trees, as well as some dwarf shrubs, of *McClintoxia pubescens* (Moonah) in flower. This was unusually early, as the species seldom blooms before Christmas.

The locality is well worth further attention by Club members, not only for its varied flora and its bird-life, but the marine-life and fossils in the vicinity are full of interest. One member took the opportunity to make a considerable collection of sponges.



## EXCURSION TO THE PYRETE RANGES

By J. ROS GARNET

The Pyrete Ranges, an elevation stretching between Toolern Vale and Gisborne, are so accessible and interesting to naturalists in so many ways that it is surprising how rarely they have been the object of a Club excursion.

In November, 1928, under the guidance of that grand old lepidopterist Mr. George Lyell, F.E.S., and the geologist, Mr. W. Crawford, both of Gisborne, a party of members explored portion of the northern end of the range; doubtless there are still among our members participants who well remember that excursion. It was briefly reported in the *Victorian Naturalist* for December, 1928.

Twenty-one years later, again on Cup Day, November 1st, 1949, the Pyretes were re-visited by the Club and the large number of members who took part in this excursion was equally impressed with the region.

It had been hoped that the excursion might be led by Mr. Lyell himself—a country member from 1888 and, since 1940, one of our highly esteemed Honorary Members. He has resided in Gisborne these sixty years and one of his most productive collecting grounds has been the Pyretes, where he has taken many fine species of moths and butterflies. These specimens may now be seen in the wonderful collection presented by him (in 1932) to the National Museum (see *Wild Life*, vol. 8, May, 1945).

It was in these ranges that Mr. Lyell found three uncommon species of orchid—the strange and elusive Elbow Orchid (*Spiculaea Huntiana*) and two lilying-duck Orchids (*Caltrana major* and *C. minor*). Several flowering plants of *Calceola major* and one specimen, yet in bud, of *C. minor* were seen again on our recent excursion.

Under Mr. Lyell's guidance and with the benefit of his intimate knowledge of the peaks and gorges at the northern end of the ranges I am certain we would have learned far more of the Pyretes' natural history than we did; but his 83 years have taken their toll and, to his keen disappointment and our equally great regret, he was unable to join us.

Guided by a military survey map (South J55/Giii and iv), and with some additional detail provided by Dr. Langdon-Lockton of Gisborne, we arrived at the first stopping place—somewhere near the source of a number of those little seasonal streams that converge to form the Pyret or Pyrete Creek. At this northern end of the ranges some of the party scrambled down to examine the bed of one or other of the adjacent streamlets while others rambled around on the sharp slopes above. The bird life was not abundant nor as varied as one would find further south at Toolern Vale, but about twenty species were noticed. The ten children present were especially helpful in the matter of collecting spiders and lizards and I am sure Mr. A. Dunn, who was with us, could have accumulated hundreds of spiders had he been less discriminating. One kangaroo was seen and the almost mummified carcass of a fox dangled from the branch of a tree.

The vegetation was characteristic of quartzite-sandstone formations in many parts of the State—predominantly Peppermint and Stringybark eucalypts, with some Ironbark, and *Acacia* species forming the bulk of the lower canopy, *Acacia leprosa* being the commonest. About 90 different flowering plants were identified, but a more careful and systematic examination would certainly reveal two or three times that tally. Twelve species of orchids, seven species of the lily family, seven acacias and seven other legumes, four epacrids, four veronicas and eleven composites were noticed. After lunch and hilly-tea in the warm sunshine, a little bird-nesting and a little more botanizing, we boarded the van and were taken to the southern end of the ranges.



Little more than seven miles by four miles in extent, the Pyretes are bounded on the east by the Gisborne-Toolern Vale road and on the west by the Coimadai-Bullengarook road. Both of these roads are impressively scenic at their southern ends. The ranges are almost an island of Ordovician sedimentary rock overlaid by a capping of Upper Silurian quartzite and sandstone. The capping has been deeply dissected by stream action, so that the island now exhibits the character of an old pene-plain in the deep gullies of which the Ordovician sub-strata with their fossiliferous mud-shales are frequently revealed. The drainage is to the south and south-west and Pyrete Creek, tending south-westerly, joins Coimadai Creek whose waters flow into the Lerderberg River near Parwan. This drainage is conditioned by lava flow from the 2,200'-high Mt. Bullengarook on the west side and several flows from the 2,100' Mt. Gisborne to the east—flows which appear to have brought about the isolation of the Pyretes. They have also been the means of providing ready access to the ranges from the south, for the road, after cutting through the Toolern Gap, rises to an even elevation of about 1,400' and continues thus until nearing Gisborne where it dips down once more.

Our second stop was at the place where the road commences its descent through Toolern Gap and from this magnificent vantage point we were able to see an extensive panorama which took in the Werrislee and Keilor Plains from Geelong to Melbourne, also Corio and Port Phillip Bays beyond.

For the ensuing two hours the party split into groups—the children to climb energetically that lightly timbered and stony eminence, Mt. Ida, others to examine the vegetation, the bird life and excellent geological sections which are exposed in the road cuttings. Here the Upper Ordovician strata are well seen and our geologists were soon diligently excavating blocks of shale. Although too near the surface to have withstood the effects of water percolation and leaching, some of the graptolites within these shales were recovered in good condition.

The herbaceous vegetation hereabouts was very scanty, especially on northern and western slopes where mosses and lichens were the principal ground cover. However, the Digger's Speedwell (*Veronica perfoliata*) was scattered attractively here and there among the sandstone outcrops; the little *Poranthera*, Flax-lily and Raspwort were also occasionally present.

The difficulty of obtaining water is a distinct disadvantage to extended trips in the Pyrete Ranges. At the southern end, where the creek is perennial, the gorges are up to 400' below the hill crests where one would choose to camp. In the northern portions they are less steep, but in normal seasons there is no reliable flow in these little water-courses.

For our excursion, and as a precaution against "drought" at lunch-time, we brought with us from Gisborne several billies and a milk can filled with water and our obligation to return the milk can gave me an opportunity of saying farewell to my old friend Mr. Lyell (and to other kind friends in Gisborne) and wishing him on behalf of the F.N.C.V. a speedy recovery.

### BIRDS HALT THE MARCH OF TIME

On the evening of August 12th, London's famous "Big Ben" was four minutes late—because of the weight of starlings on its hands! Londoners are now wondering what to do about the starlings. One suggestion is to encourage sparrow-hawks to nest in the ample crannies of the Gothic masonry. Happily, Melbourne's Town Hall pigeons have not yet interfered with knocking-off time.

L.Y.

**HETEROPHYLLY IN THE PRICKFOOT** (*Eryngium vesiculosum*)

By T. S. HART, Croydon

Portion of a lightly grazed paddock east of Croydon was fenced off during 1948 and sub-divided. For more than a year there has been little or no grazing on it and in a moist, grassy valley there I found, early in September, 1949, a plant with hollow subulate leaves several inches long, leaves appearing later showed a coarsely serrated narrow blade, with centre strip representing the earlier hollow subulate leaf. An *Eryngium* seemed likely, and a search about a mile down the valley, at a place where *E. vesiculosum* had been found, detected similar subulate leaves on the first spring growth (not so advanced). As the season advanced more leaves appeared and the first-flowering shoots were detected in November—definitely *E. vesiculosum*, in which the arched and trailing flower stems contrast strongly with the nearly erect first leaves. Flat rosettes of foliage have been noticed, apparently a condition assumed under grazing. The plant had no doubt been grazed off in other seasons and was unknown to two residents acquainted with the paddock.

Few of the available descriptions mention the hollow subulate condition of the early season's leaves, though Black says they are hollow in another species. Bentham stated, under *E. rostratum*, that in wet situations the leaves are of simpler form, and this may actually be due to early seasonal growth while the place is still very wet. Bentham notices that flowering stems resemble stolons but are not rooting.

These first leaves are of considerable interest for comparison with other species of *Umbelliferae* which retain the fistulate leaf throughout their growth, e.g., *Aciphylla simplicifolia*. Care is needed in recording plants from leaf features alone, especially before maturity. Nardoo (*Marsilea*) can have a simple spatulate leaf early in life and then pass through gradations of 2 and 3 lobes to the normal 4-lobed condition.

The development and fading of *Eryngium* flower colour was described in *Viet. Nat.* LIV, p. 177, the examples there dealt with coming from a moist patch south of South Road, Moorabbin, and east of Chapel Rd. Perhaps the colony may still survive there?

**NESTING MATERIALS OF THE PAINTED HONEYEATER**

Mr. J. H. Willis's report (vol. 66, page 136), on the material used by a pair of Painted Honeyeaters, spurs me on to record some observations made by members of the Bendigo Field Naturalists' Club.

Mr. Eddy, of Diamond Hill, recently gave us a talk on the birds of his district, and exhibited several nests. At question time, Mr. H. Milne asked the speaker if he knew from what plant the Painted Honeyeaters obtained the rootlets with which they lined their nests. He didn't know, but said that they flew some distance to collect them. All nests that I have examined have been lined with the same material.

Our next outing being to Diamond Hill, I determined to find out, if possible, what the material was. Because there were nodes or projections at fairly even distances on the "rootlets," I suspected that stems of some thin plant were used. I therefore examined such plants as *Thysanotus Patersonii*, *Drosera Planchonii*, and *Carytha glabella*, but they were not like the "rootlets."

Mr. Eddy watched the birds for me, and a few days later reported that he had seen two pairs of birds some distance apart collecting the rootlets of Barley Grass (*Hordeum marinum*). The grass had been turned up by a spade or plough. It would be interesting to know if Painted Honeyeaters in other places use this same material.

—MARC COHN, Bendigo.

## MONTHLY NOTES FROM PORTLAND F.N.C.

By NOEL F. LEARMONTA

A sanctuary for the Forked Spleenwort (*Asplenium praemorsum*), mentioned in the *Naturalist* last November, is now practically assured. Some of this fern, with accompanying Filmy Fern (*Hymenophyllum cupressiforme*) is growing on freehold property owned by our guide, Mr. C. Stanford, who will assist in the reservation of a few acres to preserve the rare species.

Our club aims at short addresses on natural history subjects at its monthly meetings, and Mr. W. Thomson, principal of the High School, recently gave an illustrated talk on the *Amoeba*. Mr. C. Beaglehole has provided the following notes:

"In *Victorian Naturalist*, August, 1947, a plant and bird list for the Lower Glenelg National Forest was published. Since then many additions have been made. In August, 1949, several new bird records were made, and here are my own botanical additions—11 Lichens, 33 Mosses, 12 Hepatics, 7 Ferns and 17 Flowering Plants. The seven ferns are Rough Tree-fern (*Cyathea australis*), Adder's Tongue (*Ophioglossum coriaceum*), Blanket Fern (*Fleurosorus rufifolius*) and Black Spleenwort (*Asplenium trichomanes*), also three collected by J. Eckert in 1891 and recently found amongst his material at the National Herbarium, viz., Shining Wood Fern (*Dryopteris, Shepherdii*), Rainbow Fern (*Culcita dubia*) and Batwing Fern (*Histiopteris incisa*). Eckert also records the Pygmy Clubmoss (*Phylloglossum Drummondii*). I hope to send a detailed list of the balance of my new material to the *Naturalist* shortly.

"On Bat's Ridge, 6 miles west of Portland, I discovered (in July, 1949), two specimens of a rare Victorian fungus, *Xylaria Readeri*. The type specimens came from the Little Desert in 1893 and only two other records have been made since, i.e., Torquay 1943, and Warrandyte 1946. My specimens were found near plants of Small-flowered Mat Rush (*Lomandra micrantha*), listed as rare in Victoria but quite plentiful in the Portland district. Another recent discovery was of Dark Swamp Wallaby-grass (*Amphibromus recurvatus*) which I found at Gorae West growing in association with its congeners *A. Neesii* and *A. Archeri*. In several swamps of the Lower Glenelg area *A. recurvatus* plants grow by the thousand, usually in a few inches of water."

## HYBRID BETWEEN LYREBIRD AND COMMON FOWL

In the *Vict. Nat.* for June, 1946 (p. 47), there appeared a letter from Major H. M. Whittell, of W.A., asking for further information regarding a report that the late A. W. Milligan once had a number of hybrids between the Lyrebird and the common fowl; and to this I added a note directing attention to a report of the existence of a similar novelty in the Twofold Bay (N.S.W.) district about 1890.

Recently I have come upon another reference to the subject: it occurs in the course of an article on the Lyrebird written by J. G. O'Donoghue in the *Vict. Nat.* for May, 1914 (p. 15). Some interesting notes include the statement that Milligan bred his hybrids about 1896, when he was living at Taralgon, and that he had successfully reared two generations at the time he broke up his home and removed to W.A.

With that date in hand it should be possible to obtain additional information, for Milligan was an intelligent man and the importance of the experiments would surely have caused him to put something about them on record

—A. H. CHISHOLM.

## COMPASS OBSERVATIONS AFFECTED BY MAGNETIC ROCKS

By T. S. HART, Craydon

As pointed out by Mr. N. A. Wakefield in "Baron von Mueller's Victorian Alps" (*Vict. Nat.*, Jan., 1949, p. 373), Mueller's compass directions to various hills from his "Mt. Latrobe" [Mt. Loch] were clearly inconsistent with those he took from a neighbouring and higher peak [Mt. Feathertop]. Local magnetic irregularities are quite likely to occur in basaltic areas. R. A. F. Murray's *Geology of Victoria* states that the basalts of the Dargo and Bogong High Plains are often extremely magnetic.

Small basalt cappings exist as residuals on several of our high mountains. The edge of the basalt would be a situation with the most marked abnormalities and would also probably, as on Mt. Loch, be the best position from which to make observations on distant hills. Two examples of compass interference known to the writer may be worth quoting here:

A strongly magnetic basalt occurs near Addington (9 miles S.W. of Cuneo) where a small runnel has cut through the basalt; at the edge of this rock, one end of a delicately poised and well-balanced compass needle was drawn down with such force that the compass had to be tilted steeply in order that the needle might swing at all. Near an outcrop of iron ore (much more magnetic material) 7 miles north of Nowa Nowa, the needle assumed various directions just off the iron ore; at one place it turned almost east and west, but was nearly normal in the middle of the excavation. The compass used in these observations had a larger circle than was likely in Mueller's and was probably also more sensitive in action.

Dr. G. Neumayer (*Results of a Magnetic Survey of the Colony of Victoria, 1869*) made observations of magnetic details at Mt. Useful, a basalt-capped alpine hill north-east of Walthalla. In his report (No. 218 for Dec., 1863, on p. 187) he says, "The volcanic rocks on the summit of the mount make the magnetic observations valueless, as will be seen on inspection of the following results . . . . Magnetic declination: 23°26'54" west," etc. Also on p. 198 he makes the following remark, "The great masses of Older and Upper Volcanic around Melbourne exert an influence upon the values of the magnetic elements. This influence, to the west of the meridian of the University, is such as to prove utterly useless, were one to attempt anything like a near approach to the real value of the elements." Neumayer, of course, was here referring to the more precise scientific work and not to large errors in readings of direction.

In the *Proceedings of the Royal Society of Victoria*, N.S. IV, 1892, p. 65, R. L. J. Ellery gives an interesting and detailed examination of a magnetic shoal near Bezout Island (often spelt "Bedout"), off Cossack on the N.W. coast of Australia.

**WHAT, WHERE AND WHEN****General Excursions:**

- Saturday, Feb. 18—Geology Group, with General Members cordially invited. Black Rock to Sandringham. Subject: "Geology of the Seaside." Elementary excursion for beginners. Meet Black Rock tram terminus at 2.30 p.m. sharp. Leader: Mr. A. A. Baker.
- Saturday, Feb. 25—Healesville Sanctuary. Subject: "Australian Fauna." Leader: Mr. J. Pinches. Nash's bus from Batman Avenue at 1 p.m., leaving Sanctuary on return about 9 p.m. Fare, 8/6. Bookings with Mrs. M. Pinches, 8 Thomas Street, Brunswick.
- Saturday/Monday, March 11-13—Toolangi. A general excursion. Leader: Miss M. Elder. Accommodation: A party of 6 can be accommodated under semi-camp conditions at a two-roomed cottage, and hotel accommodation, at £1.1.0 per day, can be arranged for a further 6 members if application is made immediately. Train: 8.25 a.m. to Healesville, Sat., 11th March. Fare: 2nd return Healesville. 7/7; bus fares, 10/-. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3 (Tel. U 7297).
- Saturday, March 18—Mt. Piper, near Broadford. Subject: "Geology and General." Leader: Mr. A. W. Burston. Calderwood's coach leaving Batman Ave. at 8.30 a.m. Fare, 11/-. Bring two meals. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3 (Tel. U 7297).

**Preliminary Announcement:**

- Easter, April 7-10.—Gellibrand River, in the Otway Ranges. Subjects: "Birds, Botany and General." Leaders: Miss A. B. Adams and Mr. H. E. Stewart. Dormitory accommodation at Wonga Wonga Guest Ranch for small party only. Transport arrangements, probably by private car. Bookings with Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale (Tel. FU 022, extn. 457).

**Group Fixtures:**

- Saturday, Feb. 25—Botany Group excursion to Kallista. Subject: "Ferns." Train: 9.18 a.m. Upper Ferntree Gully, then bus to Kallista. Members coming by 12.15 p.m. train will be met at Picnic Ground at Kallista. Fare: 2nd ret, U.F.G., 3/1. Leader: Mr. E. Dakin.
- Monday, Feb. 27—Botany Group. Royal Society's Hall, 8 p.m. Monthly meeting. Subject: Discussion on Saturday's Excursion. Hon. Sec.: Mrs. A. Osborne, 21 Renwick Street, Glen Iris.
- Thursday, March 2—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly Meeting. Hon. Sec.: Mr. R. B. Jennison, 3 Linla St., Moreland.
- Friday, March 3—Marine Biology Group. Royal Society's Hall, 7.45 p.m. Monthly Meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont.
- Tuesday, March 7—Native Plants Preservation Group. At home of Miss W. Waddell, 3 Denham Place, Toorak, at 8 p.m.
- Tuesday, March 7—Geology Group. Royal Society's Hall, 8 p.m. Subject: "The Bush of Victoria," by Dr. D. E. Thomas, Chief Geologist of Mines Dept., Melbourne.
- Saturday, March 11—Geology Group all day excursion to Berwick. Collecting excursion for National Museum. Subject: "Fossil Plants." Leaders: Messrs. E. D. Gill and A. A. Baker. Transport arrangements at previous meeting.

# The Victorian Naturalist

Vol. 66.—No. II

MARCH 9, 1950

No. 795

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, February 13, 1950. The President, Mr. Colin Lewis, presided and about 180 members were present.

A letter had been received from the Church of England Boys' Society regarding a Photographic Exhibition in Ararat from March 16th to 18th, inviting members to submit photographs. The meeting was interested to learn that Mr. S. R. Mitchell had recently published a standard reference book entitled *Stone-Age Craftsmen*.

Support is sought for a reservation of native flowers at Tyndal's Road (Shires of Doncaster and Templestowe). Local members are asked to support this movement actively. Assistance is also desired for a similar project at Lakes Entrance.

It was advised that the subject of placing a ban on the picking of wild flowers, etc., had been exhaustively discussed by Council, which has now requested the Botany Group to give this contentious matter full consideration, submitting a recommendation to Council. The views of members were also invited.

The following were elected to membership:—As Ordinary: Major D. R. Robinson and Miss B. Barber; and as Interstate Member: Miss M. D. Cairns. A warm welcome was extended by the President.

Nominations for Ordinary membership were received on behalf of: Miss Clarissa Starey, 23 Wallare Avenue, Toorak (Mr. G. A. J. Barrett/Mr. P. F. Morris), and Miss A. E. Brooks, Tulip St., Cheltenham (Mr. H. P. Dickens/Miss C. M. Gamble).

The President announced that the incorporation of our Club has now been achieved and that during this 70th Anniversary Year it is hoped to mark the event by some appropriate function. The cost has amounted to about £70, and members are invited to help meet this outlay by donations. Mr. V. H. Miller immediately donated £5/5/-, which was received with pleasure by the President.

The President explained that arrangements had been made for a film of the Heard Island Expedition, but that circumstances had necessitated a postponement of the screening until later this year, and Mr. F. Lewis had kindly agreed to show his films of North Queensland and the Barrier Reef instead.

On a number of occasions the Club has had the pleasure of seeing Mr. Lewis' films taken in Central Australia, New Zealand and other places, and these North Queensland pictures were no less enjoyable. We saw coral atolls, palm-fringed and resting low on the shining blue of the Pacific; also peaked islands of tumbled granite, jettisoned from the Mainland Range when the present coastline was formed. We had tantalizing glimpses of the multitudinous forms of life in and about the Reef—the corals, clams, star-fish, and a strange bi-valve which was surely the original working model of jet-propulsion. Places of interest included the Tully Falls and Barron Falls, the rich Atherton Tableland, and outside Townsville the Sir John Robinson Sanctuary—of particular interest to bird lovers, as one picture showed a massed flock of Whistling Ducks, like a great chestnut-brown shadow on the blue water; here birds could almost be measured by the acre.

The President's thanks to Mr. Lewis were supported by enthusiastic applause.

#### NATURE NOTES

Referring to Mr. Lewis' description of giant clams seen on the Barrier Reef, Mr. Gabriel said that there was an old clam shell in Sumatra which measured 4 ft. 7½ in. across and weighed 551 lbs.; it could hold a small human being. The second largest was in the Cathedral of St. Cyprus in Paris, which weighed 521 lbs. and was used as a font.

Mrs. Pinches reported that grebes were nesting on Queen's Park Lake, Essendon.

Mr. Lord advised that the Superintendent of the Healesville Sanctuary, Mr. Jack Pinches, had commenced giving attention to planting the Sanctuary with native shrubs and would welcome seeds and plants of suitable species.

#### EXHIBITS

Mr. Ivo C. Hammet: Specimen in flower of our only native *Rhododendron* (*R. Lochæ*), garden grown

[Mr. Hammet, in referring to his exhibit, explained that this was the famous plant which Baron von Mueller anticipated on the high Mt. Bellenden Ker Range in North Queensland. When, years later, it was actually found there, he named the species after Lady Loch. Although not difficult to propagate, this distinctive plant is very hard to obtain. Mr. Hammet is to be congratulated upon his success with this rare and lovely flower, so seldom seen in Melbourne.]

Mr. K. Atkins (from Botanic Gardens): *Acacia difformis*, *Baccharis citriodora*, *Blindensia pubescens* and *Hibiscus heterophyllus*.

Mr. H. C. E. Stewart: *Helichrysum adenophorum*, var. *Waddelliae*, *Libertia pulchella*, *Helichrysum thyrsoideum*, *H. Stirlingii*, and a hybrid *Helichrysum* sp., showing characteristics of *H. thyrsoideum* and *H. Stirlingii*; stem of *Stylidium graminifolium* over 30 inches long, showing more than 100 flowers—all collected at Mt. Buffalo National Park.

**FROM MELBOURNE TO THE MURRAY IN 1839**

(Extracts from the Diary of a Pioneer Naturalist, Dr. Edmund Charles Hobson)

By H. S. PARRIS, Melbourne

(Continued from February number, p. 190)

April 13.—We started from our last night's bivouack not much refreshed after our night's rest. Our horses exhibited the same jaded and haggard appearance as their masters. The ground and pasture about this place is very good in the neighbourhood of the creeks. The water is also abundant and good although it is stagnant. There are mussels, shrimps and amydæ, the eel (fish) and cod as in all the rivers that flow westward from the Australian alps. The country through which we passed is flat and sandy with a hungry clayey subsoil which had become boggy from last night's rain. Saw several cockatoos and red crested cockatoo. We passed over some slight undulating ground just before coming to the Honeysuckle Creek—which were covered with broken quartz. We halted about 2 o'clock at the distance of 12 miles from our last night's camp. There are here a great number of Banksias from which the place has received its name. The water is not running here but as at most of the creeks is found in large ponds. The country is open and the pasture good. Eucalypti are covered with the same magnificent pendent parasite. I shot two parrots and a hawk. The hawk is identical with the sparrow hawk of V.D.L. The parrots I fancy are the young of *Platycercus Pennantii*. Mr. E. shot an owl identical with the spotted owl of V.D.L. We dined on the swan and the duck shot the day before. I can't say much for flavour or tenderness. As night came on it began to assume a threatening appearance. Large cumuli came tumbling over each other and now and then a large premonitory drop would fall, as a foretaste of joys to come. We hastened to construct a tent with our sail cloth on a better plan than last night's. We fastened the back to a log and drew the front up to a pole supported on two sticks which gave the cloth a good fall. The front of the tent was left open—here we slept comfortably. This evening was spent in skinning the birds I had shot and in giving Lady Franklin lessons in the same art.

April 14.—Moriarty was early on the move and few sleep after he is awake. We started early having rather a long stage. The country was low and flat and boggy as yesterday and the rising grounds were covered with quartz—box is almost the only tree found on this ground. Saw several cockatoos, parrots, hill-parraquets and various *Mallipagidae*. A species of *numosa* was found to-day very like *Acacia hispida* in V.D.L. The country travelled over to-day was of the same monotonous flat character as yesterday. Heavy



cumuli began to pass over from W. to E. accompanied with peals of distant thunder. Our road to-day was intersected with many dry creeks. The road was tolerably level the whole way. We arrived at the Broken about 2 o'clock. The peals became nearer and nearer and just as we arrived premonitory drops began to fall and scarcely had we pitched our tents when it began to rain, thunder and lightning in a most fearful manner. We were politely invited to dine in a hut that was in progress of building belonging to the mounted police—the only room that was at all roofed was covered with an old tarpaulin in which there was not a foot without a hole. Under this shower bath our dinner table was laid. It rained in a perfect torrent all the time we were at dinner. The lightning danced among the trees with a rapidity and brightness that laughs at description. The claps of thunder were as if some huge mountain had been rent in twain and was vomiting its contents upon the plain below. The floor of our dining room was knee deep in water. After dinner it was a problem for solution how to convey the ladies to the tents. Moriarty and Elliott offered to support them on their shoulders. Moriarty started first with Lady F. in his arms and was followed by Elliott with Miss Cracroft. They staggered along with their loads and after sundry and divers groans and puffs they landed safely and dry at their tents. I need not say this scene made me laugh. The temperature to-day has been extremely variable, 5 a.m. 66, noon 79, evening 57. The Broken River is not at present running but merely consists of a chain of ponds. The grass and trees are very luxuriant. The pools abound in eod (*Gristes Pealii*), eel-fish, shrimps, and emydes and a variety of fish which I know only from description. The ponds are full of duck, ornithorhynchi, Hydromys or water rats, cranes (common blue), and are covered with a beautiful *Camferina* which covers the surface of all the rivers and ponds in this part of the country. As it gets old it assumes all the beautiful shades betwixt red and purple. This is a powerful prevention to evaporation. It continued to rain and thunder the greater part of the night. Lady F. was disturbed during the night by what she imagined was a shot succeeded by a cooey. She came to our tent. To quiet her Ladyship we fired several guns and halloed, but no answer could be heard. We had one of the mounted police to keep sentry, but nothing was heard during the remainder of the night. The banksias grow luxuriantly on this river. Various species of *Melliphagidae* abound in these trees. This is the spot where Mr. Faithful's servants were murdered by the natives—8 out of 15—and here also Major Mitchell crossed this river and lost one of his men in crossing. The natives are fond of this view and often encamp near the plateau but never come down. We lighted a large fire at the front of one tent which dried the clothes as fast as they became wet. Innumerable

quantities of the large moths which the aborigines are very fond of both in their larva and imago state (called Bogong) came fluttering about our fires and at last in spite of every effort to prevent themselves dashed into the midst.

April 15.—On examination we found our tent had been pretty waterproof. Our guns had got wet and the percussion only could be got off. The clothes and etceteras were tolerably dry. We started this morning with our two fresh policemen. Lady F. went to see the grave of Major Mitchell's men. The country is very flat for the greater part of our stage. The forest was composed principally of the box. We saw flocks of parroquets, lorries, wattle birds—a different species from our V.D.L. This flat is sandy with clay subsoil and is very boggy from last night's rain. Our carts have several times sunk in up to the axle. After crossing over twelve miles of such country we came to rising ground covered with ironbark, stringy bark and box, strewed with laminated iron stone and broken quartz. On reaching the summit of the range we had a most extensive view of the country we had passed over and a peep into futurity. We saw before us a plain of forest land 30 or 40 miles in extent—intersected by a slight range which mark the position of the Ovens River and over a range of hills beyond we saw a line of vapor sailing which indicated the course of the Hume. Our halting ground was about 2 miles from this elevation. Here I saw several of the "Superb Warbler." Mr. Elliott shot a fine specimen of the blue mountain . . . . The comfort of our journey had well nigh been marred by a serious accident. The horse on which Miss Cracroft was riding suddenly took fright, dashed into the woods and threw her violently upon her face. Fortunately the horse sustained the brunt of the fall. The concussion notwithstanding was severe. The sufferess bore the misfortune with more courage and resignation than most men and contrary to my expectation did not appear to be anxious about its effect on her beauty. We put her into the light cart and on arriving at Reedy Creek we pitched the tent and placed her on a stretcher keeping her head bathed with a solution of Muriate of Ammonia L.H. and ordered a brisk cathartic to be administered. The creek on which we bivouacked is a mere chain of ponds. The water is however tolerably good. The holes contain shrimp and some species of *Astacus*. Duck are also abundant. The soil is here alluvial but far from being poor. Eucalypti are here, the forest trees and the parasites, very numerous at this season, covered in their crimson blossom (*pend. monogin*). The night was clear cold and frosty.

April 16.—Our movements were somewhat retarded by Miss Cracroft's accident. I was glad to find that she was sufficiently well to proceed with safety. The morning before sunrise was

extremely cold and the ground covered with hoar frost. By 8 the temp. had risen to 67°. The land over which we travelled to-day was flat and poor. Our road was for several miles under the same range that we crossed yesterday which runs N. and S. They terminate about three miles south of the Ovens. I observed for the first time that species of *Eucalyptus* which is called the Cider Tree in V.D.L. Saw the recent track of an emu across the road. We arrived at the Ovens about 4 p.m. I uncautiously left the party and went down to the river to shoot ducks—after arriving at the bank of the river I found a well beaten path which I soon discovered to be the track of the natives by the bones of kangaroo, turtle shells and mussel shells. I soon had the more decided proof—a foot mark. The temptation of getting some duck induced me to go to the spot I had been told they were so numerous in. I, however, found none. I now thought of the condition I was in and how easily I might be cut off by this worst of all tribes of savages in N.H. I was much relieved from this unpleasant feeling by seeing Mr. Elliott advancing. I shot a beautiful kingfisher with a purple back and head and reddish brown breast and little white dots below the eyes. I saw one other but failed in getting a shot. I had a shot at three ducks and succeeded in killing one which flew and fell dead on the opposite side of the river. Mr. Elliott shot a pair of sulphur-crested cockatoos. We now hastened to join our party whom we found encamped on the opposite side of the river. The Ovens is a beautiful stream skirted by lofty gums or yarra and various other handsome shrubs. The banks are high as is the case with all rivers running through a level country where soil is deep alluvial. It is about 40 yds. broad and varies considerably in depth. At the dry season it can be crossed without going half knee deep. The King River joins it about a mile above where we are bivouacked and at this junction the natives cross and often encamp. The flying squirrel is here most abundant. They were gamboling and screaming in every tree around us. About 8 our horses suddenly came rushing in as if frightened. This was said by some of our men to be a sure indication of the approach of the natives. We accordingly took up our guns and went to reconnoitre the direction from which the horses came from, but no symptom of them was visible. As a precautionary measure watches were placed for the remainder of the night. The last or morning watch heard the cooey distinctly.

April 17.—The morning was extremely cold. Thermom. 51. The side of the river on which we are encamped is twelve or fourteen feet lower than the other. Consequently this side is inundated whenever the river is swollen. This flat extends for a full half mile. This strip of land is indicated by the luxuriant and verdant

character of the trees and pasture. The trees are the narrow leaf gum. The soil is a rich red alluvial loam, the result of the washings from the hills. The channel is about 30 yards broad and the stream is still and deep for the greater part of its course, there being so little fall and the deep alluvial soil through which it runs. The red *Conferiæ* covered the still parts of the river as at the Broken River. After passing across the half mile of made soil we came to the counterpart of the road of yesterday. This last country continued for eighteen miles when we began to ascend and continued to do so for 600 or 700 feet. These ranges are composed of beautiful micaceous granite and schist upon quartz. This primitive rock is fast crumbling and decomposing into soil, the detritus of which the soil in the valley is formed. There also heaps of broken agate. The hard compact granite seems to resist the action of the elements whilst micaceous kinds rapidly decompose. These hills were clad with various kinds of eucalypti, cherry, casuarinæ and native hop. We arrived at the Rocky Water Holes, two miles past Springhurst, at four o'clock. The country is very arid; there is scarcely a blade of grass to be seen . . . . \* After dinner I left and went in pursuit of specimens; but I took good care not to get out of hearing as we are still in the country of Brian Borhu's tribe whose kindly reception we are by no means anxious to prove. The moon was so obscured that although the *Petauridae* (squirrel) and opossums were abundant, I had not light enough to see along the gun barrel. During the whole night we were kept awake by the howling of the dingo, the shrill scream of the squirrels and the hoarse cry of the opossum. The men kept watch as usual. I was exempt, having a cold. I obtained a nest . . . . \* filled with the young silk of which it is composed . . . . \*

April 18.—It is still colder this morning than yesterday morning, 47° before sunrise. The first part of our journey was over the same low ranges of granite. The vegetable growth was stunted except the iron bark which grew only on poor ground especially whenever there was much of the white agate which contrasted mournfully with their black stems. About 11 miles from our starting point we began to descend. The hills, over which we had been travelling, run pretty nearly N. and S. After coming upon the flat we had two deep and difficult creeks to cross. The last is called the Indigo. Near the creek are some high granite hills almost bare and running E. and W.; from this point Mitchell extends his survey upwards and downwards. Between this and Mr Hume on the Hume is a pretty good tract of country. This is the result of the vegetable deposit left no doubt by inundation from the Hume. We came to Mr. Hume's station about 2 o'clock.

\* These portions of the diary have been torn out.—H.S.P.

Here we bivouacked by the side of a lagoon which are always found in the vicinity of the rivers of N.H. and are the result of floods. This is a cattle station. Mr. E. and myself as soon as we arrived took our guns and went to the Hume. We saw numbers of ducks at which I had several shots without effect. We also saw abundance of cockatoos, parrots and a beautiful specimen of the white hawk. The river is about 80 yds. wide and in many places still and deep. The trees on its banks are high luxuriant gums. Quail are here about this river. The beautiful and clear note of the bell bird, *Myzantha flavirostris*, is heard incessantly. I shot a specimen of the common blue crane of V.D.L. Mr. E. shot some cockatoos, a specimen of the *Dacelo gigantea*, laughing jackass or Squatter's Clock and a bird called by the natives here "Gone-sack," by the colonists the "old soldier." The lagoons contain abundance of ornithorhynchi and Hydremis or musk rat and the eel-fish. I shot a fine specimen of the musk rat in a small pool near our tent. The pond was full of them gamboling and careering about in all directions. The preparation of this animal took the whole evening. The iris of the *Gracula cyanotis* is of a pale straw color and the naked part around the eye is of the brightest cobalt blue (*vide* description "Lesson's Manual"). The land on the river is of the same rich alluvial character as on other rivers of this country.

April 19.—We continued our route for twelve miles farther which brought us to the police station at the ford. I shot on my way a fine specimen of the bronze-winged pigeon (*Calchastiros splendens*) and a fine specimen of the fly catcher which I think is identical with one we have in Van Diemen's Land. On approaching the Hume we saw several duck, plovers, cormorants, quail, pigeons, bell birds, etc. I had two shots at the duck without effect my shot being small and the birds wild. Whilst walking along the side of a lagoon, Mr. Elliott and Paddy started a very large snake which immediately took the water and on being struck at either dived or sank to rise no more. The day was clear still and beautiful and the silence was only broken by the clear and distinct note of the bell bird. Geese are said to be numerous here, but we were not fortunate enough to meet any. The Nankeen Crane is also common here at one period. Mr. Brown a settler here was kind enough to contribute a very fine specimen to our collection. The river contains abundance of the cod or *Gristes Paoli*; shrimps, lobsters and emydes are here abundant, if one may judge from the number of skeletons of these creatures. The neighbouring country is very hilly. They are principally of granite in the same state of decay as was before observed—the sand on the river bank is composed of fine silica and pieces of mica the finer ingredients

of granite rocks—the coarser parts from the coarse material of the bed of the river. Schorl is here abundant and beautiful specimens of mica upon quartz. We forded the river which is at present very low, scarcely taking the carts up to the axle. The ford is extremely steep on the N. side of the river but our horses having only had a short stage pulled up their load with ease. The passage of the river was made before Mr. Elliott and myself arrived. We found them encamped comfortably on the N. side of the river. We were ferried across the river by a native whose canoe which was the body of a large tree hollowed out resembled Charon's boat. This worthy welcomed us in the most condescending manner to his hoary looking bark and landed us safely on the opposite side. At this point the mounted police have just formed a station. There are at present two privates and a corporal stationed here. These men were remarkably civil and attentive to our wants. The threatening aspect of the day obliged us to accept one of their rooms as a dining room. We here got the luxury of milk to our tea which we always use at dinner in the bush. This is a universal custom in N.H. A Mr. Brown, a native, has a store here and some land—about 3 acres in Indian corn—which, although no rain has fallen since it was sown, is ten feet high and a remarkably fine cob and grain. He expects about 150 bushels per acre. Melons, cucumbers, cabbages and other vegetables grow here luxuriantly. Several families of aborigines are living here. They are short, are ill made and in many points resemble the natives of V.D.L. The hair is more nearly approaching to the woolly nature of the V.D.L. than those of Port P. The women are thin, ill-formed and repugnant in expression—short faces, wide mouths and low foreheads are the characteristic features of the lady of the Hume. They are harmless and their language is perfectly different from that of the Port Phillip tribe *par ex.* "Budarro" is the name for the phalanger. There are phalangers, dasyuri, kangaroos, emu, and a beautiful scarlet parrot with a red crest.

April 20.—We halt to-day to give our horses rest. I took the opportunity, as did my friend Moriarty, to wash my clothes. Whether they were improved by it, I will not venture an opinion. It commenced to rain before my work was done so that I was obliged to wring and dry them by the fire. The native came with us to give an exhibition of his dexterity in killing opossums and squirrels. The first tree he climbed was a very large gum and his sagacity was extremely acute. Before commencing operations he examined carefully the recent leaves that were lying under the tree to see if they had been bitten the night before; then searched for excrement and lastly examined the trunk for recent

scratches. The result of all this preliminary investigation was in commencing to ascend the tree which was a very large one without a limb for several feet. In two minutes he had ascended to a considerable height and in as short a time he cut into a dead limb some distance from its broken extremity in which there was a hole and lugged out a large grey opossum. He climbed a great many trees of great difficulty with the greatest dexterity in Lady Franklin's presence—this man was clothed in a shirt and jacket only!!!! I obtained some very beautiful specimens of micaceous slate, schorl upon quartz and mica upon quartz. The country about the Hume is both well adapted for feeding and agriculture. Mr. Fowler and many other gentlemen have stations here. The whole of the evening it rained steadily and continued to do so till daylight.

April 21.—Rose early and found it still raining. Our tent as usual proved perfectly waterproof—finished drying my clothes before the ladies got up. At 8 the weather still looks so threatening that our movements are not decided. We breakfasted upon mushrooms this morning—a contribution from a native. These people have a natural and unassuming manner that shames the lower order of Europeans. At 9 the rain clouds cleared away and our cavalcade was on the road in a few minutes.

(Concluded.)

[Since publication of the above historical paper, both author and editor have been reminded that the selfsame diary appeared in the *Victorian Naturalist* for March, 1932 (pp. 213-221). Such a blunder is almost without precedent in the long history of our journal and calls for an apology. Mr. H. S. Parris makes the following explanation: "I had no knowledge that Dr. Hobson's diary had been previously published: I made certain inquiries and searched the index of the Victorian Historical Society. I regret very much what has happened."

To this the editor must also add a confession of ignorance concerning the late Mr. A. S. Kenyon's article in March, 1932 (read as a paper to the F.N.C. at the preceding February meeting); but his guilt in failing to be aware of all past *Naturalist* contributions is somewhat mollified by the fact that Mr. Kenyon purposely omitted many sentences when preparing the Hobson diary for publication—these additional details are now in print for the first time. Another consolation is that the diary is still new and interesting to most members who have joined the Club since 1932, while apparently very few of more than 18 years' standing remembered it well enough to write and say so.

Mr. Parris gives 8/11/1848 as the date of Dr. Hobson's death, but Kenyon had specified March 4, 1848. Consultation of the *Port Phillip Gazette* proves the latter date to be correct—there is an obituary notice in the issue of Monday, March 6, which tells us that "Dr. Hobson . . . has been for some years in the most precarious state of health, but the immediate cause of death was the bursting of a blood vessel in the lungs." Another discrepancy involves the relationship of Dr. Hobson to Captain William Hobson of H.M.S. *Rattlesnake* fame. Mr. Kenyon states that the former was a cousin, Mr. Parris that he was a nephew. Which is right? [J.H.W., Ed.]



## ADDITIONS TO THE ORCHIDACEAE OF AUSTRALIA — I

By W. H. NICHOLLS, Melbourne.

1. *DIURIS CITRINA*, sp. nov.

Planta gracillima, 20-30 cm. alta. Folio 2, elongata, gracillima circa 16-20 cm. longa; caulis bractearum 1-2 (in meo specimine). Flores 3-4, laxe racemosi, citro-lutei cum notationibus atrobadiis ornati. Pedicelli longi, gracillimi; ovarium angustelongatum. Sepalum dorsale sub-ovate-lanceolatum, apice recurvum vel decurvum, basin columnae amplexans, circiter 8 mm. longum, labellum aequans. Sepala lateralia sub-viridia, linearia, parallela vel transversa, canaliculata, circiter 1.2 cm. longa. Petala ovata, conspicue stipitata, 1.5 cm. longa. Labellum 3-lobatum, bene supra basin divisum; lobi laterales circa 4 mm. longi, lunati attenuati, marginibus anterioribus laceratis; lobus intermedius circa 10 mm. longus, sub-orbiculatus vel orbiculatus, inter lobos laterales in unguem abrupte attenuatus, marginibus integris; unguis lobi intermedii lineis duo elevatis, parallelis, late separatis. Anthera obtusiuscula in altitudine laciniarum laterales aequans. Lacinae laterales columnae angustae, apice longe subulatae, marginibus irregularibus vel fimbriatis.

A very slender plant about 20-30 cm. high. Leaves two, very slender, elongated, about 16-20 cm. long; stem-bracts 1-2 (in my specimens). Flowers 3-4, in a loose raceme on long slender pedicels, pale lemon yellow, with very dark-brown (almost black) markings; ovary much elongated; bracts loose, subulate and exceeding the pedicels. Dorsal sepal somewhat ovate-lanceolate with conspicuous markings, the apex recurved but occasionally decurved, clasping the column at the base, about 8 mm. long, and about equal to the labellum in length. Lateral sepals greenish, linear, parallel or sometimes crossed, channelled above, about 1.2 cm. long. Petals ovate on slender claws, about 1.5 cm. long (including claws). Labellum 3-lobed from well above the base, the lateral lobes crescent-shaped, attenuated at the apex, about 4 mm. long, inner margins lacerated (or fimbriated); middle lobe about 10 mm. long, sub-orbicular or orbicular, narrowing towards the base (between the lateral lobes) into a claw, the margins entire; lamina with 2 well separated raised parallel plates on the claw of the middle lobe, a single keel continuing to the apex. Anther obtuse, about as high as the rostellum and lateral wings. Lateral wings narrow with irregular margins and subulate apex.

*Flowering*: October.

*Habitat*. Dripstone, New South Wales (leg. G. W. Althofer, Oct. 1947.—TYPE in National Herbarium, South Yarra).

[Figs. A, B, C.]



2. *PRASOPHYLLUM APPENDICULATUM*, sp. nov.

*Planta gracillima, ad 40 cm. alta. Foliū erectum ad 12 cm. longum. Inflorescentia 5-12 cm. longa. Flores parvi, sub-globuliformes, subsessiles, purpurei. Sepalum dorsale 6 mm. longum, ovato-lanceolatum, incurvatum. Sepala lateralīa 6 mm. longa, sub-connata, acuminata, parallelā. Petala 5 mm. longa, linearia vel linearifalcata, incurvata, acuta. Labellum immobile, conspicue orbiculatum, concavum; marginibus integris vel minute-crenatis; pars apicalis labelli abrupte flexa; pars callosa non conspicua. Columna brevissima. Anthera comparate grandis.*

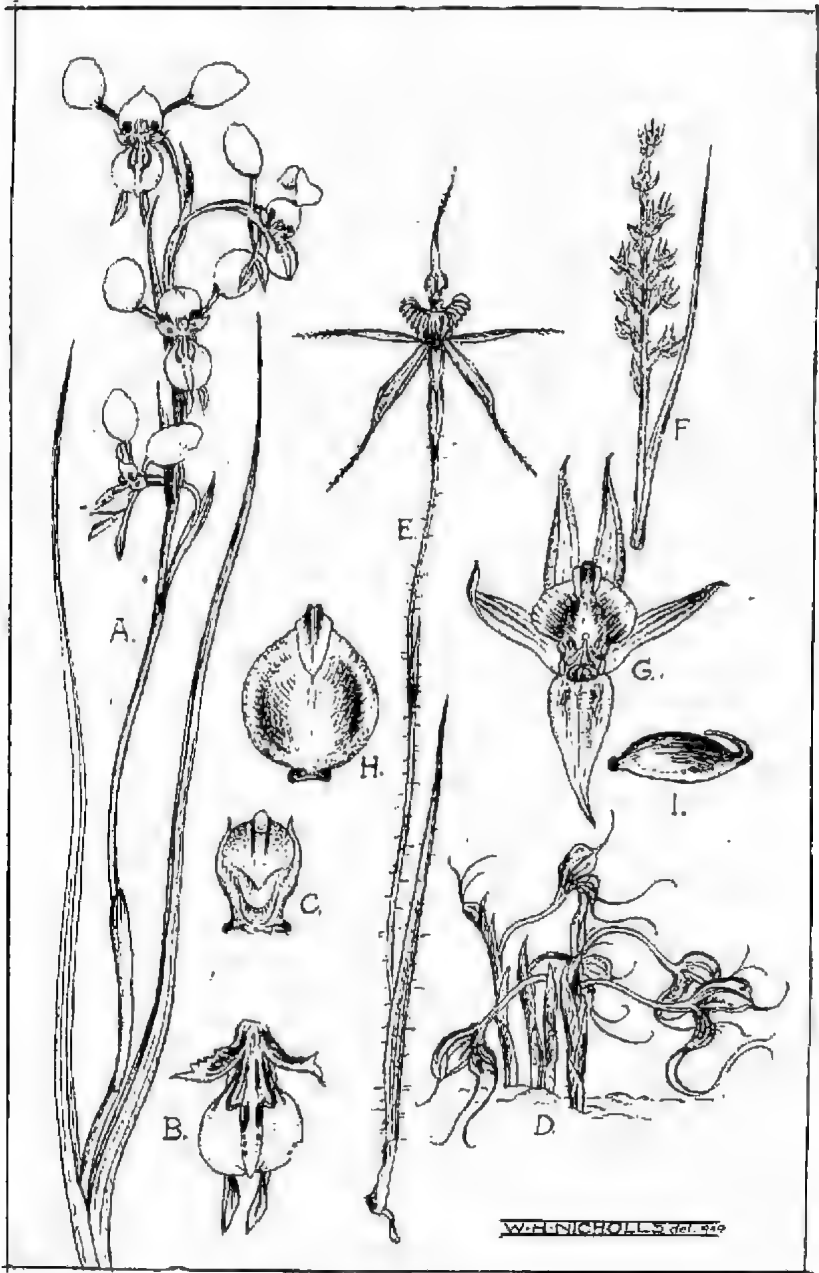
A very slender species, about 25-40 cm. high. Leaf erect, about 8-12 cm. long. Spike comparatively short (5-12 cm. long). Flowers small, not crowded, somewhat globular in form, subsessile, the prevailing colour purplish. Dorsal sepal 6 mm. long, ovate-lanceolate, usually incurved; lateral sepals 6 mm. long, connate to about the middle in all flowers examined, finely acuminate and parallel at the apices. Petals 5 mm. long, linear or linear-falcate, incurved in the majority of flowers, acute at the tips. Labellum not movable, conspicuously orbicular and concave; margins entire or minutely crenulate; apical part narrow, acute and sharply flexed; callous plate inconspicuous at the base of the flexed part. Column short. Anther brownish and about as high, or almost as high, as the rostellum and lateral appendages. Column wings (or appendages) broad.

*Flowering*: Mid-November.

*Habitat*: Mr. N. A. Wakefield, who found this orchid in November, 1940, writes: "It is known to me in two places, one near Genoa and the other near Cann River, about 35 miles apart. The habitat is on moist heathy flats of the *Xanthorrhoea hastilis* country in the Cann-Genoa district. . . . The fresh specimen I sent you was from Genoa Creek, Nov. 13, 1949. [TYPE in National Herbarium, South Yarra.] The flowering season is mid-November. The largest specimen had 22 flowers in a five-inch spike, the plant being 18 inches high."

This eastern species could be mistaken, by a casual observer, for a small specimen of *Pr. Hartii* Rogers, but though the colour scheme of the flowers is very similar, the comparatively brief spike of bloom in *Pr. appendiculatum* would be a ready guide; the labellum also is very distinct, being somewhat squat and cap-like; its sharply reflexed, very narrow appendix-like apex, which suggested the specific epithet, and the very abbreviated callous plate are also characteristic features.

[Figs. F-I.]



(For explanation see p. 215.)

3. *CALADENIA ERICKSONAE*, sp. nov.

*Planta gracilis, hirsuta, circū 12-18 cm. alta. Foliū anguste-lanceolatum, hirsutissimū, canaliculatum, circā 7 cm. longum. Flos solitarius (in meo specimine), badius vel atro-sanguineus. Sepala subaequalia, circiter 2.5-3 cm. longa. Sepalum dorsale lanceolatum, erectum, incurvatum; sepala lateralia et petala acuminata, porrecta vel deflexa. Labellum breviter unguiculatum, mobile, cordiforme, apice recurvum; marginibus ad basin integerrimis, ad apicem brevi-pectinatis; lamina nervis atris radialibus conspicue oruata. Calli lineares, robusti, 2-seriati, ultra medium laminae terminantes. Columna incurva, circā 7-8 mm. longa, late alata. Anthera obtusa.*

A very slender, shortly-hairy plant about 12-18 cm. high. Leaf narrow-lanceolate, hairy, channelled, about 7 cm. long; a short acuminate bract about the middle of stem. Flower solitary (in the specimens examined), dark brown on a light ground or wholly deep blood-red. Segments of perianth of about equal length, 2.5-3 cm. long, horizontally spreading or deflexed (with the exception of the dorsal one, which is erect and incurved), dilated in the lower part, the filiform points glandular-hairy. Petals porrect, narrower than the sepals. Labellum cordiform, mobile on a short broad claw; margins entire in the erect portion, then combed with short stout calli to the apex; apex shortly recurved; lamina boldly marked with dark crimson radial nerves. Calli in two rows, dark red-brown, the anterior ones stout, of "golf-stick" type, not extending beyond the bend. Column erect, incurved, about 7-8 mm. long, widely winged above, almost wholly blood-red, white toward the base. Anther extremely blunt.

*Habitat*: Bolgart, Western Australia (*leg.* Mrs. Rica Erickson, Sept. 27, 1949—TYPE in National Herbarium, South Yarra). Also collected in prior seasons by Mrs. Erickson.

I have named this Western Australian *Caladenia* after its discoverer, Mrs. Rica Erickson, of Bolgart, who is a very keen botanist and an artist of exceptional talent. The species is an interesting addition to the section *Calonema* Benthani. Though closely related to *C. reticulata* FitzG., it has affinities also with *C. cristata* Rogers. From the former it may be differentiated by the presence of hairy points to the perianth-segments, and by a labellum of much thicker consistency, which is boldly ornamented with radial lines (similar to those in *C. cairnsiana* F. Muell.). From *C. cristata* it is readily distinguished by the labella-margins (in *C. cristata* they are entire), also by a very different arrangement of the calli.

[Fig. E.]

4. *PTEROSTYLIS RUFa* R.Br., var. *DESPECTANS*,  
var. nov.

*Planta pumila. Flores conspicue despecti, longe pedicellati.*

A lowly plant with the principal characters of the typical form, but having smaller flowers, which are pale translucent grey. The long pedicels are consistently and conspicuously deflexed—so much so that the galea, in some instances, actually touches the ground and the filiform points of the conjoined sepals are covered with the loose soil of the habitat.

This strange form brings to mind Rupp's variety *prominens* of *Pt. pusilla* Rogers (see *Proc. Linn. Soc. N.S.W.*, LVI, pp. 136-7, 1931). Found near Maryborough in Victoria, the new variety is an interesting addition to the "rufa" clan of greenhoods and is possibly pollinated by the agency of some ground-dwelling insect. It appears to be widely spread throughout the habitat, where it was first located in 1947. Two plants were removed for study and these produced flowers during November, 1948, and again in 1949.

Although grown under very different conditions from those prevailing in the habitat, the cultivated plants maintained the curious, more or less horizontal habit of growth; in fact, in some cases, the pedicel assumed an arched posture, the "face" of the galea thus becoming covered with soil. Plants rarely exceed a height of 6-7 cm.

*Habitat*: Maryborough, Victoria (*leg.* W. H. Nicholls, Nov., 1947)—TYPE in National Herbarium, South Yarra.

[Fig. D.]

KEY TO ILLUSTRATIONS

A—*Dinris citrina* sp. nov. B—Labellum and lateral sepals. C—Column, showing stigma, etc.

D—*Pterostylis rufa* R.Br., var. *despectans*, var. nov.

E—*Caladenia Ericksonae* sp. nov.

F—*Prasophyllum appendiculatum* sp. nov. G—Flower of same. H—Labellum from above. I—Labellum from side.

(For natural size of figures, see letterpress.)

ORGANIZER FOR 1950 NATURE SHOW

Council considers that this 70th anniversary year of the F.N.C. calls for something special in the way of an exhibition. It is proposed to have a paid organizer, and any member who would be willing to undertake the work, or who knows of some competent and likely person outside the Club, is urged to contact the President or Secretary without delay.

NEW COUNTRY CLUB AT RED CLIFFS

The formation of a Field Naturalists' Club at Red Cliffs is announced and it is to be hoped that this recent venture will achieve the same success that has marked the establishment of other sister clubs in western Victoria (at Bendigo, Ararat and Portland). The president is Mr. Lang.

**"THE FAIRY WRENS OF AUSTRALIA"**

(Book Review, by M. L. WIGAN)

An outstanding publication (Xmas, 1949) under the above title is by Neville W. Cayley. The book, dedicated to his wife, is the work of this distinguished ornithologist at his best, is well bound and costs only 15/-.

"Fairy Wrens"—sweet-sounding vernacular name of 13 species in the genus *Malurus*, with two species of Emu Wrens and their numerous races—is a most comprehensive and finished work. There is a detailed description, in letterpress and colour, of the life-histories of these little "Blue Birds of Happiness," their discovery and habitats in the Commonwealth.

The highlight of the work is a series of superb colour plates featuring each species in some floral setting of its natural habitat. For instance, in the artistic setting of the Splendid Fairy Wren (Western Australia) the lovely blue of the male harmonises with the no less lovely cerulean hues of the *Leschenaultia*; the delightful Black-backed Fairy Wren contrasts with the incomparable glory of Sturt's Desert Pea, while the daintily-posed Variegated Fairy Wrens appear against a background of Flannel Flowers—these are but three of the charming studies.

There is a coloured plate of eggs, for no artistic touch is missing, and a novel feature are the coloured distribution maps, showing a miniature of each bird against the territory over which it extends. The educational value of such an attractive scheme is obvious. Black and white photographs of very high standard portray the individuality of several species and enhance the whole work; these appear over the names of L. G. Chandler, D. A. Gaukrodger, S. R. White and P. Lawson Whitlock.

Congratulations go to Mr. Cayley and his publishers, Messrs. Angus and Robertson, for a production which establishes quite a new precedent in monographical excellence. May we see more of this type of work on Australian ornithology.

**ESTABLISHMENT OF VERTICORDIA GRANDIS AND OTHER NATIVE PLANTS**

By J. S. SEATON

*Verticordia grandis* is an outstanding species, but unfortunately has proved very difficult to cultivate.

I was interested to see this plant in cultivation during a visit to Miss May Burdett at her remarkable wildflower garden in the Basket Range, South Australia. When I mentioned my failures in trying to grow it from seed, Miss Burdett explained that her father had scraped up the soil from under the bushes of *Verticordia grandis*, growing on the sand-prains north of Perth, and brought it back to South Australia; some seed lying dormant in this soil had germinated and seedlings were raised successfully.

This would suggest that Mr. W. Burdett, an authority on the cultivation of native plants, had realized that definite local micro-organisms were essential for successful germination of the seed, and it would also explain the failure attending efforts to sow seed in the ordinary way.

It would seem that some, at least, of our native plants, that have proved difficult to cultivate successfully, are dependent upon mycorrhizal associations. Mr. C. F. Walton of Pymble, New South Wales, has found species such as *Eriostemon laucelatus*, *Cyrtua saligna*, *Gompholobium latifolium* and some species of *Banksia* extremely difficult to establish in foreign soil, and his experiments suggest that it would be necessary first to establish the specific micro-organisms in sufficient numbers to ensure symbiosis in the new habitat. There is a vast field open for researches of this nature.

**HERBS AND BIRDS AGAIN**

By EDITH COLEMAN, Blackburn.

*Blackbird and Plum Leaves*

On 8/10/49 my daughter and I watched a female Blackbird pulling off sprigs (not single leaves) from a large-leaved Cherry Plum tree, weaving them into the fabric of her nest in a rose bush close by. She pulled vigorously at the sprigs, her feet so firmly planted that the "tug" was visible to us. Single leaves were dropped: apparently sprigs more easily keyed-in with grasses and other material of the fabric. We could detect little scent in the young tender green leaves.

*English Thrush and Lavender-cotton*

On 19/11/49 many sprigs of Lavender-cotton (*Santolina pinnata*) were seen on a path under the nest of a British Song-Thrush. In the fabric of the nest, which was only about 15 inches above our heads, we could see many more sprigs. Next day others were added, the border from which they were taken being at some distance from the nest. The mud lining probably negatives a suggestion that the leaves were used as an antiseptic.

The first eggs were deserted. We blamed disturbance by possums, but on 10/1/50 a lusty brood was being fed in the same nest. When the young had flown I examined the nest. There were many dry sprigs of *Santolina* in the fabric, but none in the mud lining.

*Wormwood and Lacy Pyrethrum Again*

On 25/12/49 we found our only plant of the "Summer Fir" (*Artemisia sacrorum*) much depleted, with many leaves on the ground. They had been "torn" off, as in the case of other wormwoods. Sparrows were suspected, but we saw no leaves carried.

Incidentally, why is Sparrow-wort (*Erica passerina*) dedicated to St. Thomas the Apostle?

Every year since 1942 one special plant of the Lacy or Canary Islands Pyrethrum (*Chrysanthemum plarnicaeflorum*) has been almost denuded of leaves, as described (see *Vic. Nat.*, Jan., 1944). In November last I found three new plants completely denuded. Leaves lying on the ground showed that they had been "torn" off as in former instances. One large bush of the same species is never touched.

**INDUSTRIOUS MOTHER BLACKBIRD**

A blackbird brought out three broods in the one nest (with no interval) at Blackburn last spring. Each time the nest was added to and became very high for the third brood. Examination revealed it to be a wonderful structure, bearing eloquent testimony to the patience and industry of the mother bird, who carried all the material herself.—E.C.

## MONTHLY NOTES FROM PORTLAND F.N.C.

By NOEL F. LEARMONTH

Two of our members accompanied a touring party of the Bird Observers' Club during an excursion to Nelson from December 28th to 31st and had the satisfaction of seeing the elusive Ground Parrot (*Pezoporus reallicus*). We followed the Glenelg from Nelson to its mouth by motor boat and then, in line abreast, "beat up" the low-lying land on the west bank. The locality is covered with dense undergrowth that makes progress very difficult. Knotted Club-rush, Bare Twig-rush and Shore Rush are often laced together with Dodder-laurels, not to mention almost impenetrable belts of Woolly Tea-tree, lofty Brickmakers Sedge and Tall Sedge.

After "scrub shoving" for about two miles, the party turned back towards the river for lunch. Then, in quick succession, four Ground Parrots were flushed, the last bird being surrounded and forced to fly in full view of the searchers. Another parrot was seen by an advance group almost at the same time. In each instance the birds flew low and very fast into the thickest of the tea-tree belts where pursuit was impossible. At times single birds and pairs may be seen in this Nelson area, but five at one time is a noteworthy achievement.

Bird-life on the Lagoon and sandbanks exposed by a receding tide was rich. Among others we noted the following:

Pelican (*Pelecanus conspicillatus*), Black Swan (*Chenopsis atrata*), Chestnut Teal (*Querquedula castanea*), Black Duck (*Anas superciliosa*), Musk Duck (*Biziura lobata*), Curlew-Sandpiper (*Erolia testacea*), Sharp-tailed Sandpiper (*E. acuminata*), Little Stint (*E. ruficollis*), Common Sandpiper (*Tringa hypoleuca*), Greenshank (*T. nebularia*), Caspian Tern (*Hydroprogne caspia*), Crested Tern (*Sterna bergii*), Spar-wing Plover (*Lobidyx novae-hollandiae*), Grey Plover (*Squatarola squatarola*)—a new record for the area, Pied Oystercatcher (*Haematopus ostralegus*), Sooty Oystercatcher (*H. unicolor*), Eastern Curlew (*Numenius cyanopus*), Red-capped Dotterel (*Charadrius ruficapillus*), Black Cormorant (*Phalacrocorax carbo*), Little Black Cormorant (*P. ater*) and Pied Cormorant (*P. varius*).

Whimbrel (*Numenius phaeopus*), Red-necked Avocet (*Recurvirostra novae-hollandiae*), Royal Spoonbill (*Platalea regia*) and Yellow-billed Spoonbill (*P. flavipes*) were seen by another party, but we missed these species. The Grey Plover (new for this area) was certainly our most interesting record.

The return trip by boat in the evening, through this wealth of bird-life, was a fitting close to a day that none of us will forget. While travelling to Portland on December 31st the Bird Observers were taken through part of the area to be reserved as a National Forest and shown several of the beautiful limestone cliff reaches of the Lower Glenelg.

## A WHISTLING SNAIL?

(To the Editor)

Sir,—When clearing out some old notes, made years ago during a visit to the littoral near the Kimberleys (N.W. Australia), I found this entry:

I was informed by an outback squatter there of the existence of a land snail which whistled like the call of the Curlew (Southern Stone Plover). This large, elongated snail served to augment the aborigines' diet.

Has any naturalist ever observed this remarkable creature, and is there any scientific record of it?

ARTHUR H. E. MATTINGLEY, Glen Iris.

## NECTAR BALLET

The amazing work on the dances of the Honey Bee, published by Prof. K. von Frisch in 1946 so interested Dr. W. H. Thorpe of the Department of Zoology, Cambridge, England, that he visited Prof. von Frisch at his home at Brunnikle (Austria) to repeat with him certain of the most crucial experiments, and returned convinced of the soundness of the conclusions as a whole.

The Bees do two dances, a round dance and a "waggle" dance by which they indicate the direction and the distance of a good source of food. If the food source is not more than 50-100 metres, the round dance is performed, and with increasing distance the waggle dance. This dance also indicates the distance, the number of complete waggle dances in a unit of time decreases with increasing distance of the food source. The direction of the food source is indicated by the direction of the waggle. A waggle downwards indicates that the food source is away from the direction of the sun, a waggle to the right that it is to the right of the sun (and vice-versa) and at such an angle to the sun as that by which the waggle deviates from vertical. Dr. Thorpe thinks that this extraordinary performance of the worker hive bee is essentially an elementary form of map-making and map-reading.

Professor von Frisch also proves that bees are sensitive to the polarization of light reflected from the blue sky, and by this means are able to tell the direction of the sun, even though they can see only a small area of the sky far removed from the sun. In this latest work, Prof. von Frisch poses tremendous problems which necessitate a reconsideration of our attempts to explain the behaviour of insects and other animals. The days of Loeb and the tropism theory now seem far away indeed. Interested members should endeavour to read the complete article in *Nature*, CLXIV, No. 4157, pp. 11-14 (July 2, 1949).

—LYNETTE YOUNG.

## REGENT HONEYEATERS AT BLACKBURN

For thirty years Regent Honeyeaters have frequented our fuchsias at flowering time. This season they nested in one of our gum trees. It has been a pleasure to watch the parents feeding two young birds in the fuchsias within a foot or so of a window.

The young birds show much yellow on both wings and tail, which, not being so expert in flight as their parents, they spread more widely. They appear to have a long period of babyhood. At the present time, 2/2/50, although the young appear to be fully grown, they are still fed by the male parent, while the mother bird is apparently brooding again.

Although these young honeyeaters are well able to feed themselves, as we witness, the male parent is kept busy. His work is made easier by their habit of perching side by side. After each flight they settle close together, and he feeds two at once. Their penetrating calls are heard throughout the garden.

This is the first time the Regents have nested in the garden proper, but for over twenty years they have built their deep cup-shaped nest in the fork of the same stringybark tree nearby, despite trishaps and the too eager intent of small boys. In December last year their nest was found at the foot of the same tree.

The return of Regents to the garden is announced not only by their own peculiar calls, but by a big commotion among other birds, who resent their presence, and try to drive them out.

It is interesting to note that, whereas Spinebills, Greenies and Yellow-winged Honeyeaters feast in both bushes of Fairy Fuchsias (*F. gracilis*) and the tree-like *F. globosa*, the Regents eschew the slender branches of the former, preferring to feed on firmer branches of the latter. They are like gorgeous butterflies among the abundant flowers.

—EDITH COLEMAN.



## WHAT, WHERE AND WHEN

**General Excursions:**

- Saturday, March 18—Mt. Piper, near Broadford. Subject: Geology and General. Leader: Mr. A. W. Burston, Calderwood's coach, leaving Batman Avenue at 8.30 a.m. Fare, 11/-. Bring two meals. Bookings with Miss M. Elder, 17 Adelaide St., Malvern, S.E.3 (Tel. U 7297). Preliminary bookings to be confirmed at March meeting.
- Saturday, April 1—Trentham District, with visit to Trentham Falls. Subject: "Fungus Foray." Leader: Mr. R. D. Lee. Train: 9.20 a.m., Platform 9, Spencer Street. Fare, 2nd return Trentham, 14/8.
- Easter (April 7-10)—Gellibrand River, in the Otway Ranges. Subjects: Birds, Botany and General. Leaders: Miss A. B. Adams and Mr. H. E. Stewart. Dormitory accommodation at "Wonga Wonga" Guest Ranch for limited party only. Transport arrangements, probably by private car. Bookings with Mr. H. E. Stewart, 14 Bayview Terrace, Ascot Vale, W.2 (Tel. FU 022, extn. 457).

**Preliminary Announcements:**

- Saturday, May 6—Creswick, via Ballarat. Subject: Inspection of Forests Commission School and Plantations. Leader: Mr. E. J. Semmens, Principal of the Creswick School of Forestry. 200-mile parlor coach trip; leaves Batman Avenue at 8 a.m. Reserved seat bookings, 20/-, with Mr. H. E. Stewart, 14 Bayview Terrace, Ascot Vale, W.2 (Tel. FU 022, extn. 457).

**Group Fixtures:**

- Saturday, March 25—Botany Group excursion to Wattle Park. Subject: "Eucalypts." Wattle Park tram, and meet at the Chalet at 2 p.m.
- Monday, March 27—Botany Group. Royal Society's Hall, 8 p.m. Monthly meeting. Subject: "How to Identify Six Eucalypts," by Mr. A. J. Swaby. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris.
- Tuesday, April 4—Geology Group. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mr. A. A. Baker, 53 Carlisle St., Preston.
- Tuesday, April 4—Native Plants Preservation Group. At home of Miss W. Waddell, 3 Denham Place, Toorak, at 8 p.m.
- Thursday, April 6—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mr. R. B. Jennison, 3 Linda St., Moreland.
- Marine Biology Group.—As the usual monthly meeting night would fall on Good Friday, this Group will not meet in April.

—Jean Blackburn,

Excursions Secretary.

(MB 1657—before 5 p.m.)

---

**AUSTRALIAN RED CROSS SOCIETY**

In a nation-wide appeal, Red Cross asks the people of Australia for support to carry on its many vital services.

The dramatic appeal of war is missing, but the need is very real and urgent to the sick, the maimed and the hungry who anxiously wait for help.

Present services cannot be maintained without a big increase in public support. Expenditure for the year ending June, 1949, was nearly 1900,000, while total receipts reached only 500,000.

Is Red Cross to go on? It's up to you.

# The Victorian Naturalist

Vol. 66—No. 12

APRIL 5, 1950

No. 796

## PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on March 13, 1950. The President, Mr. Colin Lewis, and about 80 members attended.

With regret, the President announced the deaths of Mr. R. D. Elliott of Toorak (a benefactor and Life Member of the Club since 1927) and Mrs. Banfield Sen. of Ararat. Members were asked to stand for a moment as a tribute to the memory of these former friends.

Cordial greetings were extended by the President to Miss Ina Watson on her recent return from abroad. Miss Watson promised to tell some of her experiences at a talk during the April Meeting.

The Secretary announced that the annual planting day at Maranoa Gardens would be held on April 29, at 2.30 p.m. Members were asked to keep this day free, and to try enrolling many of their friends as "Friends of Maranoa." It was notified that the April Meeting would be held on Tuesday, April 11, 1950, instead of on the usual Monday, owing to the Easter Holiday period.

The President expressed much pleasure in announcing that the Australian Natural History Medallion for 1949 had been awarded to Mrs. E. Coleman. Members asked that their united best wishes be conveyed to Mrs. Coleman.

The following were elected to Ordinary Membership: Miss C. Starey and Mr. A. E. Brooks.

## EXHIBIT NIGHT

Because of the Labour Day Holiday and the possibility of a small attendance, exhibits took the place of the usual lecture. Members were invited to speak briefly on some phase of Natural History as exemplified by specimens brought to the meeting.

The opening speaker, Mr. Colin Lewis, told of specimens of Christmas-bush growing at Dandenong, which had been accidentally transported there in garden soil. Miss Ina Watson followed, and gave some account of her travels in England. Mr. J. Ros Garnet introduced us to the botany of Royal Park, stating that native grasses may still be found there. Mr. I. Hammet made mention of some volumes of books he had on the exhibit tables and drew members' attention to their fine colour plates. Mr. R. Deutsher spoke of *Ceratopteris pteridoides*, a floating water-fern,

native of South America, while Mr. P. Fisch remarked on a large fungus he had found recently at Doncaster.

Mr. R. D. Lee explained several photographs he had on exhibit. Mr. Burke recounted recent experiences of lerp infestation. Mr. Hanks spoke on the feeding of the Spotted Pardalote, and on the distribution of reed warblers. Mr. Morley took us over the British countryside with his descriptions of springtime in England. Mr. Lord described a remarkable plant association between Liverwort and Gooseberry. Finally, Mr. H. C. E. Stewart spoke on the botany of Mr. Buffalo.

### MONTHLY NOTES FROM PORTLAND F.N.C.

By NOEL F. LEARMONTH

The Club was fortunate in having Mr. Les. Chandler of Red Cliffs at its February meeting. His illustrated address on Kulkynne birds was much appreciated. In March we again enjoyed the company of Miss Ina Watson (Past President, F.N.C.V.), who told us of her ornithological experiences on Skockholm Island, Wales.

Early in March, four members searched some Mt. Clay gullies for ferns. Among those found was the Small Rasp Fern (*Doodia caudata*) first record of the species from the Portland District. It was growing in profusion in one gully and a few scattered plants were found in another two miles away. A large colony of Rainbow Fern (*Adiantum dubia*), known in only one other Portland locality, was found in the same gully, some fronds being five feet tall. Noted also during the day were Mother Shield Fern (*Polystichum proliferum*), Screw Fern (*Lindsaya linearis*), Rock Fern (*Cheilanthes tenuifolia*), Common Maidenhair (*Adiantum aethiopicum*), Coral Fern (*Gleichenia microphylla*), Fishbone Fern (*Blechnum nudum*), Hard Water-fern (*B. procerum*) and Sticky Hypolepis (*H. punctata*).

The Water Buttercup (*Ranunculus aquatilis*) was found in a small waterhole—first Portland record of this plant—and nearby that infinitesimal flowering plant the Tiny Duckweed (*Wolffia arrhiza*). One swamp was completely covered with a dense mass of Bog Moss (*Sphagnum subcontortum*), and another interesting botanical find was Silky Daisy-bush (*Olearia myrsinoides*) in full bloom, an uncommon plant in our district.

It was a poor day for bird observation—very hot—and we were fortunate to disturb a Winking Owl (*Ninox comitens*) which "stayed put" just long enough for identification. A passing glimpse was all we had of the rare Diamond Firetail (*Zonacanthus guttatus*), but our luck was really in when we found a flock of Black-capped Sittellas (*Neositta filicata*) in some stringy-barks; we had long suspected that this species and the Orange-winged Sittella (*N. chrysoptera*) were both in our district. Among other birds recorded during the trip were Emu Wren (*Stipiturus malachurus*), Rufous Bristle-bird (*Dasyornis broadbenti*), Rufous Fantail (*Rhipidura rufifrons*) and flocks of both Spine-tailed Swifts (*Hirundapus cordacutus*) and Fork-tailed Swifts (*Micropus pacificus*). There have been more swifts about this summer than for many years past.

### AUSTRALIAN FOREST LEAGUE

The Victorian Branch would welcome the names of any F.N.C. members or friends desirous of helping the work of this worthy League Annual subscriptions. Full Member, 10/-; Associate, 5/-. (A. N. C. Gilbert, Hon. Treasurer, 12 Edward St., Kew, E.4.)

**ADDITIONS TO THE ORCHIDACEAE OF AUSTRALIA—II**

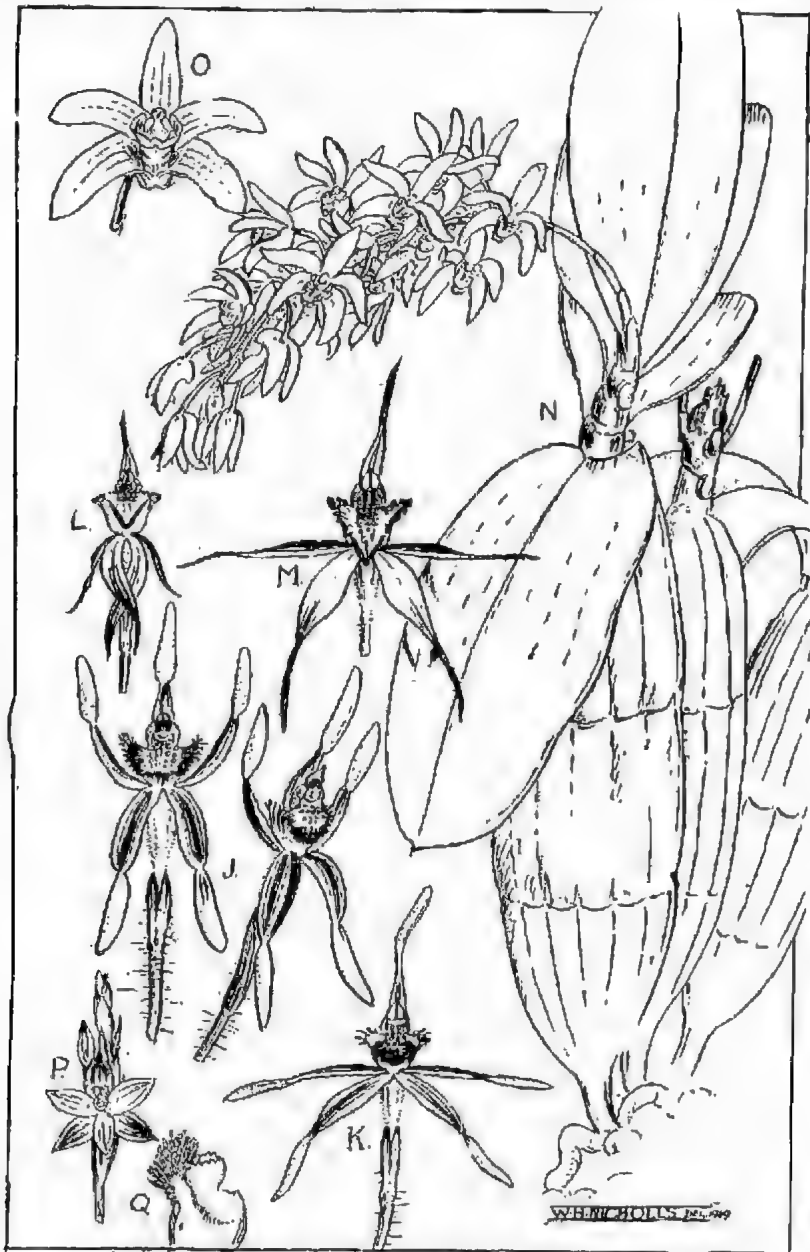
By W. H. NICHOLLS, Melbourne.

5. *CALADENIA VARIABILIS*, sp. nov.

*Planta gracilis vel subrobusta, hirsuta, circa 20-30 cm. alta. Folium lanceolatum, hirsutissimum, circa 10-14 cm. longum; bractea subulata ad medium caulis. Flores 1-2, parvi vel majusculi, luteo-badii. Segmenta perianthii patentia vel deflexa. Sepalum dorsale lineare-lanceolatum, circa 2.5-3 cm. longum, acuminatum; basi retractum. Sepala lateralia ad 5 cm. longa, lanceolata, acuminata vel filiformia, saepe dilatata in caudis filiformibus contracta, ad apicem semper glanduloso. Petala angusta lanceolata, circa 2-4 cm. longa. Labellum obovato-lanceolatum, trilobatum vel obscure lobatum, unguiculatum, marginibus denticulatis vel apice integris, ad apicem cuneatum, recurvatum; lamina ochroleuca, nervis sulcis radialibus ornata. Calli robuste clavati, 4-8 seriatj, leviter ultra medium laminae vel prope apicem terminantes. Columna erecta, incurva, circa 1.2-1.5 cm. longa, in dimidio superiore late alata, ad basin biglandulosa. Anthera breviter mucronata.*

A slender or moderately robust hairy plant about 20-30 cm. high. Leaf lanceolate, hairy, about 10-14 cm. long; stem bract subulate, about the middle of stem. Flowers 1-2, variable in size, biscuit yellow with dusky brown and some red markings, the brown predominating. Perianth segments spreading and in some flowers deflexed. Dorsal sepal erect, incurved, about 3-5 cm. long, linear-lanceolate, shortly acuminate. Lateral sepals about 5 cm. long, often very wide, lanceolate, the tips filiform; sometimes rather narrow and shortly acuminate, occasionally crossed and only 3 cm. long; the apices always glandular and occasionally sub-clavate. Petals shorter and narrower than sepals, linear-lanceolate. Labellum broad-lanceolate, trilobed or obscurely lobed, on a short mobile claw, biscuit yellow with deep brown markings; the tip cuneate and reflexed; margins denticulate with short blunt calli-like teeth, usually entire with thickened margins at the tip; lamina with some divergent light brown veins. Calli in 4-8 rows, tessellated, rather stout and short, imbricate, varying much in shape and usually extending almost to the apex, but in some flowers terminating just beyond the bend. Column erect incurved, widely winged above, more narrowly below, blotched with light red and with two yellow calli at base. Anther with a short point.

*Habitat*: Yarram, Victoria (*leg.* Miss J. Anderson, September, 1930); Wonthaggi, Victoria (*leg.* Miss Evelyn Bond and Mr. E. H. Homann, October, 1930). **SYN-TYPES** in National Herbarium, South Yarra.



For Key to Illustration, see page 226.

This *Caladenia* was incorrectly recorded (*Vict. Nat.*, XLVIII, pp. 140-141, 1931) as R. D. FitzGerald's *C. tessellata*, a species occurring only in New South Wales. The new one bears a striking resemblance, especially in its small-flowered form—flexed segments and tessellated calli—but *C. tessellata* differs in the colour scheme, differently shaped lateral sepals and column.

[Figs. L, M.]

6. *CALADENIA LONGICLAVATA* Coleman—some interesting variations.

Remarkably robust specimens of this spider-orchid were collected by the writer in several localities of S.W. Western Australia during 1948. These extraordinary flowers were conspicuous among less sturdy examples—between Denmark and Walpole, at Donnybrook and Bridgetown—and differed considerably from a greenish and maroon form seen at the State Timber Mills in the depths of the Karri country near Manjimup. The divergences of these two forms from the typical are, however, only a matter of degree.

I have figured two flowers of the robust form, and one of the Karri forest form for comparison (for delineation of the typical form see this journal, Feb., 1930). The Karri form is greenish with red and maroon markings while the robust one is deep red-brown and maroon on a rich old-gold back-ground.

[Figs. J, K.]

7. *DENDROBIUM FUSIFORME* Bail., var. *BLACKBURNII* var. nov.

*Pseudobulbi validi, Flores pallidi-flavi. Segmenta perianthii abbreviatissima.*

This compact variety differs from the typical form chiefly in its much more robust pseudobulbs which are from 12-22 cm. long and 2.5-3 cm. wide. The pendulous racemes have shortly-segmented pale primrose yellow flowers, whereas in the typical form the creamy-white flowers are borne erect, with somewhat filiform "spidery" segments. Fragrance of the flowers persists for a considerable period.

*Habitat*: Font Hills, Cliff Trig, west of Port Douglas (16° 39' South, 145° 08' East), North Queensland (*leg.* J. A. Blackburn, then in 3rd Austr. Fd. Svy. Coy., A.I.F., July, 1945).

The plant (a large one) flowered in the writer's glasshouse during November, 1948, and again in 1949.

[Figs. N, O.]

8. *THELYMITRA RETECTA* Rupp [*Vict. Nat.* LX, 176 (1944)].

This dainty colourful species has been found in far eastern Victoria by Messrs. J. H. Willis and N. A. Wakefield—"in sphag-

num moss beds at bridge over Delegate River, Bidwell, at 3,000 ft. altitude, 20/1/1918." The flowers, which vary in depth of colour—pale blue to deep violet—are from 1-2 cm. in diameter, and the orange-banded column with high yellow hair tufts contrasts attractively with the general colour scheme. The type locality of *T. resecta* was along the Tamar River near Launceston, Tasmania.

• [Figs., P, Q.]

#### KEY TO ILLUSTRATIONS

J—Two flowers of a remarkable form of *Caladenia longiclavata* Coleman: K—*Cal. longiclavata*, a forest form

L, M—*Caladenia variabilis* sp. nov., showing two forms of flower (often produced on the same plants).

N—*Dendrobium jasiflorum* Bail, var. *Blackburnii*, var. nov.; O—A flower of above.

P, Q—Raceme and head of column of *Thelymitra resecta* Rupp.  
(For natural size of figures, see letterpress.)

#### MARYSVILLE EXCURSION

Travelling via Warburton on February 11, our party's first stop was in the main street of that township, at the garden of Mr. Jack Lewis, Forest Officer—a tiny area, but what a paradise for the botanist! One marvelled how so much vegetation could be cultivated in so small a space. A number of exotic plants, including many different species of cacti—from very small to tall grotesque columns—were in evidence, and Mr. Lewis showed us some unique examples of plant grafting. Among the native plants, one of his chief attractions was a lovely sapling of Lemon-scented Gum (*Eucalyptus citriodora*) with clean smooth bole, cool to the touch.

In contrast to the depressing spectacle of thousands of gaunt skeletons of tall Mountain Ash (*Eucalyptus regnans*), it was heartening to see far miles along the Acheron Way, above Cement Creek, a prolific growth of many vigorous young plants of the Myrtle Beech (*Nothofagus Cunninghamhamii*). Here and there giant trees of Mountain Ash, which had escaped destruction, towered majestically. Typical vegetation associated with Mountain Ash forest was noted along the route. The Christmas-bush (*Prostanthera lasiantha*), Prickly Currant-bush, Tea-trees, Lomatia, Blanket-leaf and Austral Mulberry, were all noted. In gullies beside the road the tree-ferns were especially fine.

We boiled our billys in a deep quarry at the side of the road, and picnicked where a little bridge spanned the Acheron River opposite. It was a very pleasant spot, and the warm still air continually rang with the loud calls of "Egypt" from Crescent Honeyeaters in the surrounding trees. The stream was fringed with dense growth, including the Giant Mountain-grass (*Glyceria diaca*), which sometimes attains a height of 15 feet. One specimen measured by Mr. Haase was 13½ feet long.

Upon reaching Marysville we alighted and the party divided, some taking the path to Stevenson's Falls, some walking to Michaeldene, where White-throated Tree-creepers, Yellow Robins and other birds were sighted. On our homeward journey we were impressed with the fine appearance of the Fernshaw area, in which the Metropolitan Board of Works takes an obvious pride. From the Blacks' Spur, an idyllic view of Maroondah dam in the evening light made a fitting climax to this most enjoyable day.

—A. M. BURTON.

## PRESENT DAY DISTRIBUTION AND THE GEOLOGICAL PAST

By Professor D. A. HERBERT, D.Sc., University of Queensland.

The present flora of Australia is a phase that expresses not only the existing climatic and edaphic conditions of the continent, but those of the past. It is a heterogeneous collection of plant communities, including tropical rain forest, beech forest, eucalyptus forest, heathland, mangrove forest, grasslands and alpine communities. These communities have shifted their boundaries in the past with changing environmental conditions and there is evidence that many of them are still doing so. Climates have changed locally or over great areas. Barriers to migration have been created or eliminated. Creation of barriers may isolate communities giving them the opportunity of evolving along independent lines. The flora of S.W. Australia cut off by an arid belt, has produced its own derivative endemics that have been unable to spread to the east, nor have the more recently evolved species in the east been able to reach congenial habitats in Swanland. Fifty-nine per cent. of the south-western Australian eucalypts are restricted to that corner of Australia. A comparable area in the south-eastern corner has only thirty per cent. restricted because migration farther afield has been possible towards the north, Victorian species being able to extend to Queensland. Tasmania with a different type of barrier has about fifty per cent. endemics amongst the eucalypts, but it is not entirely due to the Bass Strait barrier that they have not spread. Many of them are in special habitats and could not traverse a land connection with Victoria unless it had the right habitats along its length.

Land bridges are so frequently invoked to account for distribution of plants and animals that it is worth while considering their limitations. The Australian mainland might be taken as a land mass in which there are land connexions joining all its parts. Yet the Mountain Ash does not use the land connection with the Mallee; there is no migration of communities across considerable distances of unsuitable climate or soil type. Mountains have been described as islands on land, and their floras may be as effectively cut off from one another by the lowlands as by the sea. A land connection across Torres Strait would not result in the establishment of a single mulga tree in New Guinea. The bridge itself would have an unsuitable climate, and there would be nowhere for the mulga to go.

A land bridge to be effective *must* have some reasonable continuity of suitable habitats, both edaphic and climatic. A plant community has no fixity of purpose that enables it to travel over deserts and mountains in the hope of a promised land. If it travels at all, it is over suitable terrain, and its journey ends where



that ceases. It is for this reason that we must reject such conclusions as "Australia must have received its leguminous plants, its *Proteaceae*, and mainly its *Myrtaceae* subsequent to its last connexion with New Zealand." Such a conclusion may possibly be right, but only possibly. The absence of eucalypts, acacias and such types from New Zealand could be equally well explained by the postulation of rain forest climates insulating New Zealand. Eucalypts and these other types have made a very poor showing in Malaysia. Two only have got beyond Weber's line, and they are entirely missing from a great many of the islands.

The land route from Queensland to Victoria has proved inadequate for the migration of the northern rain forest types, over a distance less than that between the Eucalyptus forests and New Zealand. Decreasing summer rainfall is the primary factor, with increasing winter temperatures as an important contributing factor. In North Queensland luxuriant rain forest along the coast gives way across the mountains and in their rain shadow to open Eucalyptus forest, rain forest mainly persisting as a post-climax, as along rivers. Like the other formations it is sharply restricted by soil and climate.

The position is that the present vegetation of Australia is in broad outline a mosaic of types that have been sifted out by climate and soil and profoundly influenced in their detailed composition by the geological past. The eucalyptus forests, beech forests, mangrove forests, and so on, are often as different from each other in their composition as if they were from different continents. We have only to compare Broken Hill with a beech forest or a tropical rain forest. These various communities do in fact often have more in common with communities in other far distant countries than with those perhaps a few miles away, or even sometimes adjacent to them. The *Nothofagus* forests have more in common with beech forests of New Zealand or South America than with the Eucalyptus forest. The northern rain forests, on the other hand, are closely akin to those of Malaysia. Since publication of Hooker's excellent Introductory Essay to the Flora of Tasmania in 1860, the idea has become well entrenched that these resemblances are due to the invasion of Australia over land bridges from various directions. The beeches presumably came from the south, together with Andean and Fuegian types, the tropical rain forests and the mangroves from the north, with an infiltration of Indian and other types coming along suitable migration lines. Though Hooker admitted the possibility of local inclusions, the general idea is of immigrants pouring in from various directions and pushing out the truly Australian plants, and of a very restricted export from Australia—a few plants pushing into the islands of the north, and rather more going to New Zealand, the whole "set-up" being rather similar to the human settlement of this

Continent. When these so-called invasion elements are subtracted from the flora, we are left with those that are more or less peculiar; they are the autochthonous element and no-one can take them from us.

There is no doubt that there is a strongly developed element peculiar to Australia. It gives a characteristic type of landscape over great areas. Floristically it is different not only from the other elements of the flora, but from the vegetation of similar ecological areas in other continents. I am not certain where the line should be drawn to limit this Australian element. C. A. Gardner raised doubts as to whether it is a true Australian element because of its many affinities with the other types. It is in general the vegetation of sub-humid, semi-arid and desert climates—the C, D and E climates of Thornthwaite. These climates are widespread in Australia, but not in the countries immediately beyond its boundaries. There has therefore been the effect of isolation on its development of endemism. It is an ancient type which was already widespread in the early Tertiary, and it has received infiltrations from other sources. In northern Australia it is interwoven with types that are not by any means restricted to Australia—*Pandanus*, *Ficus*, *Erythrophloeum*, *Adansonia*, *Terminalia*, etc.; in the south and in W.A. it has types that are to be regarded as having affinities with those in sub-antarctic countries. We can go on picking out types that have affinities with other elements—African, oriental, polynesian, New Zealand, South American—until we are left with a strong suspicion that, ancient as these Australians are in their own country, even the remaining ones must have been derivatives from once widely spread ancestors. The presence of capsular-fruited *Myrtaceae* (*Tristania*, *Metrosideros*, *Xanthostemon*) elsewhere may have no great significance, but it may perhaps indicate that these ancestors had a reasonably wide distribution. The development of this type of vegetation (of the C, D and E climates) might have been initiated in one or more of three ways: (1) the continued evolution of types from ancestors already adapted to the C, D and E climates (2) the survival of the hardier types when increasing aridity drove back the more mesic vegetation or (3) the re-colonization of drier areas by the more xerophytic members of mesic communities.

It is difficult to support these ideals with specific examples, *Flindersia maculosa*, the Leopard Tree, is possibly a residual. It occurs in dry country between areas where other members of the genus formerly grew and where they now grow along the well watered coast. The "dry scrubs" which are something of the nature of monsoon forest represent in Queensland communities derived from rain forest types. Some of these individual members wander out from their associations and thus suggest how with increasing aridity representatives of a dying flora may be left as survivors under the new conditions.

I see no reason for regarding the original flora of Australia as being almost entirely ancestral to C, D and E climate types of vegetation, and would have little difficulty in accepting the thesis that these types are very largely derived from more mesic fore-runners. Suppose Australia had no C, D and E climates,—a very unlikely state of affairs—then we would have no autochthonous element, or would have to search for it amongst the individual genera scattered in the beech forests, the rain forest and such places. It seems more reasonable to regard the rain forest types, the beech forests as equally Australian. They are very old members of the flora. Fossil evidence indicated that a flora similar to that of the Macpherson Range in S. Queensland existed in the early Tertiary in central Australia; *Nothofagus*, *Flindersia* and *Tristania* were represented as they now are elsewhere in southern and eastern Australia. Such an assemblage now must be sought about a thousand miles farther east, and only about 50 miles from the coast. They have been driven back by aridity. In the Lower Oligocene in Australia the extent of these beech and rain forests must have been enormous. That is indicated in part by the fossil record, but also by residuals. The palms of the MacDonnell Ranges in Central Australia, and the rain forest types of the Carnarvon Ranges are obvious residuals left behind by a dying mesophytic flora. Then too there are the beech forests which at present extend in Australia to only a little way across the south-eastern border of Queensland. The discovery of *Nothofagus* in New Guinea suggests that these forests were formerly very extensive in Queensland in elevated country that no longer exists. Rain forest at present extends sporadically, but with reasonable continuity, right up the Queensland coast and connects with that of New Guinea. Beech forest is only a fog-tolerant type of rain forest. Fog and mist in the Macpherson Range more or less determine whether it is to be dominant or whether rain forest is to take charge. I can see no other explanation for the 1,500 mile gap between the New Guinea and the Queensland heeches than that they were formerly very extensive in Queensland, at least in latitude, along a climatic bridge that no longer exists. The fossil record suggests a longitudinal extent of similar magnitude. It would be difficult to call such an area an invading tongue of sub-antarctic vegetation. It is the local expression of the response of a wide-spread complex to humid cool and presumably montane conditions.

Just what else disappeared in eastern Australia when that north-south climate bridge disappeared is not a mere matter of conjecture. There is a gap in the alpine vegetation between Kosciusko and New Guinea. We would expect the alpines to go just in any general lowering of the heights of mountains. The gap between the alpines of Australia and those of New Guinea is greater than that

between the heeches, as would be expected. Far south-eastern alpine types such as *Oreobolus*, *Carpha* and *Abrotanella* reappear in New Guinea. It seems reasonable to suppose that at one time alpine habitats existed all along the east Australian coast, though they exist no longer even on the highest Queensland mountains. There is a suggestion of it in the presence of a species of *Dracophyllum* (*D. sayeri*) on the top of Mt. Bellenden Ker.

The types of plant inhabiting Australia at the present time are recognizable in the early Tertiary. Many are naturally unidentifiable, but *Eucalyptus* and *Banksia* are amongst the certainties and, of course, the notorious *Cinnamomum*. In the Eocene eucalypts with transverse leaf venation—the "bloodwood type"—(*E. Kayseri* and *E. Mulligans*) were in Tasmania. The southern limit of these types is a temperature limit at present and is 4° farther north than in the Eocene. That does not prove conditions to be colder now than in the Eocene, but it does indicate a retreat of one group of eucalypts. These changes of territory have occurred so frequently that it is now probably impossible to determine any focal point or points for the original evolution of the *Eucalyptus-Banksia* component. After the retreat of the Cretaceous seas that divided Australia, there was a long period of stability with an abundant rainfall. During the Oligocene there must have been something like a pan-Australian flora from east to west. It could not be absolutely uniform in composition, because in a great area of that kind differentiation would inevitably create differences. It would have been possible for beech forests to extend to Western Australia, where now they could not exist. The fossil record is however, silent on this point. The encroachment in mid-Miocene of seas in the Bight region cut off the temperate east from west, initiated the separation of the floras on two sides of the Continent. When the Miocene seas retreated in the early Pliocene and re-established a land route, it might have been possible for vegetation to migrate again had it not been for soil conditions. Here was a great expanse of limestone plain unsuited to mass migration from the lateritic western corner. Possibly at this time too the climate had also become a barrier. Western Australia, at any rate, was no longer a place for *Nothofagus*. That part of Australia became a specialist in the *Eucalyptus-Banksia* type—that of the C, D and E climates. In the east, however, the earth movements of the middle Pliocene responsible for the Kosciusko orogeny and for the retreat of the seas from the Nullarbor plain, created new habitats, climatic and edaphic. Here in Eastern Australia were preserved the beech forests, rain forests and the alpines as well as the more exclusively Australian types. The period of maximum aridity was to come later. The evidence as presented by Whitehouse, Crocker, Browne, Crocker and Cotton, and Hills based

on pedological and other evidence, points to some difference in opinion on the period of maximum aridity in parts of Eastern Australia. It is certain however that there have been pluvial and arid periods. These would doubtless lead to spread of rain forest and beech forest in the wet periods and to the retraction of them under prevailing drought—a shifting pattern that is still shifting.

The mosaic pattern of vegetation units is best seen in Eastern Australia, for they are all there, from alpiners to mangroves. In Western Australia obliteration of practically everything that could not tolerate at best a sub-humid climate has meant that any fluctuation in rainfall towards wet conditions would have only the germules of these types to draw on for any more luxuriant development. Such is seen in the south-west corner, as for example in the Karri forests. In Eastern Australia however the germules are present for rain forest or for saltbush and the pattern is intricate. It conforms to both the rainfall and edaphic controls. Possibly no better example could be taken than a place in the Macpherson Range. There in the Dave's Creek country within a distance of less than a mile in a straight line there is luxuriant rain forest suggestive of the tropics, sclerophyll forest, beech forest suggestive of cooler latitudes, mallee suggestive of the drier interior, heathland and swamp. The limits of each are sharply defined. They look quite static in their territories, not like temporary sojourners likely to be displaced. One walks out of the green twilight of the rain forest where there is scarcely a pencil of sunlight into the sunshine of the eucalyptus forest, then into a glade of treeferns. A little farther on is the heath. It is a remarkable collection of vegetation types. Their presence is determined by rainfall, topography and soil types. The retentive basaltic soils support rain forest; where the rain bearing south-easterlies strike the mountain side, the beeches come in; rhyolite and trachyte support the eucalypts. Their non-retentive soils support the mallee and the heath. The area is a summary of Eastern Australia. Any change of climate within reason could be met by an adjustment of the areas of those communities. It represents much the sort of mixture that must also have prevailed over the continent in the early Tertiary.

[The foregoing article is a summary of an address given by Professor D. A. Herbert to the combined Geology-Botany meeting of the A.N.Z.A.A.S. Congress in Hobart last year. This address was prepared without thought of subsequent record in print, but Professor Herbert has graciously agreed to allow publication in the *Victorian Naturalist* and we are pleased to have the opportunity of presenting this interesting and thought-provoking paper. —Ed.]

**SEX-LINKED CHARACTERS IN BEES**

By TARETON RAYMENT, F.R.Z.S.

The acute apical segment of the flagellum of certain male bees was regarded by some of the older American taxonomists as a generic character of *Hoplites* Klug. (Family *Megachilidae*.)

Michener (1947) figured a number of flagella of males in this genus, and found that in a large percentage of them the apical segment is acute, sometimes bent, and he concluded that:

"Possibly the normal antennal apex has a selective advantage in most areas, and was stabilized in the Californian region by different genes from those in other regions. In this case the acute apex would appear on hybridization. Regardless of the origin of the acute antennae, however, the gene or genes which produce it must have a marked selective advantage in the genetic environment of the zone immediately outside of the Californian region for in this zone between 85 and 90 per cent of the males have acute antennae."

The gene for an acute apex persists in probably a larger number of males in *Hoplites* than in any other genus of bees, but I have found this character cropping up in specimens in almost all of the Australian genera of *Apoidea*—with *Paracolletes* and *Megachile* very often, *Halictus* frequently, *Anthoglossa*, *Trichocolletes* and *Hylaeus* occasionally, and in *Anthophora* rarely; but not at all in the hive-bee *Apis*. It is normal for at least two genera of wasps.

Several thousand hive-drones have been examined, and so far none has been found departing from the dominant conical form; it would seem that the hive-bee has lost the gene or genes for acute apex.\*

In the leaf-cutter's Family, *Megachilidae*, there is no such stability, for acute apex and expanded apex appear in the several genera. [See Figs. 2, 3, 4, 5, 14 and 15. No. 4 is stabilized in *Thaumatocoma*, but in *Hoplites* the acute segment is not a fixed character.]

The acute apex is not peculiar to bees, but is part of the genetical inheritance of the Order *Hymenoptera*, for I have been able to trace it back to the anomalous wasps *Trigonulidae*. The character

\*The author has a paper in MS. describing a "queen" *Apis*, all the drones of which have six ocelli but lack the two large compound eyes. The workers lack the three ocelli, but have one huge compound eye extending across the whole vertex of the head. The series is perhaps a remarkable example of translocation of genes, for the drone has his own (or ocelli, plus those of the worker; while the worker has her own for compound eyes, plus those of the drone, thus leaving him practically blind. The mandibulae are normal, although the head-capsule is otherwise reduced in size. The holoptic eyes of the hive-drone cannot be a sex-linked character, because a vestigial line of the division on the vertex is present in the workers. Cheshire (1886) described two similar mutations in drones, some with white eyes, and others entirely lacking the compound eyes. It would appear that the combination of genes producing these mutations must be exceedingly rare.

is normal in *Taeniogonias heterodoxus* Raym., which has 25 segments in the flagellum (Rayment 1948); it is normally recurved in the wasp genera *Discochilus* and has been observed in several sand-wasps (*Bombus*) also in the hunting wasps *Cerceris*. There cannot be any doubt that acute apex is recessive in the great majority of bees, but dominant in certain wasps.

The truncated form, and also the cavity which frequently accompanies it at the apex, is invariably shining-black and mirror-like, and a similarly impunctate polished surface is present on certain portions of the ramose-fabellate segments of *Cladocerapis*, and such mutations indicate genetic inheritance, but the older taxonomists offered no observations on these "vestigial remnants."

The truncated apex and also the acute segment were studied in a number of males of *Haliictus subpallidifrons*, Raym. Since all of the four forms, conical, truncated, acute and concave apex were present in specimens taken from one "swarm," it would seem that in this species at least the conical character is not yet stabilized, although it must have some selective advantage, since in many closely related species it is dominant. The study of genetics in *Haliictus* is complicated by the phenomenon of parthenogenesis; this genus is, of course, far removed from *Hoplitis* which is not represented in Australia.

I have described elsewhere that the clusterings at night of *Haliictus*, *Parasphacodes*, *Nomia*, etc., are comprised of the males of a whole colony (the females of which are gregarious in habit) and co-operate to a certain degree in the work of the colony. *Andrenopsis wilsoni* Raym. has the apical segment developed to a rounded sharp chisel-like form.

The characters discussed in this paper are probably sex-linked, for they are present only in males, and could, therefore be transmitted by a gene or genes in the X chromosome, although X chromosomes have not yet been visually identified as such in bees. (Snodgrass 1925). Female bees have the conical form of apical segments.

The "golf club" apical segment is dominant in *Euryglossomorpha*, for all the males have the apex so shaped, while the females have the usual conical apex; the apical segment is shaped like a tennis racket in *Thaumatostoma* males, and is truly clavate in certain male *Megachile*, although other species in this genus have the conical segment.

My notes on mutated specimens record a polished black apical segment in *Euryglossa polysticta* Ckll., a truncate one in *Paracolletes rufa-pilosus* Raym. and several somewhat flattened in *Goniocolletes sinuillimus* Raym., a slightly dilated one in *Hylaeus xanthognathus* Raym., and one obliquely truncate in a female of *Paracolletes montanus* Raym. The apical segment is flattened in several *Lysicol-*

*letes simillimus* Raym., but in *Megachile appositum* Raym. a dilated conical apical segment is dominant; the conspicuously clavate structure must be a development of the conical segment.

*Andrenopsis flavorufus* Ckll. often has the apical segment obliquely truncated. It is significant that such areas are always jet-black and polished, even though the other segments be of a clear ferruginous colour.



#### Details of Mutations in the Hive-bee

8. The titallatum, or patting organ, of *Anthophora* is composed of the eighth and ninth sternites. The two microscopic plates are highly magnified.
9. A stalked ocellus of the mutated males of *Apis*, the hive-bee.
10. The small head of the mutated workers with one compound eye on the vertex of the head. There are no ocelli. The outline of a normal head is drawn to the same scale to give a comparison of size.
11. A stalked scape: a, an abnormal plumose hair from the white eye of a male.
12. The small head of the mutated males has no compound eyes; note the pits close to the ocelli. The outline is of a normal drone's head for comparison.
13. Lateral view of the normal brown eye of a worker-bee.
14. Half of one mutated eye is white.
15. White eye of a mutated drone: note the eye hairs matted together: see "a" at No. 11 for a single plumose hair.
16. Small brown eye in another mutated worker-bee.
17. Lateral view of the eyeless head of the drone at No. 12.

The hatched parts indicate the normal brown colour.



Such areas are impunctate, and lack the pore and other organs of the true conical form, so that such mutations are at a disadvantage, since their sensitivity is correspondingly reduced. Michener does not mention any polished impunctate areas in *Hoplitus*, but it is evident that the acute segment has necessarily fewer sensory organs than the conical form, which thus has certain selective advantages.

The scape or basal segment of the antenna exhibits conspicuous contrasts to the long slender form which is dominant in *Halictus* and *Apis*. *Anthophora* has shorter and stouter scapes, while those of *Meroglossa* are ovoid, but the extreme is reached in *Sphaerhylacus*, which has spherical scapes, and *Neopasiphae* has large circular plates; *Gnathoprosopis xanthocollaris* Raym. has globose scapes, and the cryptine wasps, *Labium gracile* Raym. have smaller spherical scapes.

The median segments of the flagellum show other remarkable structures, for those of *Thaumatosoma* are filiform, while *Halictus* has the dominant submoniliform segments; a few *Paracolletes* have crenulate segments, and those of the unique *Cladocerapis bipectinatus* are ramose-flabellate [See Figs. 21, 22].

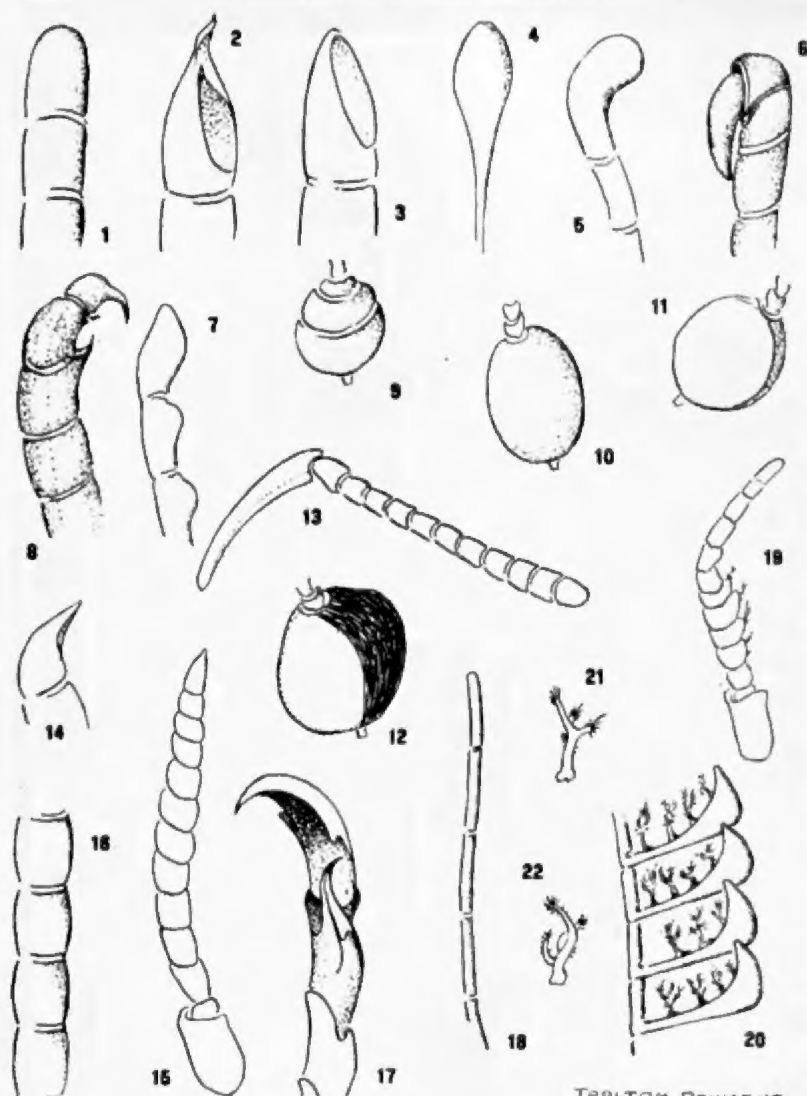
In *Cladocerapis heronii* Raym., the antennal segments are merely convex on one side, crenulate, and in *Heterocolletes capillatus* Raym. the second and third segments have a distinctive angular surface with a node; the segments of *Lysicolletes singularis* are subcrenulate, while the three apical segments of *Paracolletes ruficornis* have a longitudinal indentation [see No. 8].

The flagellar segments of *Paracolletes rufus* Raym. are articulated in a remarkable manner, and the shape of the segments is distinctive, but they probably derive from a flabellate structure.

The form of the antennae of male bees is probably determined by their genetic inheritance. We must assume, too, that the gene or genes for ramose segments have been lost by all bees except *Cladocerapis bipectinatus* (Sm.). The character is stabilized in male saw-flies such as *Pterygophorus cincta* Klug. The acute and hooked segments of *Hoplitus* and other bees are probably vestigial, inherited from the wasp-like ancestors, and bees so endowed are at a disadvantage, since the total number of organs is reduced in such structures.

#### REFERENCES

- Cheshire, Frank R.—*Bees and Bee-Keeping*, 1, p. 117, 1886.
- Michener, Charles D.—*Bull.*, Vol. 89, *Revision of the American species of Hoplitus* p. 263, 1947.
- Rayment, Tarlton—"Remarkable Wasps and Bees," *Australian Zoologist*, 11, Part 3, Feb., 1948.
- Snodgrass, R. E.—*Anatomy and Physiology of the Honeybee*, p. 269, 1925.



TALTON RAYMENT

KEY TO ILLUSTRATION

1. The conical apex is the highest development, and dominant in most bees.
2. Acute apex is recessive, but still appears in many families as widely separated as *Halictidae* and *Megachilidae*, and often in the genera *Halictus*, *Paracolletes*, *Andrenopsis*, *Anthoglossa*, *Cladocera* *Hoplitis*, etc.
3. Oblique truncation appears in *Andrenopsis* and *Halictus*.
4. The compressed clavate apex of *Thaumatocoma turneri*, with a filiform flagellum, is unique, and resembles the antenna of a butterfly.

5. The black apical segment of *Euryglossomorpha nigra* is shaped like a golf-club; the character is fixed in this genus, and appears to be sex-linked.
6. The hooked apex of *Discoelius ecclesiasticus* Raym. appears to be a modified form of Nos. 8 and 17.
7. Genuculated segments of flagellum of *Anthoglossa hackeri* Raym.; the normal form for the genus is submoniliform.
8. The true hooks are more primitive than the conical form, but it appears to persist, in modified forms, in several genera of bees (the figures are drawn from two wasps from Western Australia).
9. Spherical scape of the wasp *Labium raymenti* (*Cryptinae*).
10. The scapes are often quite ovoid in *Meroglossa*.
11. Disc-like scape of the unique bee *Necopasiphae mirabilis* Perk.
12. Subspherical bicoloured scape of *Sphaerhytaeus bicoloratus* Raym.
13. The slender scape and submoniliform flagellum of *Halictus erythrus dimorphus* Raym. is the dominant form in female bees.
14. The acute apex of *Hoplites* (*Megachilidae*).
15. Short scape and acute apical segment of *Hoplites louisae* (after Michener).
16. Submoniliform segments are dominant in the flagella of bees.
17. The remarkable apical segments of the flagellum of an undetermined wasp from Western Australia.
18. *Thaumatostoma turneri* has a filiform flabellum, although it is in the family *Megachilidae*.
19. The remarkable flagellum of an American bee, *Hoplites cylindrica*, has been repeated in a mutation of an Australian wasp, *Bembex*.
20. Four of the unique ramose antennal segments of the Geebung bee *Cladoceraapis hipoclinatus* Sm.
- 21 and 22. Antennal processes more highly magnified.

### FLOWERS OF THE BASALT

A Sanctuary for local native plants at the Sydenham Wireless Station has now been completed.

The F.N.C. Native Plants Preservation Group asks for offers of help from anyone interested in preserving a sample of this distinctive but fast-vanishing type of vegetation. Help may include actual manual work, transport, supply of plants or special information about obtaining these. In particular, plants no longer to be found on the adjacent railway line are desired—such as *Eutaxia*, *Trichinium macrocephalum* and any orchids typical of the district.

—W. WADDELL.

### "JOEY" POSSUM WAS NOT ELECTROCUTED

The two items in the January *Naturalist* on the subject of electrocution of animals may be simply explained. In neither case did the young animals form any link in an electrical circuit, while their parents did.

Subject to conditions here fulfilled, no animal or person in their position could be harmed. It is immaterial whether the thing to which they are attached is an animal covered with fur or a steel bar.

A "live" wire can be handled without any danger so long as no circuit through the body to another "pole" is completed. As the first consideration of the S.E.C. is safety, it is just as well that its officers do not make a practice of explaining how this can be done. Not being an electrician, I am not theorizing; I have tried it, but don't you!

—C. F. LEWIS.

## PTEROSTYLIS FURCATA — AN ADDITIONAL NOTE

By W. H. NICHOLLS, Melbourne.

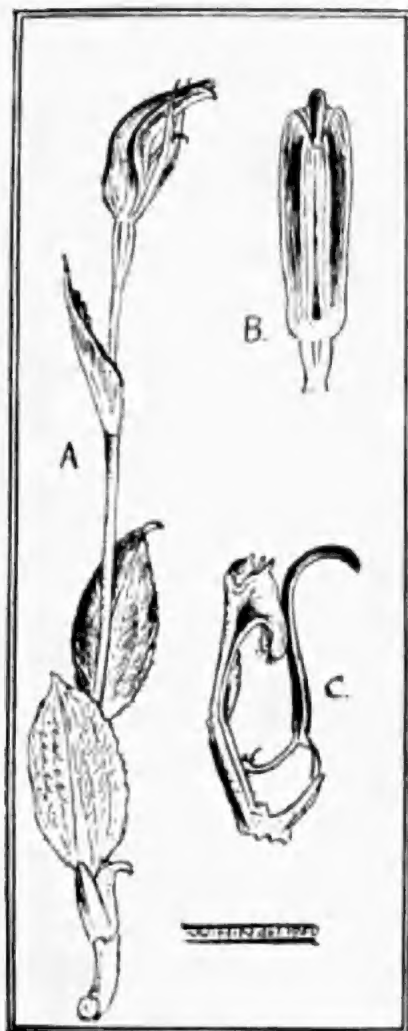
A year has passed since the re-discovery in Tasmania of the rare *Pterostylis furcata* Lindl. (*Vic. Nat.*, LXV, p. 255, March, 1949). Now several robust specimens of this elusive greenhood

have reached me from Mr. Harold Trothewie of Stanley, Tasmania. In his letter (Jan. 12, 1950) he writes:

"The specimens were collected near what is known as the Du Cane Hut, about 16 miles N.W. of Derwent Bridge at the southern end of Lake St. Clair (altitude 3,100 ft.). Although there were numerous basal leaves showing (apparently of the same species), we saw no more than eight or nine flowering specimens. I had to carry them for nearly a week during the 'hike' before I was able to post them to you."

Fortunately, the material sent to the writer opened up in very good condition; in fact, one specimen was in its prime and this particular example is figured here, along with the essential details of the flower.

These Du Cane specimens are undoubtedly more typical of Lindley's type than the Russell River examples previously discovered by Archdeacon Atkinson, who now records *P. furcata* from the foot of Mt. Ben Lomond, Tas. (approximately 2,000 feet), where it grew among long grass and attained heights of 30 cm.—January, 1950. The Du Cane plant is of robust



*Pterostylis furcata* Lindl.

- A. A Du Cane specimen, 18 cm. high.  
 B. Labellum from beneath.  
 C. Column and labellum from side.

nature (often the case with alpine or sub-alpine material) and also differs somewhat in the shape and curvature of its labellum, as well as in the shorter points of the conjoined sepals (lower lip). A comparison of the present illustration with that in *Vic. Nat.*, March, 1949, will show these varying features.

### WHAT, WHERE AND WHEN

#### General Excursions:

- Saturday, April 22—Zoology School, University of Melbourne. Subject: "Biology." Leader: Professor O. W. Tiegs. Meet at entrance to Zoology School, University Grounds, at 2.30 p.m. Names to be registered with Miss M. Elder, 17 Adelaide Street, Malvern, S.E.3. (Tel.: U 7297).
- Saturday, April 29—Maranoa Gardens. Autumn planting afternoon. Meet at main gates, Kireep Road, Balwyn at 2.30 p.m. (Mont Albert tram from Collins St., takes approx. 40 minutes to Kireep Road.) Arrangements in hands of Maranoa Gardens Committee.
- Saturday, May 6—Creswick, via Ballarat. Inspection of Victorian School of Forestry and Plantations. Leader: Mr. E. J. Semmens, Principal of the School of Forestry. 200-mile parlor coach trip, leaving Batman Avenue at 8 a.m. Bring two meals. Bookings, fare 20/-, with Mr. H. Stewart, 14 Bayview Terrace, Ascot Vale, W.Z. (Tel.: BU 022, extn 457).

#### Preliminary Announcements:

- Saturday, May 27—Annual Mystery Excursion. Leaders: Mr. and Mrs. D. Lewis. Subject: Come and see—it will be interesting. Walking distance not more than 7 miles. Nash's bus will leave Batman Avenue at 9 a.m. Fare 7/6. Bookings with Mrs. D. Lewis, 77 Dendy St., Brighton, S.5.

#### Group Fixtures:

- Saturday, April 15—Geology Group excursion to Rose Creek; Keilor Road to Buckley Street, Essendon. Take Essendon Aerodrome tram from Elizabeth St., City, to last stop along Keilor Rd. Then walk to valley of Rose Creek— $\frac{1}{2}$ -mile along Keilor Rd. Whole trip about 3 miles. Meet 2.30 p.m. at Rose Creek. Leader: Mr. T. C. Bryan.
- Saturday, April 22—Botany Group excursion to Emerald. Leader: Mr. House. 9.18 a.m. train to Upper Ferntree Gully and narrow-gauge train to Lakeside. Return 4.30 p.m. bus from Emerald. Book 2nd return to Upper Ferntree Gully: 3/1, single to Lakeside.
- Monday, April 24—Botany Group. Royal Society's Hall, 8 p.m. Monthly meeting. Hon. Sec.: Mrs. A. Osborne, 21 Renwick St., Glen Iris, S.E.6.
- Tuesday, May 2—Geology Group. Royal Society's Hall, 8 p.m. Monthly Meeting. Subject: "An Introduction to Soils," by Miss L. Neil. Hon. Sec.: Mr. A. A. Baker, 53 Carlisle St., Preston, N.18.
- Tuesday, May 2—Native Plants Preservation Group. At home of Miss W. Waddell, 3 Denham Place, Toorak, at 8 p.m.
- Thursday, May 4—Wildflower Garden Section. Royal Society's Hall, 8 p.m. Monthly Meeting. Hon. Sec.: Mr. R. B. Jennison, 3 Linda St., Moreland, N.13.
- Friday, May 5—Marine Biology Group. Royal Society's Hall, 7.45 p.m. Monthly Meeting. Hon. Sec.: Miss W. Taylor, 13 Jolimont Square, Jolimont, C.2.
- Saturday, May 6—Geology Group excursion to Balwyn. Subject: "Field Study of Soils." Leader: Miss L. Neil. Tram from Collins Street, City, to High Street, East Kew. Meet at terminus at 2.30 p.m. Returning via Whitehorse Road.

—Jean Blackburn,  
Excursions Secretary:  
(MB 1657—before 5 p.m.)