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*Editor:* NORMAN WAKEFIELD, B.Sc.

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# The Victorian Naturalist

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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*Front Cover:*

This is a family of three half-grown Pigmy-possums, *Cercaetus nanus*, which were found by a wood-cutter in the Rushworth Forest in northern Victoria. They were taken to the camp where they lived for some months, running about quite free. The species is not uncommon in Tasmania, Victoria and eastern New South Wales, and it extends into the extreme south-east of South Australia.

## The Four Bays

By JOHN BÉCHERVAISE

*Heard Island,*

*Saturday, May 9, 1953*

A biological tramp in a half-gale has much to recommend it on the morning after a "ding". At breakfast today I felt fortunate in being able to take the opportunity of helping with a seal census at South West Bay.

Though the unglaciated areas are limited on Heard Island, they yield great variety of wildlife. This is not really surprising when one considers the isolation of the place—providing a roost and resting place for the amphibious and avian life of millions of square miles of sea. In considering the other islands of the South Indian Ocean—Marion and the Prince Edwards, the Crozets, Amsterdam and St. Paul, ranging through a great circle arc from two thousand miles west-nor'-west to a thousand north, and our relatively near neighbour of Kerguelen, about 300 miles away—we find little coherence except that of a modern radio network linking a community of meteorological interests and some good friends who are unlikely ever to meet in person. We are scattered over an area three times the size of Australia.

Heard Island is furthest of all from civilization, and more remote from any family life, from women and children, than any-

where in the entire world. The Macdonald Group, sometimes just visible in the eye of the setting sun, are bleak rocky islands claimed by Australia, but upon which a landing has never been made. Kerguelen, Heard and the Macdonalds evince the Banzare Rise—or the Kerguelen-Gaussberg Ridge—a submarine upland extending to Antarctica.

Few birds stay the year long on Heard. There are the engaging Sheathbills who have adapted themselves advantageously to man's occupancy, for they must have increased considerably with the prodigality of resultant, highly acceptable food. They are notable for their lack of dietary discrimination; though I do not concede the absoluteness of subjective human judgment upon offal and excrement. The black helmeted beaks of these birds are in marked colour contrast to their immaculate white plumage. They are almost domesticated round the station; on a sunny morning, I have counted more than forty scratching and foraging within the space between the galley and the food-stores.

The Gentoo Penguins, apparently, never entirely desert the beaches and rookery areas and, as I have said, the Cliff Prions may stay in small numbers. All these birds must be



ANARE Photo: John Bicherraise

Seal Census, Autumn 1953

A huddle of Elephant Seals, Heard Island—including many young bulls.

able to survive the most violent winter storms and obtain sufficient food on the beaches and in coastal waters.

The seals, however, haul up throughout the year, their numbers varying greatly with the seasons, and to an extent with local weather. Like ships, they are generally happier to be well away from land when there is a real storm. There are generally a few gregarious old bull elephants and, especially during the winter, some unsocial leopards. One receives the impression that seals sometimes become tired of the ceaseless turbulence of the sea and, for a

while, merely want to rest motionless. Although they may submerge for many minutes, they must all surface for air; they cannot, like most marine life, rest in the relatively calm depths of the ocean. The constant necessity for revisiting the heaving surface must absorb much physical energy.

Judging by the records, including those of its rare appearances along the Australian coast,\* the Leopard Seal is close to its normal northern limit

\*In October, 1935, the author photographed a Leopard Seal on the beach at Barwon Heads, Victoria. For some days previously there had been rumours of a visiting "sea-serpent", a by no means inapt description of the seal's snake-like head.

when it reaches the Antarctic Convergence; its southern boundary is the pack-ice. Leopards, of course, do not winter below the ice (as does the Weddell Seal, with the consequent year-long necessity of keeping breathing holes open). However, they rest, and, it would seem, give birth to their pups, upon ice-floes in the summer months. Then, in increasing numbers, until they reach a maximum in August,† they move up into more northern waters. The few islands in these latitudes, especially within the Convergence, are certainly widely separated resting places, but they are at least fixed and permanent. Heard Island is apparently unique in its appeal for Leopard Seals in late winter. Although, by all accounts, they must be considered a rare species, we have lately been able to observe them closely and frequently.

Our first encounter this morning was with my friends the "shags"—about a dozen of them. Upright, pied birds, with black backs iridescent, green predominating, they possess fine white necks and breasts, distinctive yellow caruncles above the base of the bill, and bright blue rings round their eyes. They chattered in a row down by the surf of Atlas Cove, while we stalked them for photographs. Like most island life, they were not easily frightened. They allowed an approach to within a few feet as I wriggled forward on the cold black sand.

Then we moved on to the far

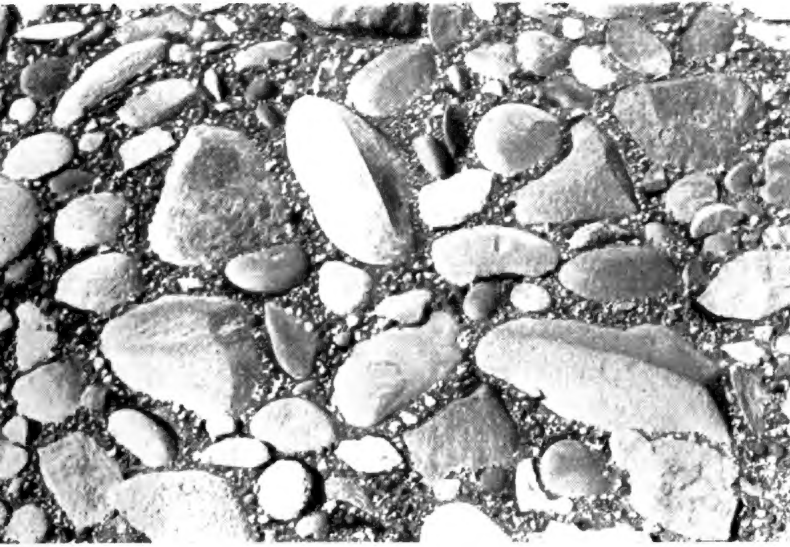
end of the cove and, round the western end, found a number of branded seals which Arthur asked me to photograph. There isn't much difficulty in approaching closely and depicting them from any desired angle provided someone is present to divert their attention. A brand—"40"—apparently denoted a cow whose appearance had been recorded in previous years; I do not know whether these seals are as faithful to locality as those of the Australian coast. All branding of Elephant Seals is done soon after the pups are weaned; we shall be busy on this task in six or seven months, I imagine. I also made some studies of the big bulls which postured so comically and "uttered such a deal of stinking breath" that truly "I durst not laugh, for fear of opening my lips and receiving the bad air". Elephant Seals are frequently unattractive; they wallow in ordure, they often have bleary eyes, and they belch offensively.

There is something, however, most patrician about the great bulbous noses of some bulls. Even their long-dead carcasses, relics of dog-meat expeditions, often preserve a sort of pathetic dignity, quite reminiscent of the effigies of knights, prostrate and defaced by time. Here, the whole process, from lazy, exhausted, sinuous bulk, through slaughter and butchering, through the depredations of skua and petrel, to the sand-blasted relics looking a century old, may take only a week or two.

We strode across the wind-swept pavements of stones, planed flat by wind and frost,

†Ref.—The Status of the Leopard Seal at Heard and Macquarie Islands, 1948-1950: by A. M. Gwynn (A.N.A.R.E. Reports), January, 1953.





Frost-shattered and wind-sculptured pavement. Heard Island. The ridges are caused by contrary winds blowing ice and pumice-grit. Seasonal ice overlying the stones causes other movements and, ultimately, the wind sculpture of small stones becomes highly complex.

ANARE  
Photo:

John  
Béchervaise

to the magnetic huts above West Bay; then stood for a while watching three Light-mantled Sooty Albatross chicks high on the earthy cliffs of Mount Andrée. They have been there quite a long time, as Dr. Faulkner ringed them before we arrived. Now they are as fully fledged as adults, and will certainly fly away over the ocean very soon.

The situation concerning juvenile albatrosses may be rather complicated, according to Arthur Gwynn. Apparently no one appears to know exactly the appearance of some of the albatross chicks; although, of course, the adults are clearly distinguishable. The Light-mantled Sooty adult has a blue line on the mandible; the Sooty has a yellow line; but the chick of the Sooty, to make things difficult, displays a blue line. When the Light-mantled chick leaves the nest, it possesses adult-looking plumage, and the typical black bill,

like that of the Black-browed Albatross. The question is whether a particular bird is the adult Mantled or a young Sooty. I became a little bewildered by the birds' obvious lack of consideration for earnest biologists, but I think I have recorded the matter correctly.

"Rand, who was on Marion Island for six months, claims to have seen both the Sooty and the Light-mantled Sooty nesting there . . ." Gwynn halts his short, eager strides to focus a far-off flight of terns or prions with his powerful glasses, then continues, "This, of course, conflicts with Murphy. The critical point of the whole discussion . . ." I try to hear the words before they are snatched by the stiff breeze. There is always quality in Gwynn's bird-lore.

At South West Bay, we commenced and carried to a successful conclusion, the counting and classifying by sex and age-

groups of exactly three hundred elephant seals. This included the recording of all brands, of which, in fact, we saw few. We zig-zagged our way along the beach, each taking different groups where possible, occasionally joining forces when great heaps of beasts required stirring in order that their tails might be well examined, while to the west rose a high surf interlaced with sweeping sea-birds, light as wind.

As we approached the southern end of the beach, the terminal face of the Vahsel Glacier, of ethereal blue seracs, was completely visible as a jagged wall fending the sea as far as Cape Gazert. We climbed over Erratic Point, named from a colossal rock that in some past age had been deposited there by a different, and greater, glacier; then, crossing a characteristically milky meltwater stream, we again descended to the beach. Here were our final elephants.

Near Erratic Point, as in several places where the mosses and azorella combine to clothe the little valleys, the colours—brown, green and yellow, in several rich tones—merge in soft contours to create an extraordinary impression of garden rather than wilderness, all the stranger for its background of blue ice. The disturbing loveliness of such places I share repeatedly with imagined friends.

Earlier in the day, we had glimpsed a large waterfall leaping over the northern buttresses of the Schmidt Glacier, so now we decided to return by a col near to it, passing Mount Dry-

galski and the glacier ice, and dropping down to the sand-plain stretching to the station. We completely forgot lunch. We crossed countless azorella hummocks and smoky streams and were soon approaching the waterfall. There were no difficulties of ascent. The fall, fully seventy feet high, overshot the cliff as a great turbid stream cleanly curving over an in-cut edge. From the colour and contours of the huge fallen blocks that filled the valley, it appeared that the waterfall was intermittent, for some of those well beneath the spray held patches of lichen. Later, when we scrambled up the sharp scree to the lateral moraine of the Schmidt, we discovered that the water was issuing from a channel below the ice in sufficient quantities to overflow a low gap in the lateral rock. Apparently, for many of the thaw periods of the year, the channel that runs parallel with the glacier itself is sufficient to take the meltwater. Every now and then when the channel cannot cope with the flow, perhaps during some of the seasonally anomalous thaws, the water overleaps the cliff edge in this striking cascade. It is probable that a reservoir of thaw water is held back by ice under pressure which, periodically giving way, allows the water to escape. We also discussed the possibility of thermal action occasionally causing an increased rate of thaw, but we had no evidence to support any such theory.

We decided to have a look at Corinthian Beach to complete our circuit of the four bays, so



Cape Pigeons and a Giant Petrel swarming over a seal carcass, Heard Island. On the right is a bird in the walking-on-the-surface movement which gives the name "petrel"—bird of St. Peter—to the family.

ANARE  
Photo:

John  
Béchervaise

turned north-east round the Baudissen moraine and lateral streams instead of crossing the flooded sands. A chaos of ice boulders, the debris of the glacier fronts, covered the beach, and some had been driven well up the water-courses. A broken sea and low, scurrying clouds heralded an early break in the weather. There were some birds fluttering over the spume; we thought at first they were all Cape Pigeons but as we approached, Arthur identified several as Blue Petrels. The latter do not breed here, as far as is known, and, in fact, usually forage much further south. However, they are known to nest on Kerguelen. They resembled prions but possessed a characteristic white tail and were completely white underwing. The Cape Pigeons' checked plumage, black heads and white underwings give a dazzling appearance to their flight.

By the time we had reached the western extreme of the beach, snow was shooting in from the sea, and a biting wind

made camp and food alluring. Still Arthur leant against a small cliff to steady his binoculars and watched the Blue Petrels, until they were almost lost in spray and eddying snow. Finally we turned for home, leaving the bay to three angular leopards and the spin-drift birds. Most of the Elephant Seals had hauled themselves well up from the uncomfortable sea. Curiously, quite a large group had found shelter in the decayed foundations of an old sealers' hut, built perhaps eighty or ninety years ago. We were scarcely in camp before a strong easterly blizzard broke, plastering the walls with wet snow and sleet.

—From *Log for Lorna*, an illustrated diary addressed to the author's wife.

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**Note:** The feature "Australian Wattles" has been temporarily discontinued. It should be resumed shortly when suitable photographs become available.



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Disturbance of Nestlings

Following the comment that it is almost impossible to induce nestlings to return to the nest after interference (*Vict. Nat.*, Vol. 78, page 329, March, 1962), Mr. E. H. Coghill writes:

I raised this point with Crosbie Morrison at a club meeting some years ago.

He said that if the nestling has left the nest because of interference it is normally almost ready to leave in any case. However, if it is restored to the nest and a hand placed over it, it will gradually settle down under the warmth of the hand and after a few minutes the hand can be withdrawn and the bird will perhaps stay a while longer.

The comment made in the March *Naturalist* was based on experience with nestlings of small birds (the actual species of which are not remembered) which persistently struggled and fled from their nest, despite efforts to induce them to stay.

The impression was gained that up to a certain stage the nest is a place of safety, but that interference triggers off a reaction which associates the nest with danger. Perhaps various species act differently.

## Fly Agaric in South Gippsland

In these columns, in the *Naturalist* of July, 1961 (Vol. 78, page 78), some notes were published giving additional localities where the Fly Agaric, *Amanita muscaria*, had been recorded. Here is a report on the subject from Mrs. O. G. Brewster, of Nerrena, via Leongatha:

On Saturday, March 10, our family was travelling along the Midland Highway at Beech Hill, when we discovered hundreds of these colourful fungi beneath a group of pine trees which were growing just above the road. To our son, David, aged twelve, goes the credit of seeing and recognizing them as we drove past.

Beech Hill (Army Survey Map,

Poster 1013; reading 378-505) is an early settled area which like so much of the Gippsland hill country has been abandoned and allowed to revert to scrub and the wild growth of introduced trees and shrubs which the settlers had in their gardens. The pines under which the fungi grew appeared to be self-sown from older trees higher on the hill. So it is a matter of conjecture how long those Fly Agarics have grown in Gippsland.

## Insect Swarms

The following observation comes from Mr. K. C. Rogers, of "Rockbank", in the Black Mountain area of Wulgulmerang, in East Gippsland:

When riding up a grassy gully in green open timber in the bush near Black Mountain, on February 12 this year, something quite unusual caught my eye.

On several shrubs of rather tall, slender Manuka Tea-tree (*Leptospermum scoparium*) were black masses of what, on closer inspection, proved to be minute insects in swarms. Two of the shrubs, about ten feet tall, were bent over with the weight of the swarms suspended from the tips of the upper branches. On another, the central part of the stem carried a mass of the insects for about two feet six inches of its length and an inch in depth, in a cylindrical swarm around the wood. Still another shrub bore a similar cluster for about eighteen inches.

On examination (but unfortunately without a magnifying glass), the swarms appeared to consist of myriads of minute, sooty black flies, under an eighth-inch long, with silvery white wings of similar length. The wings glistened in the sunlight.

From the suspended swarms, portions would keep dropping off, only to fly back onto the living mass. When squashed, the insects had a very strong smell of honey. The local "Swamp Gum" (*Eucalyptus camphora*) was flowering in profusion in the vicinity.

As this colony formed, by far, the most immense congregation of insects I have ever seen, it would be interest-

ing to know if such an occurrence is often encountered, and also what type of insect these might be.

Mr. A. N. Burns, Curator of Insects at the National Museum of Victoria, suggests that these insects were probably native bees, some of which, he says, do swarm in autumn.

In discussing the native social or honey bees (Apidae), Tillyard says, "The commonest species is *Trigona carbonaria* Sm. . . . found almost everywhere; the worker is a thick-set little blackish bee, about 4 mm. long." It would have been most interesting had specimens been sent for identification.

Incidentally, a little arithmetic indicates that there were some hundreds of thousands of insects in the two clusters of which the dimensions were given.

## Mantis Eats Frog

The following note comes from Mr. K. M. Nash, of the State Fisheries Research Station at Snobs Creek:

One of the men at the hatchery was recently walking past the ponds when he heard a distress cry from a frog in the grass. He decided to investigate and to his surprise found an inch and a quarter long Golden Bell frog was firmly held in the grip of a large brown mantid (*Archimantis latistyla*?) which was eating it. The mantid was on a thick grass stem and firmly held the frog by the back legs with its head pointing groundwards. There was a small raw area on the frog where the mantid was chewing it. Both mantid and frog were carried to the laboratory where it was hoped to get a photograph, but unfortunately at this stage the mantid let go and the frog was released. The way the mantid held the frog gave the impression that frog eating was a regular habit. Is this a normal practice of the mantid (to eat frogs), or is the occurrence unusual?

# A Koala Note

By ELLEN LYNDON

During the spring and summer months many small birds nest close around the house and garden, blue wrens, scrub-wrens and goldfinches chiefly, although there are many other visitors like the spinebills, white-eared honeyeaters and silvereyes and even an occasional reed-warbler that we hope will someday take up residence. These nesting wrens are very jealous of their territorial rights and make splendid watchdogs. For some reason the appearance of a quail creeping amongst the bushes will cause a very noisy witch-hunt and this racket will continue until the intruder has slipped through the netting into the outside paddock. It is amusing to see the reaction of the blue wrens to the efforts of some unkind person imitating the whistle of the bronze cuckoo.

One evening after rain a louder than usual commotion arose. The scrub-wrens were frantic, all dancing along the hedge tops looking outwards and downwards at some moving object on the ground. Investigation showed a strange visitor patrolling the fence—a koala—which soon found a post and mounted it. Goaded by its small tormentors it sprang heavily into the yard a few feet from me. The small light eyes roved around, passing over me as if I were invisible. Then it ambled over to a tall mallee (*Eucalyptus hitsoniana*) and placing a hand each side of the trunk it leaned

its cheek against the bark. One could almost read its thoughts, "Ah, a beautiful, beautiful gum-tree!" In one sudden bound it was three feet up the trunk and soon hitched itself to a comfortable fork. From there the tips of the twigs were pulled across and the koala fed steadily. During the dusk unfamiliar sounds floated down from the treetop. Sounds that can only be likened to those made by a motorist testing his tyres with a pressure gauge!

Next day during the forenoon the koala moved to a Swamp Gum (*E. ovata*). A day later it was feeding on the tips of *E. leucoxylo*, the red-flowering one. It returned to the mallee later, but decided to move on in the heat of the afternoon. As the koala moved along under the trees it encountered a dog fast asleep in the shade. There was a loud snuffling snort rather like a pig would make and as the startled dog leapt to its feet the koala landed well up the nearest tree trunk. Next day it had moved on.

Just recently another koala caused something of a traffic jam in the shopping centre of Leongatha, until it was hustled into a car and taken to a tree in a quieter spot. There are still quite a few living in public and private gardens around the township. The local guides are very proud of the miniature forest that surrounds their hall and are usually sure of having

at least one koala to show visitors.

Mr. Tom Baker of Korumburra, a keen observer of nature all his life, tells me that koalas visit his garden and feed on native trees and shrubs. He has noticed that they will feed on a wide variety of foliage, apparently enjoying the common paper-bark, *Melaleuca ericifolia*.

Last year, as on earlier occasions, Mr. Baker put out titbits for a pair of bobucks (*Trichosurus caninus*) which slept in a box in his shed and spent some months in the vicinity of his garden. I thought this rather surprising, as the hills around that town have been pretty well stripped except for small copses in gullies and along streams.

## Conference on Victorian Mammal Research

With the growth of interest and activity during the past few years in the study of our local mammals, it has become desirable that some form of co-ordination be instituted between the several bodies engaged in research in this field. The first active step towards this end was taken several months ago by the Director of the Fisheries and Wildlife Department, Mr. A. D. Butcher, when he put forward suggestions to certain interested persons that his Department might arrange such liaison. An appropriate occasion arose when arrangements were made for the Fauna Survey Group of the Field Naturalists Club to hold its regular monthly meeting, on April 5 this year, in the library of the Department.

A suggestion was made to the Department that the main part of the evening could be devoted to a conference, with the result that invitations were addressed to the National Museum, the Zoology Departments of both Melbourne and Monash Universities, and the Vermin and Noxious Weeds Board of the Crown Lands Department.

The meeting was chaired by the Deputy Director of the F. and W. Department, Mr. J. McNally. He opened it by outlining the recent growth of interest in local mammal research, and referred in particular to the formation a few years ago of the Australian Mammal Society. The meeting was told of the purpose of the present gathering: the Department's wish to maintain a direct interest in such work and to help in matters of general liaison, for the mutual benefit of researchers.

Those who had been invited to the meeting then spoke, in turn, of their respective fields of interest. Mr. E. H. M. Ealey, of Monash, told of his study of the biology and ecology of the Common Echidna (*Tachyglossus aculeatus*), and of the colony of them that is being built up at the University.

Mr. J. A. Thomson outlined three projects that he has in hand at the Melbourne University: the taxonomy and distribution of brush-tail possums (*Trichosurus*) in Australia, comparative population ecology of the Bobuck (*T. caninus*) and

Silver-gray (*T. vulpecula*), and population ecology of the Ring-tail (*Pseudocheirus*) in Victoria. Mr. W. Owen, who is participating in some of this work, spoke of his field studies in connexion with *Trichosurus*.

Mr. G. W. Douglas, Deputy Chairman of the Vermin and Noxious Weeds Destruction Board, spoke of an investigation of the distribution and ecology of the Wombat; and he indicated that there was scope for research into the food of foxes, as stomach contents could be made available by some of the regular shooters of the animals.

Mr. McNally commented on his Department's responsibility in connexion with conservation of dwindling mammal populations on the one hand, and the damage done by some species to pastures and crops on the other hand.

An outline was given of the formation of the Fauna Survey Group of the F.N.C.V., and of the various projects its members have in hand. Comment was made on the financial assistance which has been given the group from the Ingram Trust.

Mr. McNally tendered an apology for the Mammalogist of the National Museum of Victoria, Mr. M. Ryan, who was on a field trip in the country. A letter from Mr. Ryan was read, which indicated the general re-organization which is going ahead with the mammal collections in the Museum, and two special projects that are in hand; the maintenance of a study colony of Feather-tail Gliders (*Acrobates pygmaeus*), and a critical survey of the bats of Australia.

Mr. McNally also tabled a resume, from Mr. E. D. Gill, of the latter's new theory in connexion with evolution in the Australian mammals.

Mr. J. K. Dempster, of the F. and W. Department, spoke of the investigation of kangaroo movements and other habits, in connexion with pasture damage. He told of plans for the conservation of the Brush-tailed Rock-wallaby (*Petrogale penicillata*) in Victoria, and of a Wildlife Reserve to be gazetted in the near future for that purpose. Finally, the comment was made that the taking of mammals from their natural habitats, for research purposes, might seem to conflict with the principles of conservation, but that it was essential to obtain the knowledge of the biology of a species before effective conservation measures could be instituted.

Mr. R. M. Warneke, also of the F. and W. Department, told of two years intensive study of the Allied Rat (*Rattus assimilis*), arising from a request for help from the Forests Commission, because of damage to young trees in pine plantations.

The meeting closed with the suggestion that officers of the F. and W. Department should consider the matters which had been discussed, that they should endeavour to formulate a general plan of co-ordination, where desirable, of aspects of mammal research and surveying, and for liaison between various groups of workers, and that these suggestions be circulated to the interested bodies.

—N. A. WAKEFIELD



## The Victorian State Film Centre

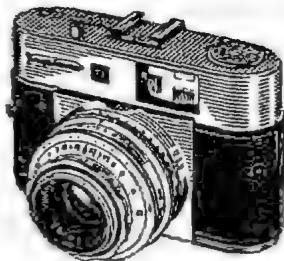
Many students of natural history are unaware of the very effective work of the State Film Centre. The centre was established quite some years ago by the Victorian Government, and operates under the control of the Victorian Documentary Film Council with the object of screening, or making available on free loan, cultural and educational films.

These subjects include astronomy and related subjects, conservation of wildlife, fish, forestry, and many other aspects of natural history. For example, the February screenings included films on the Sirex wasp, anthropology, human biology, the lakes of south-east South Australia, and the Grampians. The March programme included "Batu Caves" (Malaya), showing many kinds of bats, insects, snails, crickets, white snakes, centipedes and small crustaceans; "Tiny Terrors"—the scientists' fight against biting flies; and "Edward John Eyre" (retracing Eyre's journey from Adelaide to Perth).

Many films have won high awards, and programmes often include such items as, for example, "Pather Panchali", the famous Film Festival production from India. Half-tone blocks are also available on loan, and information is provided on the care and maintenance of 16 mm. films and projectors and on forming and running a film society.

Regular screenings are held at Nicholas Hall, 148 Lonsdale Street, Melbourne (next to Wesley Church) at 8 p.m. on Tuesdays, except November 7 (on Wednesday). The centre's Mobile Film Unit is holding screenings at the Myer Music Bowl, details being advertised in the daily press. Admission is entirely free to all screenings. The centre will forward regularly on request full details of screenings and other services. The address is: State Film Centre, 110 Victoria Street, Carlton, N.3, Phone 34 9053-4-5.

—MARIE E. ARGO



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# The Freshwater Jelly-Fish, *Craspedacusta sowerbyi*, in Victoria: A New Record

By JOHN K. LING<sup>†</sup> and BOSS DUGGAN<sup>†</sup>

The freshwater jelly-fish, *Craspedacusta sowerbyi*, was originally discovered in the water-lily (*Victoria regia*) tank in Regent's Park, London, and described by Lankester (1880) who named it in honour of its finder, Mr. Sowerby, the secretary of the Park. Subsequently, Bourne (1884) and Parsons (1885) reported a small hydroid without tentacles in the same tank and it was suggested that this was another phase in the development of the medusa. Potts (1885) described a similar hydroid from Philadelphia, U.S.A., naming it *Microhydra ryderi*, after the person making the initial American discovery. The fact that *M. ryderi* was able to give rise to medusae by a process of budding did not become established until twelve years later (Potts, 1897).

The question of generic affinities between the various animals described over the earlier years was finally resolved by Payne (1924) who examined the complete life history of *Microhydra ryderi* from a small artificial lake in Indiana, U.S.A. Payne observed the whole cycle from hydroids to sexually mature medusae (female only). The generic name *Craspedacusta*, which had priority, was adopted for all forms including the hydroid. However, differences between the original English and

American forms led Payne to regard them as distinct species: *C. sowerbyi* and *C. ryderi* respectively. It is possible that all forms may finally be included in a single species, *C. sowerbyi* (Thomas, 1951).

Following a recent television feature on freshwater biology, the junior author, a student at Oakleigh High School, sought assistance from the Victorian Fisheries and Wildlife Department in identifying some freshwater medusae in his home aquarium. The television programme included details about the discovery of *Craspedacusta sowerbyi* Lankester near Adelaide some years ago (Thomas, 1950, 1951). A close watch was then kept on all aquaria in the home in the hope that freshwater medusae might be found and, as it happened, success came quite quickly.

On January 26, 1962, the first jelly-fish appeared in a small (12 in. x 6 in. x 6 in.) aquarium placed near an easterly window in the house. In this position the water was subjected to less direct sunlight and consequent violent fluctuations in water temperature than would have been the case in a northerly or westerly aspect. The medusae were examined by the senior author on

<sup>†</sup>Fisheries and Wildlife Department. Present address: Antarctic Division, Department of External Affairs, Melbourne.  
146 Abbotsford Avenue, Chadstone, Victoria.

Figure 1

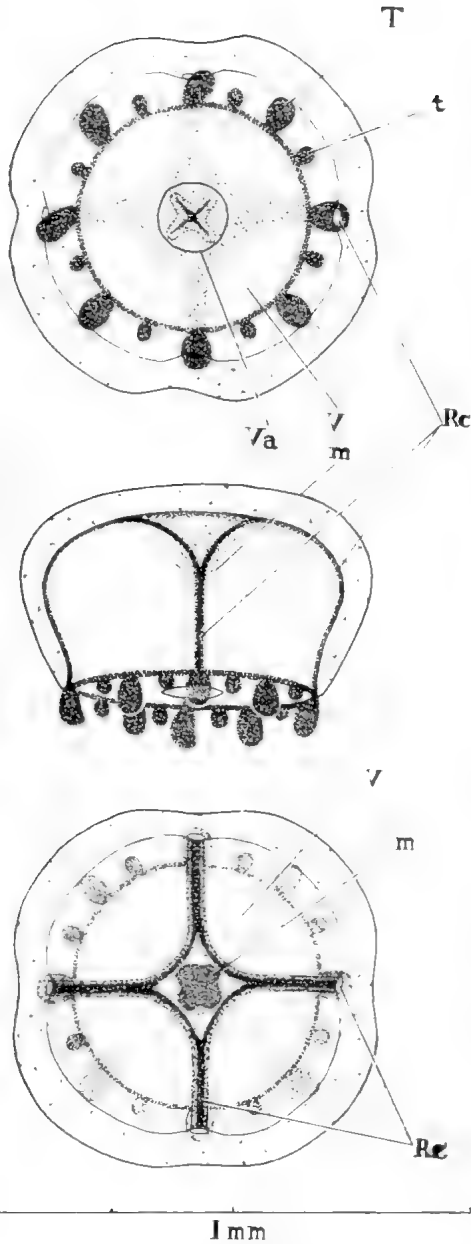
*Craspedacusta sowerbyi* Lankester  
Medusa

Above—Subumbrella view

Centre—Lateral view

Below—Umbrella view.

M = manubrium; Re radical canal; T large tentacle; t = small tentacle; V = velum; Va = opening of velum.



February 9, 1962. By placing a light behind the glass tank it was possible to discern them as small, transparent, bell-shaped organisms moving through the

water in series of jerks. The light seemed to attract the medusae out of the weed (*Elo-dea* sp.) and detritus on the bottom of the aquarium. At the time of writing (April 10, 1962) a few medusae are still visible in the same aquarium tank where the original discovery was made. New medusae continued to appear up until March 23, 1962.

Figure 1 shows the general shape and features of the medusae and figure 2 illustrates an animal in the living state. The umbrella diameters ranged from about 0.5 mm. to 1.5 mm. and the height of the umbrella was up to 1 mm. Juveniles of *C. sowerbyi* and other species which may turn out to be identical with it are well figured in the literature (Browne, 1906; Potts, 1906; Payne, 1924; Boulenger and Flower, 1928). There seems to be no doubt that juvenile medusae belonging to the species *Craspedacusta sowerbyi* Lankester have in fact been discovered in Victoria for the first time.

The species has been reported from only two other localities in Australia. These are Thorndon Park Reservoir near Adelaide, S.A. (Thomas, 1950), and Balmain Reservoir near Sydney, N.S.W. (McNeill, 1954). In neither case were hydroid stages found; the South Australian medusae were quite large (10

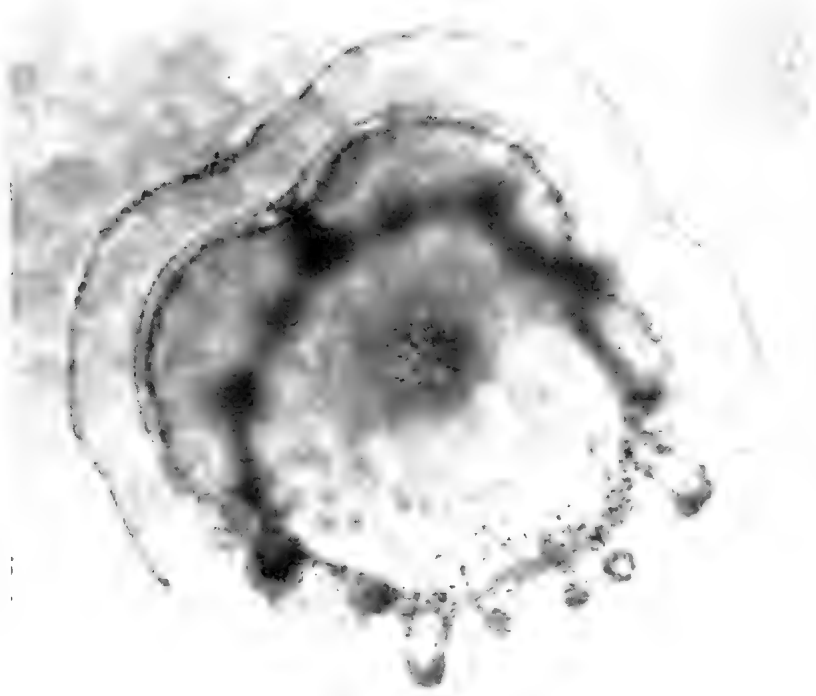


Figure 2  
Photomicrograph of living specimen of *Craspedacusta sowerbyi* Lankester. Umbrella diameter is about 0.75 mm.

to 22 mm. in diameter) subadults and adults and the New South Wales medusae also were large (9 mm. in diameter) and approaching maturity, although attempts at breeding were unsuccessful.

The exact source of these tiny medusae in Victoria is unfortunately still unknown. The water in the aquarium is a mixture of small quantities collected from quite widely scattered places: Bendigo (north-west Victoria), Meeniyan (South Gippsland), Warragul (West Gippsland), Bairnsdale (East Gippsland), small ponds in and near Chadstone as well as from the Melbourne domestic water supply. Attempts to catch hydroids or

medusae by means of tow-netting at most of these places have so far been unsuccessful.

The presence of such small and obviously juvenile medusae in the aquarium suggests strongly that the hydroid stage should also not be far away. However, the hydroid is very small and most inconspicuous and none has been found yet; the task should not be too difficult in a tank as small as the one in which the medusae occurred. Furthermore, it should be possible to observe the process of medusoid formation from the hydroid, an event still rare enough to be of extreme scientific interest and certainly so when it is recorded for the first

time on the fifth continent in the world, namely Australia.

The authors are grateful to Mr. I. C. Smith who prepared the drawings and assisted in the field work associated with the discovery.

#### REFERENCES

Boulenger, C. L., and Flower, W. U. (1928). The Regent's Park medusa, *C. sowerbyi* and its identity with *C. (Microhydra) ryderi*. *Proc. Zool. Soc. Lond.* 1005-1015.

Bourne, A. G. (1884). On the occurrence of a hydroid phase of *Limnocoedium sowerbyi*. *Proc. Roy. Soc.* 38: 9-14.

Browne, E. T. (1906). On the fresh-water medusae liberated by *Microhydra ryderi* Potts and a comparison with *Limnocoedium*. *Quart. Journ. Micr. Sci.* 50: 635-645.

Lankester, E. R. (1880). On *Limnocoedium (Craspedacustes) sowerbyi*. A new trachomedusa inhabiting fresh-

water. *Quart. Journ. Micr. Sci.* 20: 351-371.

McNeill, F. A. (1954). An elusive jellyfish from fresh water. *Aust. Mus. Mag.* 11: 225-227.

Parsons, F. A. (1885). Notes on a new hydroid polyp. *Journ. Quekett Micr. Club.* 2: 125-130.

Payne, F. (1824). Study of the fresh-water medusa *Craspedacusta ryderi*. *Journ. Morph.* 38: 387-430.

Potts, E. (1885). *Microhydra ryderi*. *Science N.S.* 5 (Suppl.): 5.

Potts, E. (1897). A North American freshwater jelly-fish. *Amer. Nat.* 31: 130-133.

Potts, E. (1906). On the medusa of *Microhydra ryderi* and on the known forms of medusae inhabiting fresh water. *Quart. Journ. Micr. Sci.* 50: 623-633.

Thomas, I. M. (1950). *Craspedacusta sowerbyi* in Australia. *Nature* 166: 312-313.

Thomas, I. M. (1951). *Craspedacusta sowerbyi* in South Australia, with some notes on its habits. *Trans. Roy. Soc. S. Aust.* 74: 59-65.



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## A Bushman's Harvest

*A Bushman's Year* was read and enjoyed by enough people to encourage its author (and its publisher) to try again. The result was *A Bushman's Harvest* (F. W. Cheshire, Melbourne, 1961, 32/-).

Into its 169 pages—which includes a useful index—Jack Hyett has packed a welter of reliable information about the natural history of a multitude of the common and garden things or phenomena one can see almost at any time if one cares to stop and look. Young people will be happy about the arrangement of the text. It demands no great effort in concentration. Each little essay is self-contained and tells a story in simple terms and in a style that is easy and pleasing to read.

Jack is a school teacher and thus more likely than most to know how much the average youngster can take and enjoy at one sitting. Since this book is designed to encourage in them a sympathetic approach to the protection and preservation of nature he has very evidently written it with an eye to the age of the reader and, in doing so, he has produced a book that will give delight to both young and old as well as to those in between.

His picture of the Kulkynie appeals especially to me for I am one of that steadily growing band of conservationists who have long urged upon the Government the pressing need for something more comprehensive, extensive and worthy of the State than the present 42,000 acres of mallee and its fringe of a few fresh water lakes which constitutes the recently dedicated Hattah Lakes National Park. Jack, too, has visited the Kulkynie and, under expert guidance, has seen something of its magnificent treasure.

Skipping from the first to the last section of the book the word "Triant-wontogong" catches my eye. I have neither seen nor heard the word used before but that may be merely because, these days, I am a bit out of touch with current schoolboy-vernacular. The spider to which it is meant to apply was always known to us, our

parents and our children as "Triantelope" or "Tarantula".

Back again to the first section, where he discourages on Flying Possums and the Greater Glider. It would be a good idea if we got used to "Glider Possums" and the recommended vernacular name "Dusky Glider" for this marsupial. Jack should have known this for, as well as being president of the Ringwood Field Naturalists Club, he is a member of the F.N.C.V. whose Fauna Group is trying hard to bring some sense and order into the application of acceptable common names for our native fauna.

There is little else to say except to add that this reviewer recommends *A Bushman's Harvest* to all and sundry and compliments author, illustrators and publisher for having produced a book which is worth having in a handy place on one's bookshelf.

—J. R. GARNET

## West Australian Wombats — A Correction

In the report on colour slides projected by Mr. J. M. Wilson at the January meeting (ref. *Vict. Nat.* 78: 309), a "desert wombat in arid country" was listed among the "oddities of Western Australia". Mr. J. H. Willis now points out the inaccuracy of this statement. He was present when the wombat picture was taken (1/10/61), a few miles west of Nullarbor homestead (S.A.) and about 110 miles east of the Western Australian border. Despite a few published references to wombats in the West, there is apparently no museum specimen to substantiate their modern occurrence anywhere in that state (see *W. Aust. Nat.* 8: 77, Jan. 1962), and definite evidence that they extend across the Western Australian border is a desideratum.

Over a limited area near Nullarbor, the population of Hairy-nosed Wombats (*Lasiorchinus latifrons*) must be

considerable. Mr. Willis noted four dead ones—killed by passing cars—along the Eyre Highway, and he explored several “wombat cities” where immense excavations had been made in the soft limestone, various burrows opening into a common chamber as large as a room and 5-7 feet deep. Well-worn pads radiate for hundreds of yards onto the surrounding plain which carries only a sparse cover of saltbush and bluebush (*Atriplex* and *Kochia* species), much of it moribund, and it is astonishing how such large animals can find enough herbage (or roots) to survive.

## Latrobe Valley Field Naturalists Club

The annual meeting of this affiliated club was held on February 28, 1962, and office-bearers elected were: President, Mr. I. Faisst, George Street, Morwell; Secretary, Mr. D. G. Marshall, State School, Morwell West.

The club's second year has been even more successful than the inaugural year. The most significant

achievements were the establishment of a 12-acre reserve through the auspices of Australian Paper Manufacturers, the advice and assistance given to the Joint Tourist Committee associated with the development of the Baw Baws and the Yallourn Storage Dam Advisory Committee.

Aims for the forthcoming year include the preservation of the Butterfly Orchid (*Sarcochilus parviflorus*) in its only known Gippsland habitat except for the rain forests of East Gippsland. The case has been prepared by Mrs. Ellen Lyndon and Miss J. Galbraith and will be presented soon.

During the year many interesting excursions and club nights have been held. The club is fortunate in being self-supporting in regard to good speakers. The highlight of the year was the nature display in Morwell Town Hall, with its dividends in prestige, new membership and financial returns.

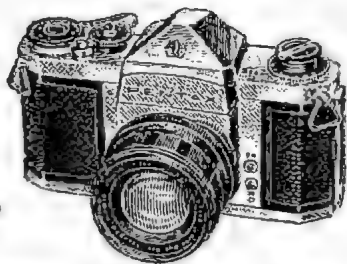
All three Gippsland Field Naturalists Clubs have agreed to form an affiliation to further joint activities and strengthen moves for conservation.

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# Field Naturalists Club of Victoria

General Meeting—April 9, 1962

The main hall at the Herbarium was almost filled with members and friends. Mr. D. E. McInnes presided, and welcomed Mr. D. N. Honie from the Queensland Field Naturalists Club.

Members were shocked to learn of the death of Mr. Paul Fisch, and they stood for a minute in silence in respect of his memory. Mr. J. H. Willis spoke in appreciation of Mr. Fisch and his intelligent and devoted interest in natural science. He and his family were always prominent as exhibitors and helpers at nature shows, and, after founding the Hawthorn Junior Field Naturalists Club, he played an almost single-handed role in conducting meetings and transporting junior members.

Mr. J. R. Garnet read a letter from Miss Wigan in appreciation of a visit paid by F.N.C.V. members, and also one from Mr. Alex Chisholm.

The President appealed for a volunteer to bring up to date the catalogue of photographic blocks of the *Naturalist*. Further delegates to represent the club at the A.N.Z.A.A.S. Conference were sought.

Mr. J. M. Wilson asked that suggestions for the Landscape Preservation Council should be entered on forms provided.

The subject for the evening was "One Year South" by Mr. G. Wheeler, who spent over a year as a weather-recording officer at Mawson, visiting Kerguelen and Heard Island on the way home.

The tragic heroic Scott expedition was recalled with a picture of Scott's hut below the 14,000-foot Mount Erebus and a memorial of 1912 to Scott, Wilson, Oates, Bowers and Evans, inscribed "To strive, to seek, to find, and not to yield".

At Taylor Glacier a proclamation was shown, erected by Sir Douglas Mawson in 1931, claiming the land for the King of England.

Geophones for measuring ice depth, masts for signals to the ionosphere, and exploring with planes on skis

were explained and illustrated. Excellent colour slides were shown of Weddel Seals, whose teeth are adapted for chewing ice to keep the holes open, of their very appealing young, of nesting Skua Gulls, Adelie and Emperor Penguins whose eggs can be opened with a hack-saw. Breath-taking were the pictures taken from forty feet down suspended in ice crevasses. The awful beauty of the freeze, of black icebergs and orange lichens, and the thrill of the beginning of the thaw were graphically conveyed and highly appreciated by the audience.

Mr. Wheeler was thanked by Mr. J. P. Curtis and Mr. E. Byrne.

Fourteen new club members were elected, and nominations were invited for Council for the coming year.

Mr. J. R. Garnet brought photographs showing a visit of the F.N.C.V. and others, including the then Governor of Victoria, to Wilson's Promontory in 1910, and showed very large specimens of a chiton and a sea-mouse (*Aphrodite*) from Corner Inlet.

Mr. H. Haase had a fine specimen of garden-grown *Banksia spinulosa*; Mr. A. J. Swaby, *Chorizema ilicifolia*, *Correa backhousiana*, and Mann's *Correa*. *Banksia spinulosa*, *Melaleuca pulchella*, *Lippia nodiflora* var. *repens* and *Solanum xanthocarpum*; Mr. M. P. Duke, a fine collection of pressed eucalypts and their fruits; and Mr. A. G. Hooke, *Eucalyptus pauciflora* from Gelantipy, with marks in its bark ("scribbles") caused by insect larvae as yet unidentified, *E. glaucescens* as a mallee from seven to eight feet high from Little River Gorge, Wulgulmerang, and reported by Mr. K. Rogers as growing on Mount Stradbroke at 4,000 feet, and *E. smithii* growing as a mallee, also in the Little River area.

Mr. E. H. Cogbill showed a large fly, *Formosia speciosa*, of a group which parasitizes insects. Mr. P. Simon exhibited upright tubes from Airey's Inlet road about one and a half inches high constructed of small oval mud pellets, some almost latticed, some solid, and asked for information



about them; they were unfamiliar to experts to whom they had been submitted, and were new to members also. Mr. W. C. Woollard said that, on a recent trip to the Promontory, he had found the Japanese Hog Deer very tame and friendly. New modern accommodation is being provided at Tidal River.

Mr. D. E. McInnes found magpies eating large numbers of bull-ants at Mount Eliza, Mr. J. A. Baines reported a great number of Magpie Larks on the Metropolitan Golf Links, and Mr. J. M. Wilson had seen Processional Caterpillar bags at Menindie.

#### Microscopical Group—February 21, 1962

Mr. E. Le Maître chaired the meeting, which was attended by sixteen members. The programme for the rest of the year was discussed.

It was decided to apply to the Ray Society for membership so that the excellent publications of this society could be received.

Mr. P. Genery discussed the use of polystyrene as a mountant in microscopy and demonstrated some points of its application. Some prepared slides gave a water-clear appearance in comparison with the yellowness of Canada balsam.

Slides on exhibition were: *Paraponyx* larva (P. Genery, A. Scott and E. Snell); *Ravatra* larva (W. Genery); Desmid (*Plaurotacium*) (E. Le Maître); an unusual *Paramoecium* (J. Strong); penguin feather in polystyrene (P. Genery); fossil Diatoms from Santa Monica (H. B. Barrett); a wasp (D. McInnes); and sponge spicules (K. Trotter).

#### Botany Group Meeting—March 8, 1962.

Mr. J. M. Wilson gave a splendidly illustrated talk on his trip to Western Australia last spring with Mr. J. H. Willis. Accompanied by their wives, they went by car, towing a trailer equipped with collecting gear such as plant presses. Mr. Willis, who will address the annual meeting of the club in June on this subject, obtained a great many specimens to add to the

Western Australian Flora in the National Herbarium, Melbourne, while Mr. Wilson's aim was to procure, with the approval of the Government Botanist in Perth, seeds and plants for Victorian growers of Australian plants.

Good work in improving Western Australian flowers has already been done in Victoria, and there are now excellent prospects that similar success will now be achieved with the lovely Qualup Bell (*Pimelea physodes*), specimens of which were obtained on East Mount Barren. This is one of the many beautiful western wildflowers with restricted habitat, and therefore exposed to a real risk of extinction. A comprehensive tour of the best areas was carried out, but most time was spent in the sand-plain country, at Badingarra, west of Moora.

#### Geology Group—April 4, 1962

Twenty members and visitors were present, with Mr. L. Angior in the chair. He reported on the excursion to Reid's Quarry, Plenty, on Saturday afternoon, March 17. This quarry is situated on the bank of the Plenty River in shale of Silurian Age. After crushing, the shale is passed through a rotary kiln, being subjected to progressively increasing temperatures in its passage through. This process expands and lightens the product which is used as aggregate for making lightweight concrete. The processed shale is marketed under the trade name of "Shalite".

The subject for the evening was a talk entitled "Gemstones" by Mr. Bruce Hardie, a well-known gemologist. Mr. Hardie outlined the gemstone localities and resources of the various states and explained that Victoria is rather deficient in good stones. Apart from a few agates in the Moorabool River there is little in the way of gemstones in the western portion of Victoria. The best locality appears to be in the Dandenongs around Selby where agate of excellent quality occurs together with fair sapphires and a little topaz. Some good jaspers are located at Heathcote and agates and other stones at Beechworth. Quartz and zircon are fairly

widespread although the zircon is generally in grains too small for cutting. The speaker described the various methods of cutting and polishing—cabachon and facetting—and the type of equipment used and which can be made by the amateur. The different types of cut—cabachon, brilliant, step, etc.—were illustrated on the blackboard. Mr. Hardie had on display an extensive exhibit of gemstones, all cut by himself.

Other exhibits were a collection of polished specimens of various rocks and some cut semi-precious stones, by Mr. Davidson.

#### Fauna Survey Group—April 5, 1962

Nineteen members attended, with Mr. N. Wakefield in the chair, in the library of the Fisheries and Wildlife Department. Business was reduced to a minimum because it had been arranged that most of the evening should be devoted to a conference between representatives from various organizations concerned with the study of native mammals.

It was reported that twelve more wire-mesh traps had been acquired to supplement those now being used by the group. As well, the new permit from the Fisheries and Wildlife Department was tabled.

Correspondence was dealt with. The outgoing included a circular to country field naturalists seeking information about local mammals, and a letter to the Fisheries and Wildlife Department on the conservation of the habitat of Leadbeater's Possum.

Miss J. Furphy reported observations made during a night excursion to the Marysville area, and Mr. J. McKean gave details of progress with the bat-banding programme. Mr. Wakefield reported on an excursion to the Kiata-Kaniva district.

Future work was discussed: Mr. McKean's plans include excursions to Bright and Hattah, and Messrs. Wakefield and McCallum are to work in the Portland area during Easter.

The meeting was adjourned at this stage, and thereafter Mr. J. McNally, Deputy Director of the Fisheries and Wildlife Department, took over to conduct proceedings which are reported on page 13 of this issue of the *Naturalist*.

#### Marine Biology and Entomology Group—April 2, 1962

The meeting was chaired by Mr. E. H. Coghill, and eighteen members were present. The lecture for the evening was on the Sirex wasp, followed by a shorter lecture on cicadas, both of which were given by Mr. H. B. Wilson, chief entomologist of the Burnley School of Horticulture. The lecturer described the life history of the current threat to the Victorian softwoods industry, and the rapt attention of his hearers culminated in many questions being asked after his talk. Mr. Wilson expressed his willingness to help with any entomological problems that may arise, where possible by telephone.

Mr. Coghill spoke on a fly, *Formosia speciosa*, which he had captured on the Torquay outing.

The Group programme for the remainder of the year was discussed. Miss V. Balaam will give a lecturette on scale insects at the May meeting. On Tuesday, June 5, Miss Hope McPherson, Curator of Molluscs, National Museum, is to speak on a marine survey of Port Phillip Bay carried out by the Marine Study Group, using slides to illustrate the lecture. Mrs. Z. Lee will show slides also, at the July meeting, to which Mrs. White and other members will speak.

#### Nominations for Office-bearers for 1961-62

*President*—Mr. M. K. Houghton.

*Vice-presidents*—Mr. E. Byrne, Mr. J. H. Quirk.

*Treasurer*—Mr. A. G. Hooke.

*Asst. Treasurer*—Miss M. Butchart.

*Secretary*—Mr. E. H. Coghill.

*Asst. Secretary*—Mr. J. R. Hudson.

*Editor*—Mr. N. A. Wakefield.

*Librarian*—Miss M. E. Argo.

*Excursion Secretary*—Miss M. Alender.

*Council*—Mr. J. R. Garnet, Dr. W. Gerow, Mr. E. R. Allan, Mr. R. R. Dodds, Mr. A. J. H. Fairhall.

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### Hooded Robin at Nest

This picture was taken by Ronald K. Munro at Pearcedale, on the Mornington Peninsula, in November 1937. The nest was in a banksia and only three feet from the ground. The Hooded Robin (*Melanodryas cucullata*) favours somewhat open country.



# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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*Front Cover:*

Yellow-tails, *Ptilotus nobilis*, is quite rare in Victoria, where it is confined to the north-west. This photograph was taken in north-western New South Wales, on the eastern slopes of the Grey Range. The spikes are 3-4 inches high, and the plants covered acres of ground.

The picture was published in the *Naturalist* in October 1924 (Vol. 41, opp. page 108).

## Interest in Nature—and a Challenge

In this issue of the *Victorian Naturalist*, there appears the eighty-second annual report of the Field Naturalists Club of Victoria. The figures in it, relating to club membership and to circulation of the *Naturalist*, are most illuminating, especially when comparisons are made with earlier records which appeared in similar reports a few years ago.

In April 1959 there were 491 members of the F.N.C.V. At the end of April this year there were 851. And, during the same three-year period, the circulation of the *Naturalist* rose from less than 600 to the present figure of almost 1200.

Coupled with this, there has been a growth of kindred societies in country districts. In 1959 there were some sixteen clubs affiliated with the F.N.C.V. Now the figure stands at 23.

The Bird Observers Club likewise has expanded. From 226 in 1952, its membership has grown steadily over the ensuing ten years to the present aggregate of 764.

The degree to which the general population of the state is learning to turn to the natural countryside for leisure and enjoyment is reflected in published statistics of visitors to some of our national parks. For instance, in 1959-60 there were 1039 visitors to Wyperfeld, while in 1960-61 the number was 2087. In 1958-59 the Tidal River camping area at Wilson's Promontory catered for 27,935 persons; in 1959-60 the figure was 29,537;

and in 1961-62 it rose to a record 38,566.

General natural history books are much in demand, John Child's *Australian Insects* and his *Australian Sea Shells*, published recently, both sold out the first impression in a very short time. Now, the second impression of each is just as much in demand.

Jack Hyett's *Bushman's Year* sold 5000 copies in two years. In November last, his *Bushman's Harvest* appeared. The latter rated third on the *Age* "Australian best seller" list on December 28. On January 20, it rated second, and a week later it topped the list.

It is apparent that there is a rapidly expanding interest in natural history and a growth of appreciation of the natural environment. This situation should be stimulating to all members of the Field Naturalists Club of Victoria and to members of organizations with similar aims and interests. But it also constitutes a challenge.

An increasing percentage of the population of the state is seeking knowledge of and contact with the countryside and its fauna and flora. One of the first aims of any natural history society is to cater for such interests. The growing demand needs to be met by vigorous policies within such organizations, and this calls for active participation by all members in the projects which are organized by the various club councils and committees.

# Stereo Photo-macrography

By C. H. GITTINS

A plant specimen, dried between sheets of absorbent paper in a press, preserves a satisfactory record of the leaves and the shoot; but the fragile flowers suffer drastically from this treatment, being crushed flat and distorted almost beyond recognition save to the expert, whilst only too often the characteristic colours vanish in a matter of weeks.

Photography offers a means of supplementing the record contained in the herbarium specimen, and for the complicated three-dimensional forms assumed by flowers, the comparatively ancient (but at present unjustly neglected) art of stereo photography is particularly suitable. Briefly, this art consists of taking two photographs of the subject, one slightly from the right, and the other slightly from the left. The pictures are then viewed so that the right eye sees only the right-hand picture and the left eye sees only the left-hand picture, the result being a highly convincing illusion that one is viewing, not two flat pictures, but a solid three-dimensional model of the subject.

For several years the writer, an amateur botanist, has been developing a technique for taking on colour film stereo pairs of the small native flowers whose interesting structure and beauty of form and colour cannot be appreciated without magnification. Photography in this size

range, carried out with a camera lens and a bellows, has been named photo-macrography, in distinction from photo-micrography in which much higher magnifications are obtained by coupling the camera to a microscope.

The two pictures constituting the stereo pair may be taken simultaneously with some form of double camera, and if the subject is in motion this is indeed the only way. But for still subjects, equal results are obtained with a single camera, taking first one picture, then moving the camera sideways the appropriate distance and taking the second. Furthermore, when the subject is small, it is more convenient to fix the camera and rotate the subject through a small angle between exposures. This is the method dealt with here.

My introduction to the idea of this *rocking stage* technique was by R. M. Allen's book entitled "Photomicrography", in which the author stressed his preference for it; he gave the angle of  $14^\circ$  as the correct amount of rotation. It is easy to see how this angle of  $14^\circ$  is derived; it is the average angle subtended by the distance separating the human eyes at the least distance of comfortable vision, so that when we take anything in our hands and examine it intently, the convergence of our eyes approximates  $14^\circ$ . I used this angle for my

first experiments without the least doubt as to its correctness. The results convinced me, however, that it is excessive, for there was an apparent lengthening in the line-of-sight dimension; so that, for instance, a saucer-shaped flower seemed cup-shaped, or a corolla-tube down which one peered seemed unnaturally lengthened. Reducing the angle of rotation to  $9\frac{1}{2}^\circ$  gave satisfactory results, and I have used this angle ever since as a reasonable compromise; the stereo effect is strong and dramatic, but the distortion noted above, if not entirely eliminated, is not obtrusive. More experiment is needed to determine the ideal angle, as, among other things, the conditions of viewing may well have a bearing on the matter.

Although this article is primarily concerned with stereo technique, it seems desirable to make some explanations concerning the equipment required for photo-macrography in general, and the conditions necessary for its success. The first of these conditions is that the photographer should be able to examine on a ground glass screen for focussing and composition, the actual image which, when the exposure is made, will be projected on the film. In terms of modern 35 mm. cameras, this means a single-lens-reflex camera. Some cameras, which use range-finder focussing, also provide a reflex attachment as an accessory. The second condition, which, if not quite so fundamental, is an almost indispensable convenience, is that the lens should be removeable in ordinary

light without spoiling the film in the camera. Another convenience, not indispensable but highly desirable, is an electronic flash unit as illuminant. The other equipment the photographer contrives for himself.

So much for material equipment: now for a little necessary knowledge. When the subject being photographed is quite small, the exposure must be multiplied by a certain factor to compensate for the small area from which the light reaching the film is reflected. This exposure factor is derived from a simple formula found in the text books, viz,  $E = (M + 1)^2$  where  $M$  is the "magnification" or more exactly the ratio

$$\frac{\text{length of image on film}}{\text{length of subject}}$$

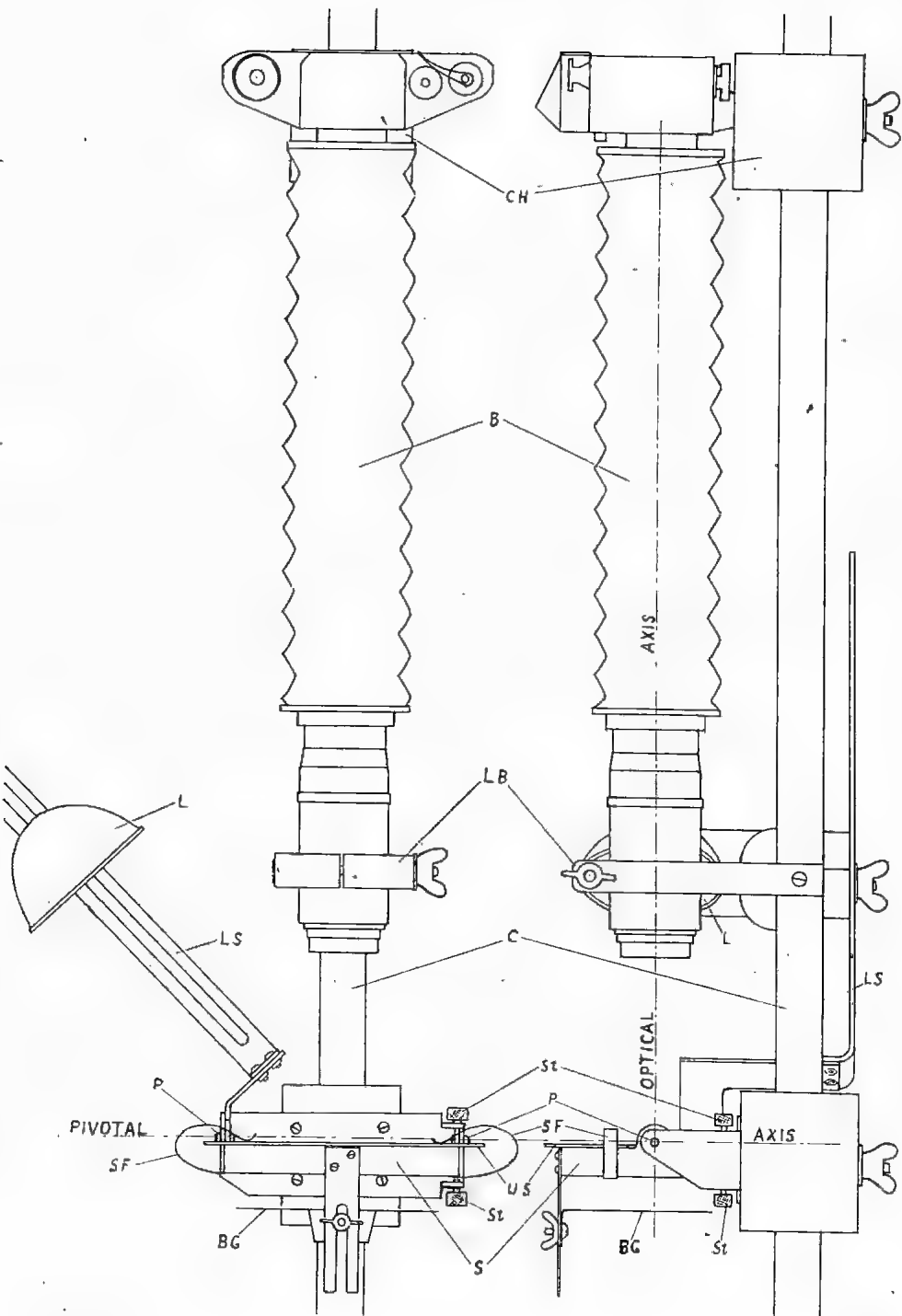
the formula being valid also when  $M$  is unity or a proper fraction. For example it will be noted that for the particular case where the image is the same size as the subject,  $E = (1 + 1)^2$ , or *four times* as much exposure is required as for a large subject similarly illuminated.

To proceed now from the general to the particular, the drawings reproduced here represent a simplified construction of the actual stereo-macro-stand used by the writer.

LB is the lens-board fixed to upright column C.

Figure 1  
Stereo-macro-stand  
Left—Front elevation.  
Right—Side elevation.  
(One-quarter actual size)





S is the stage whose holder slides up and down the lower part of C and may be clamped at any required point.

CH is the camera-holder sliding up and down the upper part of C and clamped at any required point.

B is the bellows connecting the camera to the lens.

Referring to the stage, shown also in plan view, P, P, are the pivots on which the stage rocks. St are the stop-screws which limit this motion. LS is the lamp-slide, attached to the stage and rocking with it; it is convenient to have it graduated in centimetres, for lamp position, with origin at the point where the subject is centred, the intersection of the optical and pivotal axes.

L is a small electronic flash-lamp which moves up and down LS and is clamped etc. at any required point.

BG is a background sheet, of which several are required in different colours; it also is attached to the stage and rocks with it.

US is what is termed the upper stage (in the plan drawing, shown removed from the stage and placed beside it, for the sake of clarity); it rests on the rocking frame and is lightly clamped thereto by the spring-fingers SF in the same manner as a slide on the stage of a microscope, and for the same reason, to enable it to be slipped about to centre the subject in the optical field, and also to be readily removed and replaced in the course of subject preparation. In the plan drawing it is shown furnished

with a stem-clamp, a millimetre scale held in the plane of the pivots, and a "fill-in reflector" consisting of a piece of sheet-metal bent into a semi-cylinder, painted flat white inside, and placed around the subject on the side opposite to the lamp, serving to fill in the hard shadows which the single light source would otherwise create. Other holes shown permit different arrangements of holding devices for the requirements of different subjects.

The millimetre scale referred to above, whether or not it be left in the picture, plays an essential part in preliminary setting; when it is focussed in the reflex screen, the length visible is a measure of the magnification, from which the correct exposure is calculated; being supported in the pivotal plane, it serves as a marker of that plane, in which the subject must also be placed; and finally being in sharp black and white contrast it is an easy subject to focus, so that better results may sometimes be obtained by placing the subject close beside the scale and focussing the latter, rather than trying to focus the subject itself.

The lens shown is a 13.5 cm. focal length "Xenar" and it will be seen that the end which is normally placed in the camera is here pointed towards the subject. In fact, in a macro apparatus, the subject and the film virtually change places, the subject being nearer to the lens than the film. In these circumstances one would expect the corrections of the lens to be better preserved in the reversed position, and

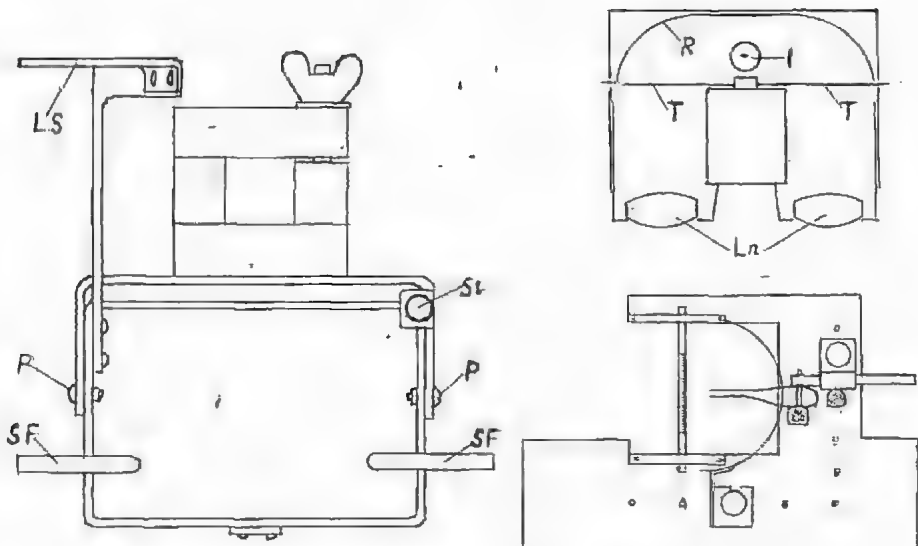


Figure 2

Left—Plan of stage.  
Upper right—Viewer.

Lower right—Upper stage.  
One-third actual size

having tried both ways, I believe that it is so, but the difference is not so obvious that I am prepared to be dogmatic about it.

It may be objected that the employment of such a long-focus lens makes necessary a very long bellows and results in a tall and cumbersome stand. This is true, but the need for the extra *depth of focus* which the long lens affords is so vital, that it overrides considerations of convenience.

Attaching the lamp to the rocking stage requires robust construction of the stage frame or small size and weight in the lamp. If these conditions cannot be met, it is best to use several lamps disposed around the subject to produce shadowless lighting, otherwise the odd fault of *shadows apparently floating in mid-air* will appear in the re-

sults. If the lamps do not move with the stage, the background sheet should not do so either.

If a light source specially made for photographic purposes is used, the maker will supply information which will enable approximately correct exposure to be calculated in terms of lamp-distance. For example, in the small flash-lamp represented in the drawings the (metric) *Indicating Number* for Kodachrome is 11. If this indicating number be divided by the *f* number at which the lens diaphragm is set, the quotient is the distance in metres at which the lamp should be placed from the subject, for average reflecting conditions. "Exposure", with flash-lamps, thus means a distance, not a time.

As an example recapitulating what has been said about ex-

Finder-field, mm.:		4	5	6	7	8	9	10	11	12	13	14	15	16	18	20
Lamp distance, cm.:	f11	18	21	24	27	30	32	34	37	39	40	42	44	45	48	51
Lamp distance, cm.:	f16	12	14	16	18	20	22	24	25	27	28	29	30	31	33	35
Lamp distance, cm.:	f22	8.8	10	12	13	15	16	17	18	19	20	21	22	23	24	26

Table 1

Example of computed data

posure calculation, take the case where, on focussing the millimetre scale in the reflex screen, 8 millimetre divisions appear across the width of the field. Since the width of the film frame is 24 mm. the magnification would appear to be 3, but a complication exists here in the camera makers' practice of masking the border of the finder-field to allow the user a margin of error in aiming. In my camera, this masking is too liberal to be neglected, and I know from past comparisons that when 8 mm. appear in the screen 10 mm. will appear in the finished picture. The actual magnification is therefore only  $24 \div 10$ , or 2.4, and the exposure factor E is  $(2.4 + 1)^2$ . Supposing that depth of focus considerations require that the lens be stopped down to f16, then the first calculation of lamp distance is to divide the lamp indicating number (for Kodachrome, 11 metric, in my lamp) by  $16 = \frac{1}{16}$  metre or 69 cm. nearly. This "exposure" of 69 cm. has now to be multiplied by E, but since it is in the form of lamp distance, the number must of course be reduced, and according to the radiation law of inverse squares. Thus, corrected exposure = 69

$$\times \frac{1}{\sqrt{E}} \text{ cm.} = 69 \div \sqrt{(2.4 + 1)^2} \\ = 69 \div 3.4 = 20 \text{ cm. nearly. The}$$

simplified rule for lamp distance may be expressed in words: Divide the indicating number of the lamp by the diaphragm f number, and then divide the quotient by the magnification—plus one.

It is a good plan to do all this figuring once and for all and have the results in tabular form. Above is an excerpt from the table in my notebook, referring to Kodachrome.

It now remains to say a few words about viewing the results of the stereo technique. Figured is a diagrammatic representation of the viewer which I use.

T, T, represent the transparencies in the usual 2" x 2" mounts, inserted through slots in the sides or top of the viewer, 6.2 cm. centre-to-centre distance. I is a 3-watt lamp supplied from a small transformer or battery. R is a curved sheet-metal reflector painted flat white. L<sub>1</sub>, L<sub>2</sub> are lenses, the centre-to-centre distance between them being adjustable between the limits of 5.8 cm. and 6.8 cm. and also capable of convenient movement in the line-of-sight direction for focus adjustment. The lenses are preferably flat-field corrected of about 5 cm. focal length. Prisms are not required.

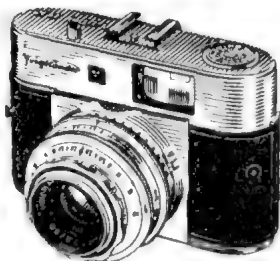
In locating the transparencies in the viewer, it is important that corresponding points in the

pictures should be on the same level; closing first one eye and then the other will reveal a high picture and a trim taken off the bottom of the mount will then lower it into line.

Projection of the stereo effect is feasible, using a double projector and crossed polaroid screens over the projector lenses and the eyes of the spectator, so that the right eye cannot see the left hand image and vice-versa; I have seen a demonstration, and the result is satisfactory, but beyond that I cannot speak of projection from experience.

When the photographer receives the finished transparencies, he probably will not know which of a pair is the right-hand one and which is the left,

but a trial will leave him in no doubt; if wrongly placed, the background appears thrust forward, and the foreground pushed behind it, the whole presenting a chaotic and ridiculous jumble. But when a successful stereo pair is correctly viewed, the effect far transcends in realism any other kind of photography. A point worth noting is that, given the rocking stage, it takes no longer to produce a stereo pair than a single picture; the preparation of a difficult subject, including abandonments of spoiled specimens and recommencements, may well consume many hours; but having achieved the desired result and made the first exposure, to rock the stage and take another is a matter of seconds only.



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## Currawang — *Acacia doratoxylon*, and Catkin Wattle — *A. dallachiana*

By JEAN GALBRAITH

These are two catkined wattles with long phyllodes, and they belong to north-eastern Victoria, though Currawang extends also into East Gippsland at Suggan Buggan and Wulgulmerang.

Currawang is a rather stiff shrub or small tree, of rocky mountainous country. It is erect, with blunt or shortly pointed phyllodes several inches long but barely half an inch wide. The little point is usually bent, and the phyllodes are sometimes slightly curved though not sickle-shaped, tapering to the base but an even width for most of their length, thick and firm, with many inconspicuous parallel nerves. As a rule they point sharply upward, and young branches are so strongly angled as to appear flattened.

At first, the stalked narrow inch-long flower spikes which spring from the leaf-axils are more or less lumpy and uneven with crowded "pin-head" buds of individual flowers, and they open in late spring into dense pale yellow catkins, followed by long slender pods only slightly narrowed between the seeds.

Currawang is a native of all the mainland states of eastern Australia, but Catkin Wattle is recorded only from the Mount Buffalo area of Victoria, though

I have collected it as far north as Beechworth.

Catkin Wattle is usually taller than Currawang, being a graceful little tree with phyllodes up to six inches long and an inch wide, noticeably curved and tapered towards each end. Each phyllode has several conspicuous parallel ribs, with a net of fine but quite noticeable connecting nerves patterning the dull surface with raised lines.

Though both species have long catkins from the leaf axils.



Dry Specimen of Catkin Wattle,  
*A. dallachiana*; leg. R. D. Croll, Eurobin Falls.  
Photo: F. Faisst.

the buds of Catkin Wattle are very different from those of Currawang. They are stalkless, numerous, and conspicuously neat, with overlapping bracts covering the individual flower buds and forming a diamond pattern almost like that of a young banksia spike. At one stage they look like nothing so much as a number of thin grubs with heads clamped onto the axis and tails in the air. They open into very dense light yellow

catkins, up to two inches long, erect, and usually curved, of remarkably even width.

Catkin Wattle flowers in mid-spring, and in early summer it is sometimes noticeable because the rachis (central axis) of each catkin which has not produced a pod remains as a long brown thread amongst the phyllodes. The pods are narrow like those of Currawang, but are more narrowed between the rather thick seeds.

## Diatoms in Port Phillip Bay

By H. BARRETT

Diatoms comprise an order of microscopic algae, and have a pill-box structure, consisting of two valves connected by a hoop. Their peculiarity however is that they have a siliceous skeleton, and that makes them desirable objects for the microscope once they have been cleaned, as the valves are covered with lines of dots or punctures, some so fine as to test the best apochromatic immersion lens. This article describes likely spots where marine forms may be found, and how to collect them.

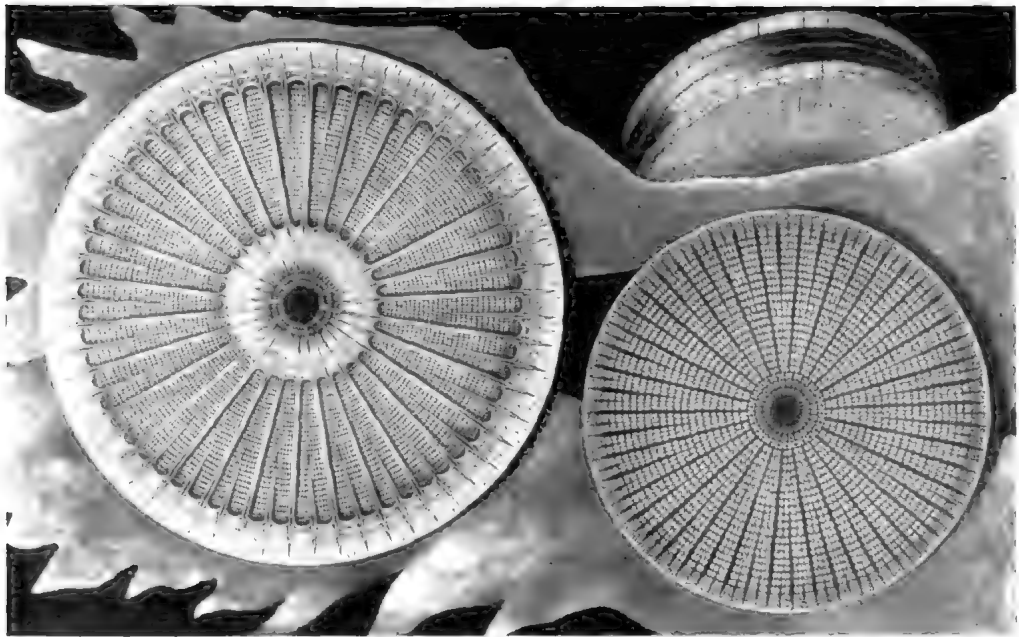
A very simple outfit is all that is required: three or four jars with screw covers, a specimen tube or two, a large spoon, and a drag-hook for bringing in weeds that are otherwise out of reach.

The localities about to be dealt with can all be reached within half an hour's journey of Melbourne. The collector should try to reach the spot he has in mind about an hour before low tide and then follow the tide down,

since it is from the pools near the tide level that the best results are usually obtained. It should, however, be remembered that searching after stormy weather is useless, since the pools will be swept clean, the best results being obtained after a spell of calm weather.

Favourable hunting grounds range from Carrum on the south to Seaholme on the north, so Carrum may conveniently be considered first.

Cross the bridge over the Patterson River and after a short stroll along the embankment the lock gates at Kananook Creek are reached. Here, on the river side of the gates, there is as a rule plenty of weed, usually covered with *Melosira* and a fair sprinkling of *Campylodiscus*. Coming back along the river bank several tidal pools will be seen, and by scraping the surface of the mud round the edges several varieties of *Pleurasigma* are usually to be obtained.



A Diatom, *Arachnoidiscus japonicus*,  $\times 400$ .

An upper and a lower valve, also a complete frustule in zonal view, showing the pillbox structure common to many discoid diatoms.

Some samples should also be taken from the creek itself. A few years ago it contained a large variety of forms, but latterly it has become more or less stagnant and the diatomaceous growth has been adversely affected.

Another spot well worth a visit is Mordialloc Creek. After crossing the bridge, walking along the south bank and passing under the railway bridge, a considerable quantity of weed becomes visible in the creek. It may be necessary to use the drag-hook in order to obtain some of this, but the effort is well worthwhile since there are always diatoms on it. These may sometimes be *Melosira borveri* and *Nummuloides*, or, at other times, *Podosira* and *Synedra* will be

the most numerous. Scrapings from the mud at the edge of the creek may supply yet other species. Both there and at Carum the diatoms are mainly the brackish species, together with a few purely marine forms.

Further along the beach towards Melbourne is Ricketts Point. After a spell of calm weather this is one of the best collecting grounds within easy reach of the city. The fine brown weed and the sea-grass near the reefs are often coated with diatoms during the summer months, usually *Licmophora* or *Climacospheia*, and sometimes *Grammatophora serpentina* are obtainable from this source.

An even larger variety of forms, however, is obtainable by carefully scraping the surface



of the fine sand and mud on the bottoms of the rock pools and crevices left dry by the retreating tide; among them will be varieties of *Triceratium*, *Stauro-neis*, *Synedra* and many others. Along the coast to Brighton several reefs well worth inspection will be passed, notably one at Quiet Corner, and, to digress a little, the beaches near this spot are often covered with foraminifera.

Continuing along the beach for about half a mile beyond Brighton pier there will be found another extensive reef. Although sometimes rendered barren by rough weather, this, under favourable conditions, is as good a collecting ground as is Ricketts Point. Some fine specimens of a quadrate variety of *Triceratium spinosum* have been found here.

From Brighton Beach onwards the sandy beaches offer little of interest until Williamstown is reached, though sometimes the red or brown algae washed up by the tide will repay examination. Although good gatherings have been made at Williamstown, the collecting grounds there are unfamiliar to the writer; they will therefore be by-passed and those at Seaholme dealt with. There conditions are rather different from those at the places discussed earlier, and it will probably be found necessary to wade through some shallow stretches of water before the seagrass beds can be reached. The small tufts of brown algae in the shallow water at low tide should not be neglected, as they are sometimes covered with *Striatella* and

*Rhabdonema*, whilst the pools contain several varieties of *Campylodiscus*, together with numerous other species.

Given favourable weather conditions, collecting at any of the sites mentioned is practically certain to provide material well worthy of further examination.

## Moomba Nature Show 1962

The Moomba Nature Show was held in Lower Melbourne Town Hall from March 3 to March 12 and was highly successful, with a record attendance of children and adults.

The many fine exhibits, which aroused much interest, included: Reptiles, arranged by the F.N.C.V. (by courtesy of Mr. Harvey Dickison); marine, geological, ethnological and botanical features of the beaumaris district (also arranged by F.N.C.V.); a large and most informative exhibit, displayed by the Zinc Corporation, showing the industrial mineral wealth of Broken Hill and its regeneration from a wasteland (caused by mining operations and wind erosion) to a garden city, as a result of the planting of trees and other vegetation.

Other fine exhibits included those arranged by the Bird observers' Club, Ringwood Field Naturalists Club, Federation of Walking Clubs and Native Plants Preservation Society. Particularly noteworthy were the Forests Commission's Sirex wasp exhibit, and minerals and gemstones displayed by the Mines Department, largely from the Beechworth area.

As usual, the display and competition work from schools, arranged by the Gould League of Bird Lovers, aroused much favourable comment. Excellent films were shown and lectures given, and the publications stand was well patronized. Hearty thanks are due to the members of the F.N.C.V. and other co-operating bodies who staffed the exhibits, and the organizers, headed by Mr. A. B. Court, are to be congratulated on the excellent results achieved.

—M. E. ARGO



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Finches Eat "Meat-mash"

A curious development was recorded in a note in the *Victorian Naturalist* for April 1962—Vol. 78, page 358—which stated that several species of finches in north Queensland "are now eating carrion", as made available by the bodies of bandicoots, etc., killed by cars on bitumen roads. In this connexion, Mr. A. H. Chisholm now writes from Sydney:

A similar report appeared in an article in the *Emu* for June 1961 (p. 94) by H. L. Bell of Sydney; he said that on several occasions examples of the introduced Spice Finch (*Lonchura punctulata*) had been seen, in north Queensland, beside the bodies of toads and other small animals squashed flat on roads.

In the *Vict. Nat.* paragraph several questions were asked, viz.: whether the finches were forced to the roads through shortage of seeds elsewhere, whether they were obtaining seeds from the fur of the dead animals, or

whether, perhaps, they were using the fur as nesting material.

Obviously, all of these points became negatived on reference to Major Bell's report (which mentioned dead toads among the "attractions"); nor did a suggestion he made, that the birds might be "investigating insects" on the bodies, seem to me to present the correct explanation.

Accordingly, I made inquiry on the subject, and now I am informed that the finches have, in fact, become addicted to meals of flesh—not in its tough state (which they could not cope with) but as "meat-mash". John Orrell, of Cairns, tells me that he has watched the process closely during several years.

Soon after a road-death occurs—be it that of a bandicoot, a bird, a toad, or any other creature—hawks arrive on the scene, and, later, as the bodies are flattened and dehydrated by numbers of cars, finches congregate and feast on the dried, protein-rich maceration spread on the hot road.

Mr. Orrell adds that on one morning, recently, a small wallaby killed on a road was given prompt attention by hawks and crows; then, as other cars passed, the body became smeared

on the bitumen, and at 2.30 p.m. a flock of finches took over and were distinctly seen eating the dried flesh.

Another correspondent, Mr. J. A. Bravery of Atherton, tells me that, on the Tableland, he has occasionally seen finches feeding beside dead bodies, apparently on powdered bone and crushed flesh, and he adds that his grand-daughter gives laying mash (which includes meat-meal) to Red-browed Finches, which eat it with relish.

On the whole, this eating of "meat-mash" on roads by tropical finches—one of several odd food-variants reported of certain birds in recent years—may be regarded as a very singular development; and not the least intriguing aspect of it is contained in the question, How did these finches first discover that bodies lying on bitumen roads could be, when thoroughly pulped, a source of "new" and very good luck?

### Short-nosed Bandicoot

Here is a record, with some comments, of one of the fairly common animals of southern Victoria. The data has been sent by Mrs. Ellen Lyndon of Leon-gatha.

There are many road casualties amongst the nocturnal animal life, and anything bearing fur that is not obviously cat or rabbit is always worth further examination. We stopped to pick up a small animal on the South Gippsland Highway opposite Tarwin Station, where scrub still borders the road. It was a specimen of the Short-nosed Bandicoot (*Isododon obesulus*), somewhat knocked about. As we were on our way to join a party of field naturalists from the Latrobe Valley we took it along. It was a powerfully built animal for its size with harsh, almost prickly, fur. The short and strong front legs ended in three only very efficient-looking digging toes, each bearing a curved shining nail. It could be equally well called the Short-eared Bandicoot, as it was by this feature we were able to identify it.

The name "short-nosed" is misleading, for the species has quite a long pointed snout. The term is used comparatively, however, and this bandicoot certainly has not the extremely long tapered snout of the Long-nosed Bandicoot. A picture of the latter appeared on the cover of last month's *Naturalist*. In Tasmania, *Isododon obesulus* is known officially as the Brown Bandicoot, a name which could well be adopted in mainland states as well.

### Diet of Giant Slugs

Referring to Mrs. E. Bennett's nature note, reported on page 309 of the *Naturalist* of February this year, that the giant slug does not eat live plants and that it likes milk, Mr. T. J. C. Rogers of Ringwood has written these comments:

At various times in the past seven years I have found giant slugs about my home. Sometimes they were near the cat's milk tin. Up to date I have had no hesitation in putting my foot on them. However, the last one, seen last night, received some milk and was allowed to return to its home, while I made further inquiries as to what it is and what it eats. I am hoping you may be able to shed some light on this topic.

Miss Hope McPherson says that these slugs will eat green plants, though they probably prefer decaying vegetable material and animal matter. Mr. A. N. Burns of the National Museum has intimated that leaves of a potted orchid had been attacked, and that two giant slugs were found under the container when he made a search for the culprits.

The species is introduced, and its name is *Limax maxima*.

# Field Naturalists Club of Victoria

## General Meeting—May 14, 1962

About one hundred members and friends attended, and Mr. D. E. McLunes, the chairman, welcomed Mr. and Mrs. Sloane and their son from the Ballarat club. Mr. H. Stewart said that Mr. Sloane was a nephew of Mr. T. Sloane, one of the foundation members of the F.N.C.V., in 1880, and an honorary life member after 1923. The latter was author of many scientific papers on entomology, and his collection is in the possession of the C.S.I.R.O. in Canberra. The suggestion of a natural history medalion came from a reviewer of the classic nature of Mr Sloane's work in entomology.

A letter from Mr. H. B. Dickins, who will be ninety years old this year, offered his regretful resignation from leadership of the Hawthorn Junior Club after eighteen years association with it. The F.N.C.V. secretary will write a letter of appreciation to Mr. Dickins, who was also responsible for the suggestion of the correa as the club emblem.

A letter was read from Mr. A. B. Court thanking the club for its help with the Moonba nature show.

Dr. M. J. Littlejohn, of the University Zoology School, gave a most informative and entertaining illustrated lecture on "Australian Frog Songs". The mechanism of their sound production and the simple receptors were clearly explained. Of three types of sound produced—mating calls, release and distress calls—the mating calls were recorded on tape, and these have been replayed to get visible patterns by means of a sound spectrograph or sonograph and by a cathode ray oscilloscope, which showed duration, pitch, number of notes and rate. Slides of the patterns were shown, as well as excellent colour pictures of various frogs and toads, accompanied by recorded sounds which help to distinguish species responsive only to specific sounds. Hybrids, arising where species are not isolated, showed mixing of sound patterns in some cases. Information from these studies is sought to reveal something of how differences arise in evolution. Dr. Littlejohn was thanked by Messrs. A.

Fairhall and J. Strong for a unique and very much enjoyable lecture which combined stern science with diverting entertainment.

Dr. M. Chattaway showed slides illustrating regrowth after the fires in the Dandenongs, relating the sequence of epicormic growth in Grey Gum (*E. goniocalyx*), Peppermint (*E. radiata*) and Messmate (*E. obliqua*) to the probable influence of thickness of bark and the absence of inhibitors coming down from the leaves.

Mr. J. R. Garnet exhibited a fruiting body of Stone Fungus (*Polyporus hazelapillides*) from Wyperfeld National Park, of which the mycelium ramifies between soil particles and cements them into a mass as hard as sandstone.

Mr. J. P. Curlijs showed small freshwater snails from Apollo Bay, and a parasitic isopod or "fish-louse" frequently found astride the tongue of a trovally.

Nine new members, whose nominations appeared in the May Naturalist, were elected.

## Geology Group—May 2, 1962

Twenty members were present, with Mr. L. Angior in the chair. The secretary paid a tribute to the late Mr. Paul Fisch, a prominent member of the group. Mr. R. Davidson gave a report on the excursion to Point Leo on April 22, to collect zircons and sapphires from the heavy sands of the beach area. Examples of small zircons and sapphires, with ilmenite and magnetite, were exhibited from the same area. A group syllabus was arranged for the next six months. Mr. D. McInnes outlined plans to continue the work of the Hawthorn Junior Field Naturalists Club, so ably conducted by Mr. Fisch for many years. An excursion to the Geology School, Melbourne University, to be conducted by the librarian, Mrs. Matthai, was arranged for Tuesday, May 22, at 8 p.m. Members were also urged to attend the club's excursion to Kinglake West quarry on May 20, to collect trilobites.

The subject for the evening was a symposium on fossils and general geology. Mr. R. Davidson gave an

outline of the fossil localities around Melbourne and explained the value of fossils towards dating the age of beds and solving problems connected with evolution. The areas mentioned included Studley Park (Silurian: graptolites), McIlroy's Quarry on Mornington Peninsula (Ordovician), Beaumaris (Tertiary: marine fossils), Brown Coal Mine at Altona (fossil wood), and Royal Park (marine fossils). The speaker illustrated his talk with a comprehensive array of fossils from the different localities.

**Exhibits.** Minerals from basic rocks (felspars, mica, quartz), and from metamorphic rocks (garnets, forms of hornblende, beryl, pegmatites, anorthoclase, tourmaline and woolastonite—A. Cobbett; diabase from Ceres—L. Angior; fragment of australite, quartz crystals, specimens ranging from slate to schist from contact zone of Ordovician sediments with granitic rock, all from Beechworth—D. E. McInnes; and banded jasper, andalusite, copper ore and talc, all from Western Australia—L. Hairstow.

#### Fauna Survey Group—May 3, 1962

About twenty were present at the meeting, and Mr. N. A. Wakefield occupied the chair. Three members of the Ballarat F.N.C. had travelled down for the occasion.

Correspondence included letters from the Bendigo, Casterton and Benalla F.N.Cs, in answer to the group's circular seeking information about mammals of the various districts. A letter was received from the Fisheries and Wildlife Department, indicating that the Leadbeater Possum habitat was being investigated with a view to preserving roadside vegetation in it.

Mr. J. McCallum reported on the excursion during Easter to the Portland area, when several specimens of *Antechinus* were secured for study purposes. Mr. Wakefield referred to a report from Mr. J. Edge of Allansford, of the capture of a fruit-bat (*Pteropus poliocephalus*) near Warrnambool.

Details were discussed of a recent grant made to the F.N.C.V. from the M. A. Ingram Trust, much of which was for fauna group equipment and working expenses, and figures were given of amounts now in hand for various purposes.

At the conclusion of the meeting, some time was spent examining animals in the Department's wildlife research laboratory.

Members should note that the next group meeting will be held on the second Thursday of the month (June 14), instead of the first Thursday.

#### Microscopical Group—March 21, 1962

Sixteen members attended the meeting, which was chaired by Mr. E. LeMaistre.

The guest speaker, Dr. J. Gulasekharan, explained that all of the basic work in bacteriology can be done with a good microscope, oil immersion lens, some sort of gas flame, a platinum loop and an incubator. But he warned that the microscopical examination of specimens was only one step in the lengthy laboratory tests necessary for the diagnosis of a particular case. The speaker explained how necessary it was for accurate diagnoses of certain outbreaks of diseases, as the identification might involve international repercussions, leading to the isolation of certain communities and the closing of ports. He then described the various shapes and distinguishing features of bacteria, as well as how they are grown and plated.

As all Dr. Gulasekharan's slides needed very high power, members found it necessary to use their oil immersion lenses. This necessitated more than usual caution than when lower powers are used, but fortunately there were no mishaps. Specimens shown were: Smear of *Gonococcus*, *Proteus bacillus*, Tuberculosis smear, *Diphtheria bacillus* smear, and *Gonococcus* pus cells. Also, a very good display of a may-fly larva covered with vorticella was shown under Mr. E. Snell's binocular microscope.

#### Affiliated Clubs

**Wimmera F.N.C.**—This club is going strongly. It meets at Kiata on the third Thursday in every month, and this year has held excursions to such places as Lake Albaeuia, Mount Arapiles, and the Naracoorte Caves in South Australia. Mr. W. Middleton of Wail in president and Miss A. M. Jordan of Kiata is secretary.

**Geelong F.N.C.**—The first annual report of this club gives details of

what it modestly describes as a year of amazing and unprecedented success. In one year the club has enrolled over 130 members, most of whom attend meetings and excursions regularly, and has held a meeting and an excursion each month. The only setback reported is the failure of the schools of the district to respond to an offer of co-operation. Club meetings are held on the first Tuesday of the month, Miss V. Boardman is secretary, and with her report she forwards her club's syllabus for the coming year.

**Lorne League of Bush Lovers**—Although this club meets regularly from March to November, its members are mostly summer visitors from Melbourne, Colac and other districts. It

finds that it must concentrate its efforts on tree protection and tree planting, with the support of local organizations such as the Winchelsea Shire Council and the State School. Miss O. L. Armytage is president, Mr. J. S. Hayes, secretary-treasurer, and the League is fortunate in retaining Mr. H. Stribling as patron.

**Sunraysia F.N.C.**—This club continues to flourish, with over seventy members. The retiring president, Mr. Phillips, reports a year of activity, much of it relating to the protection of local native plant reserves and to the Hattah National Park. Mr. J. Caldwell is the incoming president, while Miss Mary J. Chandler continues as secretary.

## EIGHTY-SECOND ANNUAL REPORT, 1961-62

The year has been one of steady progress, which we hope and expect will continue into the future.

**Shows:** Last September we once again held a most successful nature show in the Lower Melbourne Town Hall. Attendance and takings were most satisfactory. We had asked the Ingram Trust to bear some of the expenses and it had agreed, but results were so good that we withdrew all of this request, except so much as related to the publication of a pamphlet in English, German and Italian, advocating protection for the Lowan. It was felt that this had very little to do with the show. The Ingram Trust agreed, and paid the expense of preparing, printing and circulating this pamphlet. This show was conducted in conjunction with the Society for Growing Australian Plants, and in recognition of their friendly co-operation and the great value of their display, they were allotted \$100 from the proceeds. They will co-operate again in the coming year.

We also took part in the Moomba Nature Show, last March, our exhibit concentrating on the Beaumaris area. This show was spread over two weeks, and our delegates have been instructed to object to such a long drawn-out affair.

**Membership:** This continues to grow steadily, and with it the circu-

lation of the *Naturalist*. During the year ordinary membership increased from 412 to 471, Country from 248 to 306, Juniors from 39 to 48, while there are 26 honorary life members. Taking into account subscriptions and exchanges (including a number sent to learned societies overseas at the request of the Herbarium authorities) about 1000 copies are mailed each month; 1250 copies are printed, some being sold through booksellers, and the balance kept as a reserve for the future.

During the year, Miss M. L. Wigan, a member since 1926, was elected an honorary member, in recognition of her long and enthusiastic service to the club.

We are sorry to have to report the death during the year of Mr. Paul Fisch who, besides being an enthusiastic grower of native plants, was secretary of the Hawthorn Junior Field Naturalists Club, a position which will be very hard to fill. We also lost Miss G. Neighbour, Mr. Henry Best and others.

For years we have talked of publishing a membership list. At last, due mainly to the enthusiastic efforts of Mr. and Mrs. F. Curtis and of Mr. G. Allan, what we hope is a complete list of members and individual subscribers, and a partial list of institutional subscribers was compiled as at January 1, 1962. It was decided

not to print this list as a supplement to the *Naturalist*, as had been our first intention, but to reissue it. This has been done. Copies have been sent to office-bearers and affiliated clubs, and additional copies are available for 5/- each.

*The Victorian Naturalist*: This is our principal service to the great bulk of our members, and by it we are judged. We feel that it has continued to maintain a high standard, and has ably fulfilled its dual role as a magazine to interest nature lovers generally, and a vehicle for serious articles of scientific importance. We must thank the editor and the authors of the various articles for an interesting volume. Special mention may be made of anthropological articles by A. Mazzola and S. R. Mitchell, I. M. Watson on tongue-orchids and ichneumonids, the series by J. Béchervaise on Antarctica, K. C. Halafoff's concluding articles on the lyrebird's song, E. Bird on land changes, D. Fleay, on animals he has kept in captivity, Miss Galbraith's series on the acacias, and the articles and notes by members of the Fauna Survey Group.

*Affiliated Bodies*: As mentioned in last year's report, the newly-formed Geelong Field Naturalists Club applied for affiliation last year, the appropriate resolution being carried at the annual meeting in June 1961. This club is making great progress, membership at the conclusion of its first year of existence being 130 persons.

This left only one substantial area of Victoria—the north-east—in which there was no naturalists club, and we were very pleased to hear of the formation and to receive an application for affiliation from the Benalla Field Naturalists Club. This means that there are now 23 country clubs affiliated with the F.N.C.V. Another interesting move is the organization of the affiliated Gippsland Field Naturalists Clubs, a federation of the Bairnsdale, Latrobe Valley and Warragul Clubs for mutual support and encouragement.

An outstanding feature has been the regular attendance of country members at excursions, especially those of longer duration. Thus at the Portland excursion, led by members

of the Portland club, there were present representatives of the South Australian Naturalists Society, and of the Ballarat and Frankston Clubs. At Beechworth, besides members of the Benalla Club, we saw representatives of the Ballarat club, and members of the F.N.C.V. from Tatura; and at Wilson's Promontory other local members welcomed and helped the party.

The only disappointment has been the "clubs' get-together". We have held this regularly for the last three years and feel it is a good idea, but attendances of country members have been disappointing. In the past, it has always been held on the last week-end of the Royal Melbourne Show, but we fear that this may be a bad time of year for most country members, and so this year it will be held on the week-end of October 20-21. We hope this will be more convenient.

*Parks and Reserves*: During the year we have given our moral support to the project to set aside forest country at Labertouche—to protect the stands of Pink Boronia, Scarlet Grevillia, and *Tetratheca stanocarpa* there, and to the movement to buy the Cuthbertson block at Ocean Grove, which is the last block of virgin land on the Bellarine Peninsula.

The Landscape Preservation Council of the National Trust, with which we are affiliated, is collecting lists of what have been called "Natural Monuments" and we are co-operating. In that connexion, we were very pleased to hear that the "Organ Pipes" at Sydenham had been presented to the State, and we thanked the family of the late Mr. Green for this generous gift.

We have also concerned ourselves with problems relating to existing parks, such as the proposed hotel at Wilson's Promontory, and the fire risk at Sherbrooke.

*Wildlife Protection*: Constant vigilance is needed with regard to wildlife protection. We work in friendship with the Native Plants Preservation Society, and during the year were pleased to hear that steps were being taken to reconstitute the Fauna Protection Council. We have also suggested to the authorities that it is

unnecessary to list the Wombat as Vermin.

**Speakers:** Once again we must thank those who have instructed and entertained us during the year, especially R. T. M. Percott, who spoke on "The Royal Melbourne Botanic Gardens", G. Baker ("Australites"), R. Golding ("Australian Bird Songs") and L. W. Thompson ("Honey Bees"). An interesting experiment was the illustrated discussion by three members of the club excursions to Yarram and Portland respectively. These two evenings were most successful, and this technique will doubtless be repeated in the future.

**Finance:** As the treasurer will report, expenses are rising steadily. Fortunately membership fees (including the supporting membership) are rising also, and at approximately the same rate, so that we will "break even" or have a small excess of receipts over expenditure.

**Excursions:** Excursions have been well patronized. This year, general excursions have been held on the third Sunday of each month and, in addition there have been several extended excursions as well as those organized by the groups.

The major excursion was to Portland from December 26 to January 1. This was led by members of the Portland club and places visited included Bat Ridges, Mt. Clay, Bridgewater Lakes, Mt. Gambier and the Glenelg River. On December 27 the visitors were officially welcomed by the Mayor and the Portland club and shown splendid slides of the district and its natural history. Over sixty members attended this excursion.

In October, a week was spent at Wilson's Promontory and members were delighted to renew acquaintance with Messrs. Rossiter and Greenaway who led the Yarram excursion last year. There was an excursion to Beechworth at Easter, which was led by Mrs. F. Gladstone, a local member. Mrs. Gladstone took the party to Mt. Pilot and showed them a cave with aboriginal drawings, to Mt. Stanley, Woolshed Creek and Falls and on a tour round the district as far as Chiltern and Myrtleford. Agates were found at the Woolshed Creek and Mrs.

D. McInnes gave a successful demonstration of gold panning.

Country members were welcomed at the combined week-end excursion made to Ricketts Point, to the building stones of the city, Maranoo Gardens and the Dandenongs. Part of the Saturday afternoon programme was televised. Day excursions were popular and these also enabled us to meet country clubs as, for instance, when the Warragul club led the Labertouche excursion and the Geelong club one to Torquay.

**Botany:** This group has had another successful year, attendance at meetings is increasing and interest is held by the lectures which have been very ably arranged by Miss M. Leeter, the programme organizer. Among the subjects chosen were "Liverworts and Mosses" by G. Thomson, "Ferns and Clubmosses" by Mts. E. Webb-Ware, "Cycads and Conifers" by Miss L. White, "Flowering Plants" by G. Thomson, "Orchids" by W. L. Williams, "West Australian Plants" by J. M. Wilson, "The Vascular System" by Dr. M. Blackwood, and there were several members' nights. A number of excursions were held, led by the lecturer, the subjects usually chosen to combine with the lectures. One week-end excursion was held when Mr. and Mrs. K. Cheslin invited members to make their headquarters at their week-end cottage at Anglesea. This offer was gratefully accepted and members were shown the floral highlights of the district by their host and hostess.

The group lost its chairman when Mr. F. Zirkler and his wife left for a trip overseas, but looks forward to their return in November. Mr. J. Baines has accepted the position and the group continues to progress.

**Microscopical Group:** The year has been a very interesting one. Lectures have been given by five outside speakers and three members of the group. The remainder of the meetings were taken up by "open nights" at which members exhibited their own slides and specimens. This latter type of evening always proved successful and gave every member the opportunity to discuss their own particular branch of microscopy.

Lectures by outside speakers were



on such subjects as the microscopic study of the flinty acid-resisting bodies obtained after the treatment of the cores from deep drilling bores, the study of the fossil remains and impressions of plants, the study of fungi and the use of the microscope in a diagnostic laboratory.

Subjects discussed by group members included photo-micrography and desmids.

Early in the year Mr. D. McInnes, who had been the leader of the group for many years, resigned, and Mrs. G. Middleton was elected to fill the position, but unfortunately she had to resign again some months later because she and her family were moving to Lord Howe Island. Fortunately for the group, at this juncture, Mr. E. LeMaistre returned from Singapore after many years residence there. Mr. E. LeMaistre has been an active member in the Microscopical Society and also held the position of chairman in the very early days of the group's formation as a part of F.N.C.V.; consequently he was elected and returned to his original position in the chair. Shortly before the departure of Mr. and Mrs. Middleton, a picnic was held at Heaney Park which was in the nature of a final get-together with "Charles" Middleton who has been an irreplaceable help to all Melbourne microscopists. The highlight of the day was a presentation to Mr. Middleton of a book signed by all members of the group.

An exhibition of microscopes held during "country members week-end" aroused a great deal of interest, and this may become a regular feature.

Following an invitation Mr. W. Evans went to Colac and gave a talk and demonstration to the local club. This was most enthusiastically received, and an article written in a Colac newspaper represented one of the few times microscopy has become an important news item.

Attendances at monthly meetings throughout the year, though not great, on the whole were consistent and very gratifying.

**Marine Biology and Entomology:** Regular monthly meetings have been held by this group throughout the year, with an average attendance of 16 members.

An endeavour has been made in the

past year to obtain speakers who are specialists in their own branch of natural history. This endeavour has met with some success. We have already listened with great interest to Mr. R. B. Wilson, Chief Entomologist of the Plant Research Laboratory, Burnley Horticultural Gardens, who spoke on the *Sirax* wood wasp and cicadas, and we have ahead of us Miss Hope McPherson, Curator of Molluscs, National Museum, and Mr. C. J. Irvine, Chief Entomologist, Forests Commission, both to give a lecture this year.

Members continue to bring many marine and entomological specimens for identification and discussion, and there are usually three or four microscopes set up for use with minute specimens.

The group is looking forward to another interesting and instructive year.

**Fauna Survey Group:** This group continues to gather information on the mammals of the state, and again the year's work has been carried out in close liaison with the Fisheries and Wildlife Department. The M. A. Ingram Trust has given further financial assistance, meeting costs of some equipment, certain working expenses, and cost of illustrations in connexion with articles on mammals in the *Victorian Naturalist*.

A bat-banding programme is under way, and the survey of the Healesville-Warburton area is continuing. The study of the state's species of *Antechinus* has developed into a major research project, necessitating attention to interstate and overseas museum collections and to populations of the animals in other states.

In the *Naturalist* during the past year, a paper has been published on the rediscovery of Leadbeater's Possum, and a series of articles has appeared dealing with phalangers and phascogales near Benalla in north-eastern Victoria.

In November last, the group was asked to contribute to the annual soirée of the Royal Society of Victoria by screening colour slides of native mammals in their natural habitats; and in April this year it was instrumental in arranging a general conference of persons interested in Victorian mammal research.

**FIELD NATURALISTS CLUB OF VICTORIA: FINANCIAL STATEMENTS, 1961-62**

**GENERAL ACCOUNT**

**STATEMENT OF RECEIPTS AND PAYMENTS FOR 12 MONTHS ENDED APRIL 30, 1962**

(Figures adjusted to the nearest £1)

Receipts		Payments	
Subscriptions received—		<i>Victorian Naturalist</i> —	
Arrears	£41	Printing	£1,544
Current	1,459	Illustrating	376
Supporting Members	76	Less from Ingram	
	<hr/>	Trust Grant	105
	£1,576	Despatching	271
Sales of <i>Victorian Naturalist</i>	200	Editorial expenses	152
Advertisements in <i>Victorian Naturalist</i>	205		<hr/>
Interest received—			£1,980
Library Fund	£2	Working Expenses—	
Bank Account	19	Postage and Telephone	£54
	<hr/>	Printing and Stationery	16
	21	General Expenses	28
Surplus from excursions	133	Library Expenses	17
Sale of Club badges	13	Subscriptions, Donations and	
Other sales	2	Affiliation Fees	8
Amount transferred from Building Fund		Natural History Medallion	13
Account for payment of rent	61	Fauna Group	122
			<hr/>
			£258
		Less Ingram Trust Grant	
		on account of Fauna Group	122
			<hr/>
		Rent of Hall and Library	136
			61
			<hr/>
			£2,177
		Surplus for the year	34
			<hr/>
	£2,211		£2,211

**BALANCE SHEET AS AT APRIL 30, 1962**  
(Figures adjusted to the nearest £1)

Liabilities		Assets	
Subscriptions paid in advance	£358	Bank Current Account and Petty Cash	£863
Sundry Creditors	27	Current Assets—	
M. A. Ingram Trust Grant—Amount in hand	224	Sundry Debtors	£84
Special Funds and Accounts—		Arrears of Subscriptions—	
Building Fund	£1,554	estimated to realize	30
Publications Fund	1,410	Badges on hand—at cost	64
Library Fund	50		178
Club Improvement Account	110	Library, Furniture and Equipment	1,702
Excursion Account	100	Investment of Funds—	
	3,224	Building Fund—	
Surplus of Assets over Liabilities	1,944	Commonwealth Bonds at cost	£950
		Inscribed Stock at cost—	
		S.E.C. £500 3½% 1965	420
		M.M.B.W. £100 3½% 1963	90
		E.S. & A. Bank No. 2 Account	94
			1,554
		Publications Fund—	
		Commonwealth Special Bonds	£700
		Stocks valued at cost—	
		<i>Wildflowers of Victoria</i>	1
		<i>Victorian Ferns</i>	343
		<i>Victorian Toadstools</i>	74
		Other publications	2
		E.S. & A. Bank No. 3 Account	268
		Amounts owing by Booksellers	22
			1,410
		Library Fund—	
		Commonwealth Bonds at cost	50
		Cosstick Reserve—Maryborough—at cost	20
			£5,777
	<u>£5,777</u>		<u>£5,777</u>

## BUILDING FUND

Amount of Fund at 30/4/61	£1,551
Interest on Investments and from Bank account	64
	£1,615
Less amount transferred to General Account for payment of rent	61
	£1,554

## PUBLICATIONS FUND

Amount of Fund at 30/4/61	£1,285
Surplus for year from—	
<i>Wildflowers of Victoria</i>	63
<i>Ferns of Victoria and Tasmania</i>	21
<i>Victorian Toadstools and Mushrooms</i>	3
Other publications	7
Interest on Special Bonds and from Bank account	31
	£1,410
Amount of Fund at 30/4/62, as per Balance Sheet	£1,410

## CLUB IMPROVEMENT ACCOUNT

Amount of Account at 30/4/61	£102
Donations received during year	12
Amount transferred from surplus on 1961 Nature Show	100
	214
Charged against this account during year—	
New books for Club Library	£13
Prox Viewer	11
Repairs to speaker system	6
Binding of periodicals carried in Library	74
	104
Amount of Account at 30/4/62, as per Balance Sheet	£110

Audited and found correct,

W. P. J. Evans }  
R. Davidson } Hon. Auditors

### Treasurer's Comments

The surplus of £34 on the General Account is satisfactory, coming as it does after deficits totalling £71 in the two preceding years, and is a net deficit of £37 over the three years since May 1959 when steps were taken to enlarge and develop the *Naturalist*. Present indications are of some further increase in cost of printing, but of continuance also of the present steady enrolment of new members.

Further support has come from the M. A. Ingram Trust, which has met

cost of equipment, travelling and other expenses of the Fauna Survey Group, and in providing illustrations for articles in the *Naturalist* reporting on their work in the field.

*Special Funds.* The present edition of the wildflower book was sold out during the year. Sales of both fern and toadstool books have now exceeded the whole of the outlay in both cases, so that all further sales, after deducting expenses of distributing, will yield clear profit.

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Victorian  
Naturalist

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2/6



Magnificent stand of White Mountain Ash, *Eucalyptus regnans*, in the Maysville State Forest.

## FORESTS COMMISSION VICTORIA

. . . . . *preserving the beauty of our  
forests for your enjoyment.*



# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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### *Front Cover:*

During summer months and early autumn, the Mountain Gentian, *Geni-  
anella dicmensis*, is a feature of sub-alpine meadows in the south-eastern  
Australian highlands. This group was photographed in the Wombargo range  
in north-eastern Gippsland during Easter 1961.

## British Museum Expeditions

Exactly three years ago, it was considered necessary to publish in this journal a two-page editorial entitled "Wildlife Management and Common Sense" (*Vict. Nat.*, Vol. 76, pp. 56-57, July 1959). That was prompted by the controversy which was raging amongst bodies who were under an erroneous impression that pheasants and mallards were to be introduced, as game birds, into Victoria.

At present there is a similar storm, in connexion with the proposed expeditions to Australia by scientists of the British Museum. Mild hysteria has developed in some quarters, and even some of the more staid naturalist groups have considered it necessary to endeavour to shape the policies of Government departments.

Perusal of last month's issue of *Fur Feathers & Fins*, the Newsletter of the Victorian Fisheries and Wildlife Department, indicates that there are no grounds for apprehension or for fears of "wholesale slaughter" of native birds. One piece of editorial comment reads:

As far as Victoria is concerned, no collecting can take place except under permits issued by the Chief Secretary. It will be necessary for the Museum authorities to make application for these permits stating in detail the numbers and kinds of specimens which they wish to collect.

The application will then be examined in detail by this Department and appropriate recommendations made to the Chief Secretary, in conformance with the conservation policy of the State. No permit will be given which would interfere with or endanger any rare species.

Previously, the Chief Secretary, the Honourable A. G. Rylah, had issued the following press statement:

The exact requirements of the British Museum are not known yet, but when details are received they will be referred to the Fisheries and Wildlife Department for careful examination and advice. The indiscriminate collecting of rare or even common species of wildlife is not permitted at any time.

Also in the June Newsletter, in the Director's Column, Mr. A. Dunbavin Butcher emphasized two very important aspects of such wildlife matters:

The British Museum Expeditions have received widespread publicity. One of the most surprising features has been the almost complete disregard, both by writers of letters to the press and persons writing as self-appointed authorities, of the fact that over the greater part of Australia the States are sovereign in the wildlife sphere. A disturbing feature of the campaign is that the majority of letter-writers have made no attempt to ascertain the views of the Department, or to even inquire as to what controls will be exercised, before expressing their own views in the daily papers.

Legitimate collecting for museum purposes is accepted by the Department but such collecting will be permitted only within the limits of the conservation policy of the State.

The real threats to wildlife lie in habitat loss, unplanned development, wantonly lit forest fires, the widespread use of pesticides, soil erosion, illegal clearing of river banks, indiscriminate shooting and so on. A public consciousness of these things is highly desirable. This Department is proud of its conservation record and is not unaware of the fact that abuses have occurred in the name of science. However, its work would be greatly strengthened if public interest could



be directed towards the really significant threats to wildlife.

It would be well for "nature-lovers" to analyse these three quoted statements and to consider carefully their significance. The Director's final sentence should be heeded especially.

Mallards and pheasants were not banned by public outcry, nor is that procedure necessary to protect our birdlife from indiscriminate killing. Such matters are controlled by a Department

which has, over the years, developed sound and stable conservation policies.

While it is pleasing to see that a section of the public is conscious of the need to protect our wildlife, it would be even more gratifying to see natural history organizations recognize and emulate the mature approaches to conservation which are the established policies of our Fisheries and Wildlife Department.

Australian Wattles—No. 37

By JEAN GALBRAITH

## Alpine Wattle — *Acacia alpina*

Alpine Wattle is a characteristic mountain-dweller: a low bush, often sprawling, nearly

mat-like, over rocks. Its dull hard foliage is stiff to the touch.

The relatively broad phyllodes are from one to two inches long, frequently with one straight side and the other strongly curved. If there is any indication of a point, this is more often to one side of the apex rather than in the middle. And though the foliage is marked by several long raised veins, the reticulations between these are inconspicuous.

Yes, it is a scrubby little wattle; and it has short spikes of scattered pale yellow flowers which are followed by narrow curved dark pods. Yet it has a peculiar attractiveness. On the few high mountains where alone it grows—low and sturdy, or flattened espalier fashion amongst the rocks, covered for weeks by snow and swept by high cold winds—it looks completely and cheerfully at home.

Alpine Wattle, *Acacia alpina*.

Photo: E. Faisst, of dried specimen from Mt. Buffalo.



# The Grinding Rocks at Gellibrand

By A. MASSOLA

Dense, hard stone has always had a special appeal to primitive man, as it was the material most suited for making his tools and weapons. In Victoria the materials utilized by the aborigines for axe-making were generally diabase or other fine-grained igneous rocks. Outcrops of these materials are found scattered throughout the state. Some of these outcrops are large, and must have figured in the mythology as well as in the economy of the tribe in whose territory they were situated; others are no better than isolated boulders, and as such were of restricted economic value.

The quarried stone was generally roughly chipped into the shape of an axe-head, at this stage of manufacture known as a "blank", and bartered in that condition with other tribes against the produce of their territories. The finishing of the blanks into axe-heads was done by the recipient by rubbing the blank on a slab of sandstone or other abrasive material, until the necessary cutting edge was produced. The slabs of sandstone were quarried and bartered for this purpose in a similar manner to the axe-head blanks. Thus, for instance, diabase from Mt. William, near Kilmore, or the Dog Rocks, near Geelong, was bartered for sandstone from St. Kilda or the Grampians. Oc-

asionally, both the igneous rock and the sandstone outcropped in the same locality. These occurrences would, of course, be used to advantage by the local tribe: the igneous rock would be quarried and turned into the finished axe-heads, while the sandstone would not be quarried, but the whole of the boulder used as a gigantic grinding slab. Where this occurred a real industry developed, the whole tribe taking part in it.

Such a stone-axe quarry can be seen on a hill, now the property of Mr. John W. Clancy, close to the present township of Gellibrand, in the Otway forest.

Wind and rain eroded the eastern flank of this hill, exposing a deposit of fine-grained basalt, covering an area of perhaps two acres. The foot of the hill extends into river flats, through which the Gellibrand River still winds its way, this combination of forest, flats and water assuring subsistence to the native miners.

Basalt also outcropped on the crest of a second hill, about one and a half miles south-west of the first. On the western flank of this hill storm waters excavated a drain into Lardners Creek, a tributary of the Gellibrand, which river it joins about one mile downstream from where the storm creek enters it. The rain water rushing down this

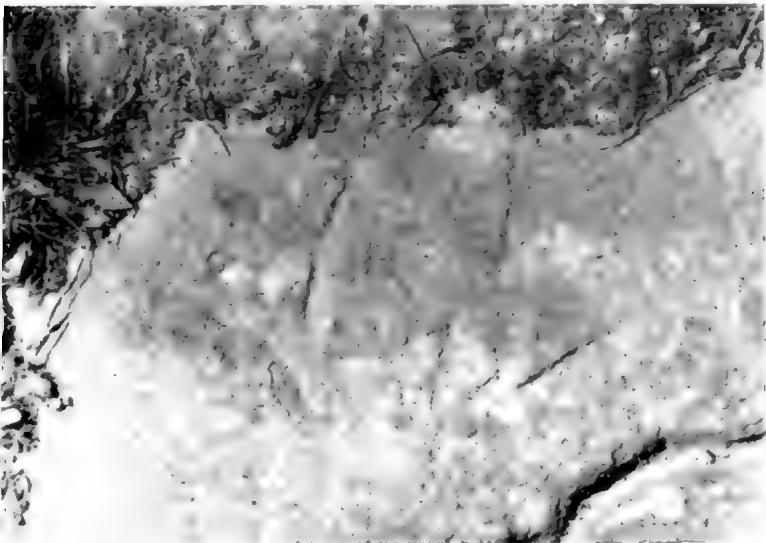
drain exposed and underpassed a large coarse-grained sandstone boulder, which now forms a natural bridge over the storm creek, and is used as such by cattle. Twenty-five yards west of this natural bridge a second sandstone boulder is readily seen on the now cleared paddock. On the surface of both these sandstone boulders, grinding grooves, caused by the finishing of the blanks into axe-heads, are visible.

Thus, with two extensive fine-grained basalt quarries which, judging by the amount of broken stone scattered about, show abundant signs of having been worked and two large coarse-grained sandstone boulders on which are plainly visible the grooves left in grinding the basalt blanks, the picture of the locality and of the activities of the aborigines is complete.

The discovery of these sites

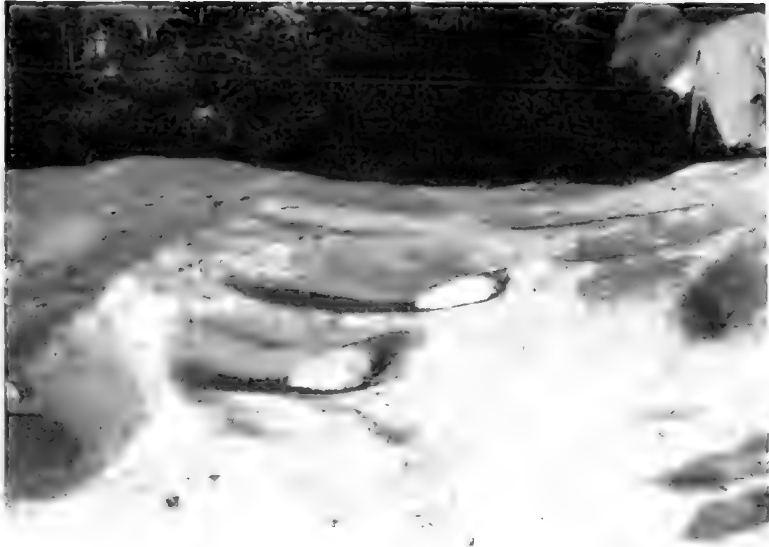
is due to the enthusiasm of Mr. Donald Burns, of Colac, a dynamic member of the local Field Naturalist Club. I am greatly indebted to him, not only for leading the recent Anthropological Society's excursion, of which I was a member, to the spot, but also for allowing me to quote freely from a paper on the aborigines of the Colac district, which he is preparing.

In his paper, Mr. Burns states that he investigated the district thoroughly, and refers to what he claims to have been the camping site of the natives working these quarries. It is situated in the bush country surrounding the clearing on which are the grinding rocks, and is about three hundred yards uphill or west of them. He further states that the spot is free of undergrowth, and that large amounts of quartzite chips and split quartz pebbles are in evidence.



Kangaroo  
track on  
Grinding  
Rock,  
Gellibrand.

No. 1  
Grinding  
Rock with  
ground axes  
placed in  
grooves to  
show method.  
*Photo:*  
F. Spry.



He first discovered these sites by persistent inquiries amongst local residents, to whom the existence of the grinding rocks had become almost legendary, and he was able to locate them during August of 1960.

The first rock, the one bridging the storm drain, measures approximately 15 feet in length by 13 feet wide and 5 feet 4 inches thick at the rising side of the hill. The surface of this rock slopes slightly downhill and bears fifty-eight grooves made in grinding the blanks. These grooves vary in size from 7 inches long,  $3\frac{1}{2}$  inches wide and  $\frac{3}{8}$  of an inch deep, to 18 inches long,  $7\frac{1}{2}$  inches wide and 4 inches deep. The greatest concentration of grooves is on the high side of the rock, where they are mostly in groups of two and three, the greatest number in any one group being five. Someone, presumably a white man, has carved

the initials M.D. on the middle of the rock. This must have been done a long time ago, as the initials are now quite worn by the elements and the feet of the cattle. These initials were cut into the rock with a sharp instrument.

At the lower end of the rock there is another engraving: it is the symbol generally referred to as "kangaroo track". It also appears to have been engraved a long time ago but has all the characteristics of genuine aboriginal work. It measures seven inches in overall length, the spurs being two and a half inches long. It has been grooved in the rock with a blunt instrument, the grooves varying in width and depth. At one end of one of the spurs there are slight indications of "pecking", as if this part had been chipped.

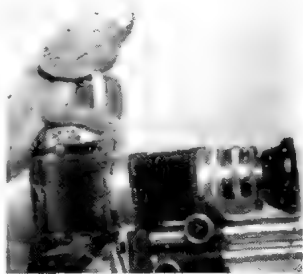
With the exception of Victoria, rock engravings have been

recorded from every state of Australia, including Tasmania. Many of these are magnificent and spectacular examples of aboriginal art. It may seem somewhat of an anti-climax that this, Victoria's first reported rock carving, should be a solitary kangaroo track; nevertheless the Gellibrand Rocks have the distinction of proving that rock carvings exist in Victoria.

The second rock is twenty-five yards west of the first one, on a gentle incline which has been cleared of timber and on which cattle graze. Its visible surface protrudes 3 feet 6 inches and measures 21 feet long by 9 feet wide. However, it is possibly much larger, as a layer of earth has accumulated on it, thereby hiding its real size, so measure-

ments can only be approximate. The visible grooves vary in size from 11 inches long,  $\frac{1}{4}$  inch wide and  $\frac{1}{8}$  inch deep, to 16 inches long, 6 inches wide and  $\frac{1}{2}$  inch deep. The grooves appear to be distributed all over the surface of the rock in groups of two and three.

I feel sure that when the Colac field naturalists clear the rock of its covering of earth more grooves will be found. It is also possible that other engravings will come to light; if so, these would add immensely to the understanding of inter-tribal contact and diffusion of art techniques and styles in Australia and assure for the Gellibrand Rocks the fame they deserve.



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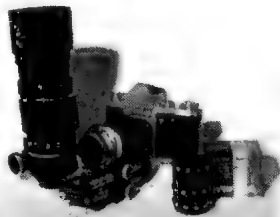
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### **Native Bird Visitors**

Mr. K. C. Halafoff is well known to readers of the *Victorian Naturalist* in connexion with his contributions to our knowledge of the lyrebirds of the Dandenong Ranges. A few years ago he moved to a new home, at Upper Ferntree Gully, and here are some of his comments on the native birds which appear about his garden:

In front of our place, we have planted only native trees and shrubs which belong to the mountains, and they have grown considerably over the past two years. Now it is becoming an ecological field of experiment, for forest birds, never to be seen in adjoining gardens, are visiting it more and more often. White-browed Scrub-wrens and Yellow Robins were the first to appear; then came honeyeaters, red-breasted robins

and willie-wagtails. One day recently, an adult ground thrush was hopping along the fence beneath some daisy-bushes; and later, a young ground-thrush took a bath in our bird pool and then dried itself under a young blackwood tree, sharing the lawn with several blackbirds. We have had native bird visitors before, to our bird table—thrushes, butcher-birds, kookaburras, magpies, mudlarks and rosellas—but these came only to eat the food placed there. However, the more recent forest visitors are obviously collecting food associated with native trees in the garden itself.

These notes by Mr. Halafoff draw attention to a situation which is familiar to those who grow native shrubs and trees in their gardens. Honeyeaters in particular soon learn to come when the nectar-producing species—especially grevilleas and banksias—are flowering.

One wonders how they find these tiny oases in the midst of what must be to them a vast vegetational desert. For instance, a large Pincushion Hakea (*H. laurina*) is flowering at present in the grounds of the Melbourne Teachers' College in Carlton, and wattle-birds of two species may be heard calling from it throughout the day.

An outstanding example of this ecology is provided by the native garden of the Hodges, at W Tree near Buchan. Grevilleas are a feature there, and their attendants include several species of honeyeater. Blue-wrens and scrub-wrens frequent the ground, nesting about the house, and there are many other avian visitors. The key point there however is that domestic cats are banned from the locality. And it is for this reason that shy little phascogales may be seen frisking about at night on the fly-wire window screens, catching moths that are attracted by the lighted rooms.

### Flowers Out of Season

These notes come from Miss Lorna Banfield, who is a member of the Ararat Field Naturalists Club as well as of the F.N.C.V.:

A visit to the Grampians, especially the less frequented areas, in any month of the year is usually rewarding to the botanist, but in the recent dry autumn the scarcity of flowers was noticeable. Red *Correa* and one or two wattles were flowering, but spikes of the popular *Epacris im-*

*pressa* were few and far between though this is often seen in abundance in April.

One shrub which excited the attention of visitors to the northern end of Victoria Valley in mid-April was the Yellow Hakea (*Hakea nodosa*). The small yellow flowers were shining so brightly in the sun that from a distance it was mistaken for a wattle. But when cars were halted to give those interested a close-up view, the tall shrubs were found to be the Yellow Hakea in full flower a month or two before time. The plants were five or six feet high and the long branches were crowded with small flowers in axillary clusters. *Thryptomene*, also, was already flowering in late autumn where cultivated in well-watered gardens.

On an Easter visit to a gully at the foot of Mount William we found another out-of-season flower, the Tiny Bladderwort (*Utricularia lateriflora*). On the side of a creek near a bank of coral-fern there were half a dozen of these tiny but interesting flowers, each minute, lilac bloom crowning an erect slender stem not more than two inches high. Usually the Tiny Bladderwort flowers at the same time as its big cousin, Fairy Aprons (*U. dichotoma*), from November to January.

These out-of-season flowers were probably a result of the abnormally dry autumn with temperatures correspondingly above average. And it was perhaps for the same reason that the Spreading Wattle (*Acacia diffusa*) began flowering in abundance along the Hume Highway in north-eastern Victoria, before the end of May.

The same wattle is now in full bloom along the Western Highway near Ararat, and one wonders if this precocious burst of blossom will result in its producing no flowers in spring.

# The Swamp Paper-bark

By E. C. F. BIRD\*

Swamp Paper-bark (*Melaleuca ericifolia* Smith), sometimes called Swamp Tea-tree, is a shrub or small tree of the *Myrtaceae*, that grows on river flood-plains, around lakes, and in low-lying coastal swamps. It ranges from southern Queensland through the coastal regions of New South Wales and Victoria to the south-eastern province of South Australia, and is found also in Tasmania and on islands in Bass Strait. It is generally the dominant species in dense *swamp scrub* communities (see Fig. 1), where numerous closely-spaced trunks rise to a thick canopy of evergreen foliage up to 30 feet above ground level. As little light penetrates this canopy, the ground flora is sparse. Wet conditions prevail, and when the land is not actually flooded water can be found a few inches below the surface. The litter of fallen twigs, leaves, and papery bark forms a superficial woody peat, bound together by an interlaced network of shallow roots and underlain by soft peaty clay or silt; the surface will often "quake" beneath the weight of a man.

Swamp scrub vegetation is extensive in the coastal districts of Gippsland, particularly around the Gippsland Lakes (see Fig. 2). Little is known of the ecology of *Melaleuca ericifolia*, but some of the factors that affect its growth may be deduced from study of its occurrence and

condition in the swamps bordering the Gippsland Lakes.

## General Ecology of Swamp Paper-bark

*Melaleuca ericifolia* is found on sites that are frequently flooded by rainwater or water overflowing from rivers and lakes. It can stand prolonged flooding, but sites that are *permanently* flooded are occupied instead by reed-swamp communities, with such plants as the Common Reed (*Phragmites communis*) and Reed Mace (*Typha angustifolia*). On shores of fresh or slightly brackish lakes (like Lake Wellington, the westernmost of the Gippsland Lakes) *Melaleuca ericifolia* dominates swamp scrub that is bordered towards the lake by a fringe of reeds. The significance of reed growth in these lakes was discussed in a previous article (Bird, 1961a), which deduced that a vegetation succession is in progress, swamp scrub colonizing the mudflats that are built up by reeds spreading into the lake. Swamp scrub cannot invade open water directly; the land has first to be prepared by sedimentation in a pioneering reed fringe. Where reeds have been cut away, or where they have died back in recent years, waves expose the roots and undercut the trunks of *Melaleuca ericifolia* (see Fig. 3), but where the reed fringe

\*University College, London. I am indebted to my colleague Dr. P. J. Newbould for advice and criticism concerning this work.





Figure 1:  
Swamp Scrub  
Vegetation.

persists, swamps continue to encroach on the lakes. It is clear that this vegetation plays an important part in the physiographic evolution of swamp land.

Farther away from the lake shore, swamp scrub becomes more open and varied, with Manuka (*Leptospermum scoparium*) a frequent associate of *Melaleuca ericifolia*, and such trees as Mahogany Gum (*Eucalyptus botryoides*), Manna Gum (*E. viminalis*) and the Forest Red Gum (*E. tereticornis*). It is possible that swamp scrub will eventually be succeeded by mixed eucalypt forest similar to that found on higher ground, but it is difficult to show that this succession actually takes place. Swamp scrub is dense vegetation that cannot readily be invaded by tree species, and it is likely to occupy a waterlogged site for a very long period, regenerating by growth of young *Melaleuca ericifolia* shrubs in clearings that form where old trees die and fall. Continuous accession of woody litter to the ground surface must gradually

build up land level until the site becomes dried and less frequently flooded, when species less tolerant of waterlogged conditions may colonize. Alternatively, bushfires during dry periods may destroy swamp scrub and permit invasion by other species; but if the site is subsequently flooded by fresh water the vegetation that revives after a fire consists of reeds and more *Melaleuca ericifolia* scrub. This is well displayed in the swamps south of Lake Wellington, where swamp scrub occasionally catches fire, but revives, together with reed-swamp vegetation, when the burnt sites become flooded.

Large areas formerly covered by swamp scrub in Gippsland have been cleared, drained and reclaimed as pasture land. Where sheep, cattle or goats are allowed to graze swamp scrub there is much less regeneration of *Melaleuca ericifolia*, and the scrub becomes progressively more open until finally it gives place to herbaceous grassland. Extensive reclamation has been carried out since 1885 in the

Koo-wee-rup Swamp area, north of Western Port Bay. This was formerly an area of lakes, reed-swamp and swamp scrub underlain by peat deposits, but drainage and clearance, followed by grazing and cultivation, resulted in subsidence of the land surface, in places by as much as 8 feet. Subsidence has been attributed to shrinkage, oxidation, fire-damage and wind-erosion of the drying peat (Hills, 1942) and the effects are similar to those that followed the drainage of the fenland of eastern England, a landscape very similar to that of the Koo-wee-rup district.

Salinity undoubtedly plays an important part in the ecology of *Melaleuca ericifolia*. It does not grow in the more saline parts of the Gippsland coastal swamps, which bear salt marsh vegetation in which the Beaded Glasswort (*Salicornia australis*) is prominent; and regeneration evi-

dently fails on sites where salinity has increased. Swamp scrub is often found at the back of inter-tidal salt marshes bordering estuaries and marine inlets. Patton (1942) described it in this situation behind salt marshes in Western Port Bay, where it occupies land slightly above normal high-tide level. He commented that *Melaleuca ericifolia* was essentially a freshwater species, but that it would endure brackish floods.

The boundary between swamp scrub and salt marsh vegetation is worth close inspection. On parts of the shore of Lake Reeve, for example, the swamp scrub boundary is advancing as young shrubs of *Melaleuca ericifolia* invade the salt marsh; just as they invade the back of reed-swamp around Lake Wellington. In such situations it appears that swamp scrub is a stage in natural vegetation succession follow-

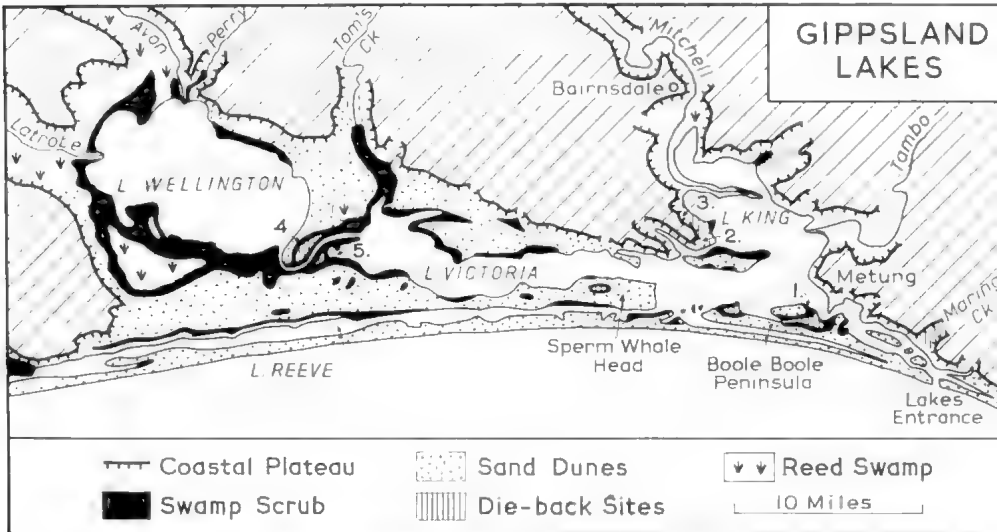


Figure 2: Gippsland Lakes area, showing swamp vegetation and location of five "die-back" sites.



Figure 1.  
Shoreline  
erosion of  
*Melaleuca  
ericifolia*.

ing salt marsh. Elsewhere the swamp scrub boundary has receded; there are no young *Melaleuca ericifolia* shrubs, and dead "sticks" standing in the salt marsh mark the former swamp scrub coverage. The edge of the surviving swamp scrub presents a truncated appearance, with paper-bark trunks exposed. It appears that a reversal of natural succession (retrogression) is in progress.

Swamp scrub has been partly replaced by salt marshes in several of the swamps near Lake King, Lake Victoria and McLennan's Strait, in the Gippsland Lakes region. "Forests" of dead sticks mark a former swamp scrub cover in what is now salt marsh (see Fig. 4). In addition to *Salicornia australis* the salt marshes include Noonflower (*Mesembryanthemum australe*), Shore Rush (*Juncus maritimus*) and Salt Grass (*Distichlis spicata*), and there are patches of bare clay "pan", some carpeted with mats of algae. Replacement of swamp scrub by salt marsh

vegetation is clearly a response to some kind of ecological change; in most cases the boundary of live swamp scrub is still receding and the salt marsh vegetation still spreading, so that investigation of ecological conditions across the swamp scrub salt marsh boundary may be expected to yield evidence of why *Melaleuca ericifolia* is dying back.

#### *Salinity measurements in the swamps*

Samples of swamp soils were collected during April, 1958. That was a dry month in Gippsland; rainfall at Bairnsdale was only 48 points, less than a quarter of the thirty-year average for this month. These were analysed for salinity content at the State Laboratories of the Department of Agriculture in Melbourne.\* Samples obtained from the top six inches of swamp soil in the Latrobe Valley gave salinities (as percentage of dry weight

\*I am grateful to Mr. J. K. M. Skene for advice and assistance with salinity measurements quoted in this article.

of soil) between 0.10% and 0.50%. Up to 1.20% salinity was found in samples from mud-flats near the back of lake-shore reed-swamp, and over 2% under swamp scrub in the low-lying country south of Lake Wellington. Soil salinity in salt marshes ranged up to more than 10%, and a figure of 18% was obtained from topsoil in a salt marsh "pan".

The salt content of swamp soils may originate in three ways. Swamps bordering the Gippsland Lakes are frequently flooded by lake water, which is relatively fresh when the floods are due to heavy rainfall or river inflow, but more brackish when water is driven into the swamps by a strong wind blowing across the lake. During droughts the lakes become more saline, fresh water lost by evaporation being replaced by sea water drawn in through the artificial opening at Lakes Entrance. Brackish water driven into the swamps fills slight hollows and depressions, and when lake level subsides these remain flooded until the water evaporates. In this way, shallow depressions in swamp land receive repeated accessions of salt, and on many of the clay pans crystals of salt glisten on the surface.

A second source of salt is the airborne or "cyclic" salt derived from sea spray, carried inland, and brought down in rainfall (Jennings, 1955). This produces an accession of salt to the whole coastal region, and is responsible for the slight salinity (rarely more than 0.01%) detectable in rivers. On freely-drained sites it is soon dispersed, but in low-

lying swamp land, and particularly in depressions, it accumulates.

A third possibility is that salt is raised from the subsoil by capillary action when the surface dries out in summer. Leeper (1957) has quoted evidence that the upward movement of water from a moist subsoil to a dried topsoil is "so slow that for most practical purposes it may be ignored". Repeated drying-out of the swamp surface could result in elevation of salt, but there is no evidence that deposits of salt exist in the subsoil beneath these swamps. Salinity diminishes downwards, and at depth is no greater beneath salt marsh or clay pan than beneath swamp scrub or reclaimed pastureland. A salinity profile beneath clay pan gave 11.65% at the surface, 6.54% at 6 inches, 0.85% at 12 inches, 0.45% at 2 feet and 0.06% at 6 feet, figures which suggest that salt arrives on the surface from external sources, brackish floods or aeolian accessions, and spreads downwards into the swamp soil.

#### *Die-back of Swamp Paper-bark*

Swamp Paper-bark can be destroyed by deliberate clearance, grazing, fire, or attack by pathogenic organisms (i.e., plant diseases), but none of these explains adequately the features and distribution of die-back in the swamps around the Gippsland Lakes. All may have contributed to the driving-back of swamp scrub, but the primary cause of die-back is increasing salinity in the swamp soils.

Die-back has occurred near Lakes Entrance, notably in the

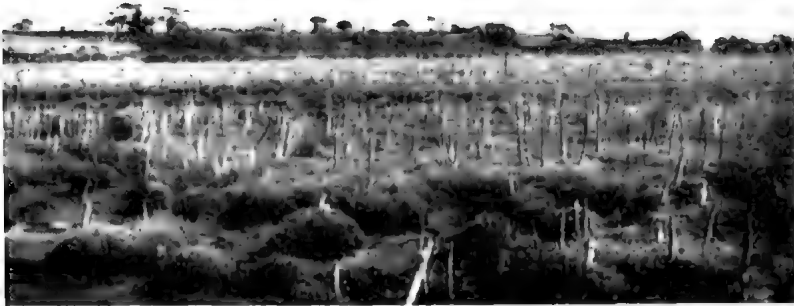


Figure 4

Dead stick-mark former swamp scrub cover in salt marsh at Fullarton's Swamp, north of Paynesville.

Maringa Creek valley (Bird, 1961b); in swamps on the Boole Boole peninsula, south of Metung; on the north shore of Raymond Island; on Sperm Whale Head; and in swamps on either side of McLennan's Strait. At the time of the Coastal Surveys by Wilkinson and Smythe between 1846 and 1851 these areas had a more extensive scrub cover, although there were some areas of low marsh vegetation; on the Boole Boole peninsula, for example, reed-swamp or salt marsh vegetation fringed a residual lagoon. Swamp scrub has not suffered from die-back around Lake Wellington or along rivers and creeks away from Lakes Entrance; it grows very well along Tom's Creek, which enters the western end of Lake Victoria. The distribution of die-back has much in common with the pattern of disappearance of the former lake-shore reed-fringe around the Gippsland Lakes (Bird, 1961a); it is more serious towards Lakes Entrance, *i.e.*, towards the point where sea water enters the lakes. The pattern of salinity in these lakes is such that water spreading on to

the swamps is always likely to be more brackish near Lakes Entrance than towards Lake Wellington. For this reason, salt accumulation in swamp soils is likely to be greater in the eastern swamps than in those to the west.

Correlation of die-back with salinity is confirmed in detail by salinity measurements of swamp soil on either side of the swamp scrub salt marsh boundary. Table 1 summarizes results obtained from soil samples in five swamps (see Fig. 2) where die-back has taken place. *Melaleuca ericifolia* has a shallow root-system, and salinity in the upper layers of the swamp is likely to be significant. At each site the topsoil (0-6 ins.) and the subsoil (6-12 ins. and at 24 ins.) were sampled from ten soil pits beneath healthy growing *Melaleuca ericifolia* and ten in the adjacent salt marsh, amid the dead sticks of former swamp scrub. Samples from each horizon were compounded before analysis to rule out local variations. The results showed *Melaleuca ericifolia* still growing where topsoil salinity was 2.49%

and subsoil (6-12 ins.) salinity 2.62%; die-back had occurred where topsoil salinity was more than 4.01% and subsoil salinity at least 3%.

On some sites the swamp scrub boundary showed signs of recession and re-advance (see Fig. 5), cycles that may well reflect climatic conditions over the past few years. In dry years, swamp soil salinity is likely to be relatively high, but in wet years much salt may be washed out of the soil, particularly towards the margins of swamps, away from furrows and depressions. Where young *Melaleuca ericifolia* shrubs were recolonizing amid sticks of their dead predecessors, topsoil salinity was less than 2.72%. The minimum topsoil salinity found in any die-back area was 2.65%, but it is possible that this had been reduced by rainwater leaching after the shrubs had died.

In general terms the limit of

salinity tolerance of *Melaleuca ericifolia* in these swamps must be in the range 2.50%-3%. Other species of *Melaleuca* have different ranges; for example the Salt-water Tea-tree (*M. halimifolia*) in the coastal swamps of South Australia, which can apparently survive sea floods. Nothing is known of the physiological processes which set a limit to the salinity tolerance of *Melaleuca ericifolia*.

#### *Evidence from Taylor's Swamp*

Evidence of the evolution of swamp scrub vegetation can sometimes be found by investigating deposits that lie just beneath the swamp surface. Taylor's Swamp is a branch of Boole Boole Swamp which repeats on a small scale the vegetation zones of the larger swamp area. A narrow corridor between scrub-covered dune ridges is bordered by *Melaleuca ericifolia* scrub, a zone of salt marsh (the outer

TABLE 1

The salinity tolerance of *Melaleuca ericifolia*  
(Salinity as % dry weight of samples)

- Site 1. Boole Boole Peninsula, south of Metung.
- Site 2. Swamp north of Paynesville.
- Site 3. Fullarton's Swamp, near Paynesville.
- Site 4. Morley Swamp, west of McLennan's Strait.
- Site 5. Seacombe Swamp, east of McLennan's Strait.

(See Fig. 2 for site locations)

#### GROUP I. Beneath healthy *Melaleuca ericifolia* scrub

Depth	Site 1	Site 2	Site 3	Site 4	Site 5
0-6 ins. . . . .	0.52	0.17	0.54	2.49	2.33
6-12 ins. . . . .	0.71	0.09	0.16	2.61	2.62
at 24 ins. . . . .	0.59	0.12	0.25	0.36	0.47

#### GROUP II. In salt marsh on swamp scrub die-back area

Depth	Site 1	Site 2	Site 3	Site 4	Site 5
0-6 ins. . . . .	5.66	6.80	10.75	8.09	4.01
6-12 ins. . . . .	2.51	5.37	8.64	3.75	3.00
at 24 ins. . . . .	0.52	0.92	1.30	5.90	0.29

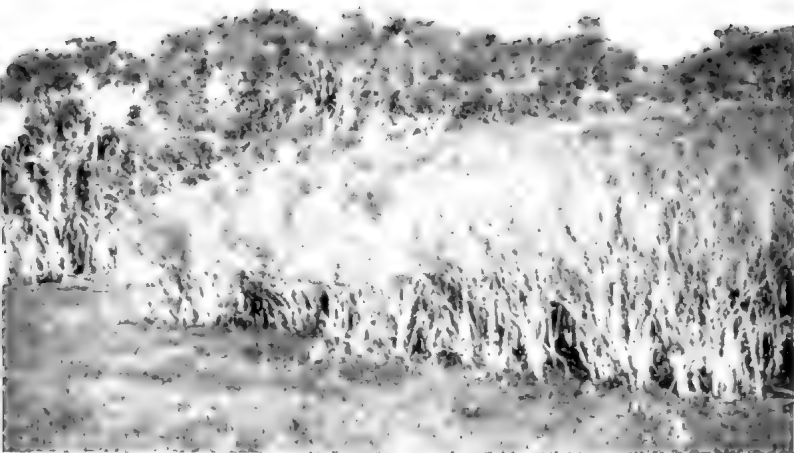


Figure 5:  
Boundary  
between  
swamp scrub  
and salt  
marsh. The  
lower scrub  
advanced  
after the older  
scrub  
boundary  
receded, and  
now the  
boundary is  
receding  
again.

part dominated by *Juncus maritimus*, the inner by *Salicornia australis*), and a central clay pan (see Fig. 6). Measurements showed that topsoil salinity here rose from 0.52% beneath swamp scrub to 5.66% in the *Juncus* marsh (where there are "die-back" sticks marking former swamp scrub), 8.84% in the *Salicornia* marsh and 10.41% in the central clay pan.

Borings show that swamp deposits here occupy a furrow underlain by sand (see Fig. 6, AB). It must once have been an arm of the lake, for it is lined with silt and clay with *Phragmites* remains, and topped by brown woody peat identical with that found beneath *Melaleuca ericifolia* scrub at the margins. The sequence indicates silting of water occupied first by reeds, then by swamp scrub; in other words the encroachment succession seen on the shores of Lake Wellington at the present time. Existing vegetation bears little relation to this sequence, for *Phragmites* does not grow

on or around this swamp, its nearest station being more than two miles away on the shore of Bunga Arm. Swamp scrub must have covered the whole of Taylor's Swamp to produce the woody peat horizon, but now it is confined to the less saline margins, and salt marsh and clay pan have taken its place in the centre.

Central depressions are doubtless due to the fact that these swamps have been built up by vegetation encroachment on open water areas. Reed-swamp spread in from the margins, and the succeeding swamp scrub did not arrive at the centre until a relatively late stage. Salinity increase must have begun when brackish floods invaded these central depressions, precipitating salt as they evaporated. Swamp scrub was thus killed, and the ground layer of woody peat exposed. Drying-out and shrinkage of exposed peat leads to subsidence, which enlarges the depression, preparing the way for expansion of the salt-

accumulating area and hence for further recession of the swamp scrub boundary. Initiation of this cumulative salinity effect requires an increase in the salinity of flood waters, for they cannot have been as brackish when reed-swamp and swamp scrub were still encroaching. Die-back of swamp scrub, like

disappearance of much of the lake-shore reed-fringe, suggests that the Gippsland Lakes have become more saline in the last few decades.

### Conclusions

The fact that areas shown as scrub on maps made just over a century ago are now under salt

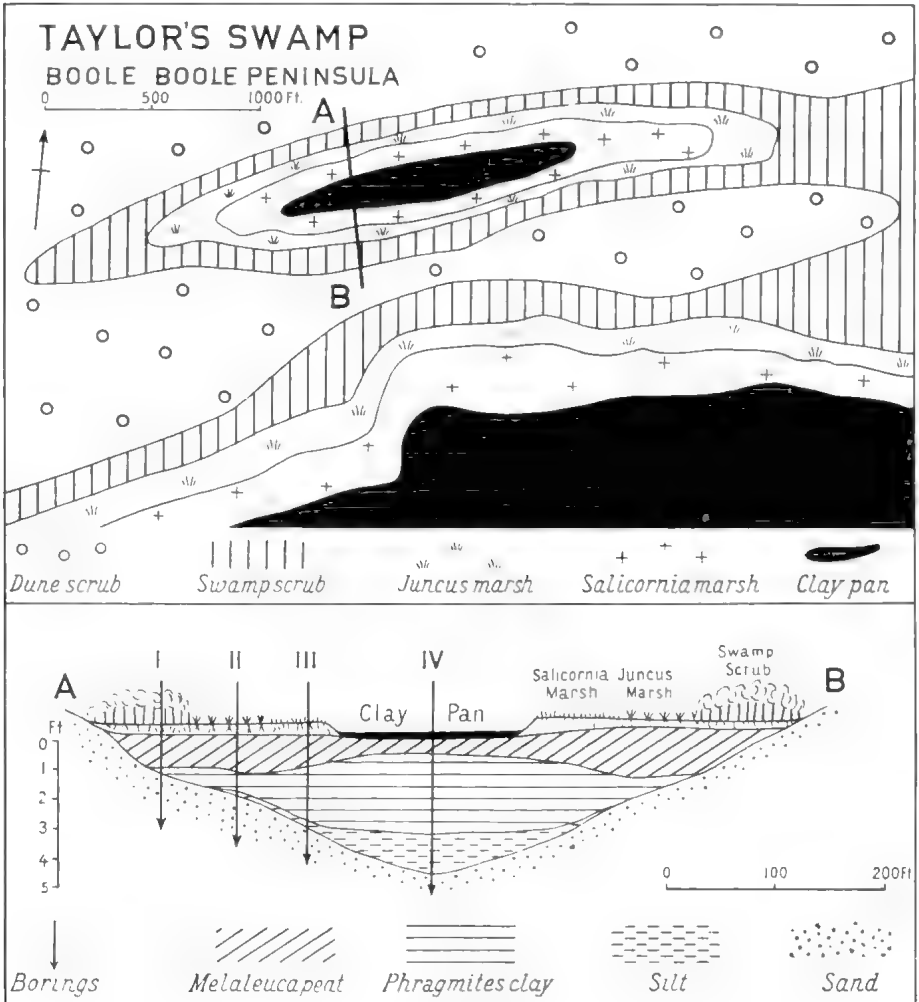


Figure 6: Taylor's Swamp.



marsh, with many dead sticks of Swamp Paper-bark still standing, indicates that die-back of *Melaleuca ericifolia* is a relatively recent phenomenon. Indeed, local residents agree that it has taken place "within living memory". The features and distribution of die-back suggest that an increase of salinity in swamp soils may be the explanation, and as the boundary between swamp scrub and salt marsh occurs where salinity of the topsoil lies between 2.5% and 3% it is inferred that *Melaleuca ericifolia* has been killed by salt-accumulation in these swamps.

Yet swamp scrub was formerly able to spread across these swamps, and in fact played an important part in building them up. Swamp salinity must have increased during the past century. The most likely explanation of this increase is the development of higher salinity in the lakes after the cutting of an artificial entrance in 1889. Since then, lake water flooding on to the eastern swamps has been generally more saline, and where

it has accumulated and evaporated in slight depressions, salt has become concentrated in the topsoil, and vegetation changes have ensued. No doubt salt marshes existed in the eastern parts of the Gippsland Lakes region before 1889, for these lakes were never completely fresh; towards the old natural outlet (east of the present entrance) they were probably quite brackish. Nevertheless, die-back of swamp scrub and disappearance of much of the former lake-shore reed-fringe are responses to a change in salinity conditions, regarded as a consequence of the cutting of an artificial entrance to the Gippsland Lakes.

#### REFERENCES

- Bird, E. C. F. (1961a). *Vict. Nat.* 77: 262-68.  
Bird, E. C. F. (1961b), *Vict. Nat.* 78: 137-46.  
Hills, E. S. (1942). *Proc. Roy. Soc. Victoria* 54: 79-90.  
Jennings, J. N. (1955). *Geographical Review* 45: 277-79.  
Leeper, G. W. (1957). *Introduction to Soil Science*; 3rd edition.  
Patton, R. T. (1942). *Proc. Roy. Soc. Victoria* 54: 131-44.

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## Notice to Contributors

In the past, a great deal of sub-editing has been done, both by the editor and by persons assisting him, but this service can no longer be given with the promptness which has usually been managed in the past.

Material for publication should be typed, preferably on foolscap-sized plain paper, *double-spaced*, with plenty of margin on the left side. Abbreviations should not be used, and there should be no underlining of headings or other items in the manuscript. The

editor does all necessary annotations of this kind, in conformity with a standard set of conventions used by printers.

In general, contributors should familiarize themselves with the format used in the *Naturalist* (in writing dates and figures, use of quotation marks, indication of references, etc.). Manuscripts conforming to this pattern need very little editorial attention and can therefore be put into the printers' hands immediately.

## “Victorian Year Book”

As from No. 75, 1961 (covering the years 1958 to 1960), the Victorian Year Book has been issued in a new and attractive format, liberally illustrated—aimed at providing interest for the general reader whilst retaining a background of authoritative statistics. Students at Leaving and Matriculation level will find the Year Book of particular value. Each year a number of special articles will be included, with periodic revisions as required.

Of considerable interest to field naturalists and other students of natural history is the first section: Physical Environment, which in the 1962 issue (No. 76) features articles on the land flora of Victoria, mountain regions, climate, and general geography of the state. The article on “Land Flora of Victoria” was prepared by Mr. J. H. Willis of the National Herbarium, a prominent member of the Field Naturalists Club of Victoria. It deals, firstly, with the history of investigations into Victorian land flora, with particular mention of the work of Baron von Mueller, carried on very largely after his death by naturalists who described their findings in the *Victorian Naturalist*—a fact of which this club may well be proud.

This is followed by a detailed description on an ecological basis of the flora of the ten vegetation provinces into which the state is divided for the purposes of this study. A good map is provided, and the article is excellently illustrated with a selection of Mr. H. T. Reeves's well-known photographs of Victorian flora.

As a special article in the 1961 issue dealt with the geology of Victoria, and one on mammals is planned for 1963, the Year Book will, over the years, achieve a comprehensive coverage of Victorian natural history. Material for other articles dealing with the physical environment of the state has been supplied by: Department of Crown Lands and Survey, Forests Commission, Soil Conservation Authority, State Rivers and Water Supply Commission, Tourist

Development Authority, Victorian Railways, Commonwealth Bureau of Meteorology, and the Departments of Botany, Geology and Geography of the University of Melbourne.

*The Victorian Year Book*, published by the Commonwealth Bureau of Census and Statistics, Victorian Office, 8 Elizabeth Street, Melbourne, C.I. Price, 15/- (postage 3/-).

—MARIE E. ARGO

## Geelong F.N. Club Syllabus

Members of the F.N.C.V. and of other country clubs who visit Geelong are invited to participate in the local club's meetings and excursions. Here is the syllabus for the remainder of the Geelong club's year.

**Excursions**—Held monthly, on Sundays, leaving G.P.O., Geelong, at 9 a.m.:

- July 15—Woolbrook, Teesdale.
- August 19—You Yangs.
- September 16—Anglesea.
- October 21—Steiglitz.
- November 18—Dog Rocks.
- February 17—Little River and Lake Borrie.
- March 17—Queenscliff and Point Lonsdale.

**Meetings**—On first Tuesday of each month, in the Reformed Presbyterian Church Hall, Fenwick Street, commencing 8 p.m.:

- August 7—Symposium, “You Yangs”.
- September 4—“Enchanting Flowers of our State” (J. H. Willis).
- October 2—“Volcanoes” (Films).
- November 6—“Underwater Exploration” (L. Bismire).
- December 4—Address by J. Bécher-vaise.
- February 5—Address by R. Golding.
- March 5—“Australian Birds and Trees” (E. S. Hanks).
- April 2—Annual Meeting, Members' Night.

# Field Naturalists Clubs of Victoria

Annual General Meeting—  
June 11, 1962

A capacity audience attended. The retiring president, Mr. D. E. McInnes, presided at the beginning of the meeting, and welcomed a visitor from England, Mr. Jephcott.

A motion, prepared by F.N.C.V. council, expressing apprehension concerning the proposed British Museum expedition to collect birds and eggs in Australia, was read. In it rigid controls were suggested. A lively discussion ensued, and the motion was carried with only one dissentient, Mr. N. A. Wakefield expressed faith in the ability of the Fisheries and Wildlife Department to control the taking of specimens, but supported the motion.

The annual report, published in the *Naturalist*, was presented by the secretary, Mr. E. H. Coghill, and adopted. The treasurer, Mr. A. G. Hooke, commenting on the published financial statement and balance sheet, pointed out the surplus for the year, the greatly increased membership and the expanding circulation of the *Naturalist*, due to the editor, Mr. Wakefield. The honorary auditors, Mr. W. P. J. Evans and Mr. R. Davidson, were thanked for their services.

Mr. McInnes introduced the new president, Mr. M. K. Houghton, who took the chair. Mr. W. C. Woollard, moving a vote of thanks to the retiring officers, spoke of the fine work Mr. McInnes had done for the club and thanked the members of the council. This was supported by Mr. E. S. Hanks and carried with acclamation.

Office-bearers for 1962 were elected as follows:

*President:* Mr. M. K. Houghton.

*Vice-Presidents:* Mr. E. Byrne, Mr. J. H. Quirk.

*Secretary:* Mr. E. H. Coghill.

*Assistant Secretary:* Mr. J. R. Hudson.

*Treasurer:* Mr. A. G. Hooke.

*Assistant Treasurer:* Miss M. F. Hutchart.

*Editor:* Mr. N. A. Wakefield.

*Librarian:* Miss M. E. Argo.

*Assistant Librarian:* Mr. J. J. Meade.

*Excursion Secretary:* Miss M. Allender.

*Council:* Mr. J. R. Garnet, Dr. W. Gerwe, Mr. E. R. Allan, Mr. R. R. Dodds, Mr. A. J. H. Fairhall.

*Honorary Auditor:* Mr. W. P. J. Evans.

Mr. J. H. Willis gave an illustrated talk on "The Call of Western Scenes and Flowers". The early history of Western Australian contacts with navigators, beginning with the Dutch in the early Seventeenth Century, was outlined. He stressed the unique nature of the Australian flora on country undisturbed since the mid-Tertiary period and thus almost the oldest land above the sea in the world.

Beautiful colour slides traced the contrasts from the arid Nullarbor to the granite rock pools (with ghosts of the Diprotodon) and to the Karri forests of the south-west. Mr. Willis and his travelling companion, Mr. J. M. Wilson, on Mount Lesueur, found some plants that were new records for that district, and found and photographed many lovely species on East Mount Barren and the peaks of the Stirling Range. The wealth of beautiful and diverse flowers shown by Mr. Willis provided a rich experience, spiced by his enthusiasm and encyclopaedic knowledge.

An application from the Ringwood F.N.C. for affiliation with the F.N.C.V. was received.

Mr. E. H. Coghill exhibited a Tachnid fly that parasitizes other insects, and moths that lurked in great numbers under cover at Beechworth. Mrs. Webb-Ware brought *Botrychium australe* (Austral Moonwort) and a fossilized stem from Emu Plain on Nunning Plateau; Mrs. D. S. Lewis, a fruiting spray of Illawarra Fig (*Ficus vahipinosa*); Mr. E. S. Hanks, a piece of the Western Beefwood tree (*Grevillea striata*) that was inscribed by Sturt in 1845 at Poole's grave, and a piece of bark from the Coolabah tree (*Eucalyptus microtheca*) from Cooper Creek—the famous Burke and Wills "DIG" tree.

Mr. R. McQueen showed minute chalcid wasps from gall-producing male coccids (*Aptomorphus*) and their characteristic galls. Mr. I. Hammet brought correae from Mount Slide and Brisbane Ranges, Mann's Correa, *Thryptomene stenophylla*, *Hakea varia* and a *Dampiera*; Mr. A. J. Swaby, *Correa alba*, *Melaleuca steedmani*, Mann's Correa, *Correa backhousiana* and *C. lawrenciana*. Mr. R. L. Condon showed a minute freshwater fish from a Murray billabong.

Twenty-two new members whose nominations appeared in the June *Naturalist* were elected.

#### Marine Biology and Entomology Group —May 7, 1962

Mr. E. H. Coghill took the chair, and sixteen members were present.

Miss V. Balaam gave a talk on scale insects, with detailed descriptions of various species. Members were surprised at the number of kinds in Australia.

Mr. P. Gentry exhibited a moth, *Parapomyz*, the larvae of which are aquatic. He pointed out that in this respect it is unique in Australia, and a live larva was exhibited microscopically under low power. He showed also another species of aquatic larva, not yet identified. Mr. Coghill exhibited a leaf-hopper, taken at Easter-time during the Beechworth trip.

Mr. D. E. McInnes spoke about the nature show, to be held in September, and suggested that two sub-committees be formed within the group, to work out details of exhibits in entomology and in marine biology. This was done, and the respective sub-committees decided to meet within the following fortnight.

#### Microscopical Group—April 18, 1962

Fifteen members were at this meeting, which was chaired by Mr. E. LeMaistre. Mr. W. Woollard had a communication from the Wool Research Bureau regarding the holding of the June meeting at its laboratories; the offer was accepted.

The speaker for the night was Mr. D. McInnes and the subject was "Looking Through Rocks". The use of the polaroid microscope constituted a very interesting subject in itself, and Mr. McInnes decided to devote

the evening to the preparation of rock sections for viewing under the microscope using ordinary light. His offer to continue in the May meeting on the subject of polaroid microscopy was enthusiastically received.

Mr. McInnes demonstrated most ably how, with a few odds and ends from the kitchen, suitable pieces of rock are ground on one face, using various grades of silicon carbide on some glass squares; and finally polished with Bon Ami. As an alternative method he used some flat grinding and polishing stones. After cementing the polished face to a microscope slide the other face is treated likewise. Finally Canada balsam and a cover were applied. Although everything appeared very simple, the sections when viewed under various forms of illumination, including dark ground, showed up beautifully.

Slides exhibited included Foraminifera from Keilor, flow structure, tourmaline crystal, and a basalt cavity.

#### Microscopical Group—May 16, 1962

Mr. D. McInnes then gave the second part of his talk, "Looking through Rocks", in which he explained how the polaroid microscope works and why some rocks produce "pretty colours". He demonstrated how, when a calcite crystal is placed under the microscope and a pencil of light passed through it from below, two images appear in the eye-piece, one of which is plane polarized light. The polaroid microscope makes use of two such specially cut crystals or Nicol prisms or polaroid discs. If light is passed through birefringent rock sections the velocity of the light is affected and colour is produced. The colour is specific for different minerals but is affected by the thickness of the section. Thus when a quartz section is about 30 microns thick it should exhibit a pale yellow colour.

Ten microscopes were in use showing some very colourful effects produced by different mineral sections under both plane polarized light and crossed Nicol prisms.

Leaflets of the Society of Limnology and a copy of the History of the Ray Society were received and discussed.

## Botany Group—May 10, 1962

A very good attendance of members enjoyed an excellent talk on "Floral Structures" by Dr. Margaret Blackwood, of the Botany School, University of Melbourne. This was the second of two lectures by Dr. Blackwood, the first being on "Vascular Systems", given at the previous meeting. To illustrate the structures, the lecturer used large models of some typical flowers, such as buttercup, dead-nettle and lily, which were able to be taken apart and re-assembled. The series of whorls was brought out clearly: the corolla (petals) and calyx (sepals) of the perianth, and the androecium (stamens) and gynaecium (carpels) as the essential parts of the flower. The correct method of setting out the

floral structure of any genus in a numerical formula and also as a floral diagram was clearly explained.

Dr. Blackwood's delightful touches of humour in dealing with a rather technical subject were much appreciated by the members, who carried the vote of thanks which was moved by Mr. M. Houghton.

Miss M. Lester showed some colour slides of eucalypt regeneration in the Dandenongs since the recent bush fires, illustrating the more rapid recovery of some species than others.

Arrangements were made for an excursion to two nurseries specializing in Australian plants and to Cheltenham Park, where many native species have been planted in an effort to make a worthwhile sanctuary for our local flora.

## F.N.C.V. Library Report, 1961-62

Considerable progress has been achieved in reorganization of the library and extension of facilities during the past year. Unfortunately, the honorary assistant librarian (Miss S. Apted) was forced to relinquish the position after only three months in office; in the meantime, Mrs. Y. Gleeson and Miss V. Balaam have provided very valuable assistance.

Deputy librarians, who are responsible for the provision of library facilities at study group meetings, have been appointed for 1962-63 as follows: Botany Group—Mr. J. A. Baines; Geology Group—Mr. J. J. Meade; Microscopical Group—Mr. W. J. Genery; Fauna Survey Group—Mr. D. Woodruff. Requests by group members for new books and periodicals are made to the deputy librarian concerned, who then forwards the requests to the club librarian for consideration by council. Other members forward their requests direct to the club librarian.

Increasing use is being made of the library facilities, particularly as regards loans of books and periodicals, at meetings and to country and interstate members.

A large number of books and periodicals presented to the library has been gratefully acknowledged by personal communication to the donors, and further acknowledgement is made

in this report. At present the library stock comprises approximately 1000 books and 700 bound volumes of periodicals, together with a large collection of unbound periodicals, reports, pamphlets and separates. Much of the collection still requires processing, including accessioning, cataloguing and classifying under the Universal Decimal System now being installed. During the past year, 80 books have been processed; of these, 22 were purchased, 43 were gifts, and 15 were already in the library but required processing.

About 40 Australian and overseas periodicals are received regularly, also a large number of reports and pamphlets; these are received mainly on exchange. Expenditure on books and periodicals was just over £30, and the cost of binding several sets of periodicals was almost £100. Other library expenditure totalled about £20.

Once again, the library was directly responsible for the organizing of the publications stands at the 1961 F.N.C.V. nature show and the 1962 Moomba nature show.

The assistance and advice of council members and club members generally during the past year has been greatly appreciated.

—MARIE E. ARCO  
Honorary Librarian

## F.N.C.V. DIARY OF COMING EVENTS

### GENERAL MEETING

**Monday, July 9, 1962**—At the National Herbarium, The Domain, South Yarra, commencing at 8 p.m. sharp.

1. Minutes, Reports, Announcements, Correspondence.
2. Subject for Evening: "F.N.C.V. Excursion to Beechworth", by Members.
3. Election of Members:

#### *Ordinary Members:*

- Miss Aldyth A. Anderson, 43 Foam Street, Elwood (J. O. Annear/D. R. Robinson).  
Miss Nancy H. Carstairs, "Padua", 13 Montclair Avenue, North Balwyn (E. H. Coghill/J. R. Hudson).  
Mr. Robert Counihan, 225 Nepean Highway, Gardenvale (J. M. Woollard/E. H. Coghill).  
Mr. Norman France, 6 Iona Street, Black Rock (E. H. Coghill/J. R. Hudson).  
Mr. Harry S. Parris, 100 Riverdale Road, Hawthorn (H. Stewart/A. C. Hooke).

#### *Joint Ordinary Members:*

- Mrs. Norman France, 6 Iona Street, Black Rock (E. H. Coghill/J. R. Hudson).  
Miss Shirley H. Luke, 4 Polo Parade, Caulfield (M. Alexander/A. G. Hooke).

#### *Country Members:*

- Mr. Ernest H. Brownlie, Cann River, via Orbost (N. A. Wakefield/E. H. Coghill).  
Mr. Henry J. Eckert, Langhorne's Creek, South Australia (E. H. Coghill/J. R. Hudson).  
Mr. Robert C. Jephcott, 14 Laura Street, Surrey Hills (J. M. Woollard/J. A. Woollard).  
Mr. Robert James Tonsen, 6 Park Street, WallSEND, N.S.W. (E. H. Coghill/J. R. Hudson).

#### *Junior Members:*

- William I. McCarthy, 12 Sheffield Street, South Caulfield (M. Alexander/E. H. Coghill).  
Robert H. Phenezy, Mallacoota (G. H. Taylor/R. G. Taylor).  
Frederick J. Rossignoli, 5 Arama Street, North Balwyn (J. Wallis/J. Wombey).

4. Nominations for Membership.
5. General Business.
6. Nature Notes and Exhibits.
7. Conversazione.

**Monday, August 13, 1962**—"Maria Island", by N. A. Wakefield.

(Note: There will be an extraordinary general meeting, at 7.55 p.m. on August 13, to consider the application by the Ringwood Field Naturalists Club for affiliation with the F.N.C.V.)

### F.N.C.V. EXCURSIONS

**Sunday, July 15**—Healesville Sanctuary. The coach will leave Batman Avenue at 10 a.m. Bookings with the excursion secretary. Fare, 13/-. Bring two meals.

### GROUP MEETINGS, ETC.

(8 p.m. at National Herbarium unless otherwise stated.)

**Thursday, July 12**—Botany Group. "Myrtaceae", by Mr. M. K. Houghton.

**Wednesday, July 18**—Microscopical Group. "The Draw of the Threads", by Mr. R. Hudson of the Animal Health Research Section, C.S.I.R.O.

**Friday, July 27**—Hawthorn Junior Club (meets in Hawthorn Town Hall at 8 p.m.). "The Honey Eaters", by Mrs. Kath Hough. Colour slides, birds, nests.

**Wednesday, August 1**—Geology Group. "Southern Tablelands of New South Wales" (illustrated), by Miss P. Carolan. (Meeting to commence at 7.45 p.m.)

**Thursday, August 2**—Fauna Survey Group. General Business. (Meeting to be at Fisheries and Wildlife Department, commencing 7.30 p.m.)

(Note: There will be no meeting in August of the Entomology and Marine Biology Group.)

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by post as a periodical*

2/6

# It's Nature Show Time Again!

On Monday, Tuesday and Wednesday, September 10, 11 and 12, the Lower Melbourne Town Hall will once again be the scene of many interesting and varied exhibits of natural history, and a display of wonderful wildflowers. The Society for Growing Australian Plants is again co-operating with the F.N.C.V. and will present another magnificent show of garden-grown wildflowers and shrubs from all over Australia; this promises to be even better than last year's effort, if that is possible.

The main display by the F.N.C.V. will be an extensive scene depicting "Birds of the Swamps", with emphasis on the preservation of these birds; and the printed leaflet will deal with this aspect.

Living exhibits will include snakes and lizards as well as spiders. The geology exhibit will feature fossils from within a hundred miles of Melbourne and the origins of lava flows near Melbourne. The botany group is staging a colourful exhibit featuring the floral emblems of all states. The Hawthorn Junior Club will show how to polish ordinary pebbles and will exhibit some of the very attractive finished specimens. The marine biology exhibit will illustrate tidal zones, and other marine displays will include live coral — not from the Barrier Reef but Port Phillip Bay. There will also be an interesting entomological exhibit.

A special feature will be *FREE* showings of some splendid nature films at frequent intervals throughout the show. Frog song recordings by Dr. M. J. Littlejohn will be played.

The show will be opened officially on Monday, September 10, at 2 p.m.

Members of the show committee have done much work in the designing of the show but they cannot look after it by themselves — they need help. Club members will be asked at the August meeting to fill in forms indicating when they will be able to help with the setting up and supervision of the exhibition.

The success of the show will depend to a large extent on the co-operation of club members in providing a team of helpers. Members are also asked to publicize the show as widely as they can, and so help to assure that the greatest number of persons, both adults and children, come to it and learn something of the wonders of our Australian bushland and its unique inhabitants.





# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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The Leopard Seal (*Hydrurga leptonyx*) is normally an antarctic and subantarctic animal, but occasionally one visits Australian waters. This specimen was photographed by John Béchervaise, on the beach at Barwon Heads, Victoria, in October 1935.

## In the Bleak Mid-winter

by JOHN BECHERVAISE

### *Heard Island,*

*Monday, May 18, 1953*

It was discovered today that the last of the three Light-mantled Sooty Albatross chicks on Mount Andrée had taken flight. The nest was buried in snow. There is a poem in which the image of a bird's nest filled with snow symbolizes dereliction and sadness; here, it just means that the last of last summer's fledglings has given up its place to the elements. Only temporarily will the ancestral rock-ledge be unoccupied; in six months the pedestalled nest of hard mud and guano will probably hold another egg. When we first arrived, the chicks, both on Mount Andrée and amongst the azorella of the Laurens Peninsula, were fluffed out with silver down. The changeover of A.N.A.R. Expedition men always takes place in the midst of the albatrosses' summer family season so that no one observer, unless he spends two years on the island, may have the chance to follow through the whole sequence.

*Thursday, June 25*

The magic of a calm moonlit night on Heard Island is hard to describe; Big Ben is a glorious dome of silver scalloped by intensely black ravines three thousand feet long. There is nothing hidden; yet a mysterious unreality strikes the senses.

Snowy arêtes many miles away are clean-cut against the stars and the moonlight gathers almost blindingly wherever it may. Such nights seldom last until dawn.

There were a hundred Leopard Seals gathered by moonlight round Corinthian Bay tonight, making the object of a pleasant brief excursion over the dry, squeaking snow. It seems that the big grey Phocidae favour the midnight hours for hauling out of the water, for all the maximum counts have been obtained at such times; the dusk census is generally unimpressive. Gwynn says that the beach population of Leopards will probably increase for another couple of months, but dwindle almost to nothing in the summer. At present Leopard Seal statistics are keeping him busy most nights.<sup>1</sup>

*Friday, July 17*

I made a sleety, pre-dawn trek to West Bay, to change magnetic traces; a featureless discomfort except for the sight of a much scarred Leopard, marked perhaps from a killer-whale attack; but, on the way back, there was exhilaration in the journey. The icy squalls ceased and broken clouds re-

1. Two papers, ANARE Interim Reports, Nos. 3 and 16, *The Status of the Leopard Seal at Heard Island and Macquarie Island, 1948-1950*, by A. M. Gwynn, and *The Leopard Seal at Heard Island, 1951-54*, by K. G. Brown, provide a great deal of statistical and other information on Leopard Seals.



The Dominican Gull (*Larus dominicanus*), an adult bird. On the extreme left is a profile view of the bill of a Sheath-bill (*Chionis minor nasicornis*)

ANARE Photo:  
John Béchervaise.

placed the gray pall. Flocks of Dominican Gulls (*Larus dominicanus* Lichtenstein) wheeled and cried overhead; unlike their relations, the great brown skuas, which almost entirely disappear from the island in mid-winter, the Dominicans are always about both by day and night. They have the true cry of the gulls, and this morning they flew me back to the Cornish cliffs. The Herring Gulls of Europe (*Larus argentatus*) possess a wild, exciting cry known to generations of men; it is answered here; never, to my disappointment, by the truer antipodeans, the Silver Gulls (*L. novae-hollandiae*).

There are more birds wintering here, or at least still about, than I expected. Gentoo Penguins and Shags are fairly common along Atlas Cove, especially in the early morning; there are still some Kerguelen Diving Petrels (*Pelecanoides winatrix exsul* Salvin) about; I found one bewildered bird lost in the

slush and darkness—probably attracted by the station lights—about a fortnight ago (July 3). He was a beautiful trim little fellow with diamond eyes, fine black plumage and strange blue legs. The species is less common here than the South Georgian Diving Petrel (*P. georgicus*), but neither is frequently seen, as they fly to and from their underground burrows only under security of darkness. Then, last week (July 9), Dr. Gwynn noted some Antarctic Terns flying over South-West Bay. He described a young bird with mottled brown plumage and black bill being fed by a dove-grey adult with bright red bill and feet. There seem to be a number of puzzling features about the terns' plumage; in winter most adult birds grow white caps, so that they look very like the Arctic Terns, that visit the island in summer. However, last week's tern inconsiderately still kept his black cap.

Only sometimes one realizes geographical position; this morning I was conscious that only Cape Horn could interrupt an endless voyage east or west round the globe. Whatever the time on Heard Island, the night lies always east or west over uninterrupted water. Ocean fogs obscure the island, and our great mountain ceases to exist . . . I meandered home, finding beautifully wave-worn stones, elephants' teeth and, right at the water's edge, thousands of tiny globules, completely transparent like jellied rain-drops; fish-spawn I think. A couple of Nellies (Giant Petrels—*Macronectes giganteus*) circled on large slender wings, sometimes sweeping close enough for me to hear and feel the parting air.

*Thursday, 23 July*

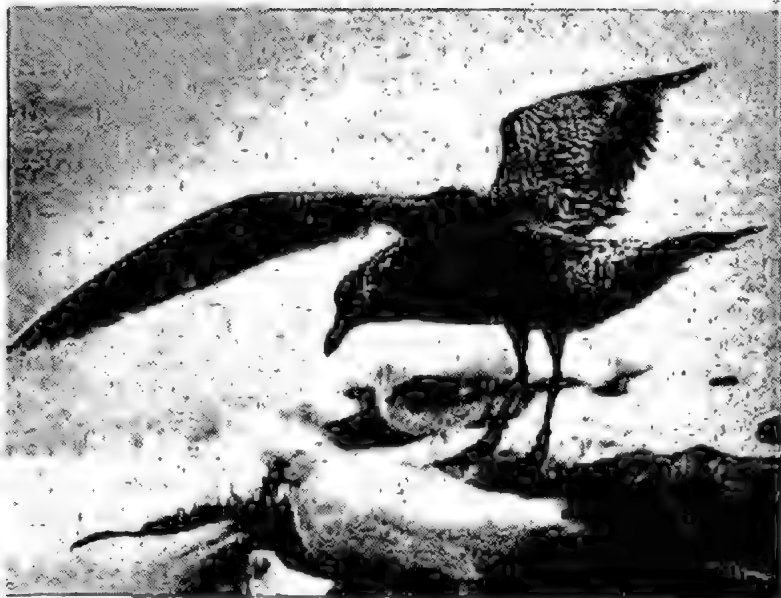
The night had built splendid drifts, ridges and cornices buttressed against walls; and deep, rounded, wind-scooped trenches. Walls had been dappled and patterned by the blizzard while they were still warm enough to cause the ice to stick. Over the azorella and poa hummocks the snow rose in great waves . . . Jack Hughes had to dig himself out from his cubicle adjoining the engine-room. Happiest of all were the huskies, never more at home than in fine, dry snow.

Right through the camp lay the trail of a small elephant seal, a smooth shallow groove flanked by energetic flipper marks. We lost his track somewhere up beyond the dogs, where the snow was bumpy. It is a very curious fact that young seals at this time of year occasionally migrate inland and reach as-

tonishing situations high above the sea. I have wondered whether it is some aberration associated with a yearling's first return to land.

*Saturday, 25 July*

After breakfast I fought my way down through a furious gale to see the innumerable birds gathered at the carcass of the elephant seal on the beach. Evidently the hungry winter stalks the native birds as well as our alien dogs. The wind was in the sixties and seventies at times, tumbling the water over the beach and striping the shallows with dark frantic rifts through the spume. But the Giant Petrels were there in force, tearing at the entrails and preserving their balance by a curiously awkward-looking combined movement of wings and webbed feet. Their heads completely painted with blood, they were dark, determined harriers, yet staggering uncertainly and curiously envisioning pterodactyls. The Dominican Gulls, much more fastidious, were also present in great numbers, screaming as the wind tore them from their repast, and as they fought against it to recover a footing. But, most numerous, were the lovely checkered Cape Pigeons, their speckled wings seeming part of the wind-driven spray. They rested on the waves, finding storm-torn fragments and morsals dropped from the indiscriminating bills of the larger petrels; or flickered in the air, wings moving mightily, making no headway against the force of the gale. The scene was utterly bleak and memorable—to surge the spirit and torment



Juvenile Dominican Gull (*Larus dominicanus*), alighting; with Sheathbills.

ANARE Photo:  
John Richardson.

the limbs. Like gravel the wind-shot spray struck my face and drenched my clothing.

After tea at 4.30, I made an hour's leisure and companioned Fred to the crater near Rogers Head. We stumbled through the snow to the little frozen lake below the station, exulting in our power to parry the wind. The black lava cliffs were drenched with spray and snow-free for several yards from the brink. We pressed round them for half-a-mile or more while the sea quarrelled below and the dusk fell gently until the rocks and snow were jet and deepening grey. The waves crashed in, each crest streaming behind in cold, grey rain. After a while we broke away from the cliffs and ploughed through soft snow towards the broken crater. Right up there we found the tracks of small seals, hopelessly lost, it seemed, and apparently trying in vain to reach the sea. Time

and time again they had turned to the cliffs, but they had always retreated and made their way higher and higher. Most must eventually work their way round the abrupt edges to Corinthian Bay, but others must surely become stranded and die in the snow or upon the tortuous rope lava, as hard and brittle as glass.

*Sunday, 26 July*

Dick joined Leon in a distant sledging foray on the sparse elephant seal population. All right-thinking elephants are now in their ocean wallows, the cows seeking to nourish themselves against the days of their accouchement in the spring. Now only individuals, stray misogynists and lazy trollops, and a few restless youngsters,

2. In a later account I shall hope to mention the inland wandering of seals in the Vestfold Hills, on the edge of the Antarctic Continent, and upon the antarctic plateau where the evidence of fatal excursions of many miles, sometimes to elevations of thousands of feet, is discovered.—J.M.B.

haul out on the beaches. Mostly the strands are rented by the Leopards, grey, angular and surly, who, on being disturbed, raise their heads in anger, baring their serrated teeth and, with scarcely a sound, lope into the surf where, but for the terrible killer whales, they are masters of all.

When the Rawin flight was over, Peter Shaw and I packed a few essentials and slogged away from camp with no firmly set objective but to stay away until dark. However, Peter (and Fred Elliott) will accompany me on the planned major reconnaissance of the mountain as soon as the days are a little longer, and, in preparation, we have been making a number of glacier trips lately.<sup>2</sup>

The station and all our little balanced world soon disappeared in the murk, and we were two puny creatures on the wide frozen plain. A diffused cloud base pressed down on the lighter mist from about a thousand feet. It erased the mountain above the faint Baudissen Glacier and gave a high imaginary extension to the ice-clad cliffs across the waters of Atlas Cove.

We explored the plateau extension that runs north-west from Drygalski . . . and discovered a cairn atop a large triangular rock at the base of the little mountain's main northern ridge. To an old sand- and blizzard-blasted wooden pole had been nailed, at some time, an iron canister. This had dis-

integrated completely, except for the top, and the lower ring had fallen down the pole and had become wedged beneath the storm-toppled rocks. Many years would have been required to cause such total oxidation, even on Heard Island, and I have no doubt that this was Douglas Mawson's cairn—on the Moyes Rock he was enquiring about in a recent signal—raised over twenty years ago. The recorded position, however, according to our modern survey, would place it well up the Abbottsmith Glacier (unvisited by Mawson).

As a terminal, we thought we might reach the igloo on the Vahsel Glacier. The obvious route lies up a valley of gigantic rocks, fallen from the high black facade of the North-West Cornice cliffs. Today the wall rose beyond vision, with clefts, corries and aiguilles magnified and isolated by the clouds. Snow wiped out solidity, and huge slabs seemed to loom tottering as though, at any moment, another great cataclysm might hurl down fragments as large as houses. All round us were such rocks; the only certainty was that, at moments in time, they had crashed with earth-shaking violence. Some, fifty yards apart, could be visually placed together; stones so large that a human, beside them, is an ant.

We are, indeed, the only ants on Heard Island. Nowhere, except upon the Antarctic Continent itself, can insect life be more sparse. Yet, on Heard Island, there are two species of wingless-fly<sup>1</sup> and one fly with vestigial wings.<sup>2</sup> I have seen

<sup>1</sup> Readers who are interested in other aspects of Heard Island may care to consult the forthcoming Annual (1962) of the Fell and Rock Climbing Club (Great Britain), which will publish a lengthy, illustrated article on Big Ben. The original Log for certain records most aspects of the expedition.

<sup>1-2</sup> Respectively *Anatolento aptera*, *Calopteryx monaleyi* and *Anelosterna maritima*.



In the bleak mid-winter, Heard Island. The North-West. Cornice, a rock ridge leading up to Big Ben's abrupt ice-cliffs, shows out of the mist. The conspicuous bird is a Giant Petrel. A sleds and dog-team, driven by James Fox, are crossing the bottom left hand corner of the scene.

ANATE Photo:  
John R. Schwartz.

some of them on the beaches below old rotting kelp; there are also a few beetles, especially a small black dung beetle which I have seen in several places on the limited areas below the permanent ice-cap. No insects seem to have acclimatized themselves to indoors and, apparently, none that might have arrived with stores has survived; never a moth, or fly or ant. Neither are there rats or mice or any mammals except of the ocean."

6. The stores at Heard Island were unheated. In the air-conditioned vegetable store at Mawson, potato flies were common while stores of fresh vegetables lasted.

As we progressed up the valley, immense snow drifts hindered us until we were sinking thigh-deep at every step. We followed the lateral moraine and were soon over fathomless ice, but there was no sign of the igloo. It was utterly buried; not even a faint hump showed its whereabouts.

*Wednesday, 5 August*

While I was writing this evening, Arthur came in, quite pleased with his discoveries on the beach. He had a collection of minute transparent shrimps

and some strange almost fish-like creatures which puzzled him completely. For my collection, he produced a small, white sponge.

After a while, browsing in the literature produced results.

"I wonder, John, whether it could be *Amphioxus*! Listen! (reading from Parker and Haswell) *Amphioxus* has had a chequered zoological history. Its first discoverer placed it among the *Gastropoda*, considering it to be a slug. When its vertebrate character was made out, it was for a long time placed definitely among fishes, as the type of a distinct order of that class; but, on further study, it became obvious that an animal without skull, brain, heart, auditory organs, paired eyes, or true kidneys, and with colourless

blood and a pharynx surrounded by an atrium, must be as widely separated from the lowest fish as is the lowest fish from a bird or mammal . . ." I have since, of course, looked over the reference. The *Amphioxus* described is from the English Channel, but it seems credible that an animal so primitive might have a very wide distribution. I expect some of the earlier biologists here have already collected it.

It was our doctor's birthday . . . There came a point when time ceased to have any quality of duration. It was proposed that every man give an item. . . Most . . . extraordinarily, everyone did. Tales were told by candlelight; music came from piano and flute; and Leon sang.

—From *Log for Lorna*, an illustrated diary addressed to the author's wife.



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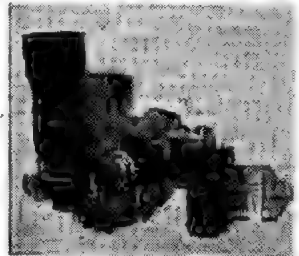
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# Portland Excursion, Christmas 1961

By M. J. LESTER

On a perfect summer day, Tuesday, December 26, 1961, thirty-three members travelled in a McKenzie tourist coach to Portland, via Geelong, Colac and Warrnambool. As they crossed the basalt plains towards Colac, the stone fences and the fine Red Gums (*Eucalyptus camaldulensis*) provided a characteristic aspect of the Western District.

A stop was made for a picnic lunch, overlooking a little lake in the scrubland of the Stony Rises, about ten miles west of Colac. A Crimson Rosella was seen there, feeding its young at a nesting hollow in the branch of a tree. Spiny Spiders were so plentiful that many members had their own private specimens to watch. Some of these spiders were beaded with tiny white or green circles which, with the shiny black spines, gave them a remarkable gem-like appearance. Many of these little creatures were seen during the week. Several koalas were noticed as the coach travelled through the Stony Rises.

As the day progressed, the weather became warmer and groups of cattle or sheep were seen sheltering in the plantations of Sugar Gums fringing the paddocks. So extensively has this tree been planted in Victoria that few people realize that *Eucalyptus cladocalyx* is endemic to South Australia.

From Warrnambool a visit was paid to Tower Hill. This is probably the loveliest, as well as the most interesting, of the many extinct volcanoes that are the source of the Western District basalt plains and their consequent rural wealth. The Fisheries and Wildlife Department has recently taken Tower Hill over; perhaps it may be hoped that more native plants will be seen there in the future and fewer pine-trees and box-thorns which now form the dominant vegetation. The lake surrounding the clustered islands of scoria cones is a resort of many water birds, and the bird enthusiasts reported Black Duck, Swans, Coots, Pelicans and hundreds of Mountain Duck. It was a delight to see a little Striated Field-Wren among the shrubs on the crater rim where the party was standing. A section of this rim has been quarried and the cut face shows clearly the horizontal layers of bedded tuffs—as if, at various times, the contents of a giant ash-can had been spread out and carefully levelled off.

Portland was reached soon after 5 p.m. Like so many of the Western District towns, Portland has gone in for Norfolk Island Pines in a big way: they line many of the streets and are planted along the harbour front. At first sight the harbour seemed to be a medley of moles and

piers, and it was some time before one could sort them out.

After mutual greetings, members of the Portland Field Naturalists Club guided the visitors to the guest house. But Cliveden House could not accommodate all; several members had rooms in a nearby private house, joining the main party for meals. In the evening Mr. N. Learmonth of the Portland club outlined the plans for the ensuing five days.

On Wednesday morning the coach was boarded again and Mr. Learmonth in his car led the way in a tour along the southern fringe of Portland Bay. A stop was made on Battery Point overlooking the new pier-cum-breakwater known as the K. S. Anderson Wharf. From the cliff face, which has been cut back to allow for the approach, this wharf extends for almost a mile, to the light tower at its northern end. Six and a half million pounds were spent in erecting the wharf, but it is estimated that one and a quarter million pounds per annum will be drawn from petrol dues alone, with additional income from the greatly increased number of other vessels entering the port since the completion of the harbour scheme.

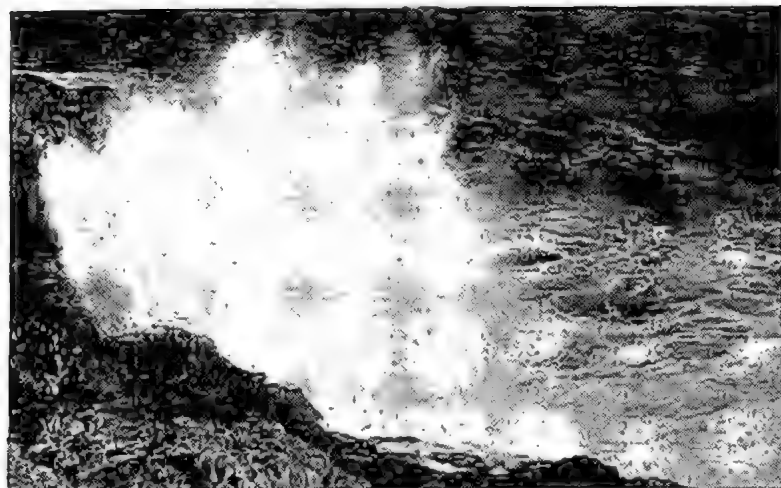
The route continued southward to Black Nose Point and Point Danger, where the Portland Harbour Trust, at the instigation of the Portland Field Naturalists Club, has fenced eight acres of heathland scrub for preservation of the native flora, etc. Approaching this locality, many bushes were noticed of a lavender-flowered *Melaleuca*; it was somewhat disappointing to find

that it was an introduction from Western Australia—*Melaleuca nesophila*. Other plants there were the grasstrees (both *Xanthorrhoea australis* and *X. minor*) with their upright fruiting spikes, many bushes of *Ixodia* (*Ixodia achilleoides*) covered with little white daisy-like flowers, the creamy-yellow blooms of the low-growing Mitchell Wattle (*Acacia mitchellii*) and Golden Wattle (*A. pycnantha*).

Wood Swallows, both the White-browed and the Dusky, were very active above the scrub of the reserve and, less conspicuous, were Silver-eyes, Grey Fantails, Pipits and the Yellow-winged Honeyeater. Darting amongst the tussocky grass near the cliff edge at Point Danger, gorgeous blue-green dragonflies were the despair of photographers; bird observers were excited about the Reef Heron on the rocks immediately below, and every pair of binoculars was used to look at the gannets on the Lawrence Rocks—about a mile off Point Danger. The rocky islets are a gannet rookery.

The party turned west to Cape Grant to see the quarry from which the filling rocks of the K. S. Anderson Wharf have been taken. There was still an extensive stock-pile of rocks on the landward side of the immense quarry hole, and the geologists had a fine time examining crystals and other oddities in the cut faces of these huge basalt boulders.

In the afternoon the coach was taken to the farm of Mr. Davies, about six miles west of Portland, and Mr. Cliff Beagle-



Near the  
Blow-holes,  
Cape  
Bridgewater.

Photo:  
B. E. Carthew.

hole led us through the bush to Bats Caves. We were delighted with the beautiful heads of Hyacinth Orchids (*Dipodium punctatum*) and the bushes of Flame Heath (*Astroloma conostephiodes*) with their scarlet flowers. Attention was drawn to the Gippsland Mallee (*Eucalyptus kitsoniana*, which obviously has no respect for common names), and many lingered to watch some Red-browed Finches feeding young at the nest. But it was very hot, and some members turned back before reaching the caves. These less energetic ones lazed in the shade of three huge pines, were served biscuits and cold water by the young members of the Bedggood family from Ballarat, examined Featherheads (*Ptilopus macrocephala*) and other flowers with their hand lenses, or watched the photographers as they tried to get a baby brown frog and green tree frog to pose for them.

The really energetic ones who lasted the whole two miles to the

caves reported that it was icy cold in the one they entered: the roof was about eight feet high and small stalactites were developing from it but growing sideways. There were no bats.

In the evening, at a social in the hall of St. Stephen's Church of England (the many reminders of the Henty family were inspected in the interior of the church) the visiting naturalists were officially welcomed to Portland by the president of Portland Field Naturalists Club (Mr. B. E. Carthew) and by the Mayor of Portland (Cr. N. G. Nicol). The visitors totalled an impressive number—46 of our members (thirteen of whom travelled otherwise than by the chartered coach), two from Ballarat and their four children, two from Bendigo, two from Hamilton and five from Adelaide. Together with the Portland members, it was exciting to see so many people from so many areas, all with similar interests.

Mr. Carthew reported the achievements of the Portland club since its inception sixteen years ago. Portland had sponsored the Warrnambool and Hamilton clubs, had taken a leading part in having Mount Richmond declared a national park and in obtaining the reserves at Cape Nelson, The Nine Mile and the eight acres at Point Danger. Club members (mainly Mr. C. Beaglehole) have listed in the area 750 flowering plants, including 93 orchids (5 new to science), 49 ferns, 400 seaweeds, 150 native bees (30 new to science), 70 ants, 320 shells (2 new to science), 301 birds (11 were first records for Victoria, 5 first and only Australian records), and they have found bones of some extinct animals. These achievements are truly remarkable and evidence the purposeful enthusiasm and energy of the Portland members.

At the social were exhibits of fungi (including an exceptionally large Stone-maker Fungus (*Polyporus hirsutipes*)), pressed wild-flowers, ferns and mosses and a collection of storm-killed sea birds. Excellent slides were shown of orchids, fungi and birds and of the local coastal scenery. The evening ended with a delicious supper.

On Thursday Cape Bridgewater was visited with Messrs. Learmonth and Beaglehole as guides. After clambering down the cliff to view the booming mist of The Blowholes, all drifted toward the so-called Petrified Forest. This consists of roundish columns of rock ranging from six inches to 24 inches in diameter and extending from a few inches to ten or twelve

feet in height, jaggedly broken off at the top. These columns look just like stone tree trunks, and what seems to be stems of vines can be seen winding round some of them. But the trunks are very crowded together, sometimes only two or three feet apart, and one wonders how any trees could grow so large when so close together. The geologists explained that these are not fossil trees but solution tubes. Solution tubes may occur in limestone or, as in this case, in sand dunes containing much limy material such as shells. Water drains into small pools on the surface and then percolates downward in definite channels, causing the lime to harden and cement together. The whole area may then be uplifted; the loose material soon becomes blown or washed away while the water-hardened parts remain as upstanding columns. Solution tubes may vary in shape, but at Cape Bridgewater they are fairly circular in cross section giving the appearance of tree trunks. Though this offers a more or less satisfactory explanation of the crowded columns, one regrets losing the "Petrified Forest".

Lunch was taken during a light shower of rain, with members inadequately protected by a clump of large Moonahs (*Melaleuca pubescens*). Moonahs are very plentiful in the Bridgewater locality and may grow to heights of twenty or thirty feet. Many of these trees have weather-beaten, twisted trunks with only a few sparse clumps of foliage at the top, so that one wonders how they continue to thrive. The Moonah bushes car-

ried their spikes of creamy flowers.

Most of the afternoon was spent at the Bridgewater Lakes, which are most attractive. Several members dabbled about the marshy fringes amongst bulrushes, sedges, Slender Knotweed (*Polygonum minus*) and smaller water-loving plants. Sea Box (*Alyxia buxifolia*) was very abundant there, also Coast Beard-heath (*Leucopogon parviflorus*) bearing its little white berries, and there was a glorious spread of Fairy Fan-flower (*Scaevola aemula*) with lavender blooms up to two inches across. Previously quite a lot of the dainty Small-fruit Fan-flower (*S. microcarpa*) had been seen, but this handsome large one was new to many of the party. Some members thought to walk through thick scrub over the high sand dunes to the coast (Discovery Bay) but, though they climbed to crest after crest, there were always more dunes ahead, and they returned, mission unaccomplished. Others were drawn to the caves near the road.

Eventually all groups returned to the coach, which travelled on to a high spot where a wonderful view was obtained of the Lakes and Discovery Bay. The vehicles—the coach and ten other cars—made quite a procession along the road. The return to Portland was via Cashmore.

In the evening, Mr. B. Kraehenbuehl, of Adelaide, secretary of the Field Naturalists Club of South Australia, showed very interesting slides of that state. Throughout the stay it was a

privilege to enjoy the company of this enthusiastic young naturalist and of his wife, his comments on South Australian varieties of plants met with in the Portland district adding to the interest.

(to be continued)

Letter to the Editor:

## An Appreciation

Dear Sir,

May I express my sincere admiration for the magnificent achievement of Mr. F. Corrigan in his capacity of Alberton Shire Engineer in carving out from the bush two such lovely National Parks as Tarra Valley and Bulga. He has indeed left a most precious gift to the people of this State: a beauty to be cherished forever.

I have visited both these parks several times in the course of my investigation into the Lyrebird's song and its musical structure and have often pondered that these two fascinating parks would not have been in existence but for the bold and imaginative initiative of one man occupying the modest position of Shire Engineer.

No less miraculous was Mr. Corrigan's ability to find sufficient money to finance his projects. The undertakings involved not only the provision of amenities within the parks, but also the construction of a scenic access road along the valley and the erection of a suspension bridge at Bulga Park. To me, after thirteen years with the Country Roads Board, the thought that the huge sum of money necessary to cover these expenses could be acquired out of a Shire budget is completely unreal: yet it was done.

It is not for the inert masses, but for daring individuals to make history. As G. B. Shaw once said, "The reasonable man adapts himself to the world; the unreasonable man adapts the world to himself. Therefore all progress depends on unreasonable men."

—K. C. Halafoff.



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Grasshoppers of the Mountains

These observations, and a question, have been sent along by Mr. G. A. Crichton of Alexandra:

On March 7, on top of the Mount Stirling Road, I found two Mountain Grasshoppers. These were apparently females heavy with eggs, very thick and deep and about  $1\frac{1}{2}$  inches long. They were dark grey, almost black all over except the large hopping legs which were ringed by yellowish circles. The wing covers were very rounded and dimpled and at certain angles this gave them a spangled appearance.

References state that these insects make no attempt to escape except to drop to earth, but rely on bluff. Mine made every effort to escape, crawling away over the short mountain herbage they appeared to have been feeding on, and hopping if they were put on anything elevated. At no time did they make any show of bluff, such as described, by raising their wing cases and displaying a brightly coloured abdomen. Furthermore, they did have membranous flying wings which they started to unfold several times when desperate to escape.

On mentioning mountain grasshoppers to a friend, he presented me with one he had captured some weeks previously on the Cathedral Range. He said there were plenty of them, feeding on Hedge Wattle (*Acacia armata*). Now this specimen is a beautiful thing: about an inch long, olive-green with some broad dark markings, and covered all over with tiny pin-point white dots, including its short quarter-inch feelers, and there is a white triangle at the rear of the thorax. It is apparently immature, and shows two small wing buds, but makes up for lack of flight by the vigour of its hops.

Now which specimen is the real Mountain Grasshopper?

The description of the first is quite typical of the Mountain Grasshopper, *Acridopeza reticulata* (family Tettagonidae — long-horned grasshoppers). However, females of the species have no wings beneath the short wing-covers (tegmina). Edith Coleman published notes on the life history and habits of *Acridopeza* in the *Naturalist* of June

and November 1938, April 1939 and June 1944.

The second insect appears to be a species of *Monistria* (family Acridiidae—short-horned grasshoppers). Members of this genus are flightless, having only rudimentary wings in the adult stage.

While on the subject of mountain grasshoppers, it is appropriate to include this comment by Miss Jean Galbraith of Tyers, after an excursion to the highlands by one of the Gippsland field naturalists clubs:

Flowers covered the high moors of Mount Skene when we were there on January 25, but there were signs of other life also. A member of the party found a very large worm—about one foot long and proportionately thick. It reminded me of the giants near Loch. An enormous brown grasshopper was identified by Mr. Burns of the National Museum as a Mountain Grasshopper (*Acridopeza reticulata*), which is common on Mount Hotham and Mount Bogong and is occasionally seen in the lowlands. Birds were rare on the mountain-top, Pipits being the only kind in evidence.

The same *Acridopeza* was in evidence near the Wombargo Range in north-eastern Gippsland, at 4,800 feet elevation, in January 1961, and both sexes were very abundant on the Cobberas Mountains—6,000 feet up—during Easter the same year. At the other end of the state, members of the F.N.C.V. observed the Mountain Grasshopper during the club excursion to Portland last summer; and a short note about it is due to appear in next month's *Naturalist* with the concluding part of the excursion report. Edith Coleman commented upon the lowland distribution of this insect, recording it as plentiful on

parts of the Mornington Peninsula, and suggesting that it was more abundant near the coast than in the mountains.

### Possums as Tight-rope Walkers

This observation has been submitted by Mr. K. C. Halafoff, of Upper Ferntree Gully:

About midnight my wife called me and said that she thought there was a possum on the roof. I went into the back garden and saw a small ringtail possum on the electric cable connecting the house with the bungalow. It ran with the amazing skill of a tight-rope artist along the cable towards the bungalow. I returned inside, peeled a banana, stuck it on the end of a stick and went back into the garden. The baby possum was sitting quietly on the cable. Slowly I raised the stick until the banana was right under its nose. For a while there was silence, then came a sound like an infant sucking. The possum had "got the message" and was chewing at the banana, still attached to the stick.

This incident brings to mind a related occurrence which took place several years ago, along the road between Genoa and Mallacoota, in eastern Victoria. Late at night, the car headlights revealed an animal, apparently suspended in mid-air high above the road. Investigation showed that it was a ringtail possum, walking slowly, upright, along the Genoa-Mallacoota telephone wire. At that time a single cable connected the two townships, being attached to a series of insulators which were fixed to convenient trees. The line crossed the road at that point, with a span of perhaps forty or fifty feet, and the possum was using it evidently to avoid ground travel and the possible hazard of fox or car.

# Two Aboriginal Legends of the Ballarat District

By A. MASSOLA

The two legends were obtained during a visit to Lake Tyers Aboriginal Station. One had already been recorded in a slightly different form, but as it appeared in an obscure scientific journal published over a hundred years ago, both the original form and the new version are given here. The second legend has not before been published. My informant was an old full-blood aboriginal woman, Mrs. Annie Alberts, who was born at Lake Condah. She is probably the last full-blood aborigine from the Western District.

## The Fight between Mount Buninyong and Mount Elephant

The original version of this legend was recorded by W. Stanbridge, in a paper entitled "Some particulars of the general characteristics, astronomy, and mythology of the tribes in the Central parts of Victoria, Southern Australia", and appeared in the *Transactions of the Ethnological Society of London*, Volume 1, 1861.

Writing about the tribes in the neighbourhood of Fiery Creek he states:

One of the legends that these tribes are fond of relating is that Tyrrinallum (Mount Elephant) and Bouninyong (two volcanic hills about thirty miles apart) were formerly black men, that they quarrelled and fought, the former being armed

with a leewil and the latter with a hand spear, and after a prolonged contest Tyrrinallum thrust his spear in Bouninyong's side, the cause of the present hollow in the side of the hill, which so infuriated him that he dealt the other a tremendous blow, burying the point of the leewil in his head, which made the present large crater and knocked him to the spot where he now stands.

Mrs. Alberts version is as follows:

Mount Elephant and Mount Buninyong were once men, Mount Elephant was in possession of a stone axe. Buninyong offered him some gold for it. Having agreed they met at what is now Pitfield Diggings for the exchange. Some time later Buninyong reconsidered, and desired his gold back. Elephant refused. Buninyong sent him a fighting message, and the challenge was accepted. They met at Pitfield Diggings. Elephant buried his spear in Buninyong's side, and the hole can be seen to this day. Elephant received a deadly blow on the head from Buninyong's stone axe. The gaping hole on Elephant's head can also be seen to this day. The two men, mortally wounded, retired in opposite directions; their bodies, turned into mountains, can be seen today at the spots where they died.

It is obvious that this latter version has post-European elements, at least in the exchange of gold for a stone axe. Gold, of course, was of no value to tribal aborigines, and it was only after the arrival of white men that they learnt its value. The fact that gold was exchanged for a stone axe is another indication of the high esteem in which axes were held.





Mount  
Elephant.

Mount Buninyong (*Buninyoung*, Knee Mountain) seen from the south-west has a vague resemblance to a man, lying on his back, with knees drawn up. A peculiarity of the mount is that its crater, locally known as "The Basin", is about half way up the western flank.

Mount Elephant (*Derrinallum* or *Djerinallum*, Home of Sea Terns), was so called by the aborigines because of the large number of these birds frequenting the marshes in the neighbourhood. Europeans call it Mount Elephant, because of its vague resemblance to one of these pachyderms lying on its side. The crater of this mount is at the top.

Pitfield Diggings (*Warrebaal*, Place of Red Gums) apparently enters into this legend as being about half-way between the two mountains, and not because of gold having been found there. On the other hand it could have been a traditional fighting ground, where the challenged tribes would come to meet the challengers and so it would be natural for it to be the scene of a legendary fight.

The story of the fight is a classical example of the primitive man's way of explaining natural features in the landscape of their territory.

#### The Witch of Lake Burrumbeet

Lake Burrumbeet (Big Water) is an extensive sheet of water about twelve miles west of Ballarat. Judging by the large numbers of stone implements collected over the years on extensive camping grounds on the bordering sand hills, the south-eastern shores of the lake were much frequented by the aborigines.

The north-western shores, on the other hand, are skirted by low basaltic cliffs rising about thirty-five feet. Although not very high, these cliffs are abrupt and difficult of ascent. From the top of the cliffs the ground gently rises in a westerly direction, culminating in the 200-foot eminence called Mount Callander. At the base of the cliffs the flat, narrow shoreline, only eight or nine feet wide, is strewn with basalt pebbles and boulders detached from the cliff-face by the action of the ele-

Basalt  
Cliffs,  
Lake  
Burrumbeet.



ments. Erosion is also responsible for a number of caves at the foot of the cliffs.

The water of the lake, at this point, is polluted by dead birds, fish, and water-plants, putrefying in the shallows, the prevailing winds apparently driving these carcasses, as well as other litter, to this side of the lake. At the time of my visit a dead sheep added modernity to this graveyard.

To my knowledge no artifact has ever been found on or near these cliffs, although I feel sure this area must have been a source of raw material, as basalt was used by the aborigines in making their implements. Apparently, they preferred the open sand hills on the other side of the lake to the shelter of the cliff-caves, which could have been haunted by the ghosts of dead men.

A legend, which fits admirably into this landscape, is remembered by Mrs. Alberts.

The caves in the cliffs were once the home of a creature with the face of a pretty woman but with the legs of an emu. She would stand on the cliff top and attract the attention of passing blackfellows. When they came near her she would kick them over the cliffs into the water. Many men had thus disappeared.

At last two friends decided to investigate these disappearances. As they came near the lake they smelt the horrible smell of putrefaction. They saw the woman standing on the cliff tops, but she did not see them, so they cautiously made their way to the cliff edge, and from there saw the dead bodies lying around in the water below. At the bottom of the cliffs the shore was strewn with the stone axes belonging to the dead men. They armed themselves with many of these, and stealing upon the witch they soon axed her to pieces.

This simple legend, typical of the stories told to children, draws attention to cliffs in an otherwise undulating country, and is the blackfellows explanation for the large quantity of basalt pebbles lying around, and in addition explains why this corner of the lake is always foul smelling.

# New Butterfly Records for Victoria

By A. N. BURNS

Recent correspondence from my friend Mr. Archie May of Noorinbee near Cann River in eastern Victoria has contained reports of still more new butterfly records for this state. Mr. May mentions that he has seen and taken several specimens of the "Blue Tiger", *Danaida melissa hamata* Macleay (Family Danaidae) in the season that has just finished. The finding of this pretty species so far south is indeed noteworthy; in fact the late Dr. G. A. Waterhouse mentions in his book, *What Butterfly is That?*, that it is even a rare visitor to Sydney! It is very common from the northern rivers of New South Wales, up the Queensland coast to Cape York, and into the Northern Territory at Darwin. The sexes are similar in size and colouration; the upperside of the wings is black with numerous hyaline blue spots and streaks, the latter being mostly in the middle of the wings and the former around the margins. The underside is similar in pattern but much paler. The larvae feed on the foliage of a small-leaved vine which exudes a milky sap when broken (*Asclepiadaceae*). They are grey in colour with transverse black bands; the head is black with grey markings on the front. The pupa is green, short and thickset, and has ten golden spots around the middle. It is suspended by the cremaster

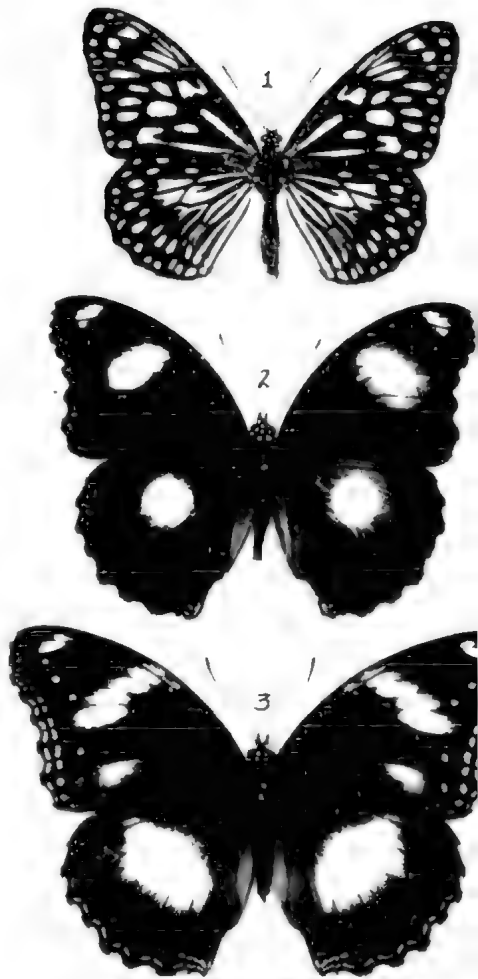
to some object, usually near the food plant. Danaid butterflies are very tenacious of life and live for comparatively long periods; they are also capable of travelling considerable distances, so it is likely that Mr. May's records were migrants from New South Wales.

The capture of a specimen of the Common Eggfly, *Hypolimnas bolina nerina* Fabricius (Family Nymphalidae), is another very interesting record for Victoria. Mr. May captured a male of this butterfly earlier in the year. Normally this is a very common insect in New South Wales, north of Newcastle, and right up through coastal Queensland and round to the north-west of Western Australia. Waterhouse states that it too is a rare visitor to Sydney but that it does sometimes breed there. Records over the past few years from entomologists in New South Wales show that its range extends considerably farther south and also that it sometimes breeds well south of Sydney. The sexes are very dissimilar in colour and the species affords an excellent example of sexual dimorphism. The male has the wings on the upperside rich black with central white spots which are widely margined with iridescent purple. The underside is brown with a double row of white marginal spots; the forewings have a

1. *Danaida melissa hamata* Macleay,  
male.
2. *Hypolimnas bolina nerina* Fabricius  
male.
3. *Hypolimnas bolina nerina* Fabricius,  
female.

Photo: E. R. Rotherham.

white band at the end of the cell and several white bars crossing it, and the hindwings have a central white marking. Individual females vary very much in depth of colour and extent of markings, but a typical specimen has the upperside of the forewings black with a sub-apical white band, several apical white spots and a lower discal orange brown patch. The hindwings also are black with a large central white band overlaid with shining blue scales. The underside of the wings is brown with the basal portion of the forewings reddish brown, repeating the markings of the upperside in pattern but more extensively and without the overlying blue scales. The larva is dark brown, with rows of long branched spines bearing numbers of hairs; the head is orange brown with two long black horns. The pupa is brown with lighter brown dots and markings, and has rows of spines along the back. It is suspended head downwards by the cremaster and usually located in some sheltered place remote from the food plant. The larvae feed on several plants, mainly



Paddy's Lucerne (*Sida retusa*), various species of *Portulaca*, and *Alternanthera denticulata*, a plant which grows in swampy places. Should this fine butterfly breed in Victoria it should not have difficulty in finding suitable food plants because portulacas are largely grown in gardens and *Alterhanthera denticulata* (commonly called Joy Weed) also grows in this state.

# Field Naturalists Club of Victoria

General Meeting—July 9, 1962

The president, Mr. M. K. Houghton, was in the chair and about one hundred members attended. Mrs. F. Gladstone, from Beechworth, who led the F.N.C.V. Easter excursion, was welcomed.

Members stood for a minute in silence in respect to the memory of Dr. R. T. Patton, a member for almost forty years, who died recently at the age of 79. Mr. J. H. Willis spoke in appreciation of Dr. Patton's great worth and work as a stimulating and witty lecturer in the Botany School at Melbourne University, leader of excursions, authority on eucalypt distribution and the ecology of a variety of Australian communities, the author of seven papers on the subject to the Royal Society. He studied the exploitation of forest products such as honey-yielding trees, and for the Commonwealth Government during the war he mapped the tree cover in Victoria for camouflage. He was a regular contributor to *Your Garden*, especially on vegetable growing.

Mr. H. C. E. Stewart, in moving that Mr. H. P. Dickins, who is ninety years old, be elected as an honorary member of the club, spoke of his work in organising nature shows, as a good excursion leader and a water colourist of wildflowers, particularly orchids.

Mr. R. Hudson, assistant secretary, who deputized for the secretary, Mr. E. H. Coghill (in Queensland at present), announced that Mr. E. H. Zech of Sydney was awarded the F.N.C.V. Natural History Medallion for 1962 for his work on insect life-histories.

Mr. W. C. Woollard drew attention to the editorial in the July *Naturalist* concerning the British Museum Expeditions, to the last paragraph of which he took exception. The president read a letter that was being sent to the editor requesting that the full text of the motion on this matter read, discussed and carried at the last general meeting, be printed in the *Naturalist* in full.

Mr. A. J. Swaby announced a C.A.E. school on the Grampians from Octo-

ber 12 to 26 for the study of flora, fauna and geology. He invited a member with a car to go there with him a little before the beginning of the study.

The F.N.C.V. Nature Show is to be held in the Lower Melbourne Town Hall on September 10, 11 and 12, 1962.

Mr. E. S. Hanks is to represent the F.N.C.V. at the Barrier Club on the recent visit to the Burke and Wills DIG tree.

Fourteen new members whose nominations appear in the July *Naturalist* were elected.

The subject for the evening was the F.N.C.V. Easter excursion to Beechworth. Mr. D. E. McInnes outlined some of the early history from 1839 when a sheep station was established and 1852 when gold was discovered at Spring Creek. He described geological and topographical features shown in colour slides taken by members. Mrs. D. S. Lewis spoke of the species of birds seen, and Miss Alison Hooke of the vegetation, especially the trees, including Black Cypress Pine (*Callitris endlicheri*). Mrs. Gladstone was thanked for her help in leading excursions.

Mr. A. J. Swaby exhibited garden-grown native plants: *Grevillea sericea*, *G. thelemanniana*, Althofer's *Grevillea*, Hodge's *Grevillea* (Poore's *Constance*, probably a hybrid of *G. victoriae* and *G. juniperina*), *Chorizema cordata*, *Thryptomene saxicola*, Payne's *Thryptomene* and Queensland Silver Wattle (*Acacia podalyrtaefolia*).

Mr. R. Condon showed a collection of beautiful moths caught at his home at Box Hill. Mr. C. J. Gabriel brought a Mauritius mollusc, *Magilus antiquus*, which lives on coral, beginning life as a typical snail but growing a tube many inches long which it seals behind with calcium carbonate as it grows. Mrs. E. Bennett showed a Red-back Spider and egg-cases. She has noted more giant slugs, *Limax maximus*, that frequent the cats' milk saucer, some being four inches long. She pointed out that she had not stated previously that they did not eat grass. A museum official said they eat decaying vegetation.

## Resolution Relating to Proposed British Museum Expeditions to Australia

The report that the British Museum (Natural History) has planned a number of expeditions with the object of studying and collecting specimens of the native fauna of the Commonwealth is viewed with apprehension by the Field Naturalists Club of Victoria. The Club believes that no impediment should be placed on the participants engaging in the scientific study of this country's native wildlife so long as that study does not call for the destruction of species whose numbers are already seriously diminished by loss of habitat or other causes, nor the disturbance, particularly during the breeding season, of such species in their often restricted habitat.

As field naturalists, members of this club are in a better position than most to appreciate the real need for strict protection of such species and they would deplore any action in official quarters which facilitated their killing or disturbance by any person or organization whatsoever.

The club considers that a clear distinction should be made between scientific study and the amassing of a mere collection of specimens. Export of specimens is considered to be permissible in very strictly limited numbers for scientific study only if it can be demonstrated that facilities for such work are not already available in this country.

Accordingly, the club asks that, in respect of Victorian native wildlife, a permit to kill or capture any animal, collect any bird's egg or remove any specimen from its natural habitat be granted to such expeditions only after consultation with the Council of the Field Naturalists Club of Victoria or its nominee, the Council of the Royal Australasian Ornithologists Union or its nominee and the Council of the Bird Observers Club or its nominee.

Further the club requests the Commonwealth Minister of Customs to ensure that permits to export be *not* issued for specimens designated in the state of origin as "rare species".

It is further resolved that a copy of this statement be forwarded to the Prime Minister, the Minister of Customs, the Chief Secretary of the State

of Victoria, the Director of Fisheries and Wildlife, the Director British Museum (Natural History), the press and to all organizations affiliated with the Field Naturalists Club of Victoria and that these organizations be invited to support the requests by the most effective means at their disposal.

It is also resolved that allied organizations in all states be sent a copy of the statement in order to ensure that each is aware of the Field Naturalists Club of Victoria's attitude in this matter.

## Marine Biology and Entomology Group—June 5, 1962

Mr. E. H. Coghill chaired this meeting, which was attended by twenty-six members. The lecture for the evening was given by Miss Hope McPherson, Curator of Molluscs, National Museum. She spoke on a marine survey of Port Phillip Bay carried out by the Marine Study Group in conjunction with the Fisheries and Wildlife Department. The lecturer pointed out that the need for such a marine survey had been felt for some time. It took nearly four years of mostly weekend work on the part of the group, a club of very enthusiastic members, and Mr. J. Lynch and other members of the Fisheries and Wildlife Department. Among other things the cold-water coral reefs were mapped, and it was discovered that they were far more extensive than was originally thought. Also some marine species new to science were found.

Miss McPherson's lecture was very well illustrated with many coloured slides, among these being pictures of hydroids, sea anemones, soft corals, sponges, jellyfish and polychaete and annelid worms. A vote of thanks was moved by Mr. A. Fairhall, who expressed the feelings of members when he said how much the lecture had been enjoyed.

## Marine Biology and Entomology Group—July 2, 1962

Mr. J. Meade chaired the meeting, which was attended by twenty-two members.

Mrs. Z. Lee showed several beautiful slides of insects and marine life. These slides were up to her usual high standard (she has won international honours for her photography) and

were thoroughly enjoyed by all members. Miss L. M. White identified the fauna shown in each slide, and gave life histories and other details that added to the interest.

Mr. P. Genery brought a micro-projector and showed living specimens of *Floscularia virgata*, a tube rotifer. This proved of great interest to members, many of whom had never seen microscopical life projected before.

Membership of the group is increasing.

#### Fauna Surrey Group—June 14, 1962

Twenty-two members and five visitors attended the meeting, with Mr. N. A. Wakefield in the chair.

In a letter to the group, Mrs. E. Bedgood of Ballarat reported the observation of a small animal, which from its description, was the Yellow-footed Phascogale (*Antechinus flavipes*), feeding and sunning itself near Bunjil's Cave in the Black Range. Mr. W. J. Begley has offered the group the use of an additional spotlight and battery set for night work.

There seemed to be a misunderstanding by some country clubs with regard to our recent circular asking for their assistance, in that they interpreted the communication as wishing them to take part in actual surveying rather than our expressed desire for them to collect and collate the information that is already known about the mammal fauna in their respective areas. This was discussed at some length by the group and, as a result, a subcommittee was formed to carry out liaison between the group and country clubs.

Mr. T. Harrison expressed his thanks to the Ingram Trust, the Fisheries and Wildlife Department and Mr. Wakefield for their assistance in his feeding and study of the Sugar Gliders (*Petaurus breviceps*) and phascogales at Warrenbayne.

#### Geology Group—June 6, 1962

Twenty members and visitors were present with Mr. L. Angior in the chair. The following reports were made: Mr. D. McInnes reported that the general club excursion to collect trilobites at the Kinglake West quarry had proved rather unsuccessful; Mr. L. Angior commented on the visit to the University of Melbourne Geology Library, where members spent a pleasant evening brows-

ing amongst the treasures after a conducted tour by the librarian, Mrs. Matthaël; Mr. R. Dodds gave a brief resume of an excursion to Healesville, Buxton, Eildon, Jamieson and Mansfield.

The subject for the evening was "Stones and some Geological History", by Mr. R. Dodds. The speaker traced the development of knowledge about stones and minerals from very early times to the end of the Eighteenth century. An endeavour was made to show how many ideas about geology were influenced by social and religious thinking. The knowledge of the ancient Greeks and that of the Roman natural history philosopher, Pliny, followed by the stagnation of the Middle Ages was outlined. The magical and medical virtues supposed to be inherent in many stones and minerals were explained and the talk concluded with an exposition of the teaching of the Freiburg School in Saxony where our modern concepts of this science had their beginning.

*Exhibits:* Volcanic bomb from Mount Porndon showing olivine and augite—P. Carolin; Specimens of the Tertiary (Janjukian) strata from Anglesea—R. Davison; Zeolites from Flinders (analcite)—A. Cobbett; Stromatoporooids and copper concentrate from Cave Hill, Lilydale; Graptolites, granodiorite showing garnets (from a ring dyke) and black mica (six-sided crystal)—all from Eildon; Limestone with crinoid stems from Mansfield—L. Angior.

#### Geology Group—July 4, 1962

Twenty-seven members were present, with Mr. L. Angior in the chair. A welcome was extended to seven visitors. Mr. R. Dodds reported on two excursions during June—one half-day to Royal Park and one full day to Bacchus Marsh and Werribee Gorge. Arrangements were made for an excursion to Heathcote on July 15, in conjunction with the Bendigo Club.

The subject for the evening was "Fossils" by Mr. D. Jeffrey. All the speaker's remarks were copiously illustrated by fossils of many descriptions. The speaker mentioned the great interest taken in fossils at the present time, as evidenced by many excellent books and by articles in Life and National Geographic magazines. The various means of preservation were then covered in detail

under the following headings:—Refrigeration (cold storage since death), drying or desiccation, simple burial, carbonization, petrification, casts and moulds, Imprints in shale etc., tracks and burrows, stomach stones (as from dinosaurs), and finally so-called fossils such as dendrites—which may be solution patterns of manganese oxides.

**Exhibits:** Eucalyptus leaves from Tertiary deposits at Geelong — E. Blackmore; Fossils from many different geological periods: Archaeocyathinae (Cambrian), shells and corals (Silurian), crinoids (Devonian), Glossopteris and brachiopods (Permian), Equisetales or horse-tails (Triassic), ammonites (Cretaceous), fossil wood and marine shells (Tertiary)—R. Davidson; Archaeocyathinae (Cambrian)—N. Carstairs; Graptolites from Ingliston—J. Cheslin; Under the microscope, section of diabase from Ceres, Geelong—D. McInnes; Graptolites from Ordovician at Lancefield—L. Angior; Numerous fossils to illustrate his talk—D. Jeffrey.

#### Botany Group—June 14, 1962

The meeting was chaired by Mr. J. A. Baines, who read a letter he had received from the previous chairman, Mr. T. F. Zirkler, who, with his wife (also a keen member of the Botany Group), is touring the British Isles and many Continental countries, making contact where possible with natural history societies. The highlights of their trip so far have been Peter Scott's Wildfowl Trust at Slimbridge in Gloucestershire and the Kew Gardens, which they have visited a number of times.

The group intends to deal with several key families of flowering plants, the first lecture being given by Miss M. Lester on the Ranunculaceae. She had prepared a series of finely drawn charts illustrating the floral structure of representative genera within the family, with various colours indicating the different whorls. Some members had brought additional specimens to supplement those of the speaker.

Office-bearers elected at the meeting were:—

Mr. J. A. Baines, *Chairman*; Mr. S. Marshall, *Secretary*; Mrs. R. Webb-Ware, *Programme Steward*.

The Chairman thanked the retiring office-bearers, Miss M. Lester and Miss M. Allender, who has been the Secretary for many years.

Arrangements were made for preparation of the group exhibit in the September nature show and for an excursion to Seaford to examine sea-side flora.

#### Botany Group—July 12, 1962

A good attendance at the meeting, chaired by Mr. J. A. Baines, augurs well for the success of the current series of lectures on various plant families. The club president (Mr. M. K. Houghton) gave an excellent talk on the Myrtaceae, illustrated by well-drawn diagrams representing examples from each of three sub-families: Chamaelaucaceae, Leptospermae and Myrteae. He had prepared a summary in tabular form of the chief Australian genera in the family, together with a detailed setting-out of the place of the Myrtaceae in the Engler system of plant classification. A copy of this very useful aid to the memory was issued to every member present. Another sheet gave the key to the Myrtaceae, together with a glossary of botanical terms. Mr. Houghton is to be congratulated for his very thorough effort.

Miss Alison Hooke reported that she had identified a climber that was flowering profusely on the Seaford foreshore during the group's recent excursion as *Senecio mikanioidea* (Cape Ivy). Also flowering freely was *Correa alba*, very early because of the mild June weather. As leader of the excursion, Miss Hooke took samples of soil from the different zones of vegetation, and showed how the comparative acidity or alkalinity of the soil affected the flora. About forty species were listed in a relatively small area.

The chairman and Miss M. Lester reported on progress made so far in the preparation of the group's nature show exhibit on the floral emblems of the various states. The sub-committee consists of these two, Mr. J. M. Wilson, Miss M. Allender, and Mr. S. Marshall.

It was decided to hold the next excursion to Nunawading, where an inspection of a native plants sanctuary at Antonio Park school would be made.



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Magnificent stand of White Mountain Ash, *Eucalyptus regnans*, in the Marysville State Forest

## FORESTS COMMISSION VICTORIA

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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### *Front Covers:*

This is a view of the Wellington Valley, in northern Gippsland, looking west to "The Crinoline", from Monument Gap. The interest of the picture is its antiquity; for it has been printed with a block which was made originally for use in the *Victorian Naturalist* of June 1907. Two scenes were published on that occasion, this and a view of Lake Tali Karng. They accompanied an article by E. O. Thiele on the physiography and geology of the Mount Wellington district.

# The Nargun's Cave at Lake Tyers

By A. MASSOLA

Our aborigines can never be called cave-men. They did not inhabit underground caves and, in fact, had a genuine dread of them; they seldom ventured close to any, believing all caves to be the homes of ghosts and evil spirits. The references commonly made to aboriginal cave paintings are therefore misleading and wrong. The term "rock art" or "paintings in rock shelters" should be substituted. These shelters, like those used as camping places, are shallow holes or overhangs in the sides of rocky outcrops. They are open to daylight and have no nooks or crannies in which malignant spirits might lurk.

These malignant spirits are of two kinds. The first are the ghosts of the dead, who will harm the living in consequence of their dead state. The others are wicked supernatural spirits, who can do untold injury, and even cause the death of humans for the mere fun of doing it. These latter spirits appear to men in a variety of guises. In Gippsland some are called Baginis, others Dulagars and a third variety, Narguns.

Baginis, like the sirens of old, entice the passing warrior, who is held prisoner by them and not released until they have grown tired of him. Although they look like pretty young girls, baginis can be recognized by their small

hands and feet which are generally armed with claws.

Dulagars are very strong men-like spirits. They may be recognized because they are very hairy. They live in the mountains behind Suggan Buggan, and when a woman wanders alone through the bush they fly through the air and come and take her. She, also, is released after a while. According to the late Mrs. Annie Alberts\*, the last time hairy men made their appearance was at Gelantipy, north of Buchan, just before the first World War. Big Charley and his wife were walking along a bush track when they heard the three loud taps which always precede a visit by the hairy men. Soon one of these creatures appeared, and Big Charley's wife ran into a cluster of gum-trees for protection, while Big Charley prepared to fight. The clustered trees were very close together, and the dulagar was unable to reach the woman. He was also worried by the husband, and eventually retired. Big Charley, bleeding from a profusion of wounds, and his wife, with her dress almost torn off her where the dulagar had got a hold, were able to reach Lake Tyers without further molestation.

Narguns, who are half human and half animal, lurk in the

\*Mrs. Annie Alberts, a valued informant on aboriginal legends, died at the Bairnsdale Benevolent Home on June 28, 1962.



The Devil's  
Hole, or  
Ngrung, at  
Lake Tyers.

shadows of deep caves, occasionally calling out Nga-a-a-a. They are feared exceedingly, for their stone bodies have the power to turn spear or bullet back to the thrower, and so they cannot be killed.

The most famous Nargun's Cave in Gippsland is the "Den of Nargun", or *Ngrung a Narguna*. This is not a cave, but a commodious shelter situated behind a fall of the creek's bed in the deep gorge of Deadcock Creek, a tributary of the Mitchell River. Being a shelter, and not a cave, it really does not conform to the classical home of a nargun. Howitt, the first white man to see it, was accompanied by two natives. In his account of this journey, published in the *Third Report of Progress of the Geological Survey of Victoria*, pages 214 to 220, plate 21, 1875, he states that his two guides claimed that this place was not known to any aborigine and they could not agree as to whether

this was a nargun's den or not. One declaring that it was such a lovely place, that he would come here with some young damsel and spend the rest of his life in such happy surroundings. This the native would hardly do if he thought the spot inhabited by a nargun.

However, there is no question about the beauty of the gorge, and I am greatly indebted to the Bairnsdale Field Naturalists Club for inviting me to a recent excursion they had to it. They claim that this is the furthest west that the sub-tropical lowland jungle of New South Wales penetrates. For those interested in botany, zoology or geology, as well as natural beauty, the locality is outstanding. Anthropologically, no evidence of aboriginal occupation was discerned.

In the same report Howitt also refers to a second cave: "a cave in the miocene limestones of Lake Tyers which is said to be inhabited by a nargun, with

which one of the natives, 'Dan's mother' according to report, had a fight. This is all I could learn."

I was more fortunate than Howitt, although first inquiries amongst the aborigines at Lake Tyers pointed to a "Nargun's Cave" about two and a half miles beyond the Blue Gum Sawmills on the Toorloo Arm of Lake Tyers. This cave could be described as a tunnel about half a mile long running right through a limestone hill. Although a beautiful home for a nargun, this place is too far from the lake to be the one referred to by Howitt.

Further inquiries amongst the white inhabitants of the district directed me to what they called the Devil's Hole or the *Ngrung*. It will be remembered that the latter name is aboriginal for 'den' or 'lair'. Everyone knew the legend connected with this place. An aboriginal woman called Lilly had fallen, or was pushed, into this hole, which is said to be bottomless. Her body emerged some miles away at Lake Mystery, behind Tostaree. Others claimed that Lilly went in at Lake Mystery and came out at the Devil's Hole in Lake Tyers. This suggests that the two lakes have a subterranean connection.

A visit to the *Ngrung* revealed an inlet of the lake with perfectly still water, surrounded on three sides by boggy soil on which grow stunted reeds. In order to take a photograph I walked around part of this hole, floundering in the mud up to my knees at every step, while the pressure of my weight released large numbers of gaseous bubbles. The Devil's Hole is a hole

in the water, and not in the ground. Obviously no nargun would live there, although other fabulous monsters, such as bunyips, could well have made their home in this dismal and sinister looking spot. However, now there were two legends. Were they two episodes of the one legend or separate accounts of one happening? Was Lilly Dan's mother?

On my return to the aborigines of Lake Tyers to make further inquiries about the Nargun's Cave as well as the woman Lilly, Dame Fortune smiled. This time the informant was Mrs. Louise Parsons, a full-blood aborigine, born at Lake Tyers, who had for years lived on the Nowa Nowa Arm of the lake. On previous visits to the settlement this woman had been most unco-operative. On this occasion, however, possibly because other aborigines who had assembled denied the existence of a cave on the shores of the lake, and she may have wished to show them her superior knowledge, she told us where it was. Yes, she had heard about it in her youth. No aborigine ever went anywhere near it. The place was known as Cameroon's No. 2. Yes, she knew about Dan's mother fighting the Nargun at that spot and beating it off. Dan's mother, she said, came from the Western District, but she could not, or would not, remember her name. She also knew that the girl Lilly had been sucked into the *Ngrung* when she was fishing in the lake from her boat; her body came up at Lake Mystery; that is why the shores of Lake Mystery are now covered with water-lilies. No blackfellow ever attempts to



Entrance Hole  
to Nargun's Cave  
Cameroon's No.2,  
Lake Tyers

fish near the Ngrung, nor do they ever walk in its vicinity, because the ground trembles there.

At last the needed information was obtained, and Howitt's Nargun's Cave discovered. It turned out to be a hole, about five feet deep and about six feet in diameter on the steep bank of the eastern side of the Nowa Nowa Arm of Lake Tyers, about 25 feet up from the water's edge. At the bottom of the hole there is a narrow opening into the side of the hill, just big enough for a man to squeeze through. Earlier that day, while making inquiries as to the whereabouts of Cameroon's No. 2, Mr. Alan Brooks, of Nowa Nowa, was interviewed. This was fortunate, because Mr. Brooks knew all about the cave, although he had never heard of the associated legend. He stated that he had gone into it, the first time about thirty years ago, the last about twenty years back, and described it as tunnelling into the hill. He said that, once inside the narrow opening, the

entrance dipped rather sharply for some ten feet, then levelled out and went straight into the hill. The tunnel was large enough for him to walk erect. It contained no stalactites or drawings. About 200 feet from the entrance there had been a fall of rock, and further progress was impossible, although his fox-terrier had got through and did not come back for quite a while, which suggests that it had gone a long way.

Having found the Nargun's Cave, it became imperative to learn something about Dan's mother. With this object in view another visit was paid to Mrs. Annie Alberts, thinking that, as she came from the Western District she would probably remember Dan's mother. Fortunately, she did; Dan was Dan Cortwine, a full-blood aboriginal, born at Dergholm, north-west of Casterton, on the Glenelg River. He came to Lake Tyers with his mother, Lilian, who was a tribal woman (Jardwa tribe) from the Wannan River. She was a real

wild black, and did not come to any aboriginal stations until after Dan was a lad. Dan died about 1940, and was then over 60 years of age.

This seemed to solve all the problems; Lilian, after fighting the Nargun, must have fallen into the Ngrung. But, no, Dan Cortwine had a daughter, and her name was Lilly. This rather complicated matters. Further, Mrs. Alberts did not remember, or had not heard the legend of the woman Lilly who was sucked into the Devil's Hole and who was responsible for the water-lilies growing at Lake Mystery.

Later inquiries, this time at the Aboriginal Board, revealed that Lilian Cortwine, the grand-

mother, the woman who had emerged from obscurity as the conqueror of the dread nargun, did not die at Lake Tyers. She went back to her own country, the Western District, and departed this life at Lake Condah on May 6, 1898, about 56 years old. Obviously she was not the one who was drowned in the Ngrung. Lilly Cortwine, the grand-daughter, was born at Lake Condah on March 26, 1909, and died at Lake Tyers when 18 years of age. The cause of her death could not be ascertained.

Alas for the legend. Unless Lilly died by drowning, neither of these two women could be held responsible for the water-lilies growing in Lake Mystery.

## Portland Excursion, Christmas 1961\*

By M. J. LESTER

On Friday, Messrs. Finck and Hardie were the leaders on a trip to Mount Clay via The Nine Mile, an area that the Portland club had been influential in obtaining as a reserve. The botanists enjoyed themselves greatly at Mount Clay, though the season was rather late for many flowers. There were more fine Hyacinth Orchids, a large Leek Orchid (*Prasophyllum* sp.), a dainty Butterfly Flag (*Diplarrhena moraea*), plentiful Scented Paper-bark (*Melaleuca squarrosa*) and Sweet Bursaria (*B. spinosa*), the Yellow Centaury (*Sebaea ovata*), and seve-

ral plants of the Blue Tinsel Lily (*Calestasia cyanea*) but only one of these had a flower.

Having returned to Portland by 4 p.m., there was time for a visit to the Kurtze Museum, where Mr. Kurtze gave free admission to all the naturalists visitors, some sixty in all! He has a splendid collection of shells, some live-looking stuffed lizards, aboriginal artefacts and a great variety of other interesting museum items. The museum was established by his father many years ago, and has become widely known.

On Saturday, December 30, the venue was Nelson, a little more than a mile from the South

\*Continued from last month



Australian border at the mouth of the Glenelg River. After a good trip through a lovely stretch of forest, the naturalists arrived at Nelson, where half the party went up the river in a launch while the other half did some individual exploring; then roles were reversed. The river trip was delightful. The Glenelg has cut down through the sedimentary rocks, mostly limestone of pale colours, and the banks, rising to sixty or seventy feet above the water are sometimes quite precipitous. The skyline was marked by large grass-trees (*Xanthorrhoea australis*) with tall black spikes, the twisted trunks and sparsely-foliaged heads of weather-beaten moonahs, and scatterings of small eucalypts—mostly Brown Stringybark (*E. Baxteri*). Nearer, on the steeply sloping banks, were the familiar Coast Beard-heath, Shining Cassinia (*C. longifolia*), Drooping She-oak, (*Casuarina stricta*), masses of clematis in fruit, ixodias covered in flowers, and, on the more precipitous parts, stretches of the colorful foliage of Bower Spinach (*Tetragona implexicoma*) with the ends trailing right to the water.

The boat turned about soon after passing Donovan's Landing, which is in South Australia. It was in South Australia that a darter gave everybody an exciting moment—a clear view of it perched on a dead branch of a tree hanging over the river; its position made the extraordinarily slender, snake-like neck obvious so that there could be no mistaken identity, even without binoculars. Both launch parties reported having seen it

in the same spot. Pelicans and egrets were active in the more open reaches of the river towards the sea, south of Nelson.

On Sunday, most members went to Mount Gambier. The Blue Lake could not have been bluer and the other lakes were just as charming. The tower on the summit of Mount Gambier itself overlooking Valley and Brown's Lakes, with its view over the fertile lands to Mount Schank and beyond, was a good vantage-point to ponder the recent geological history of the area. A visit was paid too to the Town Cave in the centre of the city. Some members remained in or about Portland for the day, seeking out Henty associations, watching the water birds on Fawthrop Swamp, almost in the town itself, or out on the nearby heathlands. All groups agreed they had had a very good last day.

It was New Year's Eve and the entertainment committee had prepared for a party in the large, conveniently-empty shop-room on the ground floor of the guest house. Many of the Portland naturalists and their families were able to join in these celebrations; altogether the gathering must have numbered about a hundred that evening.

Monday, January 1, 1962, was departure day. Several of the naturalists of Portland and the other towns came to say goodbye. There had been a wonderful series of excursions—the Portland F.N.C. had planned it that way. It is impossible to express adequate appreciation of all the Portland members did, and special thanks are due to Messrs. Learmonth, Beaglehole, Finck

and Hardie, who gave so much of their time and thought to showing us the locations and items of greatest interest. Association with people of such active enthusiasm is most stimulating.

Returning home on the Henty and Glenelg Highways via Hamilton (where the trees and flowers in the public gardens were admired) and Ballarat, a stop was made for lunch at Lake Bolac.

Thanks go to Miss Marie Alender, F.N.C.V. excursion secretary, for the planning and organizing which made the week's activities so successful.

#### Appendix: Terrestrial Invertebrates

**Spiders:** For those interested in the invertebrates, the trip commenced auspiciously. At our lunch stop on the first day, in the Stony Rises near Pirron Yallock, those who struggled through the thistles lining the north side of the road were rewarded by the discovery of a colony of living jewels—Spiny Spiders (*Gasteracantha minax*). As is not unusual with this spider, considerable colour variation was noted between individuals, some being a deep velvety black, some displaying patches of red, yellow, or white.

**Introduced Snails:** The introduced Mediterranean Snail (*Helix pisana*) was noted several times. This mollusc raises problems. Introduced by accident into South Australia, it has spread along the south coast of Australia as far as Port Phillip Heads, and is very common in the Bellarine Peninsula and Geelong; but it does not occur in

*Footnote:* In reference to comments on Tower Hill, in the first part of the report of the F.N.C.V. summer excursion (see *Vict. Nat.*, Vol. 79, p. 103, August 1962), Mr. J. Martin, of Warrnambool, has written the following:

"I should like to correct a couple of ideas arrived at after the short stop. The rim the tourists were on was the rim of the nested caldera. The numerous craters are on the island. The main one is about 250 feet deep with water of unknown depth in it; it may not be very deep, but no one seems to know. The second crater is in the north-west part, and although containing water now, has been dry at times. For every pine tree on the area one can count at least twenty swamp gums, and for every boxthorn there would be a boobialla. There are also numerous blackwoods."

By E. H. COGHILL

the Melbourne area and has never been reported east of Port Phillip Bay. On this trip it was very abundant at Tower Hill, near Koroit, feeding on Bidgee-widgee (*Acaena sanguisorba*), which is also a popular food plant for it in the Point Lonsdale district. At Mount Gambier it was observed on fence posts, and the caretaker at the camping reserve informed us that ibis frequently come and help themselves to a meal. At the January general meeting, Mr. Colliver (on a visit from Brisbane) said that this habit of the snail of seeking elevated positions had been noted at Mount Gambier years ago. But the Bidgee-widgee, which occurred here and there in the reserve, was quite free of them, and they were not observed at all in the Portland district. This suggests that it is not the distance from the open sea (a suggestion that is sometimes put forward) that



Excursionists  
on the road  
to Cashmore.

keeps them from Melbourne, but some other reason, possibly geological. I leave it to the experts on mollusca to state what that reason may be. And why do the snails like Bidgee-widgee at Warrnambool but spurn it at Mount Gambier?

To complete the tale of molluscs: in the back-yard of Cliveden House, Portland, on some *Nasturtium* plants, was another introduced snail, *Cochlicella barbara*, a small creature with a cone-shaped shell. At the March general meeting a member suggested that this snail is a scavenger eating dead plants only and not harming living matter. Comments on this point would be of interest.

*Horehound Bugs*: Near the Bridgewater Lakes, some Horehound (*Marrubium vulgare*) was seen, and on it, as usual, were Horehound Bugs (*Agonoscelis rutila*); also as usual they were mistaken for Harlequin Bugs (*Dindymus versicolor*), as they are about the same size and have somewhat similar markings, though the Harlequin Bug

is described in the books as 'red and black', and the Horehound Bug as 'orange and black'. (See McKeown, *Australian Insects*, pp. 81, 85.) Specimens of both insects were displayed at a general meeting several months ago.

*Butterflies*: On Tower Hill, also, was a clump of boxthorn (*Lycium ferocissimum*) in full bloom. This was swarming with butterflies, mostly Cabbage White (*Pieris rapae*), and an unidentified brown. Presumably they were attracted by the nectar only. It would be too much to hope that the Cabbage White Butterfly caterpillars would do something so useful as to eat boxthorn. At Cape Bridgewater, in amongst the distorted bare rocks at the top of the cliff, above the Blow-hole, where there seemed to be no vegetation whatever within hundreds of yards, large numbers of brown butterflies (*Heteronympha merope merope*) were seen. How they got there was a puzzle, till we recalled that there had been a strong north wind

the day before. We therefore presumed that there had been a big emergence of these butterflies over the last few days, that many of them had been blown away from the forest, and had taken shelter in these rock crevices to avoid being blown out to sea, and that they were now making their way back.

*Mountain Grasshoppers*: Several of the weird Mountain Grasshoppers (*Acridopeza reticulata*) were taken. The male of this species looks like a normal long-horned grasshopper, but the female, which does not look like a grasshopper, has wing-covers (*tegmina*) but no wings. When she lifts her wing-covers she shows bands of red, white, blue and black. Unfortunately, these colours very quickly fade after death; however, some good coloured photographs were obtained.

*Burrowing Wasps*: On one of our stops in the forest, some Burrowing Wasps (*Bembex furcata*) were observed in action. They were watched for about two hours, but no information of note was obtained. Some photographs were taken, but the dull white background of sand made them most unsatisfactory. We had hoped to see them bringing back their prey, usually flies, but were disappointed.

*Insects on the Beach*: Some of those who reached the coast at the Bridgewater Lakes brought back insects found on the wet sand, apparently about to commit suicide. They were an ant of the genus *Polyrhachis*, a grasshopper (*Austroicetes vulgaris*), two beetles (*Sericesthis pruinosa* and *Mastochilus poli-*

*tus*), a large water beetle (*Hydrophilus latipalpus*), weevils (*Leptopius duponti*), *Paropsis intacta*, and some unidentified ichneumons—quite a haul!

*Beetle Swarms*: At the farm on Dutton Way where we saw the blubber cauldron, now doing duty as a water trough, the ground was covered with small green Cockchafer Beetles, *Diphucephala colaspoides*. We were told that at first they ate anything, but gradually concentrated on the skeleton weed, and therefore were not so unpopular as at first. For some reason the infestation was disappearing as mysteriously as it appeared, and most of them were dead. Members will recall that we saw a similar infestation at Glen Aire.

*General*: No attempt was made to collect, or even to note, all species observed. As well as those already mentioned, the following were sufficiently interesting to bring home and identify:

A wasp, *Hypobracon* sp. (Braconidae); a hawking dragonfly, *Austroaeschna brevistyla*; a weevil, *Catasarcus* sp. (Curculionidae); a dull-coloured beetle, *Ecnolagria grandis* (Lagriidae); a chafer, *Cheiroplatys bifossus* (Scarabaeidae); a carrion beetle, *Ptomaphila lachrymosa* (Silphidae); a noctuid moth, *Pseudaletia australis* (Noctuidae); a small fly, *Anabarrhynchus latifrons* (Therevidae); a stink bug nymph, *Leptochoris mitillata* (Pentatomidae); a flower wasp, *Lophocheilus rufiventris* (Thynnidae); and a mantis-like lacewing, *Mantispa strigipes* (Mantispidae).

# The Local Dialect of Gippsland Lyrebirds

By K. C. HALAFOFF

Some months ago on our trip to Bulga Park, Mr. Peter Bruce succeeded in recording there a song of a performing local lyrebird. The weather was windy and noisy, but thanks to the parabolic reflector the background noise was reduced to a minimum and sufficiently clear results were obtained, and a note score containing the main original lyrebirds' items has been written down from the tape.

The note score proves beyond doubt that all three characteristic items—calls, cymbals and accompaniment to dance (ricochetting stick) are distinctly different from the Sherbrooke version. Gippsland calls are of shorter total duration ( $\frac{3}{4}$ " instead of Sherbrooke's  $\frac{1}{2}$ "') and contain less notes (5); while Sherbrooke birds use a greater number (7 to 8). Despite a different melody (which in the Sherbrooke call drops down at the end) both calls sound very similar; the Bulga birds' call gives the impression of a clearer sonority, and of a more metallic character.

Gippsland "cymbals" are entirely different from the Sherbrooke version; they start with an accentuated note rapidly gliding down a whole octave in a clear pitched glissando, and these are given in pairs (unlike Sherbrooke cymbals, which consist of evenly spaced up-and-down glissandos). A series of such pairs often starts with a

single note, and the start of each glissando is strongly accentuated by a high-pitched beat. These Gippsland cymbals thus have a much simpler "orchestration" than the Sherbrooke version, and they are quicker in tempo.

The "ricochetting stick" item is much simpler than its Sherbrooke equivalent: it consists of three beats of equal duration, the first being more accentuated. These beats are repeated in series of three, spaced by a pause approximately equal to one beat.

For easier comparison the Sherbrooke version of the call, as written by Miss E. Rofe, the Australian ballet composer, is also given in the score. For comparison of cymbals and stick items the reader is advised to refer to my note score in Volume 78 of the *Victorian Naturalist*, July 1961, which should however be slightly amended as follows:

It has been discovered in the process of determination of the actual pitch of Gippsland items, that a mistake has been made by the record-cutter on one of my discs, which proved to have been cut at half-speed instead of at quarter-speed. Consequently my note scores show the pitch one octave too high. It could be easily corrected in my earlier scores by replacing the sign "3 x 8 . . ." by "2 x 8 . . .". The transposition of pitch in the present score is correct.

1 GIPPSLAND DIALECT (BULGA PARK).

Call  
J = 550

CYMBALS  
J = 550

Call  
J = 700

2 SHERBROOKE DIALECT.  
By Ernest Rofe

Call  
J = 700

1 This score is sometimes F#

Note Score of Lyrebirds' Dialects

As may be seen from comparison, Miss Rofe's score of the call is very close to mine, the differences being only slight, and it is in the same key. As the beginning note in Miss Rofe's numerous other notes sometimes coincides with mine, the calls which I selected from her notes may not be the same as I wrote down; there are actually sometimes slight differences between the calls. These may, as stated earlier, vary as much as half a tone in the same series of calls, given by the same bird.

Miss Rofe also pointed out to me that "clicks" have, apart from beats, a tonal value, and I have therefore included her version of "clicks" in the accompanying note score. I am indeed very grateful to Miss Rofe for sacrificing nearly a full day of her busy time to write down many items, of which only a few

selected ones are given. Miss Rofe also checked the actual pitch of the song.

The metronome ratios given for the Gippsland song should be regarded as average values. Variations of tempo may be considerable. These ratios were all computed by myself.

Generally speaking, Gippsland birds appear to be more "formalistic" in their song than their Sherbrooke counterparts.

It appears now that the existence of at least two local dialects—Sherbrooke and Gippsland—has been fully proved. It remains now to find out what dialects are used by the lyrebirds elsewhere—in New South Wales, Queensland and in other parts of this state. It appeared to me while listening to a lyrebird at Cement Creek near Warburton that it used the Sherbrooke dialect in the cym-

bals item, but owing to the noise of the creek I was not quite certain of it. In any case, the ear may be deceived in the case of rapid melodies like these\*, and a tape recording played at a much slower speed can alone determine those subtle

\*I was confused about Gippsland "cymbals" which, when heard first, appeared to be upward glissandos.

## Book Review:

# Flowering Trees of the World for Tropics and Warm Climates

By Edwin A. Menninger, xv & 336 pages, 442 coloured illustrations and many drawings in the text. The Earthside Press Inc., New York. \$18.95.

This is a rather unusual book that contains much to interest the gardener in warm climes and the botanist. The author, after more than twenty-five years searching for flowering trees and introducing them into Florida, gives us what may perhaps be described as a magnificent modern descendant of the Victorian "conspicuous". With the help of correspondents in many lands he has selected one, sometimes more, examples of each genus of flowering tree worthy of cultivation in at least one tropical or subtropical garden. Minimum temperature limits are given for a large number of the species, and lists at the end of the volume enable the gardener to select those suited to the size of his plot, the nature of his soil, temperatures and other climatic factors, fragrance and, of course, to suit his colour scheme.

The author of such a book is justified in using the words "tree" and "flower" in their broadest senses.

Great care has been taken with the botanical nomenclature. The index contains many synonyms and most of the important vernacular names. The classification follows Hutchinson, but the families are arranged in alphabetical order and the genera in alphabetical order within the family. No attempt is made in the text to assist

differences that a human ear can easily miss.

*Footnote:* To avoid a mistake in tracing, I have given here Miss Rofe's scores in the same position on the piano note scale as they appear in her original notes. The transpositions to the correct pitch are given by the usual signs such as "8..." or "3 x 8...".


the reader to recognize the trees. The information given under each genus differs from genus to genus: it may give the size and colour of the blooms and mention the shape of the leaves of what is considered to be the "best" species, it may discuss the claims of several species to be the "best", it may contain interesting information on growing from seed or other cultural notes, and there are sometimes anecdotes.

The coloured illustrations are almost all from photographs. Most of them are excellent; but a few—for example No. 229—would have been omitted with advantage. The paper, both for letterpress and plates, is of high quality and the printing of both is most satisfactory.

There is an excellent bibliography listing 148 works on botany, tropical gardening, forests and kindred subjects in America, Europe, Asia, Africa and Australia.

This work will be found of great interest by all who are engaged in the cultivation of ornamental trees and shrubs, and it will no doubt be purchased for libraries. Most individuals who would like to possess a personal copy will, unfortunately, find the price beyond them.

J. R. HUDSON



# ALONG THE BY-WAYS

*With the Editor*

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## **Flame Robins in North-Eastern Victoria**

The following observations and questions are from Mrs. Frances Gladstone of Beechworth:

On June 12, when walking across open paddocks near our home, I counted forty-two male Flame Robins. Each was accompanied by his brown mate and they seemed to be constantly feeding. Are these birds migratory, or do they congregate for winter feeding?

My husband and I have never seen so many in this area before, but we have always observed them in greater numbers during winter months than throughout the summer.

On several trips to both Mount Bogong and Mount Buffalo during November, December and January, we have noted large numbers of Flame Robins and suspect that they spend the summer in these areas, moving down from the snow-country at the onset of winter. Is anything known for certain in this regard?

On June 11, our first nesting find

of the season took place with the discovery of the partly completed nest of a Yellow-tailed Thornbill, in the leaves of a Red Box tree.

These comments virtually answer the questions, for they indicate the little that is known of the seasonal movements of the Flame Robins. Details of the nomadic movement of birds are often difficult to assess. Even when a species appears to have a population of permanent residents in a district, it may be a case of individuals from elsewhere moving in and replacing others which have shifted out of the area.

## **Flowering Season of Wattles**

Following the reference in the *Naturalist* of July, 1962 (Vol. 79, p. 71), to the May flowering of Spreading Wattle (*Acacia diffusa*) Mr I. R. McCann of Stawell writes:



Throughout the eastern-Grampians region this wattle normally commences to bloom early in April, and it is unusual to find it in bloom later than July. This year was unusual in that the first blossoms did not appear here until June. In view of your report of it flowering in May in north-eastern Victoria, it would appear desirable to obtain observations from other regions. In *Flora of Victoria*, Ewart's "flowering September to November" is incorrect as far as this area is concerned.

The original comment was based on experience in East Gippsland, for there the species flowers, as Ewart indicated, in spring—mainly in September. However, this year it was noted to be coming into full bloom early in August, both in Western Gippsland and in far-eastern areas. This was a month earlier than usual, and that behaviour was in conformity with the pattern of early flowering of other wattles in the same districts.

In view of Mr. McCann's remarks, it is interesting to note that Ewart's description of the phyllodes of *Acacia diffusa* (" $\frac{3}{4}$  to 1 inch long") applies to the inland form, for in East Gippsland the length is usually about two inches and, on vigorous young growth may exceed three inches. The species appears to be polymorphic.

#### The Question of Root Parasitism by *Exocarpus* and *Santalum*

These notes on the behavior of the roots of certain santalaceous plants have been submitted by Mr. A. Triffett of the C.S.I.R.O. Sugar Research Laboratory:

Recently, in connection with research into the fatty acid components of plants belonging to the family Santalaceae, I had occasion to collect

the roots of many of these plants. Of particular interest were specimens of *Exocarpus cupressiformis* and *Santalum acuminatum*, which, during extensive collection, yielded no evidence of their parasitism on the roots of other plants.

Two specimens were found of *E. cupressiformis*, in which there had been division and subsequent grafting of the root. These were similar to examples reported in the *Victorian Naturalist* of October, 1961—Volume 78, page 169. However, in this latter case, the grafting had apparently occurred after the roots had been exposed. I have not seen other instances of this grafting of roots in any further members of the family which I have examined.

In one case, a root of *S. acuminatum* was found to be almost completely twined around one of the roots from a different species, but no union between the two plants had occurred.

Several years ago, it was reported that successful attempts had been made to grow *E. cupressiformis* from seed, but subsequent growth has been very poor, resulting in a spindly, stunted plant, only twelve inches high after four years' growth. It would also appear that *E. cupressiformis* is particularly adept at sucker growth from severed roots (as in road cuttings).

Although I have been unable to find any evidence for root parasitism at this macro level, I feel that in view of the abnormal behaviour of the root system, it may occur more frequently at the micro level with the extremely fine root-hairs.

In September 1934, Edith Coleman discussed this subject in the *Victorian Naturalist* (Vol. 51, pp. 132-139, giving considerable evidence of root parasitism in the Santalaceae. One comment was that in *Exocarpus cupressiformis* the attachments (haustoria) "were so small as to be discerned only with a lens", but a photograph was published of the stem of a young "cherry" growing out of the trunk of a eucalypt.

## Tame Quails at Leongatha

These comments on some local birds come from Mrs. Ellen Lyndon:

To the sheltered oasis of the farm-yard come, from time to time, many bird visitors. Some may stay around for a week, or a month; some pass along in the same day. The Mistletoe-bird left a reminder of its visit in the single flowing tuft of that parasite on a wattle. Yesterday a female Golden Whistler sat for hours quietly trilling the sweetest little song.

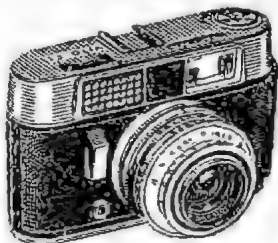
For the past three weeks of August a pair of quail, "so round, so firm, so fully packed", have lived about the garden and under the house—not that harbinger of hay-fever that cries "Chick-o-wee" night and day, but a palely freckled pair with a plaintive call, a long and a short whistle. They feed about the garden like a pair of miniature guinea-fowl and will pick up scattered grain or oatmeal spread for them.

Our cat is elderly now and quail are apparently beyond his reach, as are rats. It is amusing to see him sitting in a sunny spot with two

such delectable morsels calmly feeding a few feet away. At milking times the house is deserted for long periods, and often we come hurrying home, forgetting our visitors, and almost tread on them picking around the door. They rise in panic up over the tanks or the garage roof, but are soon to be seen again slinking along the hedge. If the pair are separated by this flushing, the plaintive whistling calls continue until they are reunited. More than once, by close imitation, it has been possible to call a lonely one right up on to the back verandah. It is a great pleasure to have such normally wary birds become so trusting.

This is a large quail and is probably the Silver or Swamp Quail (*Synoicus ypsilophorus*)—but so far I am not sure of that.

It is probable that the best of ornithologists cannot distinguish the Swamp Quail from the Brown, in the field; and many believe that the two are not different enough to be classified as separate species.



## *Voigtlander*

*because the lens*

*is so good*

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# Memories of the Dargo Valley

By S. R. MITCHELL

During 1897, my father and I were camped in a log hut on the Dargo River some seven or eight miles south of the St. Bernard Hospice. The hut was on what is known as Chinese Flat and opposite Brocket, which is shown on the map as a small gold-mining township of the sixties.

The narrow flat on the western bank was covered by a dense growth of tea-tree and acacia scrub teeming with lyrebirds and with numerous examples of their dancing mounds. On a fine day, one could hear their cheerful calls and chucklings from morning to night and listen amazed to their remarkable powers of mimicry. If one was cutting or sawing wood, the sounds were imitated to perfection. Two contrasting mimicked calls were those of the whip-bird and the raucous cries of the black cockatoos.

In those days, silver-grey and black mountain possums (bo-bucks) were abundant and the area was a naturalist's wonderland, with a great variety of bird-life and many fish and eels in the deeper parts of the river. I would be pleased to hear from members if these conditions still prevail.

The vegetation in the gorge-like valley was mostly tea-tree, silver wattles and tall straight eucalypts. On following up the steep slopes, these gave way to what we know as "woolly-

butts",\* trees with rough bark for ten to twelve feet from the ground and then smooth bark above. They were very straight, seldom more than a foot in diameter and could be readily split to make skis which we used for crossing snow. Above a certain altitude, these woollybutts were replaced by snow gums.

We were working the Flat for gold and put in a winter there with little success. After a fall of snow, when riding across the Dargo Track, one would soon be drenched due to snow being showered down from the tops of the vegetation. Often during the night we heard the sound of large branches of trees cracking and falling because of the freezing of sap and their heavy loads of snow.

On moonlit nights, the contours of the hills could be seen quite clearly. The Dargo River follows a winding course from its source near Mt. Hotham, some 6000 feet above sea level, alternating between the steep spurs from the high tops, mostly parts of basalt-capped plains and small residuals. It falls rapidly and is usually shallow except when heavy rains fall. Its bed is made up of large water worn boulders.

About half a mile from the Flat a race had been dug to carry water from Paw Paw Creek for sluicing the ground,

\*Alpine Ash, *Eucalyptus delegatensis*.—  
Editor. 17

and we often found that the water had stopped running because of lyrebirds scratching in the soft soil and breaching the race. In its lower reaches, the river bed had been worked for gold in the following manner: A central dam was constructed to divert the water to one side, then one half of the bed was dug up and sluiced. The water was then diverted into the worked part, allowing the other half to be treated. Much evidence of the early miners' activities was to be seen in the miles of water races along the steep sidelings, enabling them to work high-level terraces. In one case

there was the remains of a wooden flume that had been built around a vertical cliff overhanging the river; in another, a large white gum-tree had been felled across a rocky channel in the river and a flume adzed out of it to convey water across the river. Shallow shafts were numerous, sunk in search of payable wash, as were heaps of coarse wash thrown out of the sluice-boxes. Although much gold was won in the early days of mining, remarkably little was left, probably due to the Chinese miners who followed the Europeans and cleaned up what they had missed.

## Hunting Pond Life

By D. E. MCINNES

For sport, some men go hunting game on land with a gun, others in water with a rod and reel. This article deals with water hunters, but with a difference—it tells of some methods used to "bring them back alive", with a net, a glass tube, and a lens.

"First catch your game," says an old maxim. To do this, one must know where to seek it, and, having found a likely spot, how to land it. Where? Any pond in which weeds are growing. Pond life generally lives around aquatic vegetation, some types swimming freely, others clinging to the living plants, still others living in and on decaying vegetable matter floating on the surface or resting on the bottom. To catch the swimming or floating forms, the collecting net is used.

Having swept the net through a selected patch of water and having allowed the excess to drain through the mesh, the contents of the tube are poured into a glass trough about three inches long, half an inch wide and two inches deep. There, the catch is examined with a hand lens. A satisfactory "darkground effect" may be obtained by holding the trough so that one looks through it towards a dark area—a shadow, a tree-trunk, or even somebody's dark coat—with the daylight shining obliquely through it.

If it is decided that the catch is worth retaining, it must be transferred to some container, preferably marked and with a matching mark on the stopper, so that the location of the catch can be identified and recorded

later. The best kind of container is a flat-bottomed glass specimen tube, for this is comparatively robust and has the advantage over a test tube that it can be stood on a table without the necessity of a rack to support it. It is suggested that a standard size of tube be adopted, and the four-inch by  $1\frac{1}{2}$ -inch size seems most suitable. A diameter less than  $1\frac{1}{4}$  inches renders examination in the tube difficult, and four inches is a nice depth in which to insert a pipette. An advantage in standardization is that pond hunters may exchange tubes and each still have a uniform set.

To catch those forms of life which are fixed to weed stems or leaves, it is necessary to take the weed away for examination. Break off a piece and put it in the trough, with some of the accompanying pond water. An examination of the weeds with the naked eye, while they are still in the water, will often reveal clues. For instance, a small grey patch on a piece of root sticking out into the water could be a mass of *Vorticella*; a little brown sphere on another weed might show itself under the hand lens to be a colony of the rotifer *Megalotrocha*; and a piece of green filamentous weed with a rough dark coating in parts, on examination, discloses a colony of the graceful polyzoan, *Plumatella*. Any odd shape, projection or patch of colour, that appears to be out of place on a piece of weed, is worth a dip into the trough for closer examination. A great number of pond dwellers feed about weeds, without actually attaching themselves, and

these may be captured by filling the trough with water, then breaking off a piece of weed and gently shaking it in the trough. The creatures are freed thus and may be examined under the lens.

In almost any pond, decaying vegetable matter will be found floating—for instance, a piece of water-logged branch or a dead water-lily leaf. The under-surface of such an object is usually covered with slime, rich in organisms. Scrape this slime off (the edge of the flat trough cell comes in handy here) and tip slime and water into a specimen tube for subsequent examination. And, investigation of a greenish patch on a muddy surface (particularly where sunlight can shine through the outer film onto it) may yield hundreds of green flagellates such as *Euglena*.

Having his specimen tubes filled with swept, washed and scraped game, the pond hunter returns to his lair to systematically inspect his catch. First, the tubes are removed from their carrying container and set in stands, marked to match the tubes, and the stoppers are extracted. Any extra weed that has been carried back, rolled up damp, should be put into jars—small jam jars are suitable, provided the glass is clear and with little distortion, to enable the weeds to be scrutinized under the hand lens.

The apparatus needed to examine the catch is simple. First there is the microscope. Use this in the vertical position. This is necessary as, in the inclined position, difficulty is encountered with the water in the examining cells, and the objects tend to fall

out of the objective's field. A double or a triple nosepiece is essential—with a very low power objective and one of medium power. Low power is needed for two reasons. The first is to search the trough, for trying to find a small rotifer for instance, in a large expanse of water, with a 10× objective, is an arduous task. The second reason is that the searcher should view the pond life as a whole, for no appreciation of beauty of form can be obtained by examination of only a small area.

Dark ground illumination is preferred for almost all examinations, because most pond dwellers are lovers of light. They tend to congregate at the luminous point, especially if top light is shielded from them by some form of opaque cover, perforated to allow the objective to be inserted through it. (Advantage may be taken of this attraction to light, in arranging exhibits, as well as for observing.) With an Abbé condenser, excellent results are obtained with two-inch and two-thirds-inch objectives, and fair results with one-third-inch, which is the highest power advisable under these circumstances. Occasionally a one-eighth-inch objective may be used with transmitted light to examine internal structure and very small forms, but living material is difficult to examine at high powers.

Secondly, flat dishes or cells are needed, in which to examine the material. Suitable cells may be constructed from rings half an inch deep, cut from two-inch fibre tubing and each cemented with gold size, marine glue or

PC49, to a sheet of glass two or three inches square and preferably no thicker than a standard microscope slide. Petri dishes are unsuitable, due to the distortion usually found in the bottom, and watch glasses are useless on account of their shape. It is impossible to move a watch glass and retain objects in focus, for the curvature spoils the field, and they are usually too shallow to retain water satisfactorily.

Thirdly, apparatus is needed for selection and transfer of the catch. Initially, there are pipettes (several of various sizes are useful) and one or two pieces of perspex about three inches square and about the thickness of the slides one uses. Slides and perspex should be interchangeable without any appreciable alteration in focus. Too thick a piece of perspex will obviously prevent the condenser from focussing through it. A small funnel is also required, and some small specimen tubes, as well as strainers of various meshes. The last items may be made by wrapping the ends of six-inch lengths of half-inch glass tubing with small squares of nylon stocking or fine netting, the material being bound squarely to the tube by means of an elastic band and then trimmed.

An item considered to be absolutely necessary for the pond life hunter is a compressor or live box. This is a slide with vertically adjustable cover glass, under which a single pond creature may be held captive in a drop of water. Compressors have two types of adjustment for alteration of distance between

cover and slide. The first is a simple push fitting of concentric sliding tubes, one carrying the cover and the other on the slide. This type has the advantage of holding a drop of water for several days without evaporation, but a disadvantage is that it is somewhat rough in operation and therefore apt to squash a specimen rather than simply confine it. The other type has a spring-loaded screw adjustment to an arm which carries the cover glass. This allows precise control of the vertical movement of the cover, with little danger of crushing the specimen, but the water evaporates much more readily.

Before the actual searching, all the apparatus must be clean. Dust, or the dried remains of the last catch, are not conducive to good observation.

**The Weed.** Take a piece of weed from the collecting tube, place it in the large trough, and examine it with a hand lens. Place likely-looking pieces in one of the flat dishes, cover with water one-eighth of an inch deep, place a smaller flat dish on top of the weed (this acts as a cover glass), and examine by dark-ground illumination under the very low power of the microscope. If anything of interest is sighted, closer examination may be made under a medium power objective. Any special item required for further study can be obtained by removing the strand on which it is situated, trimming to size with forceps, and mounting in the compressor, where it may be observed under any desired conditions of illumination and power.

(to be continued)



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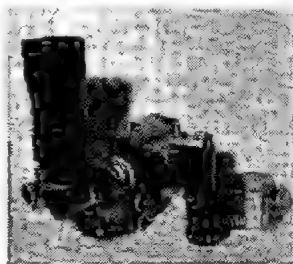
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# Field Naturalists Club of Victoria

General Meeting—August 13, 1962

Approximately one hundred and twenty members and friends were present, with the president, Mr. M. K. Houghton, as chairman. The Ringwood F.N.C. was affiliated with the F.N.C.V., making the twenty-fourth affiliated club.

Mr. J. R. Garnet and Dr. L. M. M. Beadnell will represent the club at the A.N.Z.A.A.S. conference in Sydney.

Mr. N. A. Wakefield gave a talk on "Maria Island"; visited by two members of the Fauna Survey Group in January 1962 in an attempt, with permission from the Birds and Animals Protection Board of Tasmania, to locate the Little Tasmanian Marsupial Mouse (*Antechinus minimus*). With the aid of a very informative map and colour slides, Mr. Wakefield gave a clear picture of the wasp-waisted island (named by Tasman after Van Diemen's wife), and outlined its history from the French expedition of Baudin in 1802 as described by Peron, the convict settlement of 1826, exploiting the Carboniferous fossil deposits in cement works, hop-growing and grazing to the now nearly deserted settlement of Darlington, there being left now on the island only nine residents and a plenitude of free accommodation in derelict buildings.

The rugged dolerite cliffs of the Bishop and Clerk, fern gullies with tiny filmy-ferns, the stunted *Ipaecris marginata* discovered 2000 feet up on Bishop, three endemic honeyeaters and the very photogenic lizards were amongst the items presented by Mr. Wakefield with his characteristic ability to stir the imagination and the wish to be on the trail, or blazing one, in little-known places.

No *Antechinus* showed up there. Mr. Wakefield has carried out persistent researches into references of the early French observers, and he announced that he was flying the next day to Watchhouse Island with a hope for a rendezvous with the elusive *Antechinus minimus*.

Mr. J. M. Wilson announced that the Landscape Preservation Council was recommending to the secretary of the Lands Department that a section

of Woori Yallock Creek at Yellingbo, the habitat of the rare Helmeted Honeyeater, be kept as a reserve under the control of the Landscape Preservation Council, the Bird Observer's Club and the R.A.O.U.

The Society for Growing Australian Plants asks for the state emblem, the pink form of Common Heath, be put on the protected list, but no answer has been received from the Minister for Forests. The Landscape Preservation Council asks for suggestions of places suitable to be preserved and photographs of such places would be taken by a junior group attached to the National Trust.

Mr. C. J. Gabriel presented for the library a copy of the recently published *Marine Molluscs of Victoria*, by J. Hope McPherson and C. J. Gabriel. He mentioned that the first catalogue of shells in Victoria was published by J. H. Gatliff in 1888.

Mr. Gabriel exhibited specimens of the shell, *Hinnites pigantus* from California, contrasting the young form with the sturdy older one. Mr. A. J. Swaby brought flowering *Myoporum ziscosum*, Mr. K. Cheslin a large spherical eucalypt gall containing the pupa of an insect, and Mr. Alan Parkin a *Calythric* and Native Apple from the Ord River. Mr. W. J. Begley commented on the fine progress of the native plants in Maranoa Gardens and the beautiful flowers in bloom there now, especially *Eucalyptus preissiana*.

Ten new members (whose nominations appeared in the August *Naturalist*) were elected.

## Fauna Survey Group—

July 5, 1962

Mr. N. A. Wakefield chaired the meeting, which was attended by eleven members.

Many aspects of group business were discussed, but particularly those regarding the coöperation of country clubs and the situation with respect to Fisheries and Wildlife Department permit coverage. It was suggested that in the near future there should be a conference between the sub-committee formed at the June meeting



and representatives of the Fisheries and Wildlife Department in order to discuss both these matters.

Mr. Wakefield gave a comprehensive report on the current survey of small Dasyurids, with detailed reference to the findings of his recent trip to the western part of Victoria. It would appear that there are at least six, and probably seven, species of *Antechinus* and *Sminthopsis* in this area.

Mr. F. Rossignoli drew the group's attention to the sub-division taking place along the Koorang Creek and the fact that large colonies of Ring-tails (*Pseudocheirus laniginosus*) and Silver-Grey Possums (*Trichosurus vulpecula*) are being displaced. Mr. R. Warneke reported that a whale had been washed ashore at Port Fairy, and that it was to be examined further at a later date.

#### Geology Group, August 1, 1962

Twenty members and two visitors were present, with Mr. L. Angior in the chair. Mr. R. Dadds reported on the excursion to Derrinal and Heathcote on Sunday, July 15, in conjunction with the Bendigo club. Led by Mr. F. Robbins of Bendigo, about fifty persons attended. Various glacial pavements at Derrinal were further uncovered and examined. Collection of fossils from the Silurian and inspection of the Cambrian deposits at Heathcote completed the day. An excursion to the geology section of the National Museum was arranged for Saturday, August 11. A small collection of sapphires from Pakistan was received from Mr. L. Bairstow who is now touring India.

The subject for the evening was a talk by Miss P. Carolan on the Southern Tablelands of New South Wales. The speaker explained the area with the aid of maps and black-board diagrams. As the deposits are mostly Triassic and Permian, not available in Victoria, they are of considerable interest. The Wianamatta shales, Hawkesbury sandstones and volcanic flows were illustrated by coloured slides. Other pictures showed the plateau formations; Shoalhaven Gorge, and the rugged nature of the country caused by the various erosion

effects. Illustrations of current bedding, folding, case-hardening of surface sandstones and 'jungle' type of vegetation, concluded the talk.

**Exhibits:** Map compiled for nature show, to illustrate lava flows near Melbourne (R. Hemmy); faceted stones from Derrinal, serpentine, azurite, selwynite, magnesite, fossil star-fish and trilobites — all from Heathcote (M. Salau); two specimens of granite from the big "stranger" erratic at Derrinal, and one from smaller erratic nearby, to illustrate similarity of the stone (R. Dadds); doubly terminated quartz crystal (D. McInnes); limestone and graptolites from Shoalhaven Gorge (P. Carolan).

#### Microscopical Group—June 20, 1962

This meeting, which was attended by over thirty members, turned out to be one of the highlights of the year. In the well-appointed lecture hall of the Wool Bureau, Dr. G. E. Rogers commenced his lecture by comparing the limit of resolution of the ordinary light microscope of 0.2 microns with the limit of the Wool Bureau's electron microscope which is 0.001 microns, and theoretically the latter could be improved.

The speaker then traced the development of the instrument from De Broglie to the streamlined versions of today, the commercial variety costing about £14,000.

In principle they are similar to an inverted light microscope, using a hot cathode of tungsten from which electrons emerge into a vacuum. This beam is then passed through electromagnetic fields which cause the electron beam to converge in much the same way as a convex lens acts upon light. This passes through the specimen and the remaining process of image formation is similar to that of the ordinary light microscope except that the image is formed by an electron beam and can only be made visible by receiving it on a fluorescent screen or by photography, all of which must be carried out in high vacuum.

An inspection of the laboratories was then carried out, and members saw the making of ultra thin sections, about one millionth of an inch thick, by glass or diamond knife edges,

advance of the specimen being achieved by thermal expansion. Other techniques demonstrated or explained included "shadow casting" and negative staining with phospho-tungsten.

The electron microscope has supplied science with important information about the structure and function of some living cell components such as mitochondria, the nucleus and lipid droplets.

Finally, members were allowed, in small groups, to see the image of the Tobacco Mosaic Virus magnified 40,000 diameters on the fluorescent screen of the electron microscope.

Supper was supplied with the compliments of the Wool Bureau.

### Microscopical Group

Mr. D. McInnes acted as chairman on behalf of Mr. LeMaistre who was giving a talk elsewhere, and the seventeen members present stood and observed one minute silence as a mark of respect for Mr. D. M. Hull who passed away shortly after the May meeting.

Several offers for future talks were discussed; Mr. S. Evans will give a talk and show a film on Cine-Photomicroscopy in November and Mr. E. Matthaer will give a talk on Fluorescent Microscopy in September. Two new publications recently issued by the Ray Society were mentioned as being new additions to the Club library.

The guest speaker, Mr. R. Hudson, a veterinary pathologist, introduced his subject, "The Draw of the Threads", by outlining the rather complicated life cycles of some of the Nematode worms which parasitize horses, sheep and cattle. Some of these worms have what is called a "direct life cycle", that is, although they pass through a number of larval stages, only one host is involved, while those with an "indirect life cycle" have a number of larval stages which live in one or more intermediate hosts and develop into adults in the vertebrate host. Because of their soft consistency, these parasitic worms are not preserved or fixed in formalin but are dropped into 70% alcohol and boiled for about one minute then "rolled" under a coverglass in glycerin

or creosote prior to microscopic examination. Permanent slides may be made by taking straight from the creosote to xylol balsam.

Mr. R. Hudson brought along a number of specimens preserved in alcohol with slides, coverglasses etc., and instructed members in the technique of "rolling" specimens in creosote. The experience was both novel and interesting.

Specimens of *Oesophagostomen*, *Triphuris*, *Dictyocaulis* and asterid buds were demonstrated under the microscope.

## Bendigo F. N. Club— Syllabus

Members of the F.N.C.V. and of other country clubs who visit Bendigo are invited to participate in the local club's meetings and excursions. Here is the syllabus for the remainder of the year.

- Excursions—Start from Gold Jubilee Statue (half-day at 2 p.m., full-day at 10 a.m.):  
September 8 (half-day)—Whipstick Scrub; Botany (R. Allan).  
September 29 (half-day)—Sandy Creek, Wellsford; General (C. Bubb).  
October 18 (full-day)—Wychitella; General (J. Ipsen).  
October 20, 21—Melbourne; Combined Clubs' outing (F.N.C.V.).  
October 27 (full-day)—Mt. Franklin; General (E. Flanagan).  
November 18 (full-day)—Tennyson; General (R. Field).  
December 1 (half-day)—Diamond Hill; Birds (R. Eddy).

- Meetings—Start at 7.15 p.m. at Bendigo Technical College:  
September 12; President's address (A. Thomas).  
October 10; Films (Nature subjects) (F. Robbins, W. Ebdon).  
November 14; Central Australia (R. Eddy).  
December 12; Specimen Night (Members).  
—J. Ipsen, Hon. Sec., 15 Smith Street, Bendigo.

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Magnificent stand of White Mountain Ash *Eucalyptus regnans*, in the Macysville State Forest

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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This is a mass of one of the highland everlastings, recently distinguished as *Helichrysum secundiflorum* (see *Vict. Nat.* 68: 49, July 1951). The photograph was taken by H. T. Reeves at Lake Mountain, and it appeared in the *Naturalist* in May 1948 (Vol. 65, p.11), when the species was not distinguished from *H. thyrsoides*.

## Wildlife Conservation in Victoria

David Fleay—one-time Director of the Colin MacKenzie Sanctuary and a noted authority on our native fauna—stated recently that 10,000 kangaroos were being destroyed weekly in Australia. This initiated much publicity to matters of wildlife conservation.

In this connexion it is interesting to read the six-page article on kangaroos which appeared in last month's issue of *Fur Feathers & Fins*, the Newsletter of the Fisheries and Wildlife Department of Victoria. Although the present kangaroo question is hardly a Victorian problem, some of the comments in the Newsletter have direct and vital bearing on matters of conservation in this state.

Following are the concluding paragraphs of the article:

Mr. Fleay's comments have jolted people out of any complacency and many have been quick to take up his cause and get the whole question widely heard. But unless they know just where to go from there, the whole idea will probably fizzle out.

Our great need at the moment is more and more precise knowledge about our native animals. If people are going to ask that this or that be done for our wildlife then they will need a strong case, based not on prejudices and not only on strong feelings, but also on reliable information.

There is not one person in Victoria at the present time whose sole job it is to find out the sort of things we need to know as we set about intelligently conserving our native fauna.

Some useful knowledge is gradually being accumulated as a sort of by-product or spare time activity by

people working at the Universities, The National Museum, The National Parks Authority, The Fisheries and Wildlife Department and amateur naturalists, but the race is against time.

This sort of work could be done by scientists specially appointed by the Government, but first of all the people must realize that it is necessary and ask for it to be done.

When some animals are shot from a population, the remainder continue to breed and replace them, but when animals are deprived of their living areas, they go for ever. The animals that Australia loses every day because of scrublands burnt, forests cleared and swamps drained, far outnumber all the effects of shooting. Of course such changes are essential in a developing country, but they should be planned changes providing for all our needs. Without planning, this insidious and permanent destruction of our wildlife proceeds year after year but gets hardly a mention.

With a scientific knowledge of the animals we could set about selecting big areas for them to live in. With public support such areas could be reserved for wildlife and this is the sort of protection we should be seeking—areas for wildlife, in the same way that we need areas for farming, areas for housing, for forests, water supply, areas for industry.

Establishing wildlife reserves is difficult and meticulous work. A start has been made in Victoria. We have the legal machinery to do it but not the manpower. The work will only be done when people realize the need and demand it.

On our editorial in the *Victorian Naturalist* three months ago, prominence was given to statements by the head of the Department, Mr. A. D. Butcher, concerning the real threats to our wildlife. Now, in the Direc-

tor's Column of the September issue of *Fur Feathers & Fins*, he again pin-points the most vital issue, in these words:

I do wish to draw attention to, and to emphasize, the frequently unrecognized threat to all wildlife which is presented by the loss of habitat.

Naturalists know well the story of the successful re-establishment, by the Fisheries and Wildlife Department, of the koala throughout Victoria. This animal—the most popular of our marsupials—now numbers several thousand, scattered across the state, in place of the sorry remnant some thirty years ago: a few hundred koalas in a restricted area of Gippsland.

A somewhat different but equally exciting project is being carried out, in the programme of re-covering with natural vegetation the Tower Hill reserve in the Western District. There is, too, the effort being made on behalf of the rock-wallabies in East Gippsland. But the history of the last project brings out a rather grim point.

The Brush-tailed Rock-wallaby was rediscovered in Victoria in about 1938—some twenty-four years ago. Museum personnel and amateur naturalists gradually worked out details of its distribution, as a spare-time job spread over more than twenty years. Less than two years ago, there was sufficient data on which to base ideas of a reserve and of active measures for conservation and rehabilitation of the animal.

But, unfortunately, time may have won the race in one sector. Now, with a reserve of fifteen square miles in the process of

being dedicated, there is reason to fear that the number of rock-wallabies in the best known and most accessible colony may have already declined beyond the point of no return. A costly and laborious restocking project may need to be undertaken.

Of the several species of rat-kangaroo which once flourished in Victoria, only one survives. It is the little potoroo; but this species too is on the state's danger list. Conservation measures are contemplated, but we do not have the necessary preliminary knowledge either of its precise distribution or of the animal's ecology. In this case, at least under the present system, it seems that time may win the race.

The position of the quoll ("native cat") and of certain species of the tiny insectivorous "pouched mice" is even more obscure. Do they survive in Victoria? If so, can they be conserved?

All these considerations, and other similar ones, are the background of a recent decision by the council of the F.N.C.V. It has repeated a request which it and other bodies made several months ago to the Government, that the Wildlife Research Group of the Fisheries and Wildlife Department be augmented by the appointment of a scientifically qualified research officer whose sole duty is to study problems of wildlife conservation.

We trust that such appointment will speedily be made, and that a reprieve may thus be gained for many of the species of our wildlife for which time seems to be fast running out.

## The Native Fish Traps at Toolondo, in the Wimmera

BY A. MASSOLA

Mr. Eric Barber, of Horsham, recently advised me of the existence of what must be one of the rarest aboriginal antiquities in this state: a fish trap consisting of a series of channels connecting two swamps.

Fish, where available, were an important item in the aborigine's larder, and many means were employed for their capture. The most common method was to spear them; the hunter, standing motionless on his bark canoe, or wandering silently along the water's edge, would look for the slightest movement of the reeds in the water, and unerringly throw his multi-pronged barbed spear and secure the unseen fish which caused this movement.

Fish were also netted. Nets were fashioned by the women, with string they made from chewed roots of bulrushes or the inner bark of eucalypts. When using nets, every member of the group—men, women and children—would jump about in the water, in order to frighten the fish into them. The women also used hand nets, with which they scooped along the banks, in order to catch the smaller fry as well as other edible creatures such as shrimps, yabbies and tortoises.

In Victoria, native fish-hooks were used only by the aborigines of the Gippsland Lakes. These

hooks were made from a section of kangaroo leg-bone, and were not barbed. In western Victoria, a short splinter of bone, pointed at both ends, was used. It was tied with a string at the centre, and baited at both ends. When swallowed by a fish the two sharp points would stick in the fish's throat and it would thus be secured.

Aborigines often caught eels with their feet by trampling in the mud in the shallow swamps.

Another method of catching fish was by the use of traps. Narrow parts of streams were dammed with rocks or even with upright sticks. Openings were left here and there for the fish to get through, but at these points reed baskets were placed. The fish would pile into these and could then be secured easily.

The fish traps discovered by Mr. Barber, and now under discussion, belong, however, to an entirely different category. These are trenches cut into the soil in order to connect one lot of water with another, and as such are notable engineering feats, because, apart from the colossal amount of labour involved in making such trenches with wooden digging sticks, notice had to be taken of land levels, so as to ensure a proper flow of water. Although known to have been used by all the





Remains of part of a channel of the Toolondo fish trap.

tribes of western Victoria, prior to Mr. Barber's discovery, the technicalities of this type of trap were known only from the published description of examples seen in 1841 by the Chief Inspector of Aborigines, Mr. G. A. Robinson. This gentleman had that year taken a lengthy trip through western Victoria in an attempt to contact the native tribes. The following extracts are from his Report, as published in the *Victorian Historical Magazine*, Vol. 12, Page 156, 1957. The locality referred to is the plains a few miles south-east of Mount William, the highest eminence of the eastern Grampians.

"July 8th, 1841 . . . Numerous ash hills of the natives fifteen feet in diameter, and trenches for catching eels, three hundred yards in length and 18 inches in depth, were observed. No fresh water nor aborigines were seen.

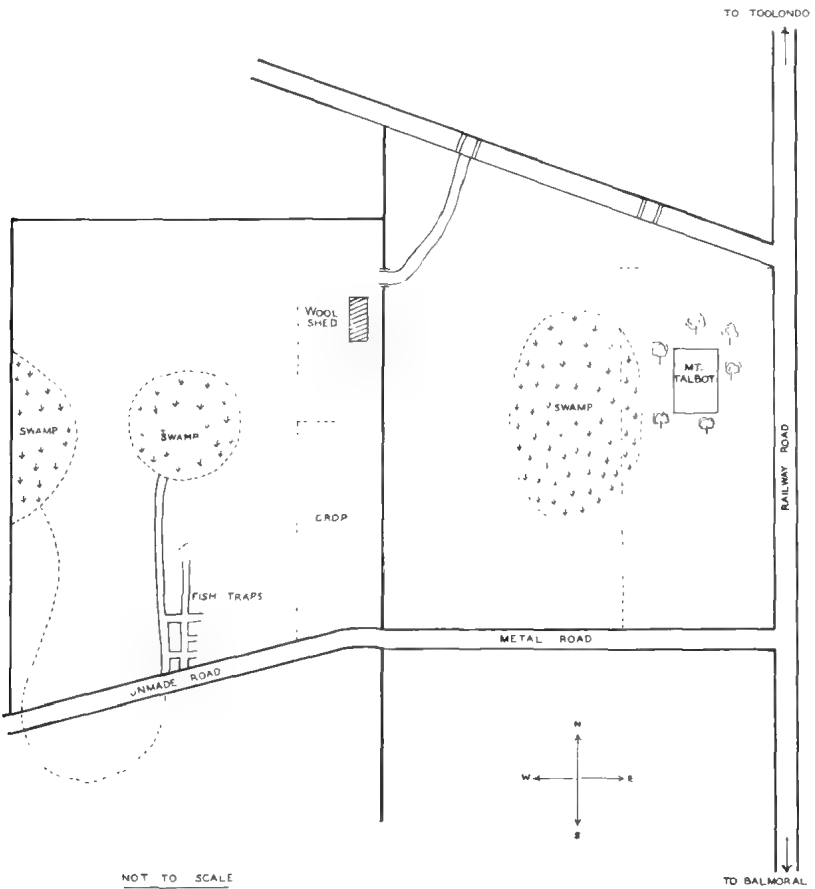
"9th and 10th. Left early, attended by Pevay, to reconnoitre the country. In the marshes nu-

merous trenches were again met with. These resembled more the works of civilized, than of savage, men. They were of considerable extent. One continuous treble line measured 500 yards in length, 2 ft. in width, and from 18 inches to 2 ft. in depth. These treble dykes led to extensive ramified watercourses. The whole covered an area of at least 10 acres, and must have been done at great cost of labour to the aborigines—a convincing proof of their persevering industry. These are the most interesting specimens of native art I had seen. Thousands of yards had been accomplished. The mountain streams were made to pass through them. In fishing, the natives use an eel-pot of plaited grass, from 9 to 12 feet in length."

The traps discovered by Mr. Barber are made on lines similar to the above and served an analogous function. They are situated approximately three and

a half miles south of Toolondo, on the west side of the road to Balmoral. Toolondo is about twenty miles south-west of Horsham, and is in a district abounding in marshes and lakes. The configuration of the terrain is therefore somewhat similar to that encountered by Robinson on the plains to the south-east of Mount William. The Toolondo traps have survived to the present day because it is only about

twelve years since cultivation started in that part of the country. Even so, Mr. Barber made his discovery just in time, as about half of the traps have already disappeared through harrowing. Before this happened it is averred that odd stakes could be seen standing in the trenches. These, presumably, would be the remains of the gateways through which the fish were made to pass.



Locality Plan of Toolondo Fish Traps.



could be consumed, the stench of the putrefying fish could be smelt long distances away. The natives actually did enjoy them a little on the "high" side, and often buried them for a few days prior to eating them; this could be described as a primitive attempt at "jugged eel".

It is to be hoped that some

means of protecting what is left of these traps will be considered by the proprietors of the land on which they are situated. The loss of a little strip of ground would be more than compensated for by the pleasure derived from the altruistic gesture of preserving these rare relics for future generations.

Australian Wattles—No. 38

## Hairy-pod Wattle—*Acacia glandulicarpa*

BY JEAN GALBRAITH

Hairy-pod Wattle is an attractive, rather dense, much branched, dwarf shrub, covered with tiny circular or oval phyllodes. The foliage is dull olive-green, each "leaf" rather thin, with one main nerve and conspicuous feather-veins spreading from it.

When the phyllodes are circular, they are well under a quarter-inch across; but when they are oval, they are about a quarter-inch long or more. They are rarely evenly oval, but rather one-sided—the shape of a gibbous moon.

This little wattle belongs to north-western Victoria, and its flower-heads are small, in keeping with the foliage. There are little globular heads of rich yellow, on stalks slightly longer than the leaves; and the blossom is so abundant that whole bushes look golden, like gay clouds along the dry roadsides.

The name is appropriate. The bumpy, sausage-shaped pods, about half an inch long, are clothed with bright brown hairs. Each pod looks like a short-haired "woolly bear" caterpillar.



Hairy-pod Wattle.

Photographed, from dried specimen, by E. Faist.

# Gastroliths or "Crabs' Eyes"

By E. M. DAVIES

Anyone finding gastroliths, perhaps in the bed of a dry water-course, and having no clue as to their identity, can be puzzled by these discoidal concretions. Their creamy-yellow colour and high polish makes them attractive. Their texture is suggestive of a fossil, and indeed they have been found fossil in U.S.A.

Gastroliths figured early in the old pharmacopoeia as *oculi seu lapides cancorum* — hence the name "crab's eyes". These crab's eyes were ground up and often mixed with other ingredients, in the apothecaries' *materia medica* of the Middle Ages. Even at a later date they were used in medicine for absorbent and antacid purposes.

Crab's eyes should not be confused with the gastroliths or *gizzard stones* swallowed by birds and lizards (Baker 1956). At certain seasons of the year (depending on the age of the animal), a pair of gastroliths develop in the stomach of particular types of crustaceans, those from fresh-water crayfish (also called lobsters) being the best known.

Gastroliths commence to form some time before ecdysis (moulting) occurs, and are fully formed when moulting takes place. A young crayfish moults several times a year but in adult life ecdysis occurs annually. A lobster ten inches long and four years of age has moulted probably about twenty-five times. At the onset of ecdysis the cells of

the epidermis become active and calcium salts are withdrawn from the cuticle to be transferred to the gastroliths which therefore increase in size. The ossicles and teeth of the gastric mill also become softened in a similar way and contribute to the enlargement of the gastroliths.

"It may be reasonably assumed that in a crayfish as in other arthropods, ecdysis is initiated by the production of moulting hormones" (Grove & Newell 1961). An English observer states that in crayfish four years of age, gastroliths begin to form about forty days before ecdysis takes place, but the interval is less in younger crayfish, and is not more than ten days during the first year of life.

Ecdysis is a heavy tax on the animal, and if the "eyes" are not properly developed the moulting is apt to be fatal. Even when it is successful the crayfish is left soft like wet chamois leather, so is very vulnerable to predatory animals. It takes about six weeks for the new "skin" to harden and the crayfish is then in such need of lime that it usually devours its cast-off exoskeleton.

"Gastroliths are by no means a mere concretion but are a cuticular growth having a definite structure and are attached to the stomach wall during formation. When fully formed they are readily detached from the stomach wall" (Huxley 1880). They are found centrally situated on each side of the stomach cavity,

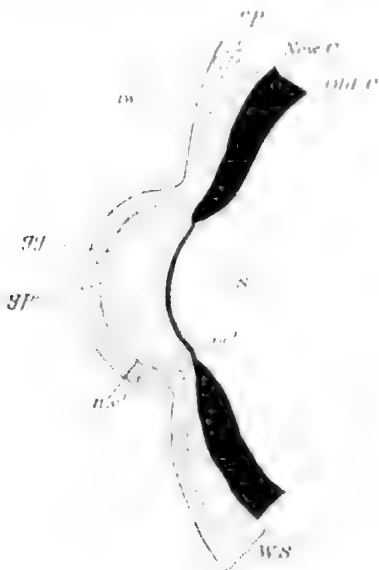
enclosed between the tough horny lining of that cavity and the skin of the stomach wall. The side turned towards the stomach is flattened, being smooth at the margin with the centre slightly concave and showing an attachment scar. The opposite side is convex, smooth and polished.

At the time of shell casting, the horny (chitinous) lining of the stomach is also cast off and this causes the stones to be shed into the stomach cavity. There they become ground down and in a dissolved state are absorbed by the blood and go to help the hardening of the new exoskeleton. The process of destruction and absorption of the gastroliths takes twenty-four to thirty hours in very young crayfish and seventy to eighty hours in adults (Huxley 1880).

A vertical section shows that the gastrolith is composed of thin superimposed layers of which the inner are parallel to

the flat inner surface while the outer gradually becomes concentric with the outer surface. Moreover the inner layers are less calcified than the outer curved ones, which are particularly dense and hard. In fact, in their composition they are very similar to other hard parts of the exoskeleton. An analysis of a gastrolith showed that it was made up of the following components: Animal matter, soluble in water, 11.43%; animal matter, insoluble in water (probably chitin), 4.33%; phosphate of lime, 63.16%; soda reckoned as carbonate, 1.41%.

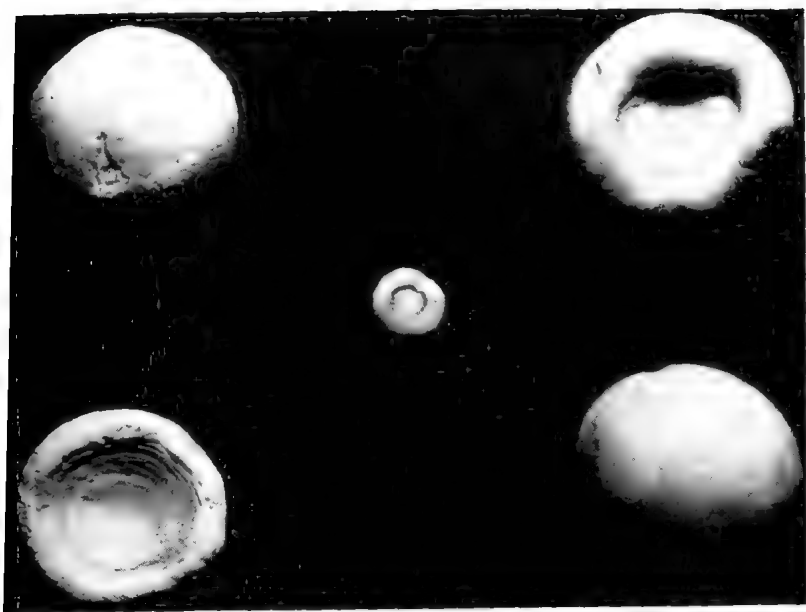
Mr. A. M. Olsen of the C.S.I.R.O. Tasmanian Regional Laboratory, Hobart, who is presently conducting investigations on the southern spiny lobster (*Jasus lalandei*), advised me that he was "not aware that this spiny lobster forms gastroliths just prior to moulting. If however it does form them they must be very insignificant. Because of the readily available source of calcium in the sea he doubted if *J. lalandei* would make any effort to store a plentiful element. On the other hand fresh water crayfishes would need to conserve calcium to assist with the hardening of their new and soft exoskeleton" (pers. comm.).



Diagrammatic section through the wall of the stomach of a moulting lobster, cutting gastrolith.

*EP*, chitigenous epithelium; *GG*, gastrolith, a differentiated part of the old cuticle; *GP*, gastrolithic sac; *NCL*, new cuticle of gastrolithic sac; *W*, outer side of stomach wall next to body cavity; *New C*, new cuticle; *Old C*, the deciduous part of cuticle overlying gastrolith; *Old C*, old cuticle; *S*, interior of stomach; *WS*, wall of stomach.

After F. H. Herrick.



Upper: Gastroliths of Murray Crayfish (*Astacopsis serratus*), Murray River.

Centre: Gastroliths of Yabbie (*Parachaeraps bicarinatus*), Glenelg River.

Lower: Gastroliths of Murray Crayfish (*Astacopsis serratus*), Geehi River. The largest gastrolith figured is 29mm. in diameter and weighs 11.3 grams.

Likely localities for finding gastroliths are on the banks of creeks, rivers and dams. They have been found in the nests of the White-faced Heron and in the excrement of the Black Cormorant. Both birds are feeders on yabbies (*Parachaeraps bicarinatus*). It is recorded that two gastroliths of the Murray Lobster (*Astacopsis serratus*) were taken from the stomach of a Murray Cod; presumably the lobster had only just moulted and the gastroliths were the only part to remain undigested. A fellow naturalist, Mr. H. E. Wilkinson, when digging in the banks of the Merri River and the Glenelg River, recently found two small gastroliths, evidently from yabbie burrows.

Fossil gastroliths have been recorded from the Eocene of Texas and Louisiana, U.S.A. These fossils called respectively *Wechesia pontis*, and *W. louisiana*,

*ana*, are similar in that they occur in glauconitic marl deposited in a warm relatively shallow marine environment. They are reported as rare and are considered to have "originated in the larval stage (possibly the 4th molt of marine crayfish" (Fizzel & Norton 1958).

From a palaeontological point of view gastroliths are stratigraphically unimportant but they have some bearing on crustacean evolution and migration.

#### REFERENCES

- Baker, A. A., 1956. The Swallowing of Stones by Animals. *Vict. Nat.* 73 (6): 82-95.
- Frizzel, D. L. & Exline, H., 1958. Crustacean Gastroliths from the Claiborne Eocene of Texas. *Micro-palaontology* 4 (3): 273-280.
- Frizzel, D. L., & Exline, 1961. Crustacean Gastroliths from the Jackson Eocene of Louisiana. *Bull. School Mines & Metallurgy* 99: 3-6.

Grove & Newell, 1961. *Animal Biology*, p. 61.

Hale, H. M., 1927. Crustaceans of South Australia, p. 92.

Herrick, T. H. H., 1895. The Ameri-

can Lobster. *Bull. U.S. Fish Commission* 15.

Huxley, T. H., 1880. *Introduction Study of Zoology*. The Crayfish.

McNeill, F., 1959. Gastroliths. *Aus. Mus. Mag.* 13 (1): 28-29.

## Pond Life Hunting\*

**The Water and Free-swimming Material.** The water in the collecting tube usually contains some large forms such as waterfleas or cyclops, as well as small rotifers and smaller protozoa. The idea here is to divide the pond population by using the strainers. With a coarse-mesh sieve in a spare specimen tube, and using the funnel, pour the contents of the collecting tube (except the debris at the bottom) through the strainer. The mesh will retain any large forms such as Entomostraca, and the concentration in the sieve may be varied by raising or lowering it in the water of the specimen tube. The contents may then be removed by placing a finger over the top of the sieve, removing it from the tube, and decanting the concentrated collection into one of the flat-bottomed dishes, where it may be examined as required. The remaining water in the specimen tube may be treated similarly, using sieves of finer mesh, and the concentrates examined in turn.

A method recommended for examining these concentrates is as follows: Draw up the concentrate into a pipette, then distribute it in spaced lines of drops on the three-inch square of perspex. Since water does not ad-

here to perspex, the drops will not spread or run as they would on glass. Each drop may be examined under a low power objective, and selected specimens may be picked up with the pipette and transferred to the compressor. A low power objective (two-inch or less) is necessary for examining the drops; higher powers are precluded by the distortion introduced by the shape of the drop.

**The Debris.** The material at the bottom of the collecting tube may be removed with a pipette and placed in one (or more) of the flat dishes, spread out, and covered with water. The concentration in a dish should be so arranged that under a low power and with darkground illumination the debris is more or less transparent. It will be mostly sand, decaying vegetation and dead Entomostraca, but careful examination may reveal specimens of Protozoa (*Amoeba*, *Difflugia*, *Arcella*, etc.), for this is their usual habitat. Selected specimens may be removed and transferred to the compressor.

A quick examination may be made of a tube without weed by shaking it to mix the contents, then pouring a portion into a flat dish. The result will be a fair sample of the contents of the tube. The dish may be

\*Continued from last month.



searched and the procedure repeated with another lot of water. This gives a rough idea of what to expect in the tube, which is useful if time does not allow sieving of the material into separate divisions.

Isolating a specimen from a dish or transferring one from the compressor may be done thus:

Have on hand one medium pipette, one fine pipette, a jar of clean pond or tap water, and two three-inch squares of perspex.

Place the dish containing the pond water and material (not more than a quarter-inch deep) on the microscope stage and, with a two-inch objective and darkground illumination, focus on the bottom of the water. Experience has shown that most pond creatures tend to move along the bottom of the dish.

Hold the dish with the left hand, and in the right hand have the medium pipette half filled with clean water and with the rubber teat compressed just enough to expel a drop or two. Put the end of the pipette in the dish, so that the tip is in focus in the centre of the objective field. Keep the pipette in position and, with the left hand, move the dish until the specimen is brought close to the tip of the pipette. A little practice in the apparent "reverse movement" seen under the objective, makes it possible to pursue even the liveliest specimen about the dish, keeping the tip of the pipette immobile. At the opportune moment the pressure on the teat is relaxed and the catch is drawn into the pipette.

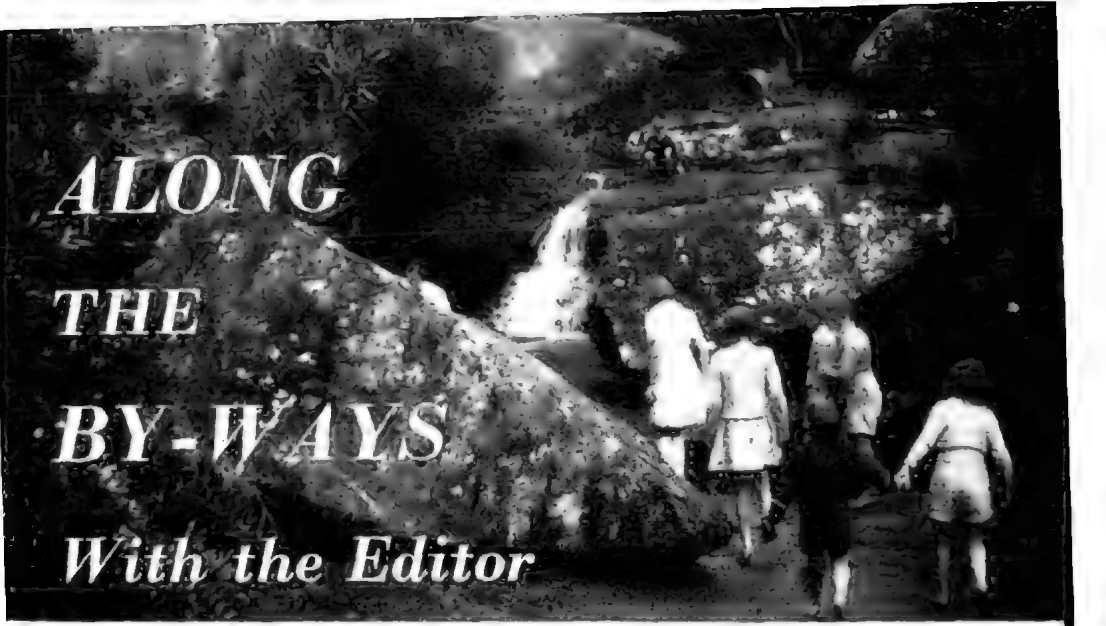
Usually the desired item is

accompanied by other specimens and often by rubbish. Expel the water from the pipette, in spaced lines of drops, onto the perspex square; and under low power ascertain which drop has in it the desired specimen. Take the fine pipette, half-filled with clean water and with the teat slightly compressed as before, put the tip into the drop of water and move the perspex with the left hand until, as before, the specimen can be drawn up. Again expel the water, in spaced lines of dots on a fresh perspex plate, and examine under low power. Repeat the process until the specimen is alone in clear water. Then empty the fine pipette, half fill with clean water, expel a drop, take up the specimen, and place it in the compressor.

It is important that when the pipettes are half-filled the rubber teat should be fully relaxed and then that just enough pressure should be applied to expel no more than two drops. If the teat is not fully relaxed in the first place, or if it is compressed too much secondly, when it is released to catch the specimen, too much water is drawn up and the prize is lost in the barrel.

I hope this article may prove helpful to those interested in pond life. The elation in observing something not seen before, the thrill of the chase in bringing it into captivity, and the pride of victory when it can be identified and exhibited, are, on their own, sufficient grounds for enjoying this form of recreation, even without exploring any of the lines of investigation into natural history which may follow.

# ALONG THE BY-WAYS With the Editor



These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.

## Crane-flies at Lang Lang

From Mrs. Vera Greaves of Lang Lang comes the following observation:

This autumn we have had an influx of large mosquito-like insects, black in colour and which do not appear to bite. Great numbers of them hang in swarms under the eaves of the house, the porch and even under flower-pots. Honey-eaters, thrushes, wrens and Golden Whistlers flutter around the windows and trees, apparently enjoying the abundance of easy prey. We have retained as much of the native bushland as is possible around our house and the insects may have come from the scrub.

Mrs. Greaves encloses several specimens and asks what the insects are, why they have come in such numbers and whether they are friend or foe.

The insects in question are crane-flies of the genus *Dolichopeza*; they emerge in large numbers and tend to assemble in sheltered places. They are harmless and are frequently found at

that time of the year, even in the inner suburbs.

## The Delectable Quandong

Miss Jean Galbraith has sent along some extracts from a letter written in October last year, by the late Ralph Higginson of Port Augusta in South Australia. The subject was the edibility of the quandong, about which Mr. Higginson wrote:

We are forwarding you herewith a small sample of the dried fruits of our native peach or Quandong (*Eucarya acuminata*). I do not know if you have tried these before, but if you have not, I consider that you have missed one of life's gastronomic delights, as they make a really delicious pie or tart or may be eaten simply as stewed fruit. But to get the full pleasure from them, they must be eaten with cream, scalded for preference. They have a delicate flavour all of their own, and I cannot liken it to anything else. Cooking is the same as for any dried fruit, but watch the sugar as they are rather tart and it is better to add sufficient sugar to taste while they are cooking.

There are plenty of trees about this locality, but they do not fruit very often, and the fruit are difficult to pick as the trees are too high to reach them from the ground, and the trees are much too brittle to climb. I am afraid that most people simply pull the branches off and then pick, but the sensible way is to take a bamboo pole and tap the ripe fruit which will fall off and can be picked up. This is a lot of trouble, but they are worth it. Apart from strawberries, they are the only fruit that I really enjoy cooked.

The quandongs are now placed in the genus *Santalum*, which is classified, as are the "native cherries" (*Exocarpos*), in the family Santalaceae, North-western Victoria has two species of the former—the Bitter Quandong or "Ming" (*S. murrayanum*) and the Sweet Quandong (*S. acuminatum*). Of the latter, A. J. Ewart wrote, in *Flora of Victoria*:

The fruit are edible, form a favourite food of emus, and the pulp can be made into jam or jelly.

Miss Galbraith was apparently not willing to forego "one of life's gastronomic delights", and she reports:

The quandongs really were delicious; I thought rather like a cross between cherries and strawberries.

### Large-Leaf Grevillea

On a visit to Labertouche we were interested in the very narrow limits of altitude which *Grevillea barklyana* seems to tolerate. Until we reached the right height (we had no altimeter) there was not a bush; suddenly it was abundant and continued so for miles, but it disappeared well before the highest point on the road and reappeared only when we descended to about the same height on the other side, running out at about the same height as we had first seen it. Despite this, the Large-leaf Grevillea grows quite well in low-land gardens.

—JEAN GALBRAITH

### Rare Gippsland Agaric

This note is from Mrs Ellen Lyndon of Leongatha, in South Gippsland:

I was fortunate enough to find, on August 8th, two nice specimens of the apparently rare fungus, *Hygrophorus lewellinae*, quite close to the state school at Middle Tarwin. They were isolated specimens, growing in sandy soil under bracken, in a stringy-bark and peppermint association. This lovely toadstool could scarcely be mistaken for any other. It is a delicate shade of violet throughout.

First recorded by a Miss Lewellin at Tarwin in 1880 and named in her honour, so far as we know it has been recorded only three times since: in 1944 in peaty soil among sedges at Foster, in 1956 in sandy soil among scrub at Corinella, and now in 1962 at Tarwin again. The species was described by Mr. J. H. Willis in the *Naturalist*, September 1957.

### Bird Notes from Rosebery

From time to time, letters come to us from Mr. H. R. Hobson, of Rosebery, on the eastern fringe of the Victorian Mallee. Here is the latest commentary, written in mid-August:

The season has been exceptionally dry, and there has been some bird movement about the area. For the past two weeks, at very irregular intervals, a lone Eastern Shrike-tit has been calling in the trees about the homestead. This is my first record of the species in this area, although it has been recorded previously in the vicinity of Wyperfeld National Park.

Earlier, during autumn, four Swift Parrots paid a brief visit, and Brown-headed Honeyeaters were busy in the trees round about. A lone Grey Butcher-bird patrolled the farmyard for at least two months but has now left for better hunting grounds.

On the last day of May, at what is known as the Little Lake at Hopton, I recorded a Greenshank and a flock of sixty Red-necked Avocets. The latter are frequently seen where swamp conditions are suitable, but the Greenshank is seldom seen in this area.

## Amethysts at Eldorado

By FRANCES GLADSTONE

Members of the Field Naturalists Club of Victoria who saw, during this year's Easter trip to Beechworth, a local resident's collection of amethysts, expressed a desire to visit Specimen Hill, where they had been collected in 1910. Unfortunately, it was not possible to accede to these requests because knowledge of the exact whereabouts of this spot had been lost, and in fact Specimen Hill had come to be regarded in a more or less legendary light.

Determined to locate the hill and discover whether amethysts were still to be found there, my husband and I set off for Eldorado and talked our problem over with several residents there. Yes, they had heard of it; however it was now selected and farm-land and hard to get to; but the road was described and we went on.

The hills were very rocky; lovely views of Springhurst and rolling farms beyond softened the view. A farmer directed us further, with a warning that visitors were not encouraged by the new owner of the property. Continuing past Pudding Hill, a round outcrop of granite, through gates and lanes, past stands of Yellow Box (*Eucalyptus melliodora*), Cypress Pine (*Callitris*) and Red Stringybark (*E. macrorrhyncha*), we proceeded along a forest road to the entrance to "Wingara" sheep station.

We asked of the owner permission to see Specimen Hill,

and it was kindly given, also help to the exact location, in a land rover. "Keep Out" and "No Digging" notices which we saw were put there, the owner said, because he did not like people coming in without permission.

Specimen Hill is a low granite hill, with decomposed pink granite gravels about it, also micaceous quartz, white quartz seamed with white, opaque and clear crystals, and amethysts. Some amethysts were in crevices and holes in the granite, some in the quartz and some in the soil. Many holes had been made in the ground in searching over the years, and there had been much sifting of soil and gravel. We actually found several exquisite six-sided amethysts for ourselves, in among the gravel and the granite.

About the hill are low, rocky outcrops, and the owner said he had found amethysts in other places about the farm. Sometimes he ploughed them up. Often they were with tourmaline or iron oxide or tin oxide. When the sun shone on the hill, sparkles of light came from the slope, from mica, from tiny crystals and from the amethysts. After a shower is the best time, the owner said, as all the digging hides half the ones turned up; the rain washes them clean and he gathers them. He has a beautiful collection.

I noticed a great deal of Nodding Blue-lily (*Stypantra glauca*), locally known as blue oats, also Rock Fern (*Cheilan-*

*thes tenuifolia*) growing almost everywhere. Coming up after the rains were several clusters of *Pterostylis* leaves and the round leaf of *Acianthus*. The trees on Specimen Hill were Forest Red Gum (*Eucalyptus tereticornis*); stringybark, Lightwood (*Acacia implexa*) and a species of *Casuarina* unknown to us.

## Pink Zieria in Gippsland

We have been used to considering Pink Zieria (*Z. veronica* F. Muell.) as a western Victorian species, though there was an early record from East Gippsland, and recently it has been noted at several places in eastern Victoria, from Providence Ponds to Monkey Creek, near Sale.

It is a very dwarf shrub with softly hairy leaves (rather like those of *Grevillea lanigera*) which are unlike those of other Victorian species of *Zieria* because they are not divided into leaflets. They are a soft grey-green with a strong and pleasant lemon fragrance. In this, plants from all localities agree, though (contrary to what one would expect) plants I have seen from South Australia and the Victorian Mallee have leaves less greyish than those growing in Gippsland. There is however an interesting difference between the pale pink flowers of the Gippsland form and the usually deeper pink flowers of the typical form. The latter open flat into the typical starlike four-petalled flowers of *Zieria*, but those of our

Perhaps some day the Field Naturalists Club may be able to have such places as Specimen Hill made into reserves, sanctuaries for nature lovers. In the meantime, it is good to know that any members up this way again may, with the owner's permission, visit "Wingara" and find some amethysts for themselves.

By JEAN GALBRAITH

Gippsland form have almost always one petal curled so as to appear more or less hooded, and, quite without exception in my experience, the flowers never open flat, but remain as a small rather scanty-looking bell until they fade.

I have noted this in several Gippsland localities; in my own garden, and in that of Mr. W. Cane, and in both spring and autumn flowers. Though it is spring-flowering, there are some blooms at most other times of year, especially about March and April.

As a further check on the difference between Mallee and Gippsland forms I asked Mr. K. Stuckey of Furner, South Australia, for flowering specimens of the South Australian form. He sent a number of flowering sprays. All had the characteristic flat, wide-open flowers of the typical form. It must be admitted that they are more attractive than the pale hooded or cupped flowers of our Gippsland form, but our southern variation is interesting.

# Field Naturalists Club of Victoria

## General Meeting—September 10, 1962

The president, Mr. M. K. Houghton, presided at the meeting, which was attended by about eighty members and friends. Mr. J. H. Willis was congratulated on the publication of the first volume of *A Handbook to Plants in Victoria*, which will authoritatively fill a long-felt want.

Mr. J. R. Garnet brought to the notice of members the possibility of some of Wilson's Promontory National Park being taken to establish a licensed hotel. A document of protest to be sent to the Premier (Mr. Bolte) was signed by a large number of members. Mr. W. C. Woollard proposed that the members call on the F.N.C.V. executive to take all possible steps to organize, with other similar bodies, a mass meeting to protest against the alienation of National Park land for a luxury hotel. This brought much discussion, some members being in favour of more accommodation, but the motion was carried by a large majority.

The subject for the evening was *The Quest for Building Stones*, by Dr. L. Finch, who is a research officer of the C.S.I.R.O. Dr. Finch recalled that man has for 7000 years used stone for shelter purposes, and he indicated the methods of stacking them, such as bonding by pressure and with mortar, in various countries and ages, down to these days when £5,000,000 each year is spent in Australia on stonework.

A geological map of Victoria showed sites where material for building stones is obtained. The qualities of sandstone, limestone, granite and basalt were described, and the effect of rising damp on otherwise durable stone was emphasized. Beautiful coloured slides illustrated localities where suitable stone is obtained, and buildings using types of stone and effective combinations of them. Numerous specimens of stones were on view, illustrating their characteristics.

Dr. Finch, with his informed enthusiasm, brought new meaning to the term "living rock". Mr. L. H. Angior expressed the thanks of members to Dr. Finch.

Five new members, whose nomina-

tions were listed in the September *Naturalist*, were elected.

Mrs. J. J. Freame sent an exhibit of ctenophores (comb jellies) found at Altona.

The secretary announced a C.A.E. spring school to be held at the Grampians from October 21 to October 27.

## Entomology and Marine Biology Group—September 3, 1962

The September meeting was attended by seventeen members. In the absence of Mr. Strong, Mrs. Strong acted as secretary, and Mr. A. Fairhall took the chair.

Miss V. Balaam reported on the group outing to Mrs. Lee's property at Belgrave, the purpose of which was to obtain material for the nature show. Several entomological specimens were taken, and members who took part voted it a very interesting and enjoyable excursion.

The lecture for the evening was given by Mr. Fairhall, the subject being "Cockroaches". He said that there were over 300 species of these in Australia, and over 1000 in Europe. The interest taken in this talk was evidenced by the number of questions asked at its conclusion.

At the November group meeting, Mr. Irvine, chief entomologist of the Forests Commission, will give a lecture on the work being done by the Commission in its endeavour to eradicate the *Strez* wood-wasp. He will also touch on other aspects of economic entomology.

## Botany Group—August 9, 1962

In the absence of the group chairman, Mr. M. K. Houghton presided at a well-attended meeting. Further progress was reported on the preparation of the group's nature show exhibit, "Floral Emblems of Australia", for which excellent charts had been made by Miss M. Lester, and information obtained from interstate sources by several members.

In continuance of the series on selected families of plants, the lecture for the evening was given by Mrs. M. Salau. She had prepared five fine charts, illustrating the Liliaceae and their position in the scheme of botanical classification. Chart I in-

cluded a geological time map indicating entry of Angiosperms—first Dicotyledons then Monocotyledons—and also set out the names of the best-known exotic and Victorian representatives of the Liliaceae (about 250 genera and 3700 species). Chart 2 showed the floral diagram, formula, and a typical dissected flower, chart 3 the pollination, seeds, roots and leaves of various types, chart 4 the distribution and economic value of members of the lily family, and chart 5 further points of special interest, with diagrams of rhizomes, corms and bulbs.

The talk concluded with reference to specimens on exhibit of native Victorian liliaceous plants, and slides by Mr. and Mrs. K. Cheelin and Mr. R. Morrison.

#### Botany Group—September 13, 1962

The group members, fresh from the F.N.C.V. nature show, in which the exhibit on floral emblems received favourable comment, met under the chairmanship of Mr. J. A. Baines, who gave a talk on the flowers of the family Papilionaceae that are designated by the uninitiated as "Egg-and-Bacon", a confusing group that all members felt needed elucidation. With the help of about thirty different specimens and a comprehensive chart, the speaker pointed out some of the vital characters used in identification of *Gomphalobium* (Wedge-peas), *Mirbelia*, *Oxylobium* (Shaggy-peas), *Sphaerolobium* (Globe-peas), *Viminaria* (Golden Spray), *Dalmanella* (Bitter-peas), *Pultenaea* (Bush-peas, the most numerous genus), *Phyllota*, *Aotus*, *Dillwynia* (Parrot-peas), *Goodia* (Golden Tip), *Platylobium* (Flat-peas), and *Bassiaea*. Presence or absence of stipules, bracteoles and stropholes was stressed as important in separating plants superficially alike, and the need for use of hand lens and even microscope in difficult diagnoses.

For comparative purposes, other "butterfly-shaped" flowers such as *Kennedy*, *Hardenbergia*, *Chorizema* and *Brachysema* were shown.

Some of the flowers referred to were shown on colour slides by Mr. R. Morrison, who also projected beautiful photographs of many wild-flowers from the Grampians, Wilson's Promontory and remote alpine areas, some of them quite rare.

The meeting decided that the next group excursion should be to Bald Hill in the Clematis district, where flowers were growing in profusion during a visit paid last year.

#### Geology Group—September 5, 1962

Twenty members were present, with Mr. L. Angior in the chair. Mr. D. McInnes reported the gift to the group, by Mrs. Hansen, of the extensive geological collections of the late Mr. V. Hansen. It was decided to store this, pending careful examination at a future date.

The secretary reported on the excursion to the Geology Section of the National Museum on August 11; and arrangements were made for an excursion to Angleses, with the Geelong Field Naturalists Club, on September 16.

Mr. D. Hemmy gave a talk on "Maps and Map Making". He stressed the importance of maps to the community, and traced the development of maps from the earliest plans of Melbourne and the state's first geological maps to the much-improved present-day maps. He explained how aerial mapping had revolutionized survey work, and gave a blackboard demonstration of the finding of ground levels from the air. To illustrate the talk, Mr. Hemmy exhibited an 1863 map of mining tracks in East Gippsland, military maps, ski club maps and scout jamboree maps.

**Other Exhibits:** Sandstone, jade, lapis lazuli, beryl crystals, quartz, tourmaline and mica (L. Bairnston); limestone from C.R.B. quarry near Quambatook, malachite and quartz crystals (R. Dodds); fossil wood, polished by members of Hawthorn Junior F.N.C. (D. McInnes).

#### Fauna Survey Group, August 2, 1962

Thirteen members attended the meeting which was chaired by Mr. N. A. Wakefield. The evening opened with an elaboration of the Glenelg River area, by Mr. Wakefield, together with reference to bone material from this locality, lodged in the National Museum. He then extended this to cover new developments in the current examination of the fauna of western Victoria and concluded with a progress report on the further analysis of the Buchan area bone material. Reports of native mammals from several country clubs were read,

and from Mr. K. Rogers of Wulgulmerang came a summary of his present attempts to find extensions to the range of the Rock Wallaby (*Petrogale penicillata*) in Victoria. A report covering the previous month's hat surveying was tabled by Mr. J. McKean, who will be leaving the group to take up a position with the C.S.I.R.O. in Canberra.

The meeting concluded with a series of colour-slides demonstrating various aspects of a number of small phalangerids.

#### Colac F.N. Club

This club reports a full and successful year, the main feature of which was increased contact with other clubs, such as Geelong. As in previous years it has carried out an active bird-banding programme, despite a poor breeding year for Silver Gulls. In all, 185 individuals of 17 species were banded. There has also been activity in the spheres of geology, anthropology and botany, and membership is at an all-time high.

## Photographic Competition

To stimulate and encourage interest in our wildflowers, the Native Plants Preservation Society of Victoria will, in February next, hold a photographic competition for the best colour slides of Victorian wildflowers.

**Entry:** Up to five colour slides in 2 x 2 inch mounts depicting wildflowers or plants native to Victoria, taken preferably in their natural habitat. Entry fee, 5/-. All slides returned.

Awards totalling fifteen guineas may be won by the top entries, and all slides accepted by the panel of judges will be exhibited at a public screening.

Now is the time to take your colour slides for "Photoflora 1963".

Entries close, February 25, 1963; results notified by March 16, 1963. Entry forms and conditions available from January 14, 1963.

Competition Secretary:

Miss B. G. Terrell,  
24 Seymour Avenue,  
Armadaie, S.E.S.



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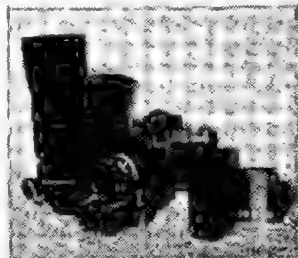
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2/6



Boobook Owl (*Ninox novaeseelandiae*)

This flashlight photograph, by Ronald K. Munro, appeared in the *Victorian Naturalist* in September 1938, accompanying an article "When Winter Comes", by Blanche E. Miller. Although at the time several forms of this bird were given specific rank, we now combine them under the name which is given here.



# The Victorian Naturalist

Editor: NORMAN WAKEFIELD, B.Sc.

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### Front Cover:

Picture of the Tender Brake, *Pteris tremula*, one of the many natural habitat photographs which illustrate the F.N.C.V. fern book (*Ferns of Victoria and Tasmania*, by N. A. Wakefield). The picture was taken in the Dandenong Ranges by the late W. H. Nicholls.

# Restoration of Vegetation at Tower Hill

BY J. L. MARTIN

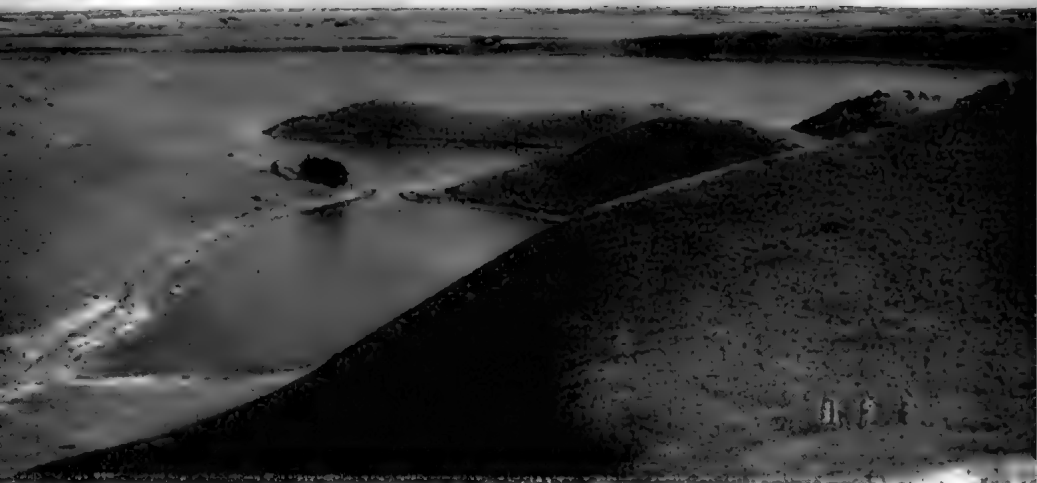
In the booklet, *What Happened at Tower Hill*, (July 1960), M. C. Downes of the Victorian Fisheries and Wildlife Department stated that "local interested societies are starting experimenting with the growing of vegetation now". The principal of these societies, co-operating with the Department, is the Warrnambool Field Naturalists Club. Valuable assistance is being given also by the Warrnambool Field Shooters, The Koroit Borough Council, Mr. R. Billings and Dr. R. B. Robinson of Koroit, Koroit Apex, and the Koroit and District school children.

For the present, the planting has been limited to the islands of the nested caldera. These are some 1400 acres in extent and it will take at least 40,000 plants to replace the vegetation on them. Fortunately, since they have been isolated from grazing stock by the filling of the lake after the 1946 floods, some natural regeneration has taken place. There are approximately thirty acres of Swamp Gum (*Eucalyptus ovata*), up to fifteen feet high and advanced to the stage of setting seed. Small blackwoods (*Acacia melanoxylon*) are scattered sparsely over the western half. Some she-oak (*Casuarina stricta*) has survived, and specimens of boobialla (*Myoporum insulare*) and Kangaroo Apple (*Solanum avi-*

*culare*) are to be seen. Bracken, varying in height from a few inches to six feet, covers almost two-thirds of the area.

Some fifteen years ago, during the period when the reserve was under the control of the Koroit Borough Council, two small areas were fenced, and eucalypts, wattles and unfortunately exotic pines and cypress were planted, and access tracks made. Seed from these wattles and eucalypts is being used to raise seedlings for present planting. The shelter provided by the trees has been appreciated by the planting parties. The tracks, although badly overgrown and boggy in winter, provide the only access.

In the eastern half, during the spring of 1960, the Warrnambool Field Shooters enclosed three small areas with rabbit-proof fencing. The Warrnambool Field Naturalists rotary-hoed these and 120 trees, supplied by the Fisheries and Wildlife Department, were planted on September 3. The idea was to find out which kinds were suitable for the locality. The species represented were Brown Mallet (*Eucalyptus astrigens*), Tuart (*E. gomphocephala*), Yellow Gum (*E. leucoxydon*), Manna Gum (*E. viminalis*), Blue Gum (*E. globulus*), Candle-bark Gum (*E. rubida*), Swamp Paper-bark (*Melaleuca ericifolia*), Prickly Paper-bark (*M. styph-*



Tree-planting at Tower Hill.

The peninsula (mid-picture) was planted on June 4, 1962, with Coastal Wattle and She-oak on the higher parts and Coastal Tea-tree on the south-west or far side. Field naturalists are working in the foreground.

*lioides*), Golden Wattle (*Acacia pycnantha*) and Long-Leaf Wattle (*Acacia longifolia*).

On September 18, a similar lot of 120 trees was planted on a steep slope of the western part of the main island by Mr. F. Swindley of the Fisheries and Wildlife Department, and Dr. Robinson and Mr. R. Billings of Koroit. Despite the late planting and the following dry seasons, many of these have survived, and now some of the wattles are flowering and the paper-barks are in bud.

During the spring of 1960, seed was gathered from local native trees and shrubs, a small nursery was established at my home in Warrnambool, and plants to be put out during the winter of 1961 were successfully raised.

In January 1961, the Fisheries and Wildlife Department arranged with the Department of Lands and Survey for an aerial bait drop of 1080 poison to destroy rabbits, so that future planting could be carried out without the necessity of fencing. The result was almost total annihilation, and only recently has there been any sign of rabbits on the island.

By May 1961, a count of trees at the nursery revealed that we had, ready for planting, 72 *Callitris cupressiformis*, 218 *Eucalyptus leucoxylon macrocarpa* (seed from a tree in the council plantation on Tower Hill), 83 *Eucalyptus viminalis*, 130 *Eucalyptus baxteri* (Brown Stringy-bark), 30 *Acacia pycnantha*, 180 *Acacia melanoxylon*, 400 *Leptospermum lani-*

*gerum* (Woolly Tea-tree), 200 *Melaleuca squarrosa* (Scented Paper-bark), 30 *Casuarina paludosa* (Swamp she-oak) and small quantities of *Hakea laurina*, *Boronia pinnata*, *Epacris impressa* and *Banksia marginata*.

Mr. Downes was contacted and arrangements made for planting. On May 11, Messrs. Swindley and G. Cerini of the Fisheries and Wildlife Department arrived at Warrnambool bringing with them a further 70 *Eucalyptus camaldulensis* (Red Gum). On the same date the suggested planting area was inspected, a plan formulated, and the location for the various species pegged out. On the morning of the 12th, the trees were packed into transport boxes, watered, and loaded on the two utilities. On arrival at Tower Hill, they were unloaded as near as possible to their respective future locations. Eleven club members started planting, and worked throughout the day.

The tea-trees, paper-barks, red gums and some blackwoods were planted on the northern margin of the largest island, to provide shelter for water birds. The other trees were planted in mixed groups on the slopes of the main cone arising from this margin. Evening saw us returning to Warrnambool to our nursery to load up in preparation for the planting on the next day, Saturday, when we were expecting more helpers.

We were not disappointed. Twenty-seven club members attended, and Dr. Robinson, Mr. Billings and his son Robert brought a boat out from Koroit. With Messrs Swindley and J.

Edge, they planted the south margin of the island north of the main island.

The club members divided into two groups. One group, directed by Mr. Cerini, completed and extended the previous day's planting of the slope of the cone. The other group, under my direction, planted a gully leading up the east side of the same cone. Mainly blackwoods were planted in the latter location, with the thought that, as some future time, ferns may be planted under their shelter, and one of the fern gullies of the early days of "The Hill" restored. In all, 1500 trees were planted.

During August 1961, a group of children from the East Warrnambool School made an inspection of the greater part of these plantings and found that most trees were flourishing.

In February 1962, because of a report that the trees were dying, due to the exceptionally dry and hot summer, three members (Messrs Edge and F. Shirrefs, and myself) of the Field Naturalists Club made an inspection. We found the eastern group almost intact, but some trees on the northern slope were dead, and many on the water's edge damaged, presumably by large brown snails. Traces of rabbits were noticed.

The raising of trees and shrubs was continued during the latter part of 1961 and early 1962, and a selection suitable for planting in exposed positions was prepared. These were ready by June, and contact was made with the Fisheries and Wildlife Department. Their field officer, Mr. Cerini, arrived in Warrnam-



Looking north-west from the main cone.

Tea-tree, planted on May 13, 1961, is thriving at the water's edge. The cone on the right was the scene of some of the planting by the Koroit schools.

bool on June 3, bringing 600 plants with him.

The field naturalists carried out their planting on June 4, when they put out 430 trees, which they had raised, and 460 provided by the Fisheries and Wildlife Department. The hardy plants were placed on an exposed peninsula some five or six acres in extent.

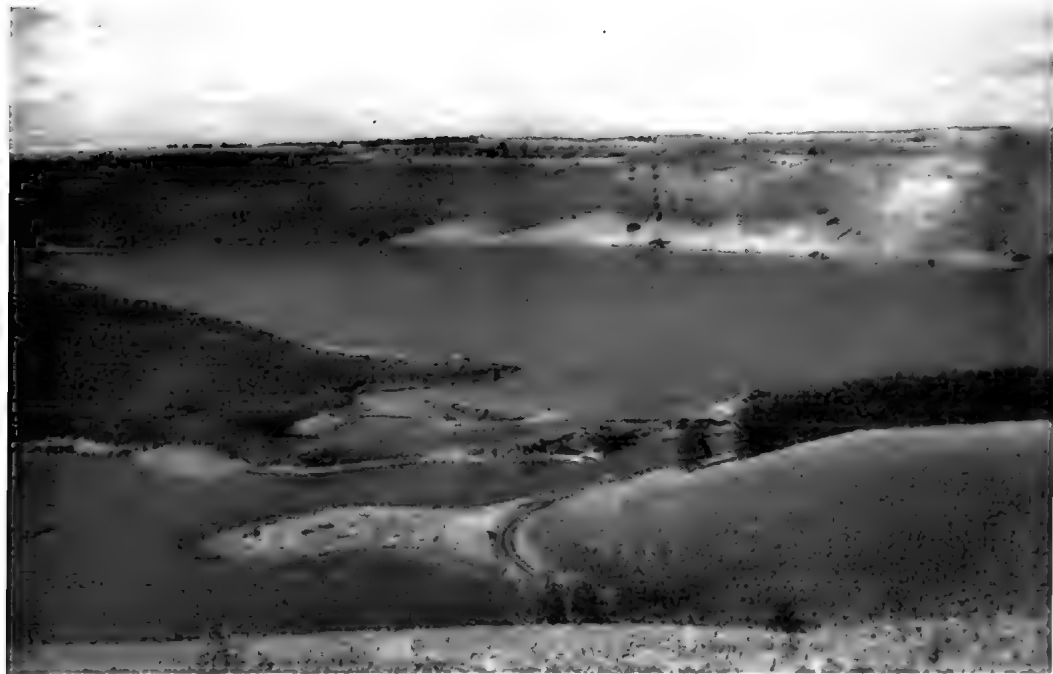
The other planting was on the north side of the cone dealt with in 1961, and it extended westerly to the pine plantation on the edge of the old quarry.

District school children, organized by the Koroit Apex Club and under the supervision of Mr. Cerini, planted 250 trees the following day. Of these, 110

were provided by the field naturalists.

As there were 200 seedling trees left on hand after these operations, a small party of field naturalists carried out a further planting on July 7.

The main species planted in 1962 were; Coast Wattle (*Acacia longifolia sophorae*), Blackwood (*Acacia melanoxylon*), Green Wattle (*Acacia decurrens*), Swamp Gum (*Eucalyptus ovata*), Manna Gum (*Eucalyptus viminalis*), Drooping She-oak (*Casuarina stricta*) and Coast Tea-tree (*Leptospermum laevigatum*). Minor plantings were made of Blue Gum (*Eucalyptus globulus*), Scarlet Flowering Gum (*Eucalyptus ficifolia*),



Photos: R. Illidge.

Looking down the slope of the cone planted May 12 and 13, 1961.  
To the left of the track is the tongue of land planted in September, 1961.

Lemon-scented Gum (*Eucalyptus citriodora*), Messmate (*Eucalyptus obliqua*), Coast Beard-heath (*Leucopogon parviflorus*), Pincushion Hakea (*Hakea laurina*), Silver Banksia (*Banksia marginata*), Pinnate Boronia (*Boronia pinnata*), Austral Indigo (*Indigofera australis*), Sea Box (*Alyxia buxifolia*) and Slender Velvet-bush (*Lasiopetalum baueri*).

In all, about 3090 plants have been put out. The aim has been to keep the main planting limited to species that were likely to have been represented in the original flora. Ascertaining these species provides problems, partly because much of the original vegetation had disappeared before a survey of any type was

made of it, and also because of the unusual composition of the soil. Although volcanic, the ground contains lime.

When planting on July 7, Mr. W. Mathieson found *Clematis aristata* growing in the shelter of the Swamp Gums. As soon as the trees which have been planted grow high enough to provide shelter for undergrowth, there is every likelihood that more native plants will re-establish themselves.

Rabbits and the danger of fire are problems to be overcome. There are bound to be failures but, with increasing interest, the time should come when Tower Hill, one of our greatest natural wonders, will be restored to its former scenic beauty.



## “Van Diemen’s Land Correspondents”

Botanists, especially those interested in systematics and botanical nomenclature, often have reason to consider the origin of the names given to plants and, in doing so, can quite easily become involved in studies somewhat removed from botany. They are apt to find themselves browsing in the rich fields of biography, classical literature, geography, sociology and in innumerable other by-ways. Specific epithets are a fecund source from which such incursions can be made.

In the *Census of Victorian Plants* we can see the epithet “*gunnii*” applied to an *Asperula*, a *Cladium*, a *Chiloglottis*, a *Helichrysum*, a *Pultenaea*, a *Phyllanthus* and a *Eucalyptus* and, at one time to a *Richea*, while the form “*gunniana*” is attached to a *Baeckea*, a *Carex*, a *Ranunculus* and, formerly, to an *Olearia*. Those interested enough would soon find out who Gunn was, but it has remained for Messrs. T. E. Burns and J. R. Kemp to attempt to bring him to us as a living being—a man of his time—and they have made the attempt by publishing a long series of his letters written during the period 1827-1849 to friends and acquaintances in England.

Most of the letters are addressed to Sir William Hooker, with whom Gunn established a firm and fruitful friendship but, for two reasons, the letters lose much of their value as a means of telling a story of the life and times of the friends. The replies by Hooker (and by the other correspondents) to Gunn’s letters are evidently not available, so the patient reader gets not much more than half the picture.

This reviewer, being a more or less patient individual, read them all conscientiously, and completed the task with the strong feeling that the material might have been applied to the advantage of the general reader had it been used as the source for a coherent story of Gunn and his contemporaries.

As the letters are published in No. 14 (New Series) of the *Records of the Queen Victoria Museum*, Laun-

ceston, one may suppose it is intended for the general reader, although the generality will be somewhat restricted by the fact that only 1200 copies have been printed. However, the material is there, assembled in a form which will make a lot easier the task of any further story teller. One feels that Gunn’s dealings with the unscrupulous T. K. Short would make a good cautionary tale and that his observations on the character and personality of the “imposter and literary pirate”, Dr. Lhotsky, merit some study.

The letters make no reference to Gunn’s meeting with Hooker, when the latter visited Van Diemen’s Land in 1840, which only goes to show that they are not by any means a diary of important occasions and events in the life of the writer. Nevertheless, they are of undoubted archival value, and the short general index at the end of the book may help in the task of selecting for perusal those which deal with matters which one might consider to be of especial interest.

The book is a 10" x 7½", and very creditably produced by the Tasmanian Government Printer. It includes a sketch map showing the areas of Tasmania covered by Gunn in his search for new and rare plants, a full page reproduction of portraits of each Sir W. J. Hooker and Gunn—that of the latter by the very talented convict, T. G. Wainwright—and a facsimile of each a letter and a letter cover.

Finally, one should not fail to mention the thoughtful preface by the Honourable E. E. Reece, M.H.A., Premier of Tasmania, the good introduction by Professor H. N. Barber, the editorial note by Mr. Frank Ellis, Director of the Museum, and Mr. W. Baulch’s biographical sketch of Ronald Campbell Gunn, F.R.S., F.L.S. Each contributor adds to the value of this special volume of the *Records of the Queen Victoria Museum*, to which institution we are grateful for the copy now included in the library of the F.N.C.V.

—J. R. GARNET

# ALONG THE BY-WAYS

## *With the Editor*



*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

### Cicadas and Spiders

In the report of the F.N.C.V. general meeting of January this year (*Vict. Nat.*, Vol. 78, p. 309) there is a note that, amongst the pictures screened, were "four slides illustrating the emergence and death of a cicada—the victim of a huge spider". Something similar had been reported by a junior club member, David Allan, of Mallacoota in East Gippsland. On October 10, 1961, David wrote this:

Last night we went cicada hunting in the school ground. There we found a big spider about three inches across; it had a cicada by the neck. The cicada had been climbing the tree to split its shell.

Now, Mr. E. Byrne, lecturer in nature study at the Toorak Teachers' College, has produced these observations and comments on the same subject:

Several years ago, while camping at Yarra Junction, by the Little Yarra River, I had rather a unique experience while observing the emergence of a number of small black cicadas from their nymphal shells. Quite large numbers of these cicadas were emerging from the ground and making their way up the outside walls of a slab hut which served as a kitchen for our Boys' Brigade Camp. It was a day or two after Christmas and the weather was hot but not uncomfortably so.

Scores of cicadas in various stages of emergence were seen and, wishing to observe the whole withdrawal process, I picked up a nymph which as yet showed no signs of a split in its coat and tried to hook its legs in the rough bark of the hut wall at a convenient height for observation. The particular position I chose was near the corner of the hut and you can imagine my surprise when a large huntsman spider suddenly dashed around from behind the bark, seized the cicada from my fingers and disappeared whence it came—and just as quickly.

Several boys were with me at the time and, after the initial excitement of the event passed, there was much

speculation as to whether the spider had "heard" the cicada's claws scratching at the bark. Certainly, from the direction it came, it was quite impossible for the spider to have seen the cicada.

It seemed to me that the type of reaction was similar to that observed when web-spinning spiders respond to the vibrations set up by the struggles of an ensnared victim. If it was actually a response to vibration, then a spider must be extraordinarily sensitive to detect the slight movements through the thick bark. Perhaps hunting by sight is not as important to these huntsman spiders as we might think, and they may actually rely as much or more on the technique we observed.

When these reports were discussed with Mr. Alex Burns, Keeper of Insects at the National Museum of Victoria, he commented that he had not previously heard of huntsman spiders preying upon cicadas. Apparently the habit is not uncommon, but simply one of those things that nobody has reported before.

### Another Mueller Tree

Mr. A. K. Parkin took the accompanying photograph, about which he makes this comment:

Some time ago, publicity was given to the fact that the only tree reputed to have been planted by Baron von Mueller in the grounds of the Melbourne University, was in danger of destruction to make way for extensions to the Engineering School. However, it is pleasing to note that alternative arrangements were made and that the tree, a Spotted Gum, still stands, minus a couple of limbs.

Mueller's Spotted Gum,  
Melbourne University.

### A Colourful Toad

Children brought me a toadlet, which Mr. Norman McCance identified as *Pseudophryne bibronii*. It is a little beauty, apparently not uncommon, for Mr. McCance describes it as "a picturesque little amphibian which I used to collect along the bush tracks at Launching Place". It is barely an inch long, its lumpy little back patterned in black and green, under-limbs orange-red, abdomen blue. I have installed it under a hollow stone by the pond and hope it consents to live there and eat the slaters which are all too abundant.

—JEAN GALBRAITH

*Note:* Material for these columns has run out. Your contributions are needed if the feature is to continue.



# A Pattern of Correas

By JEAN GALBRAITH

When discussing the distribution of species of *Correa* with Mr. W. Cane of Maffra, I was struck by the interesting pattern of their distribution in Gippsland, forming one might say a gigantic patchwork quilt over eastern Victoria. The notes that follow are the result of our combined observations — the interesting central strip from the Macallister River east to the coast being entirely Mr. Cane's contribution, though I am indebted to him for confirmation or elaboration of my own notes on other areas also.

There is an intermittent coastal fringe of White Correa (*C. alba*): the typical form with leaves almost glabrous above, with one "island" of it some distance up the Mitchell River, and within that coastal fringe there is a strip (roughly thirty miles wide) of *Correa reflexa* var. *cardinalis*, the most brilliant correa of them all. This grows in the sandy heathlands adjoining the coast, from at least as far north as Bateman's Bay in New South Wales down to Mallacoota and round the southern coast as far as Hedley, near Wilson's Promontory. This "stream" of Cardinal Correa is divided by the Strzlecki Ranges, and what one might call a tributary stream runs along the northern foothills of the Strzleckis in the sandy heathlands from Rosedale to Traralgon South, which appears to be its most western occurrence.

Beyond Hedley, it is replaced by the large-flowered red form

of *C. reflexa* var. *reflexa*, which grows at Yanakie on Wilson's Promontory. Beyond Traralgon South the northern stream of variety *cardinalis* ceases abruptly and I know of no *C. reflexa* of any kind farther east in the Latrobe Valley.

Parallel to the stream of *C. reflexa* var. *cardinalis* which comes down from Bateman's Bay (or farther north) there is a broad strip of the red-flowered *C. reflexa* var. *reflexa*, tall-growing and robust. This follows approximately the same line as the other variety but is farther inland and stops completely at Mount Taylor just east of the Mitchell River. From the west bank of the Mitchell, the stream of var. *reflexa* continues westward to the eastern slope of the Aberfeldy - Macallister watershed, but here (Mitchell to Macallister) it has green or whitish-green flowers though in no other way differing from the var. *reflexa* farther east.

This "var. *reflexa* strip" reaches some distance up the slopes of the Australian Alps, but as soon as the country becomes really mountainous, it is replaced by Mountain Correa (*C. lawrenciana*), which takes over at the northern extreme of *C. reflexa*, and also replaces that species on the western slope of the Macallister-Aberfeldy watershed. *C. reflexa* (green form) appears again in the Dandenongs and in the sandy heathlands round Port Phillip Bay, while *C. lawrenciana* continues north of it (at Marysville, etc.).

Just as *C. reflexa* var. *reflexa* is uniformly red-flowered east of the Mitchell River, and green west of the Mitchell, so is *C. lawrenciana*, but the red-flowered *C. lawrenciana* runs a little farther west to the Freestone Creek and Castle Hill, beyond which it is wholly green. However the Castle Hill Mountain *Correa* is very distinct from the form that grows east of the Mitchell. It has large ovate to cordate leaves and seems to agree exactly with the description of *C. lawrenciana* var. *cordifolia* Wilson, of south-eastern New South Wales.

The pattern of these strips (working north from the coast: *C. alba*, *C. reflexa cardinalis*, *C. reflexa reflexa*, *C. lawrenciana*) is quite clear-cut but of course over-simplified in that the strips are broken by patches where no *correa* grows at all. No species of any plant is absolutely continuous over the whole countryside, but in the entire area described there is no intermingling of these species and varieties except in one remarkable "island" of between one and two acres, at Briagolong near Freestone Creek; and two solitary and distinctive plants within a quarter of a mile of it.

This island of obvious hybrids, shown to me by Mr. Cane, and the two solitary plants, were found by him. The small mixed population at Briagolong occurs where the green-flowered form of *C. reflexa reflexa* meets the red-flowered *C. reflexa cardinalis*, and in this place there is every imaginable variation of leaf between the broad rough leaf of var. *reflexa* and the narrow leaf, smooth above, of var.

*cardinalis*; and these are variously combined with red, green, cream, ivory and white flowers. All the bushes are dwarf.

The two isolated plants are even more remarkable. Both are now propagated as "Clearview Giant" and "Clearview Rose", and as I have no other means of referring to them I shall use those names at present. "Clearview Giant" has an extraordinarily large bell, bright red, tipped yellow, and, apart from the size of the bell, is a typical red-flowered *C. reflexa reflexa*, but it is remarkable as the one known red-flowered plant in a wholly green-flowered area.

"Clearview Rose" is a tall bush growing amongst rocks, and has the habit and foliage of var. *reflexa*, but is remarkable in that the thin, green, glabrous, deeply-lobed calyx is almost that of *C. aemula* of western Victoria. The flower is clear soft translucent pink, and does not split in the way characteristic of *C. aemula*. Careful search has failed to reveal another plant. One wonders whether a somewhat similar plant provided the record by E. E. Prescott, of *C. aemula* near Orbost.

In this general survey of the Gippsland pattern of *Correa* I have left out one. On the Strzelecki Ranges, where one would expect to find Mountain *Correa* at an altitude corresponding to that of its occurrence in the Australian Alps, that species does grow, but a form of it (collected by G. Marshall and E. Faist of the Latrobe Valley F.N.C.) which seems to be quite unlike any variety so far described. The leaves are narrow-

lanceolate, about 3 inches long and  $\frac{3}{4}$  inch wide, strikingly (and equally) narrowed to each end. There was no flower on either specimen, but a solitary green bud had a peduncle about  $\frac{1}{2}$  inch long and a pedicel about  $\frac{1}{4}$  inch, both brownish woolly, with the bracts some distance below the base of the pedicel, and the rusty calyx deeply cleft (more than half-way to the base) into lanceolate lobes.

There was at one time a very small island of the red form of *C. reflexa reflexa* in the hills north of Tyers. It consisted of

a very few plants—the only known *C. reflexa* anywhere in the Tyers hills, but it has now disappeared as a result of logging in the area.

Thinking that a change in the geological formation might account for the change from red to green in both *C. reflexa reflexa* and *C. lawrenciana* at the Mitchell River I enquired about the formations there, but a full and interesting report from Dr. W. Thomas of the Geological Survey contained no indication of any differences at this point that could account for it.

## A.N.Z.A.A.S. Congress — 1962

This year the thirty-sixth annual congress also celebrated the seventy-fifth jubilee of the Association. The location was the University of Sydney, and the arrangements were as well carried out as usual.

The university, being only a ten-minute bus ride from the city centre was particularly convenient for delegates, and Sydney was an excellent centre for the various excursions into the beautiful New South Wales countryside.

The presidential addresses were all given to packed audiences and appealed to the intelligent layman equally as well as to the scientist. There were sixteen sections, and the programmes were arranged so that one could usually attend the address of one's choice, although those whose interests were not confined to one particular branch of science sometimes had difficulty in choosing between two attractive programmes.

A feature of the evening sessions was the unusual and attractive setting of the Great Hall of the University. This very fine building dates from 1857 and is built in a style similar to Westminster Hall in London. The ceiling is noted for its magnificent cedar carvings—representing grammar, dialectic, poetry, arith-

metic, geometry, astronomy, ethics, physics, metaphysics, theology, medicine and law. These carvings are each lit by three gas-jets, so that when the room is darkened by turning off the ordinary electric lighting the effect of these tiny triple flares is very beautiful. The windows are made of stained glass; there are eleven of them, each containing three portraits of people famous in English history, science or literature.

Of special pleasure to the lady members and wives attending the congress was the wonderful hospitality offered by the wives of the university staff. Interesting drives were arranged and lavish meals provided in private homes. Indeed, if a lady had no scientific interest whatever, she could have had a delightful holiday just by accepting one of the many invitations offered each day.

The A.N.Z.A.A.S. meetings, especially if advantage is taken of the pre- and post-session excursions, should be of great appeal to field naturalists and, if accommodation in the colleges is chosen, need not be expensive. The next congress takes place at Canberra, in March 1964; one of the excursions is to be to the Snowy Mountains area.

—L. M. M. BEADNELL

# The Riddle of our Swifts

By

D. J. NOONAN

Figure 1:  
Spine-tailed Swift  
found at Cape Nelson.



Although swifts are quite well known to the average person interested in birds, yet very little is known about their habits. They are indeed mystery birds; they seem to come from nowhere just prior to a change in the weather during the hot sultry conditions of summer; they may then be seen in hundreds, then, just as quickly, they vanish. They may be seen once or twice again that summer or perhaps not until the following year. They are always on the wing; they never seem to alight on tree or cliff, yet they appear to expend tremendous energy, such is the pace at which they fly.

What then is known about these birds? There are two species of swift which occur in Australia—the Fork-tailed Swift (*Micropus pacificus*) and the Spine-tailed Swift (*Hirundapus caudacutus*). They are both migrants; they breed in the Northern Hemisphere and come to Australia only during our summer months. Swifts have been seen in Australia from October to April; in Victoria, they are most commonly seen during January, February and March.

In Victoria, by far the more common species is the Spine-tailed Swift, particularly in the eastern half of the state. The Fork-tailed species seems to fa-



Figure 2:  
Feet of the Spine-tailed Swift

your the interior of Australia and is usually only seen in Victoria during extremely hot, north-windy weather. *The fork-tailed bird is the smaller of the two species; it has a fairly long tail which is slightly forked at the end; there is a large white patch above the rump.* Otherwise it appears as a darkish-coloured bird. The flight is fast, buoyant and fluttering, not unlike that of a swallow, although the swift is bigger and faster.

*The spine-tailed species is considerably bigger; its tail is much shorter and square-cut; there is a large white patch under the tail, a line of white along the flanks and a conspicuous white throat.* As is demonstrated by the photograph (Fig. 1) there is also a patch of white at the base of either wing, but this is not so obvious from below. This species, too, appears as a dark brown or even black bird when seen overhead. The flight appears far stronger and more purposeful than in the other species. At times it can almost be mistaken for the Little Falcon as it makes a long

raking dive across the tree-tops. It can fairly safely be concluded that swifts seen east of Melbourne will be of this species unless the weather is hot and windy.

The birds are wonderfully adapted to their life in the air; they present an extremely streamlined appearance, with long slender wings and bullet-shaped body. The eyes are set well back in the head, to afford protection against the wind. In common with the frogmouths and nightjars, to which they are related, swifts have short, broad beaks—adapted to the taking of insects on the wing. Surprisingly enough, the legs, though short, are quite sturdy and the claws are quite long and muscular (Fig. 2). As may be seen from the third photograph (Fig. 3) the ribs of the tail feathers extend about a quarter-inch beyond the feathers. It is believed that the birds use these spines as a support when roosting on cliff or tree. When at rest they cling rather than perch in the manner of most birds.

At present there is a survey group associated with the Victorian Ornithological Research Group interested in trying to clear up some of the mystery surrounding the habits of these birds.

The problem of where the swifts spend the night has long troubled the ornithologists. Do they stay the whole night on the wing, as the males of the English swift do during the breeding season? If they alight, do



they roost on cliffs or on trees? Do they roost in large concentrations, singly, or in pairs? If they roost in trees, is it living or dead trees? If living trees, is it the outer foliage to which they cling, or is it the main trunk? Do they roost wherever they happen to be when darkness falls, or do they hark back to the same locality each night?

Similarly, do the birds remain in much the same localities whilst they are in Australia, or do they wander over the whole country? Do they follow the recurring meteorological depressions, as one observer believes, or is it that they are around all the time but, because of the height at which they fly, are simply not seen? Most people see swifts only prior to a weather change, but perhaps this is due more to the fact that myriads of insects often emerge in these warm, humid conditions. Observations (on the Spine-tailed Swift) suggest that over the mountainous country, the birds are to be seen in the same area nearly every day during the summer months, regardless of the weather.

There are many more problems associated with these birds. At the moment we know very little of the migration route between Australia and their breeding areas of the Northern Hemisphere. We know that both species have a very extensive breeding range, which takes in Japan, Mongolia, Manchuria, and much of Siberia, but we

know little of what course they follow between these places and Australia, or even at what point they enter Australia.

Again, how often and where do the birds drink? What types of insects do they take? How many thousands of birds visit Australia each year? These are some of the many questions we hope to answer. It may be that certain readers of this article know some of the answers. If you do, we should certainly welcome hearing from you. On the other hand interested naturalists may care to help by keeping records of swifts that are seen. Species, date, time of day, numbers, flight direction and weather conditions, should be recorded, also any unusual or interesting behaviour. Some may care to join our study group. Information or enquiries should be addressed to the writer, at Mitcham Road, Donvale, Victoria.

[The three accompanying photographs were taken by Mr. B. E. Carthew of Portland, of a bird, apparently uninjured but unable to fly, found by Mr. J. Newton, near Bridgewater, south-western Victoria, in March this year.]

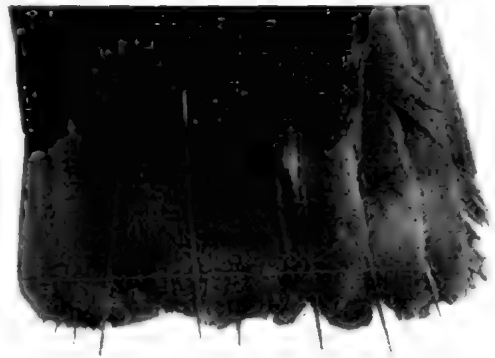


Figure 3:  
Tail of the Spine-tailed  
Swift.

# The Flora of Robinvale

By EVAN ROWLANDS

In 1937, W. J. Zimmer published *Flora of the Far North West of Victoria* (1), a comprehensive study of the vegetation types and their relation to soil types. The locality discussed by Zimmer covered some four thousand square miles, west from Hattah to the South Australian border and north and east of this to the Murray River. This article presents some observations from an adjacent area of one hundred and seventy square miles, south of the fast-developing settlement of Robinvale. The two areas are shown in Map 1.

Much of the Robinvale area has been cleared in recent years and the remaining indigenous flora is being removed daily. Since no more than passing references to the original flora exist in the literature, this article records something of the botanical features of the area while they still exist.

The climate differs little from that of the Hattah-Mildura area, the mean annual rainfall being an unreliable 11.64 inches (Mildura—10.70 ins.; Hattah—12.01 ins.), with a slight winter maximum. The summer is hot and dry, the winter mild and sunny. Long hours of cloudless sunshine with high temperatures and low humidities encourage a high evaporation rate.

It is not surprising then that the vegetation is practically identical to that in the area described by Zimmer. Because of this, the area being examined is

discussed in terms of Zimmer's defined vegetation types. The general description of each, given by Zimmer, applies also to the corresponding Robinvale type and, in this article, only differences which have been noted between features described by Zimmer and the analogous Robinvale type will be discussed. In particular, the nineteen species recorded by the author around Robinvale and not listed by Zimmer in the North West, will be examined. It seems likely that in most cases these species do exist in Zimmer's area but were overlooked by him.

Map 2 shows the exact location of notable species as well as existing areas of the various types of vegetation known to me. From the fragmentary areas of vegetation left, the original vegetation distribution has been theoretically determined. Zimmer demonstrated approximately east-west parallel bands of vegetation types, grading from the Box Flats of the Murray, south through Tall Mallee and thence through a band of Small Mallee to Stunted Mallee at the latitude of Hattah (see Map 1). This vegetation sequence is consistent with the evidence at Robinvale, where the succession of types encountered when moving south from the River is the same. The Pine-Belar-Buloke type is seen to occur as pockets, rather than bands, in both areas.

A discussion of each of the Robinvale types follows:—

#### Type 1: BOX FLAT AREAS

These are areas confined within the limits of the high-flood-level of the river and characterized by majestic Red Gums (*Eucalyptus camaldulensis*) along the permanent water-course, with Black Box (*E. largiflorens*) and Lignum (*Muehlenbeckia cunninghamii*) scattered over the flood-plain.

The prolific blue bells of *Cephalostigma fluminense* can be seen almost anywhere along the river in this area. Zimmer certainly overlooked it, since it is found throughout the Kulkynie. J. M. Black (2, p. 809) gives the erroneous impression that the plant is rare, claiming to have seen only the type specimen and another collected at Mannum, South Australia, and quotes no other Australian occurrence. In season, the white daisy, *Brachycome basaltica* var. *gracilis* is quite spectacular; together with its more demure associates, Swamp Dock (*Rumex brownii*) and Trailing Knotweed (*Polygonum prostratum*), it is plentiful along the river behind the Robinvale Co-operative, but was not noticed by Zimmer. Likewise the inconspicuous and uncommon *Cyperus victoriensis*, found growing west of the Robinvale bridge, was not recorded for the far North-west.

Zimmer did not claim to deal extensively with the *Gramineae*, but the author has recorded the common Summer Grass (*Digitaria sanguinalis*), as well as the first certain record for northern Victoria of the Awnless Barn-

yard Grass (*Echinochloa columnum*), neither of which was recorded by Zimmer.

#### Type 2: PINE-BELAR-BULOKE AREAS

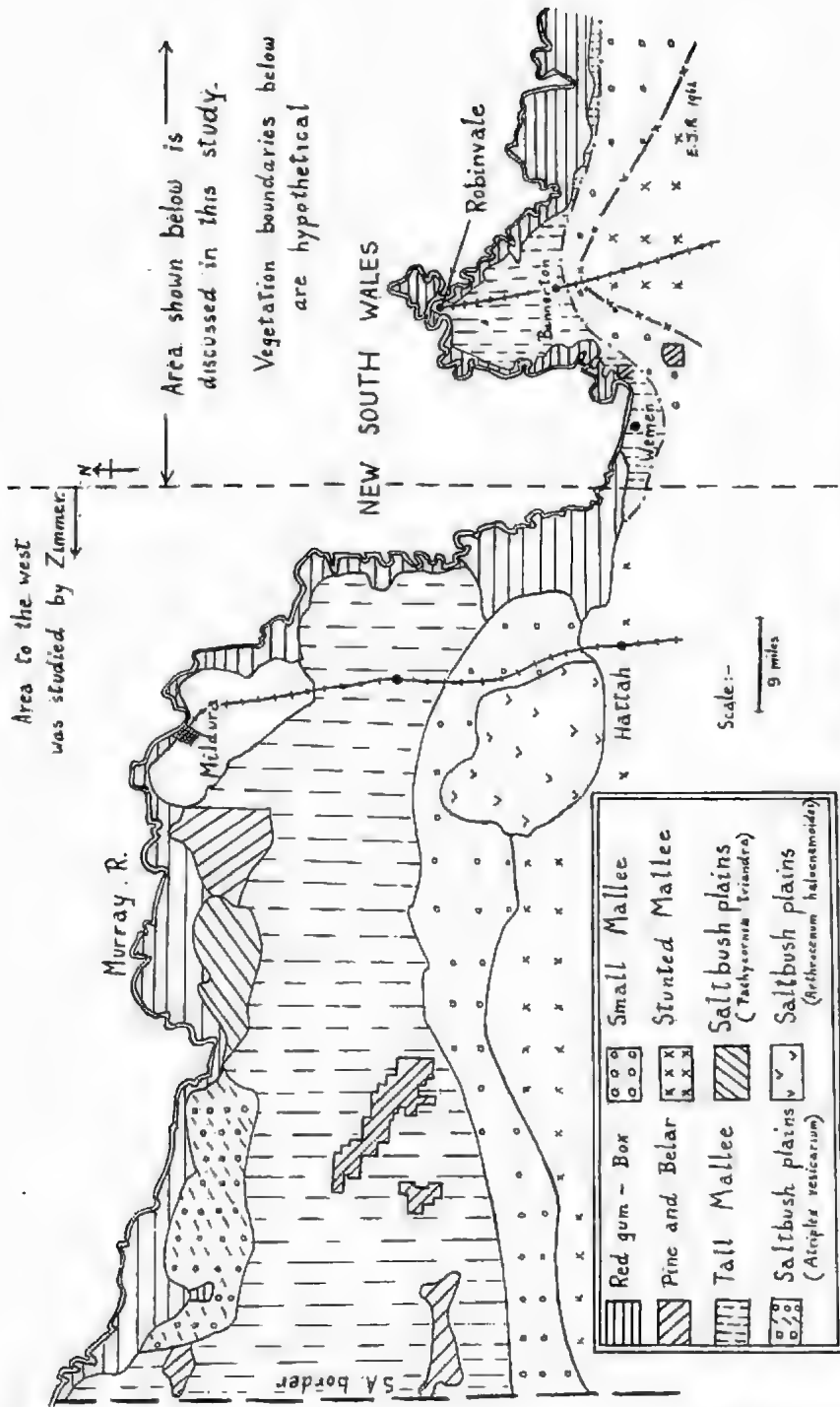
Distinctive stands of Cypress Pines (*Callitris preissii* and *C. propinqua*) and Belar (*Casuarina cristata*), with their tall trees of grey and green, whispering even on the stillest of days, provide a stimulating change for the naturalist wandering into them from the monotony of the Mallee.

Every now and then, the amateur botanist is encouraged by an unusual find. Here, a mystery *Acacia*, defying various botanical keys, rewarded the author. Superficially resembling *Acacia homalophylla*, its broad pod and transverse seeds show it to be closely related to *A. pendula*. The National Herbarium of Victoria has similar material, but with wider phyllodes, from New South Wales and Goschen, Victoria; it may yet prove to be a new species.

In addition, Spur Velleia (*Velleia paradoxa*) has been recorded here, but was not collected by Zimmer. The Desert Jasmine (*Jasminum lineare*), an uncommon plant in Victoria, has been recorded by me two miles on the New South Wales side of Robinvale, but has not been seen in this area. It is surprising to find only one stand of Buloke (*Casuarina leucomi*) in the area (see Map 2).

#### Type 3: TALL MALLEE




From remnants of the original vegetation, it is apparent that most of the area was originally occupied by Mallee



Above: Map 1—Vegetation Map for Far North West Victoria (based on that of W. J. Zimmer).  
 Below: Map 2—Vegetation Map of the Robinvale Area showing exact location of notable species.

November 1962

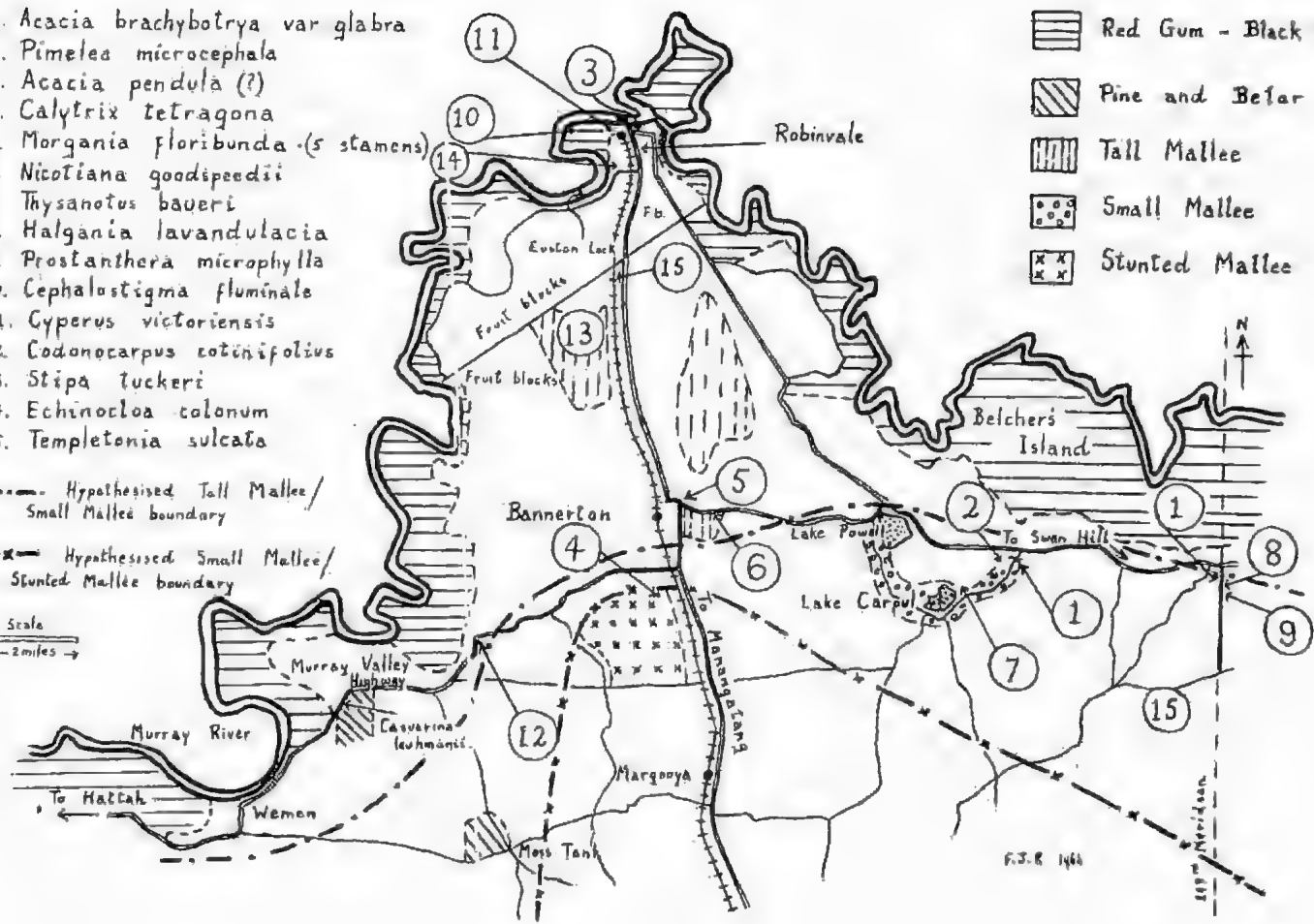
1. *Acacia brachybotrya* var *glabra*
2. *Pimelea microcephala*
3. *Acacia pendula* (?)
4. *Calytrix tetragona*
5. *Morgania floribunda* (5 stamens)
6. *Nicotiana goodspeedii*
7. *Thysanotus baueri*
8. *Halgania lavandulacia*
9. *Prostanthera microphylla*
10. *Cephalostigma fluminale*
11. *Cyperus victoriensis*
12. *Codonocarpus cotinifolius*
13. *Stipa tuckeri*
14. *Echinochloa colonum*
15. *Templetonia sulcata*

-  Red Gum - Black Box
-  Pine and Belar
-  Tall Mallee
-  Small Mallee
-  Stunted Mallee

--- Hypothesised Tall Mallee/  
Small Mallee boundary

-x-x- Hypothesised Small Mallee/  
Stunted Mallee boundary

Scale  
← 2 miles →



G.J.R. 1966

(*Eucalyptus dumosa*, *E. oleosa*, *E. incrassata*) and their varied shrub understorey. Clearing of the land has removed almost all the original flora but nevertheless it has been possible to make some interesting discoveries in that which remains.

It is worth noting that the uncommon Austral Doubah (*Marsdenia australis*), Flat Templetonia (*Templetonia sulcata*) and Small-head Rice-flower (*Pimelea microcephala*) occur in this area. The Desert Rose Mallow (*Hibiscus farragei*), known from Bolton, a few miles south, has been seen by me six miles north of Robinvale, and although as yet unrecorded, it could well occur in the study area. It was in this vegetation type that I collected the first Victorian specimen of *Nicotiana goodspeedii* in February 1960 (*Victorian Naturalist*, Vol. 78, pp. 10-11, May, 1961) and in June 1961, the second Victorian record of the Spear-grass (*Stipa tuckeri*). About an acre of this grass exists in a water reserve, and since this is entirely surrounded by cleared land, it is interesting to speculate as to how widespread the species was originally in this area. *S. tuckeri* is known from western New South Wales and from southwest of Lake Frome in South Australia—areas rather more hot and arid than Robinvale. The Desert Goosefoot (*Chenopodium desertorum*), another species not recorded by Zimmer, also occurs here.

#### Type 4: SMALL MALLEE AND PORCUPINE GRASS

When the red sandy loam gives way to brown-yellow

sands, tree growth becomes much reduced in height and Porcupine Grass (*Triodia*), a haven for scampering lizards and other small animals, occupies much of the otherwise bare soil surface. Characteristically, the white-blossomed Green Tea-tree (*Leptospermum coriaceum*), the greenish-blue of the Mallee Cypress Pine (*Callitris verrucosa*) and the Desert Grevillea (*Grevillea pterosperma*) appear.

It is strange that Zimmer did not record *Acacia bynosana*, since it is plentiful around Robinvale. The same can be said of the Twiggy Guinea-flower (*Hibbertia virgata* var. *crassifolia*). Occasional specimens of the Common Fringe-myrtle (*Calytrix tetragona*) are found in this association, but Zimmer did not record it and commented that the arid sands from Hattah to the South Australian border had probably prevented it entering the area from the south. The National Herbarium has specimens from Ouyen and Hattah, but it is obviously uncommon in this part of the state.

A puzzling *Acacia*, *A. brachybotrya* var. *glabra* is represented in the area by no more than half a dozen plants (see Map 2). It is distinguished from the typical *A. brachybotrya* by its completely glabrous nature, its slender, graceful form and its long peduncles. The National Herbarium possesses similar material from Berrigan, New South Wales, and several other localities. Small-leaf Mint-bush (*Prostanthera microphylla*) also occurs here and was not recorded by Zimmer.

### Type 5: STUNTED MALLEE AND PORCUPINE GRASS

If one stops the car two miles south of Bannerton on the Mangatang road, walks over the railway line and two hundred yards to the west, one is amongst sharply undulating sand-hills. There, surrounded by virgin mallee, with the quietness broken only by bird-calls and a gentle breeze, civilization seems very remote, and the fascination of the explorer is aroused. The rarer plants are already at hand—Slaty She-oak (*Casuarina muelleriana*), Flexible Hakea (*Hakea flexilis*), Mallee Fringe-lily (*Thysanotus baueri*) and the beautiful yellow stars of the Desert Phebalium (*Phebalium glandulosum* var. *bullatum*) for which Robinvale is the type locality. There too, in good seasons, beneath the tea-

tree, greenhood orchids (*Pterostylis* sp.) and Fringed Spider-orchids (*Caladenia dilatata*) are quite plentiful. In August, the short-leaved and spiny Silky Cryptandra (*Cryptandra propinqua* var. *grandiflora*) bursts into a cover of small pink bells, and *Nicotiana velutina* raises a white raceme. Neither of the latter two was recorded by Zimmer.

#### ACKNOWLEDGEMENT

The author is grateful to the staff of the National Herbarium of Victoria, who courteously and efficiently identified and commented upon many specimens.

#### REFERENCES

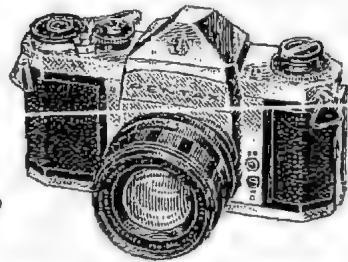
- 1, Zimmer, W. J., *Flora of the Far North West of Victoria*;—Forests Commission of Victoria, Bulletin No. 2, Ed.2., 1946.
- 2, Black, J. M., *Flora of South Australia*—Ed.2, Parts i-iv, 1957.

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## ASAHI PENTAX IS PERFECTION

# Field Naturalists Club of Victoria

## General Meeting—October 8, 1962

The National Herbarium hall was almost full at the meeting chaired by the president, Mr. M. K. Houghton. A visitor from Middleburg, Pennsylvania, Miss I. Holland, was welcomed.

The secretary reported that the Barrier (Broken Hill) F.N.C. is arranging a plane trip to the Burke and Wills "Dig" tree at Cooper's Creek, to do what can be done to save it from termites, erosion and vandals. They have asked for help to defray expenses. Mr. Houghton will be a member of the party.

Mr. G. T. Thompson, Director of the Natural Resources Conservation League, a member of the National Parks Authority and former Chairman of the Soil Conservation Authority, gave an illustrated address on "National Parks in U.S.A. and Victoria". He pointed out that Australia has no national parks, all our so-called national parks being organized at the state level, as are many well-known parks in U.S.A., such as Niagara Falls. He showed photos of several well-known parks, and of the glades of Californian Redwoods, purchased for posterity by the Save the Redwoods League for 16 million dollars. He also showed pictures of bears climbing over cars at Yellowstone Park, and of "Chester", the eagle of Wilson's Promontory. He mentioned that in U.S.A. a clear distinction was drawn between parks set aside for conservation, and those set aside for the recreation of the people. In U.S.A., Mount Buffalo would probably be placed in this second category.

In response to a question about the Promontory, he said that the Authority was definitely opposed to any building on Pillar Point, and also to the alienation of the area at first sought—50 acres. However, he felt that an area of about 10 acres near Bishop's Rock would probably be made available to private enterprise, with the approval of the Authority.

On behalf of the members, the president thanked Mr. Thompson for his very interesting talk.

Mr. F. R. Lublin suggested that maps of the national parks would be helpful; and Mr. R. Pitt pointed out

the value of nature trails or self-conducted tours in parks following direction notices.

Thirteen new members, whose nominations appear in the October *Naturalist*, were elected.

Mrs. Daisy Wood brought *Caladenia filamentosa* from Edenhope; Miss P. Carolan, *Eucalyptus regnans* from Stony Creek valley, Macedon; Mr. H. Haase, garden-grown waratahs; and Mr. A. Parkin a hermaphrodite Early Nancy (*Anguillaria dioica*).

## Fanna Survey Group—September 6, 1962

Twelve members and visitors were present, with Mr. N. A. Wakefield in the chair. At this meeting, a considerable number of reports on the wildlife in different parts of the state were made, including some comment on the Ozenkadnook "monster". A plaster-cast made from a foot-print left by the animal was exhibited and compared with that of a large domestic dog. The two were essentially similar, and it would seem that this "monster" is nothing more than a very large dog gone wild.

Mr. Wakefield reported the successful completion of a trip to the Buchan area and the collection of additional bone material, and he gave an outline of the proposed lines of research he intends to carry out with this vast amount of skeletal remains.

Mr. J. McCallum spoke to the group on the recent investigation of Waterhouse Island in the search for specimens of *Antechinus minimus*. The greater part of the habitat on the island has been destroyed and the quest was in vain. However, the island proved rich in bird life, the most notable items being a rookery area of Short-tailed Shearwaters (*Puffinus tenuirostris*), Little Penguins (*Eudyptula minor*) in their nesting burrows, and large flocks of Double-banded Doterrels (*Charadrius bicinctus*). Lizards and snakes abounded, the Tiger Snake (*Notechis scutatus niger*) and six species of skinks of the genera *Lygosoma* and *Egernia* being recorded, including the first record of *Lygosoma bougainvillei* for Tasmania.



### Botany Group—October 11, 1962

The chairman (Mr. J. A. Bairnes) received apologies from a number of members, but those who attended were rewarded by an excellent lecture on the Gramineae by Miss Alison Hooke, who had numerous specimens of various species of grasses in addition to a diagrammatic explanatory chart. A useful innovation was the distribution to those present of a typical grass specimen, the spikelets of which were closely examined to distinguish the floral parts. Awns, nodes, sheaths and ligules were also observed. Reference was made to the world total of 10,000 species of grasses, including the well-known cereals and the very large grasses known as sugar-cane and bamboo. Miss Hooke brought out the distinctions that differentiate the sedges and club-rushes (Cyperaceae) and the rushes (Juncaceae) from the Grasses (Gramineae).

It was decided, after the showing of some colour slides, that the next meeting would be a members' night, followed by a slide and film night for the December meeting, and that there would be no January meeting.

The group has recommended the purchase of some new books for the club library, and a sub-committee of four members will have a continuing role noting books desirable for acquisition.

The group's recent excursion to Bald Hill, Clematis, was thoroughly enjoyed, many species of wildflowers being noted. On the return trip, a visit was made, under the guidance of the club president (Mr. M. K. Houghton) to a survival of the Oakleigh-Heatherston flora, where members were delighted to see a fine display of Wedding Bush (*Ricinocarpus pinifolius*) in flower. Twenty years ago there were still many acres of this fine shrub in evidence near Melbourne, but the sprawl of suburbia has overtaken most of it. It was pleasing to see much *Bossiaea* in flower too.

### Geology Group—October 4, 1962

Nineteen members were present, with Mr. L. Angior in the chair. The chairman reported on the excursion to Anglesea on September 16, in conjunction with the Geelong F.N.C., when the oil rig and brown coal mine were visited. The secretary stated that, following a request, he had forwarded

a small collection of specimens to Donald, where it was hoped a field naturalist club would be formed. Mr. J. Bairstow, now touring in India, wrote that he had arranged with the Tata iron works to forward specimens to the group.

Mr. D. Mulnes favoured the group with a practical demonstration of the preparation of a rock section for microscopical examination. The methods of grinding on glass plates with various powders, mounting on slide and covering with glass slip ready for placing under the microscope, were carefully demonstrated. A number of microscopes were set up to illustrate various completed sections.

*Exhibits:* Basalt with olivine, volcanic bomb and core, from Anakie, fossil leaf from Tertiary, Bacchus Marsh (Mrs. K. Cheslin); rounded and polished stone from Cape Otway area, thought to be banded gneiss (Mrs. M. Salau); brown coal, Anglesea mine (Mr. L. Angior).

### Microscopical Group—September 20, 1962

Fourteen members attended this meeting at the Microscopy Laboratory of the Melbourne University. Mr. E. Mattheaei gave the group a very exciting talk and demonstration on fluorescent microscopy and its practical application. The speaker presented his subject in a most interesting way, giving all the practical details necessary, using ordinary microscopes and equipment.

The group were shown a brilliant display of 25 mm slides, showing numerous specimens under fluorescent illumination. The variety of colours obtained with but a single staining and stain (acridine orange) was simply astounding to all.

Finally members examined the array of slides under the ten microscopes which the speaker had set up specially for the occasion. This staining method not only showed structures which under conventional illumination would be very difficult if not impossible to identify, especially under low magnifications (400X), but also by the colour indicated, virility of any living organism or tissue.

Slides exhibited were—yeast cells showing various stages of activity, section of pine needles, skin under fluorescent illumination, similar skin section under conventional illumina-

tion, wool, iris root, ovary, kidney section, lung tuberculosis and some live epithelial cells.

Members thanked Mr. Matthaei for a most wonderful evening, especially as it had opened up a hitherto unknown field of microscopy to the group.

## Honour to Mr. N. F. Learmonth

It is with pleasure that we learn that Mr. Noel Learmonth of Portland has been elected a Fellow of the Royal Historical Society of Victoria. This is an honour rarely bestowed, and Mr. Learmonth has earned it for his valuable researches and published matter not only about Victorian history centring round the Western District but also in other spheres.

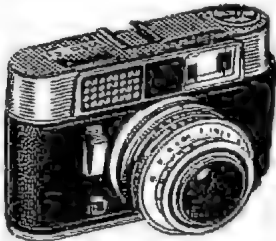
Many are aware of the splendid contribution he has made to our knowledge of pre-history and to the cause of natural history. He was instrumental in establishing the Portland Field Naturalists Club. The F.N.C.V. offers its heartiest congratulations to Mr. Learmonth.

## Special Group Meetings

Members of the F.N.C.V. and visitors are invited to attend the following two group meetings, which should be of general interest:

**Microscopical Group**—November 21, at 8 p.m., at C.S.I.R.O., 314 Albert Street, East Melbourne. Mr. S. Evans, of the Photographic Section will speak on, and demonstrate, equipment for taking moving film through a microscope. This will be followed by the showing of two colour films: "Biological Control of Insects" (which won an overseas award) and "Insect Tissue Culture" (which was filmed through a microscope). There is seating for 60 persons.

**Fauna Survey Group**—December 6, at 7.30 p.m., at Fisheries and Wildlife Department, 605 Flinders Street Extension, Melbourne. There will be a seminar, led by Mr. N. A. Wakefield, on the evolution of marsupials, with special reference to the several Australian families of the order. Exhibits will include several live specimens as well as skeletal material.



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## DIARY OF COMING EVENTS

### GENERAL MEETINGS

**Monday, November 12, 1962**—At the National Herbarium, The Domain, South Yarra, commencing at 8 p.m. sharp.

1. Minutes, Announcements, Reports, Correspondence.
2. Subject for the Evening: "The Centre and its Explorers", by E. S. Hanks.
3. Election of Members:

*Ordinary Members:*

Mr. Stuart E. Barker, 17 Cromwell Street, Glen Iris (M. Allender/M. K. Houghton).  
Mrs. Meredith Bell, Rydal Farm, Camperdown (G. Beaton/M. K. Houghton).  
Mrs. E. Cherry, 75 Athol Road, Noble Park (M. Butchart/A. L. Hooke).

*Country Members:*

Miss Stella Wade, Toorak College, Frankston (F. Forster/F. E. Cato).  
Mr. C. A. Draper, Box 27, Wodonga (E. H. Coghill/J. R. Hudson).  
Mrs. Elizabeth A. Ges, 12 Osborne Avenue, Trevallyn, Launceston, Tasmania (E. H. Coghill/J. R. Hudson).

4. Nominations for Membership.
5. General Business.
6. Nature Notes and Exhibits.
7. Conversazione.

**Monday, December 10**—"Horsham Excursion" (Members' Night).

### F.N.C.V. EXCURSIONS

**Sunday, November 18**—Anglesea. Leaders: Mr. and Mrs. Cheslin. The coach will leave Batman Avenue at 9 a.m., fare 16/-. Bookings with excursion secretary. Bring two meals. This excursion will be attended by a number of Girl Guide leaders, and members are requested to help them as much as possible.

**Sunday, December 9**—Penguin parade at Phillip Island. The coach will leave Batman Avenue at 10 a.m., fare 23/-. Bookings with excursion secretary. Bring two meals.

### GROUP MEETINGS, ETC

(8 p.m. at National Herbarium unless otherwise stated.)

**Wednesday, November 21**—Microscopical Group (Details on page 214).

**Friday, November 30**—Hawthorn Juniors at Hawthorn Town Hall. "Sea-shells, and Where to Find Them During the Holidays", by C. J. Gabriel.

**Monday, December 3**—Entomology and Marine Biology Group. This group meets at Mt. Strong's rooms in Parliament House at 8 p.m. Enter by private entrance at south end of house.

**Wednesday, December 5**—Geology Group. Members' Night: Specimens and Slides.

**Thursday, December 6**—Fauna Survey Group (Details on page 214).

**Thursday, December 13**—Botany Group. Slide and film night.

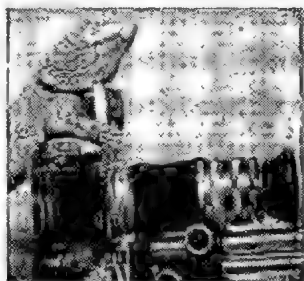
### PRELIMINARY NOTICES

**December 26, 1962-January 1, 1963**—Bairnsdale. A coach has been chartered for this excursion and will remain with the party for day trips, which will be arranged by the Bairnsdale F.N.C. Fare, £6, should be paid by December

meeting. Hotel accommodation has been booked for the coach party. Members travelling by private cars should arrange their own accommodation.

**September-October, 1963**—Western Australia. Sufficient interest has been shown in the proposed excursion to justify including it in our programme, but it will be necessary to change the date originally suggested to one a few weeks later. The club reserves the right to cancel this trip if support is inadequate. The plan is to leave Melbourne by coach about Saturday, September 14, obtaining accommodation for the first two nights then camping until Perth is reached, travelling via Port Augusta, Port Lincoln, Ceduna, Norseman, Esperance, Albany, Pemberton to Perth, thence to Kalgoorlie, where the party will take the train to Melbourne about Friday, October 4, arriving back three days later. Members going will need camping gear and will be responsible for their own meals, but the trip will be arranged to enable the party to obtain dinner at a cafe most nights, and food can be bought on the way, so there will be no need to carry large amounts. Accommodation for the first two nights and in Perth will be booked in advance, but members will pay individually. Luggage will be limited to 60 lb. per person, and lists of suggested equipment will be issued later. The coach company will supply a Porta-gas barbecue for use by the party.

The maximum coach fare will be £40, and bookings should be accompanied by £20 deposit, which will be refunded if the booking is cancelled before June 1, 1963. Members who wish to stay longer in Western Australia should state when booking that they do not wish to travel back with the party in the train. At present the rail fare from Kalgoorlie to Melbourne is £16/1/-, second class, and, when numbers are known, a block booking will be made. Early bookings for this trip are advisable, as numbers will be limited.



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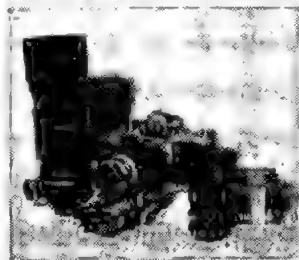
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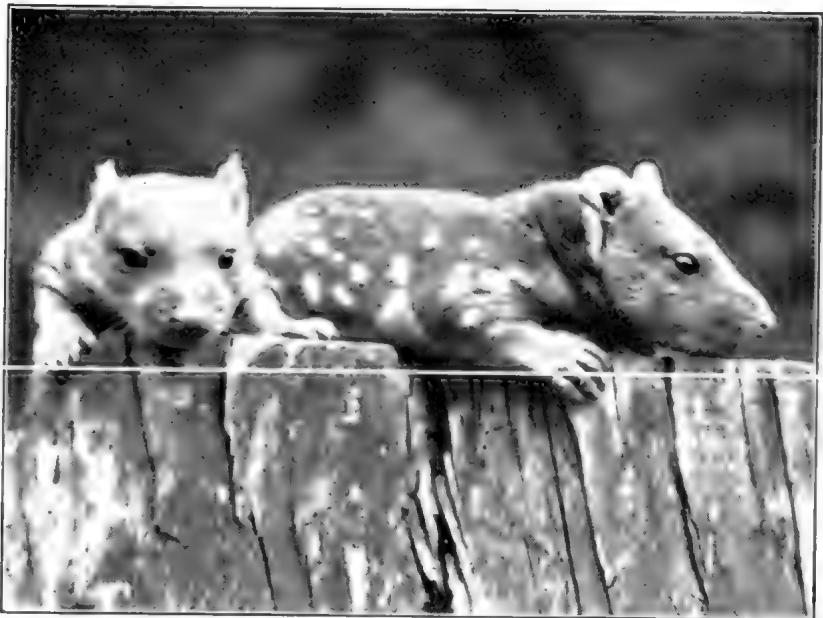
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by post as a periodical*

2/6



Magnificent stand of White Mountain Ash, *Eucalyptus regnans*, in the Marysville State Forest

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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*Front Cover:*

These are two young Tiger-cats (*Dasyurops maculatus*), 12 weeks old, born at the Sir Colin Macenzie Sanctuary, Healesville, in 1938. The photograph is by S. A. Pearl, and it appeared with an article, "Breeding the Tiger-cat", by David Fleay, in the *Victorian Naturalist* of February, 1940 (Vol. 56, pp. 159-163).

## A Problem of Administration

On page 246 of this issue there is a proposal that there should be a small increase in fees, both for the main categories of membership of the Field Naturalists Club of Victoria and for subscription to the *Victorian Naturalist*. Therefore a review of related matters—past and present—should be of interest to members and subscribers.

The club was formed in 1880, and the *Naturalist* has been published monthly since 1884. For the first forty years, the price of the journal was sixpence per copy.

In 1923-24, with club membership at a little over 300, the year's income was £182. An endeavour had been made to maintain the *Naturalist* at 24 pages per issue, and the journal had cost £249 to produce, compared with £155 for the preceding year. There was a debit balance of £162; so membership fees were increased, and the *Naturalist* repriced at 1/- per copy.

The journal cost £402 to produce in 1946-47, and membership that year exceeded 500. However, the price was increased to 1/6 per copy, and membership fees again rose. Ordinary membership rates, for instance, changed from £1 to £1/5/- per annum.

For 1950-51 the cost of the *Naturalist* (£617) was offset a little by a return of £106 for advertisements. But, as substantial losses had accrued over the preceding few years, fees

were again increased and the price of the journal was raised to 2/-. A year later, however, with another loss to record, it was deemed necessary to fix membership fees and subscription rate to the magazine at the levels which pertain at present. So, from June 1952 onward, the *Naturalist* was priced at 2/6 per copy, and ordinary membership was fixed at £2.

By 1959, due to inflationary prices, the *Naturalist* was costing approximately £900 per year but had dwindled in size to a meagre sixteen pages per issue. Thus Volume 75 barely exceeded 200 pages, compared with 268 pages for Volume 63, for instance, and 364 for Volume 43. Membership still stood at about 500.

At that stage a vigorous policy of expansion was inaugurated, based on a larger and more attractive club magazine. As a result, membership of the F.N.C.V., and the number of other persons and institutions subscribing to the *Naturalist*, have increased substantially. These grew, in aggregate, to 723 by 1960, 845 by 1961, and the total has now reached 911.

Volume 76 of the *Naturalist* ran to 332 pages, and each subsequent volume has exceeded 370 pages. Numerous good illustrations are now a feature of the magazine.

The doubling of the size of the *Naturalist*, the doubling of



its circulation, and the higher standard of illustration, have been expensive: £1523, £1759 and £1980 were the total costs of production for the past three club years respectively.

These few recent years have seen expansion in service to members in other directions as well. The library has been re-organized and augmented, and its holdings publicized, so that it is now being well used, especially through the post by members who are unable to attend meetings. Several major excursions are now conducted each year, in conjunction with affiliated organizations and country members. Nature shows, for education of the general public, have been re-established as annual events.

This recent expansion and improvement of amenities have been implemented and maintained to date without any general increase in subscription rates. The necessary extra income has come from a number of sources: a greater aggregate of subscriptions, sales of back issues of the *Naturalist*, advertisements in the *Naturalist*, and the supporting membership scheme.

However, the club council is faced with the problem that increased membership and expansion of facilities have added greatly to the amount of administrative work. All offices are honorary, and each of the several key office-bearers has, over the years, devoted many hours per week to club matters. Now, despite willing assistance from time to time by other members, it has become physically impossible to

avoid the employment of commercial secretarial services to cope with several phases of organization.

For this reason, the club's finance committee expects a substantial deficit this year, and it proposes that next year there should be a small increase in subscription rates.

Perhaps the suggested increase is insufficient and, just as in 1951, it may not solve the problem completely. Should the fees be raised even somewhat higher at this juncture?

Or is it undesirable to have any increase in subscriptions? Perhaps, as an alternative, the supporting membership scheme should be vigorously pressed. This scheme was temporarily effective a few years ago in helping to avoid early consideration of an increase in fees.

Are there other possible solutions? Whatever the solution, it should be in keeping with the objects set out in the Articles of Association of the club, the main principle of which is "to promote the study of natural history. . . and stimulate interest therein . . . by all means available".

Early next year the matter will be considered, and eventually a decision will be reached, by such small fractions of the club's membership as are able to attend the monthly general meetings at the National Herbarium.

May we ask country members and subscribers to write and inform us of their views in this connexion, so that a general cross-section of opinion may be available for consideration?

# The Kerguelen Fur Seal on Macquarie Island

BY S. E. CSORDAS\*

Macquarie Island (54° 30' S., 158° 57' E.) was densely populated by fur seals at the beginning of last century. Within ten years of its discovery, in 1810, the sealers exterminated the entire stock, and for nearly a hundred years no fur seal was sighted there. When the Australian National Antarctic Research Expedition established its station in 1948, the biologist of the expedition found a small group on the northern tip of the island (North Head). Since 1948, careful counts have been carried out each year and have shown a steadily increasing basking population during the summer months. The first sign of breeding was reported in 1955 (Csordas).

The peak of the fur seal basking season on Macquarie Island is from the last week in February to the first week in March. It starts in December and ends in May. This corresponds to the breeding season of the fur seals. The basking seals are mainly young males, which probably leave their home islands during the breeding season and look for a quiet, resting and feeding place. Up to 1960, the largest number counted was 316 on the North Head area, in 1959.

The original habitat of the basking seals is not certain, but it is probably on the New Zealand subantarctic islands other than Macquarie Island.

Although, after the discovery of Macquarie Island, it is estimated that nearly 100,000 fur seals were killed yearly and their skins shifted to the mainland, the specific name of the original stock is not known. The new settlers were identified by Dr. R. Falla as *Arctocephalus forsteri* Lesson. This identification is based on local sightings and the examination of several skulls and skins.

During my three years on Macquarie Island (1955, 1957, 1959) I checked the fur seal basking area each week. On March 1, 1959, while doing the weekly count, I sighted a young male, of unusual appearance; in the middle of a group of about a hundred fur seals, on the west side of North Head. The other seals had a dark brown dorsal surface, grizzled by the presence of white tips to the dark hairs, a reddish-brown ventral surface and vibrissae which were black at the base and brown at the tips.

The odd seal had yellowish hair on the chest and face. This lighter area was sharply divided from the darker part; the dividing line started on the nose and passed above the eyes, around the ears and down the sides of the neck to the chest. It also had extremely long, white vibrissae. On March 8, I sighted the same

\*Medical Officer, Australian National Antarctic Research Expeditions, 1955, 1957, 1959.



ANARE photo

C. E. Csordas

Large group of basking New Zealand Fur Seals, Macquarie Island

seal in the same area and, being able to get closer, I noticed that it had a crest on the forehead. Dark hair, about  $\frac{3}{4}$  to 1 inch long, stood up like a brush, starting at the dividing line of the yellowish hair and extending 3 to 4 inches in an occipito-frontal direction. The colour of this crest appeared to be slightly darker than the rest of the hairs on the back of the head. The head seemed to be wider and the nose shorter than those of the other seals present. I did not sight this seal again.

In attempting to identify the sighted male, I found that Rand's (1956) description of *Arctocephalus gazella* Peters completely fits my seal. The main characteristics are the yellow-coloured face and chest, the crest on the head and the extremely long, white vibrissae. My identification was later confirmed by Dr. R. Falla who saw a colour photograph of this seal.

King (1959) divides *A. gazella* into two sub-groups:

A—This has the abovementioned characteristics and can be found north of the Antarctic Convergence (Marion, Gough and Amsterdam Islands) and is named *Arctocephalus gazella elegans* Peters, 1876.

B—This has a browner chest, no crest, lives south of the Antarctic Convergence (Kerguelen, Bouvet Islands) and is named *Arctocephalus gazella gazella* Peters, 1875.

Later, in a short paper, King (1959) states that the correct name for the species is *Arctocephalus tropicalis* Gray, 1872, and the two subspecies are, in sub-group A, *A. tropicalis tropicalis* Gray, 1872 and in sub-group B, *A. tropicalis gazella* Peters, 1876.

According to this grouping, the straggler on Macquarie Is-

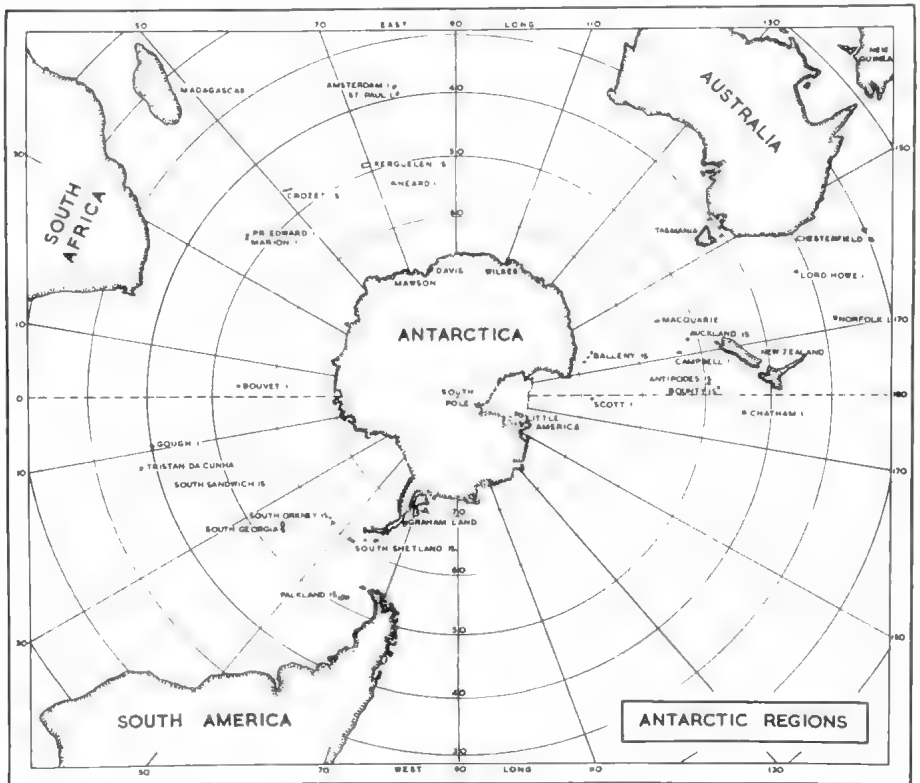
land was *Arctocephalus tropicalis* Gray, 1872.

Scheffer (1958) gives the range of *A. gazella* (*A. tropicalis*) as between 37°N., 54°S., 78°E. and 13°W., but it seems that some younger animals travel further east. Falla has sighted young seals similar to the Macquarie Island straggler on the west coast of the South Island of New Zealand.

The sighting of a strange fur seal on Macquarie Island raises the question of the specific name of the original stock. Falla, in a personal communication, suggests that probably the original stock on Macquarie Island was

not *Arctocephalus forsteri*. There is an obscure early record that the sealers called the animals which they caught on Macquarie Island and Antipodes Island the "upland seal". One fact that lends some support to the idea is that it was only on these two islands that the total stock was exterminated. They may have proved to be more vulnerable than the New Zealand fur seal.

Three species of *Arctocephalus* live in Australian-New Zealand waters: *A. doriferus* (south coast of Australia), *A. tasmanicus* (Tasmania) and *A. forsteri* (New Zealand). The difference



Polar aspect of southern areas



Kerguelen  
Fur Seal  
(left) with  
two New  
Zealand Fur  
Seals, Mac-  
quarie Island.  
Note the dark  
crown stripe.

ANARE  
photo,  
by  
C. E. Csordas

in physical characteristics is so small among these three species that Sivertsen (1953) proposed that the *A. doriferus* and *A. tasmanicus* should be included in the species *A. forsteri*. If the sealers, being laymen and without taxonomic training, were able to distinguish two types of seals, then there must have been a noticeable difference between the two groups. The "upland seal" has been completely exterminated. It is possible that this "upland seal" belonged to the *tropicalis* group and now, because of increasing numbers on its breeding ground, it is gradually re-discovering its old hunting ground.


#### ACKNOWLEDGEMENTS

My thanks are due to Dr. R. A. Falla, Director of Dominion Museum, New Zealand, for his valuable advice, and to Miss S. E. Ingham and Dr. R. Springall for correcting my manuscript.

#### REFERENCES

- Csordas, S. E. (1958). Breeding of the fur seal (*Arctocephalus forsteri* Lesson) at Macquarie Island. *Aust. J. Sci.* 21: 87.
- King, Judith E. (1959). The northern and southern populations of *Arctocephalus gazella*. *Mammalia* 23: 19.
- King, Judith E. (1959). A note on the specific name of the Kerguelen fur seal. *Mammalia* 23: 381.
- Rand, R. W. (1956). Notes on the Marion Island fur seal. *Proc. Zool. Soc. London*, 126: 65.
- Scheffer, V. B. (1958). *Seals, Sea Lions and Walruses*. University Press, Stanford, California.
- Sivertsen, E. (1954). A survey of the eared seals (family Otariidae) with remarks on the Antarctic seals collected by M/K "Norvegia" in 1928-29. *Norwegian Antarctic Expedition, 1927-28 Sci. Res.* 36.

The cost of producing the blocks for the illustrations in the foregoing article and in the series on Antarctic wildlife has been defrayed from the M. A. Ingram Trust. The F.N.C.V. wishes to acknowledge this assistance, without which it would not have been possible to suitably illustrate these articles.—Editor.



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Rainforest Bird Association

It is always interesting, when opportunity offers, to take note of the birds which frequent the small patches of sub-tropical rainforest which are scattered in the near-coastal tracts of East Gippsland. The vegetation is typified by large trees of Kanooka (*Tristania laurina*), Lilly-pilly (*Acmena australis*), Blackwood (*Acacia melanoxylon*), but few or no eucalypts, and by lianas.

The Brown Warbler (*Gerygone richmondi*) is most typical of these associations, and is apparently confined to them as far as Victoria is concerned. The nondescript appearance of this tiny bird makes positive identification difficult, though its nest, when found, is unmistakable. It was discussed at length, and its nest, habitat, and distribution

illustrated, in the *Victorian Naturalist* of April 1956 (Vol. 72, pages 178-186).

Similarly small, nondescript and difficult to identify in the field, is the Large-billed Scrub-wren (*Sericornis magnirostris*). Our knowledge of its occurrence in Victoria was set out in the *Naturalist* of February 1959 (Vol 75, pages 153-158). It too frequents the subtropical vegetation, though it extends also into central Victoria.

The loud clear whistle of the Black-faced Fly-catcher (*Monarcha melanopsis*) usually reveals the bird's presence, even if it does not show itself, and the same may be said of the Lewin Honeyeater (*Meliphaga lewinii*). The Rufous Fantail (*Rhipidura rufifrons*) and Rose Robin (*Petroica rosea*) belong to this avian association, as do several more widely distributed species.

On November 19 this year, I diverged easterly from the Omeo Highway, along a Forests Commission track known as the Playgrounds Road, and visited the area where the Timbarra River joins the Tambo. It is a picturesque spot, and the Timbarra in particular is a beautiful stream, with its waters cascading over the bedrock and the banks hidden beneath kanookas and a medley of shrubs.

Although those kanookas were the only conspicuous element there of the rainforests, most of the birds of that association were present. A family of tiny individuals came close enough to be recognized with reasonable certainty as Brown Warblers, though no nest was found to confirm the observation. Their almost inaudible twittering was diagnostic, and they were certainly much smaller than the Brown Thornbills nearby. A Large-billed Scrub-wren was perched in the shrubbery, and allowed itself to be studied from a distance of only four feet, so there was no doubt about its identity.

A black-faced Flycatcher was calling from time to time: "whee-u, wit-u, whee-u, . . .". It eventually came to investigate the intruder, and remained for a full minute only six feet away. The general body colour is slaty blue-grey, the face and throat black, and the belly rufous. Later, a second one was seen some distance away.

Two Rufous Fantails came, each in a different part of the area, and displayed amongst the kanooka branches within sev-

eral feet; and nearby a Wonga Pigeon (*Leucosarcia melanoleuca*) called continually.

The spot is twenty-two miles due north of Lakes Entrance, and is well removed from areas of the typical lilly-pilly "jungles" with which the *Gerygone* and the *Monarcha* are normally associated.

### Grounded Swifts

Last month we published an article called "The Riddle of Our Swifts", and it was illustrated by photographs of an individual that had been found, apparently uninjured but unable to fly, near Portland, last autumn. This prompted Miss Jean Galbraith, of Tyers in Gippsland, to make these comments:

I have twice had Spine-tailed Swifts brought to me that could not fly—not through injury but because some accident had brought them to the ground from which they could not rise because their weak legs were much shorter than their wings. They beat helpless wings against the earth and protested like small steam engines. When flung into the air from a height, however, they flew out of sight.

On another occasion, I found a swift with a superficially injured wing, resting on the trunk of a quince tree, clinging to the bark about three feet from the ground. We fed it with insects and gave it drops of water for two days, and put antiseptic ointment on the wing. During the second night it disappeared. I hope it was able to fly, but, as no-one saw it go, we could not know what happened.

It seems that swifts "crash" from time to time. Have other readers any similar observations to report?

# Cape Nelson—

By E. M. DAVIES

## *its Camp and Cave*

### The Lady Nelson

Cape Schanck has a very close link with the early days of sea exploration in southern Victoria. On March 18, 1800, Lieutenant James Grant was given command of a small brig of 60 tons, with instructions to proceed to Australia (from England) to prosecute "the discovery and survey of the unknown parts of the coast of New Holland". This brig *The Lady Nelson* was designed by Captain John Schanck (later Rear-Admiral) and had three sliding centre-board keels which enabled her draft to be lessened in shallow water, thus permitting her to run close to a coast or into rivers.

On reaching the Cape of Good Hope, Grant received a letter from the Duke of Portland (Home Secretary) instructing him to sail through the newly discovered Bass Strait, the discovery of which had caused considerable interest in England.

Grant sighted the Australian coast, almost opposite the present boundary of South Australia and Victoria, on December 3, 1800, and from this point he sailed parallel to a coastline which, as far as Westernport, was unknown. *The Lady Nelson* was the first vessel to pass through Bass Strait eastward, and during the voyage Grant named many of the chief points of the Victorian coastline, among which were Portland, after the Duke of Portland, and Lady

Julia Percy Island, after a close relative of the Duke's. Cape Nelson was named after the ship and Cape Schanck after its designer.

The most important service rendered in *The Lady Nelson* was the discovery of Port Phillip when under the command of Lieutenant John Murray in 1802. She remained in the Australian service throughout her highly adventurous career until she was commandeered by a party of escaping convicts.

### Pleistocene Sand Dunes

The soil, scenery and buildings at Cape Schanck possess a distinctive appearance, dependant in a great measure on the geology of the locality. The rocks there are Lower Tertiary basalt overlain by consolidated Pleistocene sand dunes. The sand of these dunes was not quartz sand but calcareous sand formed by fragmentation of the skeletons of innumerable marine animals—such as foraminifera, molluscs, bryozoa and echinoderms—when they were left high and dry on the former sea floors after a lowering of sea-level (Gill, 1954). This low level was due to the removal of quantities of water from the sea for the glaciation during the Pleistocene Ice Age.

Some of the calcium carbonate from this limy sand was dissolved by percolating waters and deposited as a cement, thus



Map of Cape Schanck (after Baker and Frostick).

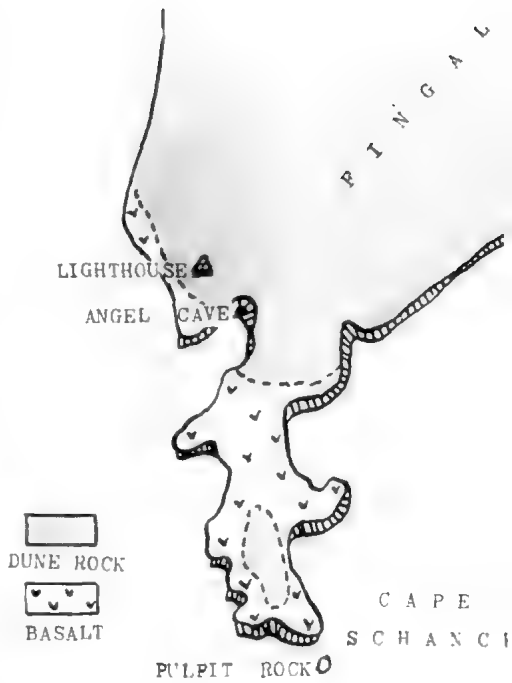
Based on an unpublished plan by R. A. Keble.

turning loose sand into solid rock. This solid rock (dune-limestone) is called *aeolianite* or, to use another name, *calcarenite*—which literally means lime-sand-rock. The calcarenite was used to build Cape Schanck Lighthouse and its adjacent buildings one hundred and three years ago. The original stone quarters are still used but only one of them as a residence.

The lighthouse comprises a stone tower surmounted by a lantern of cast iron, glass and copper, with a total height of 70 feet. The centre of the light is 328 feet above sea-level. Many of the older houses on the Cape Schanck-Rosebud road are also built of the limestone, giving to this area quite a distinctive appearance. The Pleistocene dune-limestone is soft when quarried but when placed in position in the walls of a building and exposed to the atmosphere it develops a "skin" which effectively resists fretting (Keble, 1950).

The Pleistocene sand dunes were formerly part of a big dune system that went right across what is now the mouth of Port Phillip Bay, and that is why the Bay has so narrow and shallow an entrance. It has been found necessary to blast out sections of the rock to allow a sufficiently deep channel for the passage of ocean-going vessels.

The loose sand overlying the *calcarenite* is quite recent and in most cases preserves a dune morphology. Certain land gastropods, both native and introduced,



used, live on the vegetation cover of these dunes, and their shells may be seen washed into hollows in the sand. Miss. J. Hope Macpherson has kindly identified four specimens for me.

They are as follows:

*Strangesta ruga?* (very bleached)  
—native land snail.

*Succinea australis*—native land snail.

*Candidula caperata*—European and British land snail (introduced).

*Cochlicella ventrosa*—Southern European land snail (introduced).

### Blacks' Camp

The open shore of Westernport Bay and Bass Strait was much favoured as camping grounds by the aborigines. Occupation was facilitated by the occurrence of both shifting and consolidated dune ridges, rocky

Stone  
 Implements  
 found at or  
 in the vicinity of Blacks' Camp, Cape Schanck.

1. Hammer Stone (basalt).
2. Edge-ground Axe (diabase?)
3. Edge-ground Axe (sandstone).
4. Sharpening Stone (Sandstone).



cliffs, extensive wave-cut platforms, and cobble strewn beaches. The consolidated dunes held a thick cover of native grasses where abounded native animals of many kinds. The proximity of the rocky shoreline meant littoral mollusca in abundance, to which the coastal aborigines were very partial. Basaltic cobbles, many suitably shaped, facilitated the making of edge-ground axes.

On the south-eastern side of the junction of the Flinders-Cape Schanck road is found one of the best known examples of a kitchen midden on the Mornington Peninsula. It is known as *Blacks' Camp*, and is situated at the foot of a dune ridge and formerly had a permanent water-hole nearby. The dune ridge, covered with *Casuarina* and other native shrubs, is still there, but the water-hole is dry and the area

so trodden down by stock and grassed over that practically nothing can be seen of the midden. However, Mitchell (1949) has brought to life for us this gathering-place of the natives of this part of the Peninsula.

Close to this permanent water supply lived members of the Bunuron tribe, sheltered by the vegetation growing on the consolidated dune-ridge nearby. Camp activities were carried on; women visited the coast and gathered shell-fish, small animals and vegetable foods; the men hunted the kangaroo and emu and captured possums and snakes; the children played around the camp or disported themselves in the water. Farther away, a few hundred yards from the main camp, an old man, presumably the spear maker of the tribe or an adept at making wooden implements, camped alone behind his brush break-wind. Tea-tree shoots, bent roots or short sticks would be brought to him by the more active men for fashioning into spears, boomerangs or throwing sticks.

## The Angel Cave

The coastline scenery at Cape Schanck is spectacular and shows to advantage the various types and textures of the volcanic base rock. *The Pulpit* and *The Reading Desk* are two basaltic stacks that, being of more solid texture, have resisted erosion. *The Angel Cave* on the other hand, has been formed in the soft tuffaceous material between the lava flows that constitute the cliff face. This cave is situated on the foreshore below the lighthouse and is due to marine erosion and circulating underground water. A steep basaltic cobble beach lies outside the cave which is above normal high-tide level.

The cave consists of a small entrance portal and a large inner cave, the former, about eight feet wide, is surmounted by a series of pendant growths. The inner cave—the walls, ceiling and floor of which have a very thick coating of calcium carbonate—is ornamented by small stalactites. The cave is 98 feet long, with a height and width of 30 feet in the centre (Baker and Frostick, 1947). The cave floor slopes gradually upwards and, towards the rear, on the left hand side, is a long, wide ledge. Near the walls a number of "splash cups" or small pools have developed. Water, containing bi-carbonate is continually dripping from the walls and ceiling, making the cave permanently wet. The cave waters contain 36 to 39 parts of bi-carbonate per 100,000 (Baker and Frostick, 1947).

On the floor of the cave are found discrete calcareous con-

cretions, known as ooliths and pisoliths. Ooliths are spherical, subspherical, oblate or ellipsoidal accretionary bodies, most commonly 0.5 to 1.0 mm. in size. If the bodies are over 2.0 mm. they are termed pisoliths. Many theories have been advanced to explain the formation of ooliths. Some theories demand direct or indirect intervention of organisms. Some oolithic bodies are certainly algal but in most calcareous and in many non-calcareous ooliths neither algae nor other organisms play any part in their formation. In general they appear to be the product of direct precipitation of dissolved materials on nuclei in a "free rolling" environment. When ooliths become so large that they remain motionless on the bottom, they cease to grow as such.

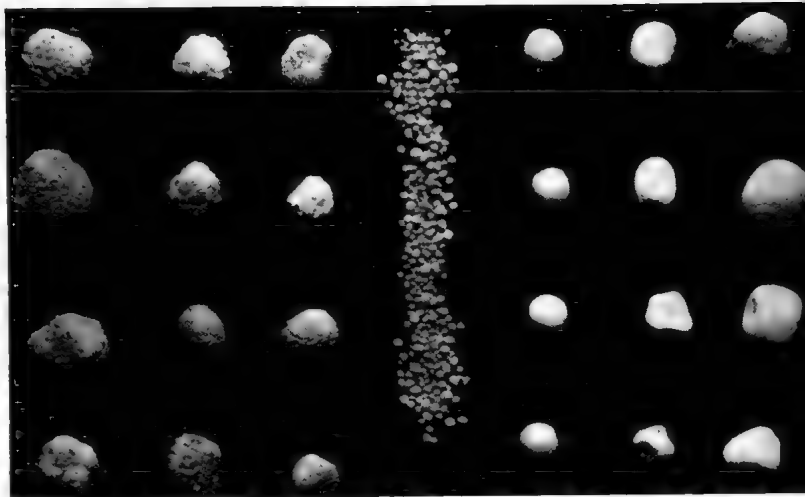
"The ooliths and pisoliths from *Angel Cave* characteristically show banded layers of calcium carbonate surrounding a nucleus (often basaltic fragments); in those with no foreign nucleus the centre may consist of calcite crystals" (Baker and Frostick, 1947).

In the *Angel Cave* are found a certain number of pisoliths known as "cave pearls" which are round, smooth, white and polished. They are located in the small pools that line the walls. Here the rate of the dripping water is swift and so the agitation necessary for buffing, to obtain smoothness and polish, is present. The majority of ooliths and pisoliths in the cave, although spherical, are rough-surfaced, and a light-fawn or bisque shade. There are many

Left: Rough-surfaced pisoliths from Angel Cave, Cape Schanck.

Centre: Ooliths from cave near Port Campbell, Western Victoria.

Right: Cave pearls from Angel Cave, Cape Schanck.



other small objects in the cave covered or partly covered with calcium carbonate, such as pieces of shell, crab fragments and even glass.

Spry (1961) quotes an aboriginal legend concerning "Pungil the god of the aborigines", in relation to this cave. Included in her article is a photograph of the "angel" after whom the cave is named, the name being suggested by a column formed from a united stalactite and stalagmite which in certain lights simulates an angel with folded wings.

Visitors to the cave are advised to carry a torch.

#### REFERENCES

- Baker, G. and Frostick, A.C., 1947. Pisoliths and Ooliths from some Australian Caves and Mines. *J. Sed. Petr.* 17 (2): 39-67.
- Coulson, A. 1940. The sand dunes of the Portland District. *Proc. Roy. Soc. Vic.* 52: 315-332.
- Gill, E. D., 1954. Extinct Giant Kangaroo from the Nepean Peninsula, Victoria. *Vic. Nat.* 70: 212-216
- Keble, R. A., 1950. The Mornington Peninsula. *Geol. Surv. Vic. Mem.* 17: 5-84.
- Mitchell, S. R., 1949. *Stone Age Craftsmen.*
- Pettijohn, F. J., 1957. *Sedimentary Rocks.*
- Spry, J., 1961. The aboriginal Cave at Cape Schanck. *Vic. Nat.* 78: 208-210.
- Twenhofel, W. H., 1950. *Principles of Sedimentation.*

### Names of Yabbie and Murray Crayfish

The common yabbie of Victoria is *Cherax destructor* E. Clark, 1936 (*Mem. Nat. Mus. Vict.* 10: 26), being distinguished from *C. bicarinatus* (= *Parachaeraps bicarinatus*) of northern and western Australia; and two "Murray Crayfish" are recognized: *Eustacus armatus* (von

Martens) 1866 and *E. elongatus* E. Clark 1941 (*Mem. Nat. Mus. Vict.* 12: 12), the *E. serratus* (= *Astacopsis serratus*) being confined to eastern New South Wales.

Appropriate adjustments should be made to the captions on page 169 of the *Naturalist* of October 1962.

—Editor

## The Leopard is not for Branding

By JOHN BECHERVAISE

*Heard Island,*

*Friday, August 28, 1953*

Blizzardly snow pelted in occasionally from the south-west and skirled across Wednesday's sleet, now hard-frozen underfoot. Unlike its nor' easterly precursor, today's storm scorned to shed its burden on land. The base of the mountain, screened above a thousand feet, emerged as a harmony of grey and blue seracs.

With the buffeting wind at variance, I early donned my anorak and struggled round to West Bay. There were no leopards; with the dawn they had departed, leaving just their sinuous impressions in the snow; there were no elephants or penguins or shags. The Cape Pigeons and Dominican Gulls in small numbers skimmed the water like animated surf, but drift-filled air is no creature's chosen element. The wind helped my homeward journey except when it took an advantage of me on the most icy stretches.

*Saturday, August 29*

The snow deepened during the day, drifting in from a more westerly direction and becoming moist and heavy enough to lie. Only under such conditions may a depth of snow be built up round the station, and at sea-level generally. If it follows a hard freeze, no matter how much

dry snow falls, it is whirled away into the sea. All the big accumulations here have occurred when successive falls of heavy "Christmas-card" snow have each been firming by spells of lower temperature than is associated with such solid precipitation. At any altitude on the mountain, conditions are somewhat different; for one thing there is permanent albedo and much less incident solar heat is absorbed.

*Sunday, August 30*

Early this morning we were in sullen cloud from which snow fell persistently. Soon after seven, in a silent calm, I walked to West Bay to tend the Magnetic Observatory, a chore I do for Jim Brooks, so he can have an occasional late morning. Everything was muffled; the sea and a thin fringe round the rising tide was the only part of the world not white and shadowless. Three leopards and an old bull elephant with the typical blown-out nose lay contentedly at the far end of the Cove. On the homeward trek, I followed the edge of the sea; the incessant flakes were drifting forward at exactly my pace and dematerializing on the wet sand at my feet.

At about ten, to my surprise, the clouds were shredded, a modest sun penetrated a high upper

layer of cloud and the mountain began to appear. With the Nullarbor an unbroken alabaster slab from one's feet to the powdered seracs of the Baudissen Glacier, the brilliance of the scene seemed quite unearthly. The wraiths of cloud held greater reality than the shining Mountain.

We decided to try our reconnaissance of a high Baudissen traverse towards Saddle Point almost due east, but, by eleven, when Dick, Arthur and I were ready, the lure had vanished. We were sufficiently kitted to spend a night out if all should go well, but the lowering clouds froze on our goggles as we struggled up the slack western side of the glacier. It was a futile attempt. By the time we had pressed up to the Schmidt Glacier, all hope of penetrating the high crevassed snow-fields leading across to the Saddle Point ridge had gone. Instead we turned west into Drygalski and descended steep snow-slopes beyond the waterfall gully, to the shelter of a large erratic in the mantled azorella.

Here, by contrast with that of the glaciers, the air was still and warm. Faint sunlight and falling snow, our backs to the rock . . . and another shared tin of "O2" rations, originally packed for wartime in the Pacific.

Then we stumbled through the drifted mounds to the Gentoo Penguin rookery below Erratic Point, but we found that nearly all the birds were down on the beach amongst the huge bull elephant-seals and stranded bergy-bits. The Gentoo (*Pygoscelis papua*), largest of the

Heard Island penguins, with an incomparable satiny white front and coal black back and wings, marches in frightened battalions, turning tail in black panic when approached. But, stand for a minute or two . . . and the procession is reversed. The whole army surges forward in white-fronted curiosity, squawking and braying, waddling daintily and surveying the intruder with myopic intensity. Every time I stepped forward with my camera, the birds became black in retreat; but only for a few moments. Time and time again they returned, and I obtained all the photographs I could desire.

Next we inspected the bull elephants. They had been rejuvenated by their months at sea. Now they were alert and active, bellowing and distending their enormous balloon-like noses, arching their backs, magnificently sleek and virile. Very different is the scene from that of the autumn when they lay lethargically amidst their own ordure, as though the sea were repugnant to them and they were tired of life. Perhaps they had had their reasons.

During the next two or three weeks, more and more breeding bulls will haul out from the surf until, in South-West Bay alone, there will be a male population of two or three hundred, many individuals weighing three or more tons. The cows will come too, probably ten times as many, nearly all pregnant. They will congregate in torpid groups awaiting the relief of dropping their pups. Only then will the bulls move into the cow-wallows



*ANARE photo John Béchervaise*

Advancing Gentoo Penguins, near Erratic Point, Heard Island, in late August.

and take over their chosen harems, and so provide for the future repetition of the scene and the propagation of their race.

At the far northern end of the bay, the leopards lay in greatly superior elegance. Some of the females of this species were also heavy with young, but even so they were beautifully sleek and quite capable of the long cruise to the floating ice that must precede their delivery. They lay with watchful red eyes; with mouths, snake-mouths, shut like traps. Arthur and Dick tried to

stalk and catch some big, clumsy "Nellies" (Giant Petrels, or Fulmars) that were tearing at the bloody remains of one of Leon's kills for the dogs, surrounded by a retinue of more agile Dominican Gulls and Cape Pigeons. They all rose screaming in the snow-filled air, a sight to remember.

I commenced climbing a steep slope of little Mount Andrée—and found it almost too steep, kicking steps in the névé. I was not happy when my feet suddenly found loose rock at the steepest part. Up on top was an unex-

pected view of Cave Bay, a forbidding place of steep snow-corniced black cliffs and jagged island aiguilles spiking the reluctant surf. The sea washed in over rumbling storm-rounded boulders. The place held a curiously gloomy, almost forbidding atmosphere, not unlike that of a Gustave Doré illustration of *Paradise Lost*. The only life seemed to be held by a few Cape Pigeons fluttering just below the brink of the cliff.

To the north, south and east are the flats comprising probably a couple of thousand acres. They lie so little above sea-level as to make nearly an island of the Laurens Peninsula; they have certainly been inundated as there is clear evidence of a higher relative sea-level. Now, across the featureless whiteness below, raced Leon and his team drawing a sledge at great speed; the dogs seemed like mice on a string, half-way to mist-soaked Drygalski. Arthur and Dick joined me on top by a different route, and we followed the edge of the cliffs northward to a small col, before glissading down to the plains we all call the Nullarbor and Windy City.

### *Monday, August 31*

The history of yesterday still lies printed in the snow, every syllable clear if one could separate today's additional text. Through the station, the "trade-routes" between the various huts are gradually being beaten down to hard, glassy grooves, but, a hundred yards out, every footprint is ageless.

The morning was routine. Arthur prepared his apparatus

designed for the branding of Leopard Seals. After lunch there was a considerable exodus towards Corinthian Bay to help or to watch the branding operations or, on such a tranquil afternoon, just to take a walk.

Leon had mustered a small husky team and the Greenland sled. On this were placed the forge with ready glowing coals, a yoke made from two-inch piping, with "handle-bars", extending for about six feet, welded on either side, a collection of brands and a coil of nylon rope. Arthur led his team of men—Dick, Jim and Jack, as urgent as matadors. Leon, of course, looked after his dogs; Peter and I went along with cameras, and even Ron finally felt the urge and left the installation of his beloved telephone system. We all walked or sledged across the smooth crisp snow in breathless quarter sunshine filtering through high filmy cloud.

Last night we had counted a record of 108 Leopards basking in the snow along the beach; some had even come several hundred yards inland across the Nullarbor. About three-quarters were still there, lying asleep or cocking wary eyes. From close up the largest, to human sight, appear evil, smooth, grey-dappled and enormously powerful. They are anything up to ten or eleven feet long. They are very quiet animals even when disturbed, just hissing or occasionally making a sound reminiscent of a low, mirthless laugh; perhaps, rather, a series of grunts with the timing of laughter. Occasionally, from a distance, an observer hears a more sust-





Branding a Leopard Seal, Heard Island. Hughes and Brooks are holding down the iron yoke, McNair is about to apply the brand at Gwynn's direction.

*ANARE photo  
John  
Béchervaise*

ained, rather musical sighing which, for want of a better term, is generally referred to as the Leopard's singing. They open their tight mouths like pythons and display undoubtedly efficient barbed and serrated teeth. Lying in the snow, or by the grey surf, they are perfectly of the sombre scene, as though spawned by the grey-blue glaciers, much the colour and often of the form of the wave-shaped glacier fragments tossed high by the sea.

The attempt to brand them proved something of a fiasco. They twisted and thrashed their enormous flexible bodies and easily wriggled away from the yoke, hissing and snarling almost silently, rearing to snap at the puny human intruders. There was never any doubt about their ability and intention to resist molestation; anyway some of us had no great heart for the

job. The trappers had to be brisk to avoid the threshing body-blows and the terrible mouths, though, perhaps fortunately, the grey animals rapidly lost their advantage on land. Dick was successful in thrusting one brand on to the tail of a Leopard. I think there was probably little or no pain, as the blubber on this seal was certainly several inches thick. He escaped and began looping his way rather wearily into the sea.

Other attempts were less successful. Men were exhausted more quickly than the seals and what might have been the only team ever marshalled to attempt the branding of adult Leopards had to give their quarry best. Even though the heavy iron yoke was bent and warped, and actually gouged with deep incisions from the Leopard's teeth, certainly evincing their great strength and their objection

to interference, there was never any evidence of spontaneous antagonism. Left alone, the grey carnivores limit the expression of their distaste for mankind to silent sneering. I doubt whether Leopard branding will ever be a success.

The pups are normally born amongst the pack-ice further south, a particularly uncoöperative region for such pursuits. Heard Island is considered quite the best place in the world for the observation of adults. On the *Tottan*, I saw a Norwegian sealer's coat made from the pelts of Leopard pups. The fur was magnificent. The adult seal, fortunately, does not offer this attraction.

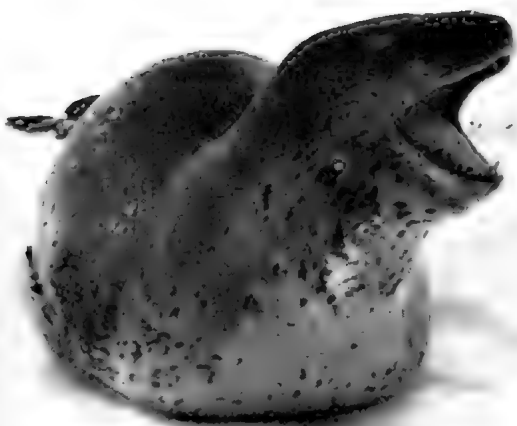
I wandered along to the far end of the bay, to where the glacier seracs prevent further progress, taking many photographs. Last year, of three men who tried to make a route below the ice-cliffs at this point, two lost their lives. The ice-foot actually extends well out, in places, beyond the incoming breakers, and though it is masked with sand and, at low tide, is often enticingly bare and flat between waves, its offer of apparent ease of passage is fatal treachery.

The sun came out and shed a pale golden light on the ice. When the sled had returned, Arthur joined me and we were content just to observe the Leopards. There were two little ones about a year old, and not more than six feet long. They behaved very much as their elders, hissing and rearing and uttering the same sad, almost soundless reproach.

I found myself recalling another haunt of seals, seeming almost as lonely: that of the blue, sunlit waters and broad gneissic ramps of the Archipelago of the Recherche, south of Esperance, in Western Australia, where, two years ago, scores of Hair Seals (the South Australian sea-lion—*Neophoca cinerea*) had barked and trumpeted their complaints on our arrival at each new island.

The two species—the Leopards and the Sea-lions—represent the two quite different families of the Pinnipedia. Our Leopards are Phocidae, true or “earless” seals, and do not use their limbs in any way as legs; these, in fact, are quite incapable of supporting them, and, if they raise their trunks, they depend almost entirely on the flexible body muscles. With Elephant Seals, also Phocidae, this muscularity is quite astonishing. I have seen great beasts rearing five feet in the surf in seeming mortal combat. Unlike the Leopards and Crabeaters, however, the Elephant may frequently obvert his flippers and they may appear as props buttressing the upreared animal. Incidentally, although the tussles between Elephants are noisy and malicious, they generally end harmlessly, with the winner holding his ground and his conjugal rights, and his opponent bouncing away in the energetic, almost peristaltic, manner of his kind.

The other great family, the Otariidae, is represented on Heard Island only by the few aggressive Fur-seals (*Arctocephalus australis*) who can cert-



Leopard Seal  
and  
attendant  
Sheathbill

*ANARE photo*  
*John*  
*Béchervaise*

ainly move much faster over land or rock than any of the Phocidae. I shall hope to write of them when I have further encounters; their greatest concentration seems to be round Red Island, the extreme northern tip of the Laurens Peninsula.

We strolled back to the station through a perfectly still afternoon. The sledge party, except Dick, the cook, were just leaving for an hour's ski-ing on Drigalski, intending to be back for dinner.

My remembrance of the last day of August, in this remote year, will be centred in the grey Leopards, creatures perfectly organized for their cold, unsociable existence in the circum-polar seas. Doubtless, as I write, they are again hauled out along the edges of the four bays, without memory of our intrusion into their ancient sanctuary. If Leopard Seals had minds as efficient and ruthless

as their terrible mouths; minds to match their taut, fearful bodies, the history of men of Heard Island would read like a Wellsian fantasy. Any tales of their ferocity, except in the water, must, however, be read with the utmost reserve. As it is, they lie like giant slugs, surrounded by flocks of snow-white Sheathbills which, judging by appearances, would be the most dainty and fastidious of birds. However, outside the brief penguin-egg season, and in the absence of man's unmeaning prodigality, the engaging, fearless little "Paddy" must gain most of his sustenance from the excrement of the seals with whom he associates.

It is, as usual, too late a bedtime for these active days. I shall, however, read for a while, and switch out my light in the first hour of our local September.

—From *Log for Lorna*, an illustrated diary addressed to the author's wife.

# Field Naturalists Club of Victoria

## General Meeting—November 12, 1962

The president, Mr. M. K. Houghton was chairman, and the Herbarium hall was almost full. The secretary read an appeal from the Save the Dandenongs League for funds to help buy thirty-three acres at Kalorama to preserve the view over Silvan Dam.

As country clubs often ask for speakers at their meetings, the Council invited volunteers from F.N.C.V. members to form a panel of speakers.

The subject for the evening was "The Centre and its Explorers", by Mr. E. S. Hanks. With the aid of a clear map, he outlined early explorers' contacts with the Centre, stressing especially the tragedy of the Burke and Wills expedition. Fine colour slides illustrated Cooper's Creek and the "Dig Tree", Preservation Creek, the tree under which Poole died during Sturt's expedition to the Centre, fine specimens of Sturt's Desert Pea, and rock drawings by ancient aborigines using a form of art unknown to present-day tribes. When showing a picture of Silverton Creek near Broken Hill, Mr. Hanks revealed the origin of the S in his name.

After the showing of close-up slides of the "Dig Tree", taken by Mr. Houghton during his recent visit with members of the Barrier F.N.C. from Broken Hill to carry out works to preserve the tree, the president thanked Mr. Hanks for the most interesting talk. One of those who spoke at question time was Mr. John McKellar, author of "Tree by the Creek" on the Burke and Wills theme.

Ten new members were elected. The president welcomed Mr. and Mrs. T. F. Zirkler back from their trip abroad.

Mr. Zirkler exhibited pictures of ibis nesting at Kerang, and showed three stone axes from Nagambie; Mr. M. Harrison, a black sea anemone; Mr. F. Harwood, larvae of Lichen Moth (*Cebysa leucoteles*); Mr. W. C. Woollard, infusorial earth from Mt. Erup, near Ballarat; Mr. E. S. Hanks, petrified wood from Sturt's Depot Glen, a piece of dead limb from the Beefwood (*Grevillea striata*) inscribed

by Sturt at Poole's grave in 1845; a small piece of bark from the Dig Tree (a coolibah, *Eucalyptus microtheca*); and Wild Lime (*Eremocitrus glauca*); Mrs. D. M. Parkin, opalized wood from White Cliffs opal mine, and bark from a Leopard Tree (*Flindersia maculosa*) from Mootwingee; Mr. R. Condron, gastroliths of a crayfish from the stomach of a Red-fin Perch, Mathoura, N.S.W.; Mr. J. R. Garnet, aboriginal grinding stones from Urangeline, Butcher's Broom (*Ruscus aculeatus*) showing red berries on the cladodes, and a collection of garden-grown native plants, including *Grevillea sericea*, *G. rosmarinifolia*, a rosy and a scarlet *Callistemon*, *Kunzea ambigua* and *Veronica perfoliata*; Miss J. Woollard, *Myoporum floribundum* from Gippsland; and Mr. H. A. Morrison, dendritic markings on limestone from the Flinders Ranges.

## Botany Group—November 8, 1962

A good attendance, including four new members, enjoyed Members' Night, with contributions from Miss A. Hooke (grasses), Mr. S. E. Barker (wildflower slides), Mrs. A. G. Hooke (conifers), Mrs. E. Webb-Ware (alpine flowers from the Kosciusko area), followed by an open question session.

Miss L. White reported on the botanical aspects of the President's Picnic excursion on Cup Day to Mount Disappointment, Hazeldene on the Flowerdale road, Mount Sugarloaf and Mason's Falls (Kingleake National Park).

Thanks are due once again to Mr. and Mrs. K. Cheslin for being excellent guides to the F.N.C.V. members and Girl Guide leaders who enjoyed the club excursion to Anglesea on November 18, when the highlights were the mass flowering of *Conospernum mitchellii*, *Xanthorrhoea minor*, *Thysanotus tuberosus* and *Brunonia australis*. Many orchids, including species of *Caladenia*, *Prasophyllum*, *Diuris*, *Thelymitra* and *Microtis* were also in flower, as were both Long and Short Purple Flags

(*Patersonia longiscapa* and *P. glauca*), *Thomasia petalocalyx*, *Lobelia rhombifolia*, *Sphaerolobium vimineum* and very many other flowers. A visit was also paid to the brown coal open cut mine, where the coal has been formed from ancient forests of *Nothofagus* (beech) trees.

#### Fauna Survey Group—October 4, 1962

Twelve members were present with Mr. N. A. Wakefield in the chair. Mr. Wakefield told the group that many interesting bone specimens belonging to several of the more unusual species of macropods had been recovered from the various western Victorian deposits. These included a single skull from *Petrogale penicillata*—affirming its original distribution in the south-western part of the state.

Mr. J. K. Dempster commented on the present status of *Potorous tridactylus* in this state and outlined current proposals to reserve at least one of its remaining habitat areas. The proposed measures for the protection of the rock-wallabies (*Petrogale penicillata*) in Gippsland were explained, and much discussion

between group members ensued. Concern was expressed by the group as to what steps had been taken to ensure the preservation of the *Gymnohelideus* habitat by the Forests Commission and the Country Roads Board.

The desirability of appointing a full-time conservation research officer to the Fisheries and Wildlife Department was then discussed at some length. At the conclusion of the meeting, Mr. Wakefield showed the group a collection of colour-slides of several species of the family Dasynidae.

#### Benalla F.N. Club

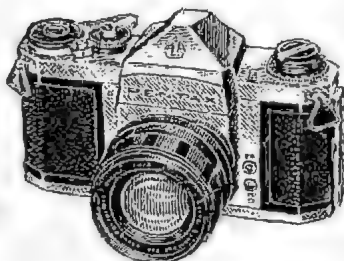
The first annual general meeting of this club was held on September 25 last. The annual report shows that the club is making good progress, a feature being that it relies very largely on the efforts of its own members both as speakers and as exhibitors of slides and of specimens, and as members of the various groups which have been formed. Councillor W. McCall Say was re-elected president, and Mr. A. Knight the new secretary.

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## Proposed Increase in Subscriptions

The finance committee of the F.N.C.V. has recommended that, as from May, 1963, an increase of 5/- be made in the subscription rates of both ordinary and country members, and subscribers to the *Victorian Naturalist*, and that the price of single copies should be increased from 2/6 to 3/-. The council considers this a matter of such importance that a decision should be made by a general meeting.

The committee has pointed out that costs are increasing steadily in several directions; printing of the *Naturalist* has increased in the last year by over £10 per month, and despatching and other incidental expenses have also increased. With the growth of the club it has been found impossible for the secretary to rely on voluntary help only for typing and duplicating, and it is expected that assistance along these lines will cost at least £100 during the current year. Membership is increasing steadily,

and sales of back numbers of the *Naturalist* continue, but not on the same scale as in recent years. The finance committee, taking these matters into consideration estimates that a deficit in the region of £100 to £150 will be incurred in the present year.

The finance committee feels that it would be a retrograde step, and most undesirable, to fail to maintain the *Naturalist* at least at its present standard, as it is the principal service we render to the majority of our members. It therefore suggests that the proposed increase in subscription rates is the most desirable way of meeting the situation, as it should yield from £200 to £250 more per year.

It is not proposed to alter the existing rates for junior members or for joint members.

This matter will be open for discussion at the general meeting of the club on January 14, 1963.



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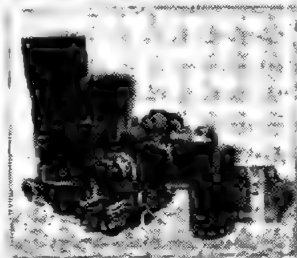
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Bower of the Great Bower-bird, *Chamydera nuchalis*.

This photograph was taken by Charles Barrett, near Darwin, about thirty years ago, and it appeared in the *Naturalist* of September 1933, accompanying some observations on the species.





# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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### Front Cover:

These are some of the 3,000 gannets (*Sula serrator*) which nested on Cat Island in Bass Strait in 1912. The decline of the rookery is discussed by A. H. Chisholm in the *Victorian Naturalist* of April 1959 (Vol 75, pp. 188-192), and the final figure given is for 1956-57 when fourteen fledglings were noted. Do gannets still use the rookery?

## A Family Event with New Guinea Crowned Pigeons

BY DAVID FLEAY

For size, beauty and grace there is no doubt that in all the world, New Guinea's Crowned Pigeons are pre-eminent in their family (Columbidae). In fact they have few rivals among birds in general. Even as far back as 1700, the realistic Dampier, on adventurous southern voyages, was sufficiently impressed to describe the species he saw as "a stately land fowl".

Not only spectacular in size, but prideful in bearing and plumage, these elegant giants of the pigeon family are even larger and heavier than Scrub Turkeys, with an aristocratic bearing enhanced by magnificent permanently erect head dresses that even peacocks might envy.

Since 1776 they have also been known as Goura Pigeons—that is likewise the generic name—and such outsized, ground-loving pigeons are strictly New Guinean, having evolved probably in the absence of any predatory animals of consequence. Nowadays they are said to have been greatly reduced in numbers owing to the depredations of better equipped native hunters, while the showy head plumes were allegedly much sought by the millinery trade.

Years ago, no less than eight species of gouras were recorded, but in the latest revision, these have been reduced to three.

Named in honour of England's great nineteenth century Queen, early in her reign, one of these

birds is the Victoria Crowned Pigeon (*Goura victoria*). It has been determined as living on Japen Island in Geelvink Bay and (introduced?) on Biak, with a closely similar form (*Goura victoria beccarii*) ranging along neighbouring northern New Guinea from the Siriwo River to Astrolabe and Collingwood Bays and between Holnicote Bay and Mount Maneao.

For many years I had nurtured an ambition to observe these lovely birds at close quarters, and on August 5, 1959, that wish became pleasurable reality with the arrival by air of a pair of exquisite Victoria Crowned Gouras.

There is little doubt that the classification of these is *beccarii*, for their original habitat has been established as the valley of the Jimmi River, 4500-5000 feet above sea level, and at least a hundred miles inland. The Jimmi flows into the Yuuat which in turn feeds the Sepik sixty miles from its outlet. *Goura victoria beccarii* is described as a larger bird, more brightly coloured than the topotype, with a notably large crest having broader edgings to the feathers.

The advent of the gouras was the result of a reciprocal exchange between Sydney's Zoological Park Trust and our West Burleigh Fauna Reserve in Queensland. We have to acknowledge a number of instances in recent years of enthusiastic as-



Alarm and threat behavior of full-grown Victoria Crowned Pigeon, sixteen months old. The crest is at maximum elevation and the wings raised to strike.

sistance from Sir Edward Hallstrom, able Director of Taronga Trust.

Clothed in eye-catching, blue-grey plumage which, contrasted with russet breasts, chestnut wing patches and ruby-red eyes, the new residents formed such an ensemble of sheer living beauty, particularly when sunlight shimmered on the crowning glory of eight-inch head plumes, that they seemed too vivid to be true! How apt was the spontaneous remark of a little girl visitor who said, "Mummy, look at those birds with flowers in their hair!"

We had long prepared for our "guests" and a sheltered aviary built among wattles on an elevated windless hillside had been the object of much thought and effort. We knew that the big pigeons spend the greater part of their time on the ground fossicking for seeds, berries and other fruits, so it was a delight on installation to find them quickly approving their quarters to the extent of walking hither and yon, wagging their tails rapidly the while in characteristic vertical movements and holding their fantastic crests at maximum elevation.

How very fortunate I considered myself, anticipating the delight of observing these wonderful and beautiful birds.

After a week of settling in, it was observed that when they flew heavily to low boughs, a perfect whirlwind of dust was created. They were so big that the act of becoming airborne necessitated powerful stroking on take-off. Soon it was noticed that the bigger male called occasionally in prolonged lugubrious "moos" for all the world like someone blowing strongly over the top of an empty milk bottle. Interestingly enough the sound struck a responsive chord in a "widowed" Eagle Owl (*Bubo bubo*) nearby, and throughout the day she responded in loud "hoos", though strictly a bird of the night! The Crowned Pigeons also uttered an alarm note, soft but penetrating, on the appearance of any strange animal such as a dog, or even at the sight of a strolling emu.

To my very great astonishment, by the middle of August, 1959, the larger male goura—distinguished also from his somewhat retiring mate by more vivid ruby eyes—signified approval of the lowest of three wired-down platforms of sticks, a mere 3½ feet above ground level, to the extent of sitting upon it and silently huffing his wings each time the lady flew up to perch. Between times he fed daintily upon sliced fruit, lettuce, grapes, cracked corn, carrot, peanuts and—greatest favourites of all—ripe "fruits" from a neighbouring Morton Bay Fig (*Ficus macrophylla*). It is obvious at all times that Victoria Crowned Gouras are extremely

fastidious feeders. Rarely are any food items swallowed without being picked up, rolled about in the beak and dropped perhaps half a dozen times before final disposal. Strangely enough, peanuts *holus bolus* in the pod are usually preferred to the shelled product and the birds are not averse to taking various grubs and even earthworms.

The courting activities of colourful birds seldom fail to provide spectacles of charm and grace, but surely the antics of this giant New Guinea pigeon surpass any known performance by lesser ones of the family. For a whole month the spectacular fellow laid on the charm—but never could a lady have cared less! He gathered thin pliable twigs of special calibre and length and flew them one at a time to the platform for careful arrangement though at the rate of perhaps a single twig per hour.

Now also a true New Guinea "sing sing" atmosphere crept in, for while the birds were on the ground, the cock Goura stepped briskly in circles about the lady. Then when she became motionless and her attention was fixed, he would sweep his spectacular head dress to the very ground between his feet. Simultaneously with this act the huge rooster-sized bird dropped his wings and elevated his tail emphasizing vigorous bows with booming calls of "boom-pa . . . boom-pa . . . boom-pa . . ."

Apart from the rustle of magnificent steel-blue and cinnamon plumage, the effect was considerably heightened by the play of sunlight on the bird's ruby red



Male Goura covers the baby and raises his wings in threat. Note the plume-like feathers beneath the wings.

eyes and the truly lovely head-dress.

At any intrusion on what was now his territory, Mr. Goura puts on acts of pugnacity, elevating his big wings on high and raising his glorious head plumes to their zenith. At the same time he rumbled threateningly, jumping sideways and buffeting in true pigeon manner with a powerful shoulder. Day by day for a whole month, the courting show went on—precipitated I found by the sound of falling water when the water bowl was

filled from a hose. At other times, between the slow methodical addition of long pliable twigs to the nest, the cock pigeon huffed his wings and called in his penetrating "empty bottle" note. But Mrs. Goura showed not the slightest sign of interest or appreciation. It almost seemed that, being aware of the big fellow's inflated ego, she saw the wisdom of ignoring both the house-building and the show that went with it. Whether she liked it or not, she had to live

with him! However, in a believe-it-or-not atmosphere, on the morning of September 26, we found Mrs. Goura squatting neatly on the nest for the first time and, in the days that followed, it was established that she had begun brooding from the moment of arrival of the large white egg. The completed matress of fashioned twigs, some of them 20 inches long, now measured 22 inches in length and had a thickness of 4 to 5 inches.

All evidence to hand on gouras appears to indicate an invariable rule of a single egg to a clutch. As might be expected it is quite equal in size to that of a domestic fowl.

Proving himself a thorough gentleman, Mr. Goura immediately dropped all stage events, and within twenty-four hours took over the day shifts, brooding sedately and soliloquizing in low crooning booms. Mother bird's turn for the night usually began between 4 and 5 p.m., and so tight was the schedule, with never more than a momentary exposure of the white egg, that it was a whole week before we even caught a glimpse of the closely guarded treasure.

Interestingly enough the daily change-over followed a definite ritual, with the non-sitting bird flapping up to the nest carrying a selected twig. This was offered to the pigeon on duty with all the solemnity of a locomotive driver passing the staff to a station master. The sitting goura then, and only then, would tuck up its shanks and shuffle slowly off the egg to make way for the relief sitter. It was impossible to secure relevant pictures, for the

lady Victoria spooked easily, and in any case the cock goura resented approaches of any kind.

Three weeks passed by with no sign of a hatching, nor was the cock bird ever seen to regurgiate food for his mate. Undoubtedly he did so, for occasionally on his approach she began working her beak.

Soon it was four weeks and luck was apparently out. But the thirtieth day was "H day" for half an egg shell lay on the ground, and we knew that the nestling had arrived. It was a very happy event. However, the notable baby remained so tightly tucked beneath either parent that seven days elapsed before it was first sighted. Conscientious father goura now showed such tremendous pride that my attempts to secure pictures were immediately greeted with wings raised on high, a gorgeous corona of crest, threatening rumbles and actual strikes. He was so big and so strong that, following one wing buffeting, my right wrist was numb and painful, and it was obviously wise to desist in case the typically soft pigeon fledgling was accidentally killed.

From this evidence I am sure it would go ill with any intruder—apart from men, monitor lizards or pythons—attempting to interfere with nursery arrangements in goura land.

First sight of the greyish-downed infant was the merest glimpse when, at the age of one week, it was observed partaking of regurgitated food with only its head projecting from under the father bird's protecting plumage. At least it could be seen that it possessed a small



Fledgling  
of Victoria  
Crowned  
Pigeon in  
nest.  
Short-tailed  
and nervous,  
this chick  
is four  
weeks old.

knob on the crown as the sprouting point for the future head-dress.

Incredibly, the parent birds continued to keep the growing infant out of sight, the male pigeon becoming even *more* pugnacious about intrusions. Then, dramatically, at the age of four weeks, when only as big as a homing pigeon and a mere quarter the bulk of either giant parent, the leggy, stub-tailed fledgling came into full view by deserting the nest abruptly and entirely. Well feathered but bunchy-crowned, it flew high into the aviary and perched safely. Next day it walked about the ground between the parents uttering short plaintive whistles of entreaty, wagging the short stubby tail up and down in the characteristic manner of the species. For several nights, habit carried the mother back to

squatting overnight on the stained and flattened nest, but the male slept protectively beside his small offspring on the highest perch.

It was late November, and the moulting season had begun. As time went by and the active baby gradually increased in size, its crest developed also, but for months it remained dependent entirely on regurgitated food delivered by both parents.

At twelve weeks, except for the juvenile squeaking, it could have passed as an adult and had become equal in size to its mother. On account of dazzling plumage and fine bearing we suspected its sex to be male, which eventually proved to be the case. It developed playful habits, throwing up its wings, jumping sideways and running broadside on to an imaginary foe with fine *joie de vivre*. But

even then it still accepted pre-digested food from the old birds, and had never been seen to pick up food for itself. This occurred for the first observed occasion on January 26, 1960, with the "baby" then a little more than thirteen weeks of age. Gradually thereafter it adopted an independent attitude though accepting parental handouts whenever they were offering.

At five months, being an extraordinarily spirited and healthy specimen, it began to exhibit aggressive as well as playful behaviour, often fetching either its father or mother a smart blow with a strong shoulder. The squeak was going out of its voice, and though slim in the legs, it promised to be the biggest and finest member of the family.

Then midway through 1960 tragedy struck. To our great sorrow, father goura died suddenly. It was either the result of swallowing some substance such as a cigarette dropped by a visitor or a consequence of some ailment of which we were unaware. He became a treasured exhibit of the Queensland Museum.

As the year went on it became obvious that though some slight interest was taken in the old nesting site by the female, her son, the young male, was too immature to encourage her and no egg-laying transpired over the 1960 season.

However on April 3, 1961, loud calls of "boom-pa . . . boom-pa . . ." drew attention to the first courting display by the youngster. Sure enough, investigation revealed him in striking pose with elevated tail and

down-swept head dress as he bowed repeatedly, advertising his grandeur to the female before him. It was noticed then and later that, in contrast to his late father's display, the "boom-pa" calls were accompanied by beak clicking. Here was definite evidence of his male sex and an indication that it took him 17 months to attain maturity. Then, as was to be expected, he began to collect sticks and arrange them into a typically untidy nest.

Nowadays his well-being is expressed in continual play-acting, with wings on high as the lovely creature jumps from side to side uttering "intimidating" rumbles or flapping both wings almost with a crack on landing, like some proud rooster about to crow. Displays or "combat dances" have become an invariable accompaniment to my various entries with food trays to the aviary; and even so, the pigeon needs only the excuse of a few Noisy Miners or "Mickies" landing in trees above to start all over again!

Often on warm sunny mornings far-carrying but lugubrious "moos" come from him and he is usually discovered during such "soliloquies" perched at the nest edge with gaze intent on his untidy but imposing architectural effort. For over a year now young "Boom-pa" has carried on with intermittent nest building and steady display. Even the provision of a single twig brings him down to collect the new item and fly it aloft for immediate addition to the treasured edifice.

I am afraid however that age has caught up with mother pigeon and, in spite of all the



encouragement and general excitement, she is apparently incapable of further egg production.

Very soon a young hen of the

species is scheduled to arrive; and before long we hope to re-establish the happy position of being able to breed more of these magnificent crowned birds.

## Masked Owl at Buchan

On July 8, as one of a party of three, investigating bats, I entered Clogg's Cave at East Buchan. Something large was noted flying towards us, and in the full beam of our torch it turned and revealed itself as an owl. The bird flew to the end of the cave and stood on the elevated floor for several minutes before flying to a perch on a rock shelf. We kept the owl under observation for some time and are quite certain in identifying it as a Masked Owl (*Tyto novaehollandiae*).

Its general size, the chestnut markings on the mask and upper breast, and the feathered tarsi allowed its immediate distinction from the Barn Owl, (*T. alba*). The shape and colouration of the specimen differed from that of the Sooty Owl, (*T. tenebriosa*); this last being short and bulky in comparison and dusky in colour. An attempt was made to catch the bird (thought to be a male), so that measurements and photographs could be taken, but this was unsuccessful.

A search of the relevant literature indicates that while *T. novaehollandiae* is fairly widespread in Victoria, the bird is far from common. My only previous experience with this species in the field, was a bird seen perched on a telegraph pole at Birregurra in western Vic-

toria during January 1956. The only unpublished record of which I have details is a dead bird (evidently killed by a motor vehicle) found by N. A. Wakefield (pers. comm.) on the Princes Highway, four miles west of Port Fairy on April 25, 1962.

As far as I have been able to ascertain, the Clogg's Cave record is the first of a Masked Owl having been seen within a Victorian cave. However, the Nullabor Plains race, (*T. n. trougtoni*), is well-known as a frequenter of caves and blowholes in that area. Wakefield, (*Victorian Naturalist*, Vol. 77, pp. 227-240, December 1960), when discussing the predators possibly responsible for bone material in caves in the Buchan district, considered that two of the deposits were accumulations by owls of the genus *Tyto* and that the evidence strongly indicated *T. novaehollandiae*. This sight record tends to confirm this theory.

Clogg's Cave, however, is regularly visited by speleologists and bat workers who have not reported the presence there of *Tyto* owls previously or since. Furthermore, as no *Tyto* pellets were present when the cave was checked by Wakefield in August 1962, it appears that the bird seen does not habitually roost there.

BY JOHN L. MCKEAN



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Abnormal Colouration in Orchids

In a letter dated September 23, 1962, Mr. T. L. Richardson of Narre Warren East, made these observations:

Last week I noticed an unusual bud in my orchid patch and marked it to see what would emerge. It turned out to be a Fringed Spider-orchid (*Caladenia dilatata*) but without any colour at all. The usual green and red patches are absent, and the calli on the labellum are cream in colour. This flower, like two coloured ones within a foot of it, has the usual clubbed sepals and fringed labellum; so I presume it to be an albino form. Is it unusual? Do you think it will come up again in the same place next year if not disturbed?

Some say that an albino plant cannot survive beyond the seedling stage because, lacking chlorophyll, it cannot synthesize food material and therefore dies after the reserves in the cotyledons are used. Mr. Richardson's orchid would certainly have had

a green leaf capable of carrying out photosynthesis, but nevertheless it is correct to refer to it as an albino, which term, according to *The Concise Oxford Dictionary*, may be applied to a "plant lacking the normal colouring".

The development of pigment in various parts of plants and animals is due to complex series of biochemical steps, each of which is controlled by a specific enzyme. The enzymes, it is thought, are organized by specific genes. A gene may be altered, by mutation, so that it does not carry out its normal function. But the body cells of most higher plants and animals are diploid (having two sets of similar chromosomes—comprising two full complements of the various genes). On the rare occasions when each of a pair of corresponding genes is defective, there

is a breakdown in function, and a "freak" may result.

With the albino specimen of *Caladenia dilatata*, there should be no change in its colour from year to year, as long as it reproduces vegetatively. However, if fertilized by pollen from other plants, in which the corresponding gene is not mutated, the albino spider-orchid should set seeds which can produce normally pigmented flowers, though the plants of this next generation would have a recessive gene for albinism.

### Funnel-web Spiders

The following note is from Mr. K. Rook of Pakenham:

Recently I dug up a spider's tunnel which was about a foot long and the diameter of a sixpence. In it was an adult, approximately 2½ inches in leg-span and with a body about 1½ inches long. With it were fourteen young ones, some of which I am sending for identification. I identified these as a species of funnel-web. Could you please give me some data about this spider?

The species may be *Anamé butleri*, the Melbourne Funnel-web, but identification in this group is uncertain unless one has a male specimen. Unfortunately, males are rarely collected, for the female is the conspicuous home-builder.

Male funnel-webs are smaller in body and longer in the legs, than females, and the apical segment of the pedipalps resembles the sting of a scorpion, with its fine point directed back towards the spider's cephalothorax. The habit of the male is to move about at night; and he may be

observed on a path, a veranda or the floor of a shed or house. Any that are noted should be placed in 70 per cent alcohol (or methylated spirits mixed with a little water) and forwarded for identification. We do not yet know much of the species and their distributions, and male specimens are needed for study.

### Movement of Koalas

These comments have been passed on by Miss Jean Galbraith, from a man who has been clearing land in South Gippsland:

We see dozens of koalas. When I am driving the 'dozer I always leave the tree with a koala in it. When all the trees round have been cleared, the remaining one always sways in the wind. The koala doesn't seem to like it. I do not know whether he gets seasick (or tree-sick), but he always comes down. Then he sits for about an hour at the foot of the tree—he always does it—as if he were getting his balance or his sense of direction before going off. Then I take down his tree.

It is pleasing to learn, by way of this pleasant little observation, that these koalas are receiving a certain amount of consideration. This was not generally the case fifty years or more ago when, by direct and indirect means, settlers were reducing them towards the point of extinction. They have since been widely rehabilitated in Victoria, but their numbers can only be maintained at the carrying capacity of suitable habitats. We hope that there will always remain sufficient habitat to maintain a strong population of these attractive animals.

## Yellow Robins and Kookaburras

Here is an interesting note from Mr. N. S. Bennett of Stawell, dealing with something like the "eternal triangle" in the domestic affairs of some Yellow Robins, and with a hint of the predatory habit of our popular Kookaburra:

Several years ago, while cutting wood on the edge of Heytesbury Forest, I was able to observe Yellow Robins nesting. When I first noticed them the hen was sitting on the nest and two males were feeding her. One male appeared to be her mate, always flying straight to the nest, causing the second male to leave. When the second male approached the nest he would always wait at a distance for the first to leave.

Unfortunately I cannot record a happy ending, as there were always a few kookaburras following me about, waiting for wood grubs. Although both male robins combined to drive

them away, one morning the nest was destroyed and the robins were gone.

The kookaburras used to wait at my house every morning and then fly from tree to tree ahead of me to where I was working, and wait until I split wood and found some grubs. Incidentally, they always left when my neighbour, half a mile away, started his tractor to go ploughing.

One day I saw a kookaburra fly fifty or sixty yards across a clearing, straight at the barrel of a dry tree, then fly off from it with a large huntsman spider.

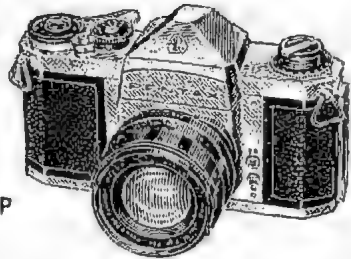
We may appreciate the rolling notes of our "laughing Jack", but many Tasmanian bird-lovers feel otherwise. Introduced some years ago to Northern Tasmania, the Kookaburra has now spread down the east coast and is blamed for a reduction in populations of local species, particularly the Grey Thrush.

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# ASAHI PENTAX IS PERFECTION

# Preservation of Colour in Spider Specimens

By G. H. KAIRE\*

The preservation of spider specimens is fraught with difficulties which are partly due to the presence of a fully chitinized exoskeleton which prevents a rapid penetration of the body by any preserving solution. Besides, some of the liquids in use dehydrate the spiders and tend to shrink the abdomen, others make the specimens very brittle. However, in all of them the colours tend to fade and finally to disappear if the specimens are preserved for lengthy periods. Some pigments are more resistant as, for instance, those of the beautiful spiny spider, *Gastracantha minax*, or the red of the red-fanged spider, *Nicodumus bicolor*. The red stripe on the abdomen of the red-back spider, *Latrodectus hasseltii*, however, fades rapidly in all commonly used preserving solutions, such as alcohol, glycerine alcohol, formalin, Kayserling solution and its modifications. For this reason it was necessary to keep a few live red-back spiders at the Commonwealth Serum Laboratories for visitors who wished to see this dangerous spider.

Recently, we have found that a small quantity of lead acetate added to glycerine-alcohol tends to prevent the fading of the red colour in these spiders. On the basis of some trials we think that it is possible to recommend our preserving solution to naturalists who wish to have spec-

imens of these spiders preserved. The solution is prepared as follows:

100 ml. pure glycerine is mixed with 900 ml. of 95 per cent alcohol or methylated spirits and to this an excess of lead acetate is added. The mixture is shaken several times during the following 3-4 days. It is important that at all times a layer of undissolved lead acetate should be in the bottle. Before use, the liquid is passed through filter paper and the clear filtrate is acidified with a few drops of glacial acetic acid, which prevents the formation of a white precipitate on storage. It is recommended to check the acidity of the solution with a narrow range pH test paper. The pH of the final solution should be about 4.0.

The specimens should be kept in a well-stoppered bottle which is filled up to the neck with this solution. After 3-4 weeks it is advisable to place the spiders in a fresh preserving solution in which they can be kept indefinitely. We have so far kept red-back spiders in this solution for over a year and very little, if any, fading of colour has occurred. Controls kept in other preserving solutions have faded in 2-4 weeks, often to such an extent that instead of a red stripe only a greyish stripe was visible.

We have used this solution also for other coloured spiders and found it satisfactory.

\*From the Commonwealth Serum Laboratories, Parkville, N.2, Victoria.

## Flinders —

### *its foreshore and fossils*

BY E. M. DAVIES

A colourful early history and great geographical and geological interest attach to the little town of Flinders, situated on the south-eastern corner of the Mornington Peninsula and the south-western end of Western Port Bay. It surrounds that bastion of rock called *West Head*, which stands guard over the western channel of the bay, George Smythe, in his survey of Western Port in 1841-2, mentions this headland as *West Head*; but a chart of Cape Schanck showing the position of the proposed light in 1857 names it *Black Head*, and as such it was known by the early settlers.

#### Early History

The Department of Crown Lands and Survey has kindly provided the following interesting information: "None of the surveys made by Flinders, Bass, or Lieutenant Grant in the *Lady Nelson* in 1804, shows any reference to this south-western corner of Western Port Bay as being named *Flinders*. However, the first survey of the Parish, connecting this area with the surrounding country lands (made by Charles Bone in 1857) bears the name *Flinders*. Following this it appears that the Township was named after the Parish, as is seen on a survey by M. Callanan in 1863. Officially *Flinders* was proclaimed a Land Act township in 1864".

Flinders was the celebrated navigator and explorer who came to Australia as master's mate on the *Reliance*, the vessel commissioned to convey Captain John Hunter to New South Wales in 1795, Hunter having been appointed as second governor in succession to Phillip who had retired owing to ill-health. The ship's surgeon on the *Reliance* was George Bass, a man animated by a keen intellectual interest and unbounded enthusiasm in the geographical problems which then awaited solution in New Holland. Flinders and Bass, both Lincolnshire men, became close friends during the voyage and laid plans for pursuing a course of discovery together. They did some intrepid exploration in a little tub of a boat, the *Tom Thumb*, and the keenness they showed in the tasks induced Governor Hunter to encourage them in further enterprises of a like character.

Hunter later provided Bass with a whale-boat for the purpose of examining the coast to the south of Port Jackson, with orders to go as far as he could with both safety and convenience. In this whale-boat, with a crew of six, Bass rowed out from Sydney Harbour on December 3, 1797. Passing Cape Howe, he commenced to make discoveries on the comparatively unknown southern coast of Australia. On January 2, 1798, Bass discovered and entered Western

Port, which he named because of its "relative situation to every known harbour on the coast". After spending twelve days repairing and re-equipping the whale-boat, Bass had to turn reluctantly homewards. He was loath to turn back at this stage, for he was perfectly convinced of the existence of a strait separating Van Diemen's Land from the mainland. Eight months later Flinders and Bass, in the *Norfolk*, circumnavigated Van Diemen's Land and Governor Hunter, on the recommendation of Flinders, named the strait in honour of Bass.

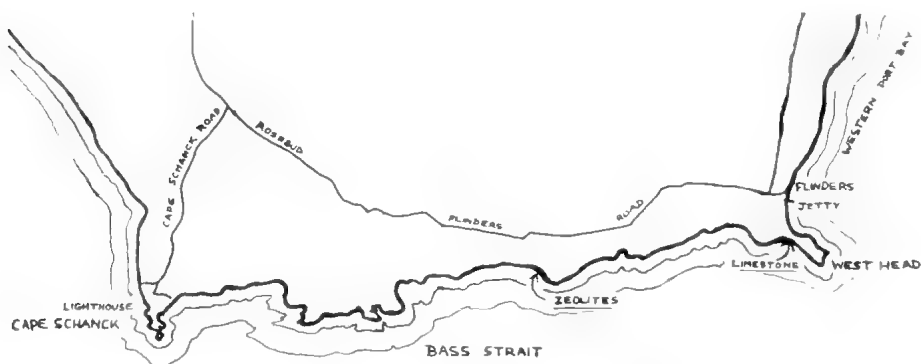
### The Coastline at Flinders

Flinders township enjoys the advantages of both ocean and bay coastlines. The ocean coastline, broadly speaking, consists of bold headlands separated by pronounced bays. The headlands are simple or compound, the simple form having one prominent point, and the compound form having two or more minor points, separated by tiny bays. The cliffs rise to as much as 260 feet above sea level. A factor in

keeping the cliffs steep is the alternation of hard and soft rocks. The latter when underlying the former are fairly rapidly eroded, so falls of the upper hard bands take place. The headlands usually have bare rock up to 25 feet above sea level, and some are clothed with scanty vegetation in their less steep upper portions.

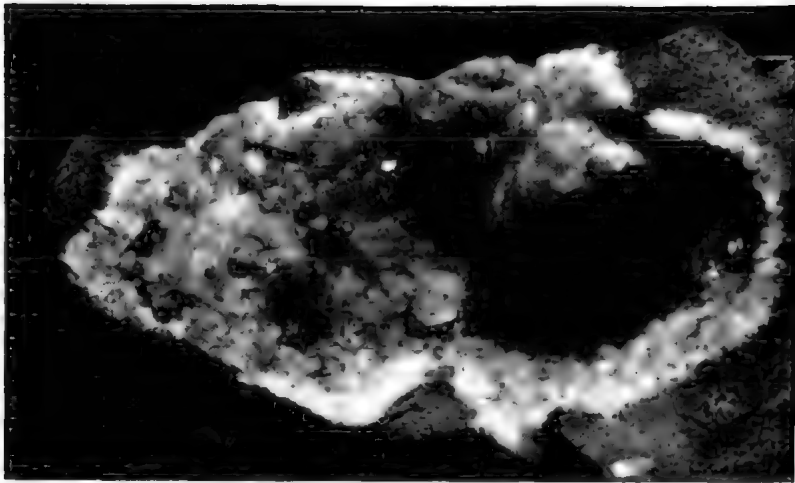
The coastline, pounded by the waters of Bass Strait, is youthful or early mature; which means that, in recent geological time, a change of sea level took place, resulting in a new irregular shore line. The streams of the Bass Strait System have adjusted their valleys to the level of the sea that drowned their lower reaches and so flow in comparatively deep gorges near the coast.

The Western Port Bay coastline is smoother in outline and more mature. The headlands are comparatively low and narrow, with vertical rock faces rising usually only a few feet above sea level, beyond which are sloping vegetated cliffs. Long, wide rock platforms, composed



Locality plan of Cape Schanck-Flinders area.

Zeolites—  
Gmelinite  
and Analcite—  
from Flinders.



either of tough grey basalt or of red or brown pyroclastic rock, are characteristic of both ocean and bay foreshores. Shingle and cobbles occur on some wave platforms and on most of the scanty beaches.

### Volcanic Rocks

The bedrock of the Flinders area is an early Tertiary basalt which can be seen clearly in the cliffs. Bores show that it is many hundreds of feet thick. The great thickness of basalt at Flinders and Cape Schanck (about ten miles west) is thought to be an accumulation in a sunkland of lavas from all parts of the Westernport basin (Keble, 1950). At sea level the thicker portions of the flows have resisted coastal erosion and remain as stacks detached from the main mass.

### Zeolites in the Basalt

One of the best collecting grounds in Victoria for zeolites

is the stretch of coast from Flinders to Cape Schanck, particularly in the Simmonds Bay area. During low tide, zeolites, together with several other secondary minerals, can be collected from the cliffs and debris of the foreshore. A large proportion of the steam cavities in the basalt contain mineral matter, and groups of crystals frequently line the larger voids. These minerals are secondary, having been formed by the solution of part of the more soluble constituents of the basalt, with subsequent crystallization in the cavities of the rock during the slow cooling from its once molten condition. "The slow cooling seems to be an important factor in their formation, as it is only in the thicker flows where the cooling would be most prolonged that these minerals usually occur" (Mitchell, 1931). The zeolites found are analcite, natrolite, phillipsite, gmelinite, stilbite, sphaerostilbite and chabazite.



## Miocene Marine Deposits

A transgression of the sea in Miocene times was responsible for the deposition of the limestone that can be seen outcropping at Flinders, on the bathing beach in front of the golf links. This limestone was deposited in an eroded hollow on the surface of the basalt, and similar limestone occurs near the Flinders jetty, north of West Head on Western Port Bay. Unfortunately, this latter outcrop is usually covered by sand. At the west end of the former locality, a thin band of basaltic conglomerate may be seen separating the limestone from the main mass of basalt. This basalt is partly decomposed, with many joints in which carbonate of lime and magnesia have been deposited.

The limestone has great quantities of bryozoa and for-

aminifera, along with echinoid remains and calcisponges; gastropods and pelecypods are present, mainly as casts, and barnacle plates are numerous. The limestone at the base of the outcrop is almost pure white in colour and very friable; and in it foraminifera of  $\frac{1}{2}$ - $\frac{1}{4}$  mm. diameter are the commonest fossils. Higher in the sequence the limestone varies from yellow to brownish, and bryozoa and calcisponges are abundant with echinoid spines and larger foraminifera. There are several thin, undulating bands hardened by deposition of carbonate of lime, but most of the limestone is fairly porous. Analysis of a sample of the Flinders limestone showed that it contained 85.2% of calcium carbonate, the residue consisting mainly of finely divided silica (Keble, 1950).

### Age of the Limestone

The Flinders limestone is Batesfordian in age. This Stage has for its type section the *Lepidocyclina*-bearing limestone of the Batesford quarries (Singleton, 1941) namely, the upper part of the Batesford Limestone. Batesford is in the valley of the Moorabool River, about five miles north-west of Geelong, Victoria. The age of the Limestone can be determined by the foraminifera *Lepidocyclina*, which belongs to the group of orbitoid species of considerable importance in dating Tertiary strata in all parts of the world. The earliest reference to these orbitoids in the southern Australian Tertiaries was made



Zeolite—Natrolite—from Flinders.

by Howchin in 1889, from specimens at Clifton Bank, Hamilton. Crespin (1943) reports that the species *Lepidocyclus* (*Trybliolepidina*) *howchini* is very common at Flinders, and it is usually associated with *Amphistegina* and *Calcarina verriculata* at both Hamilton and Flinders.

Bryozoa—those colonies of minute marine organisms that still live in the sea alongside—are an important part of the Flinders limestone. Like the foraminifera, these are characteristics of the limestone of the Batesfordian age. Tertiary bryozoa appear to have been first collected in Australia by Captain Charles Sturt during his memorable boat voyage down the Murray River. Several forms were figured in his work, *Two Expeditions into the Interior of Southern Australia*, published in 1883. The specimens were obtained from the cliffs at North-West Bend, South Australia.

In 1902, Maplestone published a very comprehensive list of "The fossil Cheilostomatous Polyzoa in the Victorian Tertiary Deposits", in which he listed 22 genera and 42 species from Flinders. The Cheilostomata exhibit the highest type of development and the greatest complexity of zoecial structure found among both living and extinct bryozoa, and many are objects of great beauty. The bryozoa at Flinders are reasonably well preserved and it is not difficult to extract specimens from the softer parts of the limestone.

The Flinders limestone is also noted for its fossil sponges (Calcispongia). The sponges of

this class (Calcarea) form a sharply defined group and are distinguished by their calcareous spicules, the calcareous matter being largely calcite. Living calcareous sponges are exclusively marine and the group is world-wide in distribution. They are confined almost entirely to the shallow waters, and some live between tide levels. Representatives of the Calcarea are of importance in the geological record. Considerable interest was engendered in 1900 when Hinde published, in London, a paper on "Some remarkable Calcisponges from the Eocene of Victoria, Australia". The article illustrates three genera from the Flinders limestone.

The Flinders limestone with its abundance of *Lepidocyclus* foraminifera, bryozoa, calcisponges, echinoderms and brachiopods indicates a warm, clear, shallow marine environment. The prevalence of barnacles probably indicates the proximity of a shore line. As the sea advanced over the solid basaltic bedrock, it received little terrigenous matter, and so the limey skeletons of marine organisms built up a rich limestone deposit. The uniformity of the lithology suggests a certain stability in the conditions prevailing during deposition of the limestone.

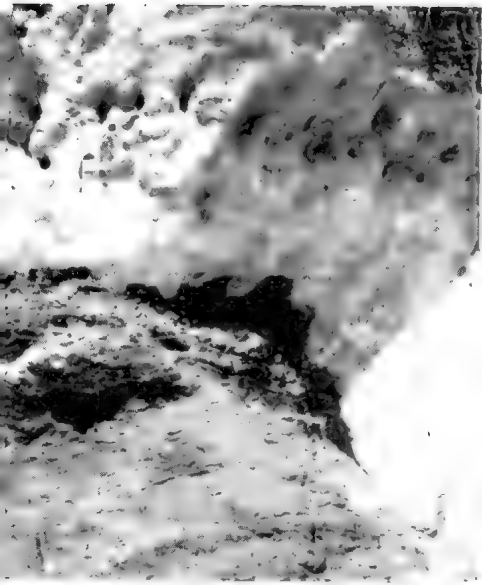
### List of Flinders Fossils

#### PROTOZOA

*Lepidocyclus* (*Trybliolepidina*)  
*howchini*  
*Amphistegina*  
*Calcarina verriculata*

#### PORIFERA

*Bactronella australis*  
*Plectroninia halli*  
*Tretocalia pezica*



Limestone outcrop,  
with basalt at base.

*Porina cribraria*  
*gracilis* (living)  
*larvalis* (living)  
*Retepora rimata*  
*Schizoporella alata*  
*convexa*  
*daedala* (living)  
*fenestrata*  
*phymotopora* (living)  
*Smittia ordinata*  
*reticulata* (living)  
*tatei*  
*Thalamoporella patula*  
*Tubucellaria marginata*

#### BRACHIOPODA

*Craniscus quadrangularis*  
*Margellania garibaldiana*  
*Tegulorhynchia coelata*  
*Terebratulina tateana*  
*scolari*  
*sucssi*

#### MOLLUSCA

*Ichnochiton* sp.  
*Conus* sp.  
*Marginella woodsii*  
*Notohaliotis naevosoides*  
*Patellanax* sp.  
 "Turbo" aff. *etheridgei*  
*Turritella* sp.  
*Chalmys foulcheri*  
*gambierensis*  
*subbifrons*  
*Ostrea* sp.  
*Septifer fenestratus*  
*Venericardia delicatula*

#### ANNELIDA

Tubes of marine worms

#### ARTHROPODA

*Balanus* sp.

#### ECHINODERMATA

*Fibularia* sp.  
*Leiodaridaris australiae*  
*Linthia* sp.  
*Monostychia australis*  
*Phyllacanthus duncani*  
*Psammechinus woodsii*

#### PISCES

*Odontaspis contortidens*  
*Muraenesox obrutus*

#### COELENTERATA

*Conosmilia anomala*

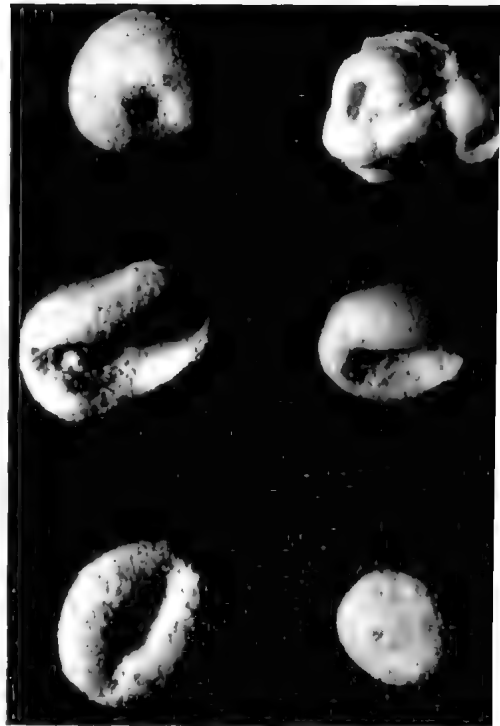
#### BRYOZOA

*Amphiblestrum annulus* (living)  
*cylindriciforme*  
*sexspinosum*  
*Caberea grandis* (living)  
*Canda fossilis*  
*Cellaria australis* (living)  
*enormis*  
*laticella*  
*rigida* (living)  
*Cribilina dentipora*  
*terminata*  
*Farcimia lusoria*  
*Gmellipora polita*  
*Haswellia producta*  
*Hiantopora liversidgei*  
*Lekythopora hystericx* (living)  
*kitsoni*  
*Lepralia burlingtoniensis*  
*clongata*  
*Macropora centralis*  
*clarkei*  
*Membranipora geminata*  
*macrostoma* (living)  
*marginata*  
*radicifera* (living)  
*Microporella macropora*  
*Micronella conica*  
*Phylactella porosa*

### Directions to Localities

**LIMESTONE:** At the eastern end of the Flinders township there is a cairn commemorating Bass and Flinders. From the cairn, follow the cliff road to St. Andrew's Guest House. Two roads will be seen inside an open gate, the one on the left leading to West Head, the one on the right leading across the Golf Links to the bathing beach. Take the right hand road for approximately half a mile where a sign will be seen saying "*Danger, slow*". Follow the track down the cliff to the second bay of the parking area. Here the limestone is easily discernable beside a small cave, half-way up the vegetated cliff. This limestone continues westward, behind the bathing boxes, for 100 yards past the last bathing box. There is a section jutting out from the cliff face where the best specimens may be obtained.

**ZEOLITES:** Two miles west of Flinders, on the Rosebud road, a gate with a sign saying "*Jennings' Bluestone Quarries*" will be seen. Walk along the private road leading to the quarry, then climb down the cliff to the beach. Walk along the foreshore for half a mile eastwards (back towards Flinders) and the zeolites will be found at the foot of the cliffs and in the basalt on the foreshore. The quarry is not suitable for collecting zeolites, and the gate is locked at the weekend.



### REFERENCES

- Beasley, A. W., 1958. Collecting Zeolites near Flinders. *Aus. Amat. Mineralogist*. Sept. 67-69.
- Bowden, K. M., 1952. *George Bass*.
- Crespin, L., 1943. The genus *Lepidocyclina* in Victoria. *Proc. Roy. Soc. Vict.* 55: 157-180.
- Hinde, G. J., 1900. On some remarkable Calcisponges from the Eocene strata of Victoria (Aus.). *Quart. J. Geol. Soc. Lond.* 56: 50-66.
- Keble, R. A., 1950. The Mornington Peninsula. *Geol. Surv. Vict. Mem.* 17: 5-84.
- Maplestone, C. M., 1904. Tabulated list of the Cheilostomatous Polyzoa in the Victorian Tertiary Deposits. *Proc. Roy. Soc. Vict.* 17: 182-219.
- Mitchell, S. R., 1931. Zeolites from Flinders. *Vict. Nat.* 47: 26-28.
- Singleton, F. A., 1941. The Tertiary Geology of Australia. *Proc. Roy. Soc. Vict.* 53: 1-125.

## Feeding Habits of Leadbeater's Possum

By R. MARK RYAN\*

Very little is known of Leadbeater's possum, *Gymnobelideus leadbeateri*. A recently collected specimen, however, afforded an opportunity to learn something of the feeding habits of this rare species.

The specimen, an adult female, was collected in a heavily forested area, 6 miles SE Marysville, Victoria, by A. J. Coventry and H. E. Wilkinson, on 28th April, 1961, and was placed in the collections of the National Museum. It was shot while resting about eight feet above ground in a mint-bush, *Prostanthera lasianthos*, in which it had been observed climbing about for a short while previously. The possum was collected at about 12.30 a.m., apparently after having fed.

Subsequent examination of the entire stomach and intestinal

content of this specimen yielded fragmented remains of an unidentifiable beetle (Coleoptera) and considerable remains of a cave cricket (Orthoptera). The cave cricket, probably *Apotrechus unicolor*, is a nocturnal, non-winged form, about 25-30 mm. in length, and is found in tree holes and under bark. No evidence of vegetable matter was found in the stomach or intestines of this possum.

Thus it appears that *Gymnobelideus leadbeateri* feeds upon orthopterous and coleopterous insects. Other insects, such as moths (Lepidoptera), may be eaten as well.

For the careful examination and identification of the insect remains, I am indebted to Mr. A. N. Burns, Curator of Insects, National Museum.

## A Pink Goodenia

I have just been enjoying the scent of *Goodenia grandiflora* var. *macmillanii*, which is flowering in the garden now. Its fruity scent is strongest at night.

This native of the Macallister River area is very distinctive. Its strongly ribbed stems are from one to three feet high, hollow, pith-filled, and very succulent. The large soft leaves are divided into seven rather raggedly serrate lobes, the end one large, the smaller ones each with an even smaller stipule-like lobe at the base.

The flowers are axillary, with two at the base of each leaf, the second always a small bud when the first is wide open. The blooms are large—at least an inch across—and bright pink. They are usually described as purple, but that is the colour of the dried specimens. The petals (or calyxlobes, since they are joined into a split tube at the base) are broadly winged, as in all goodenias. The wings are bright pink on both sides, while the main blade of the lobe is pale green outside and mainly pink inside.

\*Curator of Mammals, National Museum of Victoria, Melbourne.

However, the inside colour varies on the one plant, even on the one flower, from plain pink to white with pink or purple veins. However, since the wings are larger than the blades, the general effect of the flower is bright pink. Although listed in our *Census* as the Large-flowered *Goodenia*, I think we should call the Victorian variety of it the Pink *Goodenia*.

The three lower corolla-lobes are divided to the top of the tube, but the two upper ones are divided right to the base, where they fuse with the calyx. It is interesting that the calyx also is split to the base, but at a pos-

ition opposite the split in the corolla. So what one may call the two lines of weakness are not at the same point.

The two upper, deeply divided corolla-lobes stand erect, bent towards each other and touching, like joined finger-tips. The base of each of these lobes is narrow and stalk-like, and so widely separated that the stamens spill out through them, appearing as a pale yellow tuft underneath the flower. However, the stigma, with its conspicuous hood or indusium, can be seen in the centre of the flower, framed by the two arched lobes.

—JEAN GALBRAITH

## A Kingfisher Note

Having a few spare minutes whilst at the Herbarium, I took my binoculars and walked into the Botanic Gardens as far as the Oak Lawn.

Attracted by the strident high-pitched note of a cicada in trouble I looked up into an oak tree to see a Sacred Kingfisher (*Halcyon sanctus*) perched on a branch with a large green cicada in its bill. The bird kept moving its bill up and down, tapping it on the branch and slightly opening and closing it, without releasing the cicada. The latter was placed so that it would have been looking straight down the kingfisher's gullet. Slowly the head and thorax disappeared until only a shiny wing was visible on either side of the bill, giving the bird a somewhat ludicrous appearance. Then with a snap of its bill the wings too disappeared.

All this had given me at least five minutes entertainment. The bird did not seem to gradually swallow the cicada whole but apparently by moving the upper and lower mandibles was able to crush and break off portions of the insect nearest its throat and swallow these while still holding the remainder in its bill.

Two days later near the same oak tree I noticed two Sacred Kingfishers and they soon showed me where they have a nest. In turn, about three times a minute, the birds were flying down to and entering a hole in the trunk of the oak, giving every appearance of feeding young, judging by the movements of the tail and back of the bird.

They would fly from the hole to a nearby branch and sit there without any apparent obtaining of food, and after an interval

fly back to the nest. Is it possible that a Kingfisher is able to eat a cicada or fish and then regurgitate it in small quantities at frequent intervals over a period

of an hour or more to feed its young?

It is rather heartening to know that, within a mile of the City, a Kingfisher can nest.

—E. R. ALLAN

Book Review:

## “My Wilderness—The Pacific West”

By William O. Douglas, 206pp., illustrated, 8 vo.; Doubleday, New York, U.S.A.

The English-Speaking Union operates a book-exchange scheme called “Books Across the Sea”—a device which helps the people at the receiving end to learn in a pleasant way something about their fellows at the giving end. The book under review is one that has arrived in this country from the U.S.A., under the auspices of the scheme, and it has been donated to the F.N.C.V. library.

We are glad to be given the opportunity of reading it, because of its natural history interest. Its author is one of a diminishing race. He is a bushwalker and mountaineer, a rambler in out-of-the-way places, a conservationist, a naturalist who believes in the value of knowing something of the importance of ecological factors and in applying the knowledge in whatever action may be taken to preserve the wilderness character of his country's “open space”. He is of a diminishing race only because each succeeding day brings a reduction in the wilderness and open space available to his kind. The places of quiet and solitude, of peace and serenity, are now being invaded by roads and motor cars and what goes with them. The ever-growing throng of people who want to share the joys and satisfactions of the rambler in solitary places will inevitably be disappointed, for they will see a different scene and see it with different eyes.

Douglas is inclined to overdo his word-pictures of scenery and its component wildlife, to the extent of repeating himself now and again; but scattered abundantly throughout the eleven chapters of his book is a record of the observations of a very perceptive field naturalist who, during much of his life, has wandered foot-loose

over the unfrequented parts of the Pacific west of the United States. His rambles have taken him from Alaskan shores to the alpine meadows of Mount Adam, Hart Mountain, the High Sierras and Olympic Mountain, and to countless other secluded places. One detects a feeling of more than a little regret for the fact that they now have to be classed as “once secluded”. Today, many of them have their formed roads in place of the old bridle tracks and trails. Bill-boards and motels are moving in and the wilderness is receding before the bulldozer blade.

Douglas does his best to show that the harsher environments of glaciers and precipitous mountains in wildlife refuges and national parks are likely to be the only places left where anything resembling unspoiled nature can persist. Even they are in danger of deterioration or, as some prefer to describe it, “development”. Much the same thing is happening in our own country: the voices in opposition are not yet strong enough to control it.

*My Wilderness* is easy enough reading for anyone who would like to know or, at least, appreciate the philosophy which underlies the call for restraint in developing national parks or other nature reserves. Such a reader will see that the apparently trivial observations of naturalists may provide many of the facts upon which the science of wildlife ecology and the practice of wildlife management should be based. Without such an appreciation, those who administer and manage our “open space” reserves, well-meaning as they may be, are apt to do them more harm than good.

J. R. GARNET

# Field Naturalists Club of Victoria

## General Meeting—December 6, 1962

About a hundred members and friends attended, with the president, Mr. M. K. Houghton, in the chair. The affiliation with the F.N.C.V. of the Robinvale Field Naturalists Club was approved.

A letter was read from the Mayor of Geelong appealing for contributions towards the proposed purchase of the Cuthbertson property on the Bellarine Peninsula as a nature reserve.

The secretary announced that the profit from the spring nature show was over £100, of which £35 had been allotted to the Society for Growing Australian Plants. A letter of appreciation has been sent to the Australian Paper Manufacturers Ltd., following their gift to the Crown of the area containing the Den of Nargun, near Glenaladale, for dedication as a national park.

The subject for the evening was "The Horsham Excursion". Mr. J. Begley outlined the trip and spoke of the help given by members of the Maryborough, Horsham, Wimmera and Ballarat clubs. Mrs. M. Salau described the geology and the flora of districts visited, including the Cosstick Reserve and native water holes near Maryborough, the Gramplains, Little Desert, Black Range and Mount Arapiles. A large collection of pressed flowers, and fine colour slides, illustrated the talk. Members of the Bird Observers' Club lent excellent pictures of some of the birds of the districts. The speakers were thanked for their interesting account of the excursion.

Mr. M. Harrison brought a large collection of marine life from Phillip Island, including molluscs, sea urchins, holothurians, tunicates, crabs, biscuit stars, sea stars and brittle stars. Other exhibits included a pink cicada that turns black on maturity (Mr. E. H. Coghill), tube bivalves—*Gastrochaena tasmanica*, *Dacosta australis* and *Humphreya strangei*—the valves of which are not apparent (Mr. C. J. Gabriel), live spiders of the genus *Atrax* (Mr. E. Swarbrick), and Mr. D. E. McInnes demonstrated a simple home-constructed microscope suitable for young naturalists.

Four members, whose names appear in the December *Naturalist*, were elected to the ranks of the club.

## Geology Group—November 7, 1962

Twenty-one members were present, with Mr. L. Angior in the chair. Messrs. D. McInnes and R. Dodds reported on the excursion, in conjunction with country clubs, to Beaumaris and Fossil Beach, Mornington. A collection of mollusc fossils from the latter area was the result of an afternoon's work.

The subject for the evening was a lecture by Dr. L. Finch, of the C.S.I.R.O. on "Building Stones Throughout the Ages". The speaker traced the use of stone in building from the earliest times to the modern era. The various civilizations and their architecture were compared, and a workable classification explained. A geological approach to building stones was of assistance in solving many problems connected with sandstones, limestones, granite etc. Using a large collection of slides, the speaker was able to illustrate different monuments and ancient ruins from various parts of the world.

*Exhibits:* Septarian nodule from Fossil Beach, Mornington; lignite and basalt from a section south of Fossil Beach, aragonite from Cape Schanck (Mr. T. Sault); quartz pebble from Pompeii with some of the original Roman mortar attached (Mr. Shakespeare).

## Fauna Survey Group—December 6

The group's final meeting for the year was held in the library of the Fisheries and Wildlife Department. About twenty members were present, as well as several visitors from other sections of the club.

Mr. N. A. Wakefield spoke on the evolution of marsupials. He outlined the age and distribution in the world of fossil marsupials and early placental mammals, and illustrated the relationship these bear in time to allied groups of ancient reptile-like mammals. Evidence of the early divergence of marsupials and placental



mammals from a common stock was discussed, as well as the independent origin of monotremes. Simpson's classification of marsupials into superfamilies was explained, and Ride's recent exposition of the inter-relationship of Australian groups and their lack of close affinity to American groups. Questions and discussion followed, and certain points were demonstrated by skull specimens of local species.

Supper followed, and those present were then shown many of the animals which are at present housed in the Wildlife Research Laboratory of the Department.

Mr. R. M. Warneke gave details of recent collecting in the Grampians; and Mr. Wakefield reported observations made in the Moroka River area and the Benambra district, during the previous month, when an unsuccessful search was made for the evidence of rock-wallabies in northern Gippsland.

Owing to proposed field activities of various members, it was decided not to hold the normal monthly group meeting in January.

## Affiliated Clubs

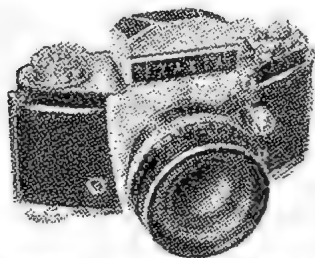
**Horsham F.N.C.**—Mrs. T. L. McKenzie, the secretary, reports a successful year with attendances at meetings of up to sixty members and outings well patronized. The club expresses appreciation of the work of the retiring president, Mr. E. Barber, who is leaving the district. His place as president is being taken by Mr. C. O. Kroker.

**Frankston F.N.C.**—This Club has recently held its annual meeting. Miss L. M. Noall has been elected president, and Miss J. Lett, secretary. There are 38 adult members and 8 juniors.

**Colac F.N.C.**—Colac reports that its "key" officers for 1963 are Mr. M. Hodges, president and Mr. E. Perkins, secretary.

## Correction

The title of the article beginning on page 232 of the December 1962 *Naturalist* and in the contents on page 223, should read, Cape Schanck—its Camp and Cave.



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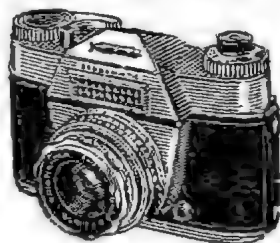
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## F.N.C.V. DIARY OF COMING EVENTS

### GENERAL MEETINGS

**Monday, January 14, 1963.**—At the National Herbarium, The Domain, South Yarra, commencing at 8 p.m. sharp.

1. Minutes, reports, announcements, correspondence.
2. Subject for Evening: Members' Night.
3. Nominations for Membership, 4. General Business.
5. Nature Notes and Exhibits. 6. Conversazione.

**Monday, February 11**—"Recent Biotic Provinces in the Eastern Pacific and their Fossil Equivalents", by Professor Valentine.

### GROUP MEETINGS

(8 p.m. at National Herbarium, unless otherwise stated.)

**Wednesday, January 16**—Microscopical Group.

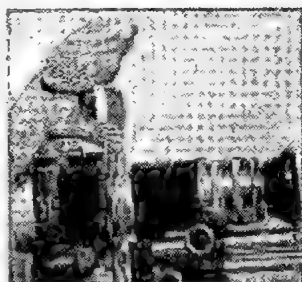
**Monday, February 4**—Entomology and Marine Biology; meeting at 8 p.m. in Mr. Strong's rooms at Parliament House; enter through private entrance at south end of House.

**Wednesday, February 6**—Geology Group: "Geology in Colour", by members.

**Thursday, February 7**—Fauna Survey Group: General Business. At Fisheries and Wildlife Department, commencing 7.30 p.m.

### F.N.C.V. EXCURSIONS

**Sunday, January 20**—Somers, bush and beach, including a safe swimming spot. Leader: Mr. A. J. Reid of the Children's School Camp, Somers. Fare 14/-, bookings with excursion secretary. Rendezvous, for private cars, junction Coolart and Flinders Roads, Somers. Bring two meals.



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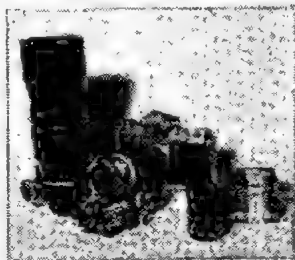
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2/6



Marblefont stand of White Mountain Ash *Eucalyptus regnans* in the Marysville State Forest

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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*Front Cover:*

This is a photograph, by courtesy of the Fisheries and Wildlife Department, of a Squirrel Glider (*Petaurus norfolcensis*) from the Rushworth district in north-central Victoria.

The species is about twice as big as the common little Sugar Glider (*P. breviceps*) and it has a much more bushy tail and a somewhat longer face.

Very little is known of the distribution of the Squirrel Glider in Victoria, so any local information about it would be of considerable interest.

## Derrimut—

### *An Aborigine of the Yarra Tribe*

By CECILY M. TUDEHOPE

There were a few aboriginal Australians whose character, exploits or personality gained them a place of distinction in the early annals of the Port Phillip settlement. One such aborigine was Derrimut (sometimes spelt Derrimot, Derriemert, Derrimart or Derrihmart), who played an historically important role at the time of the first European-aboriginal contact on the Yarra.

Early accounts of Derrimut's ancestry are rather confused. For instance, he is described by Fawkner as a chief, which he could not have been for two reasons; first, because he was immature, and, secondly, because aboriginal tribes had no chief but only headmen or elders. Daniel Bunce claims that he was "King of the Werriby District", and brother of Betbenjee of the adjoining district. Betbenjee—better known as Bebe-jan—was headman of the Kurung-jang-baluk, which inhabited the Werribee River watershed at the time Melbourne was established, and was the father of Berak who, as far as is known, had no brothers. It is, therefore, more likely that Derrimut was his nephew and thus the son of one of the three "chiefs"—either the one called by Batman Jakka-jakka, or of Bungereim, who were neighbouring headmen of the Wurrunjerrri clans and all signatories to the Batman treaty. This

ancestry would entitle him to the eventual headmanship which was always ascribed to him.

An unpublished narrative manuscript of J. P. Fawkner's in the Melbourne Public Library which, although dated and presumably written in 1862, deals with the 1835 period, contains early references to Derrimut. This manuscript, which is of the greatest importance regarding the founding of Melbourne, is now being collated by me and will shortly be published with appropriate notes. In this document Fawkner describes his coming to the Yarra and his first contact with the natives there. He states that both banks of the river were lined with a huge assemblage of blacks who had been gathered there by Buckley at Henry Batman's request to impress John Batman, who was hourly expected, with their numbers. It will be remembered that Buckley had joined John Batman's party at Indented Head in August 1835, and the incident now referred to occurred on the Yarra on October 28, 1835, with members of both Batman's and Fawkner's parties present.

In the document Derrimut makes his entree to history as a young native who formed a spontaneous friendship with a youthful servant of Fawkner, William Watkins, and because of this attachment acquainted him of a

conspiracy which had been entered into by the visiting Goulburn, Western Port and Barra-bool Hill tribes. The white men were to be wiped out so that the natives could take possession of all their goods. The Europeans were all busily engaged in building Fawkner's house, and the plan, according to Derrimut, was for two natives to cover each man and at a given signal to strike the builders on the head with their stone axes. The aborigines had appeared friendly and were permitted in and about the camp, hence their hostile intentions were not suspected, and it is certain their nefarious scheme would have succeeded but for the warning given by Derrimut. An easy and entire massacre would have followed as the whites' only arms were on board the schooner *Enterprise*, of which Mrs. Fawkner, Mrs. Lancey and children, the sick mate and the cook were the only occupants at the time.

The Melbourne blacks were more friendly to the white men than were their tribal visitors, but in spite of this Derrimut was nearly speared by them for his action. Whether heroism or treason or genuine friendship prompted his action is not known, but it enabled Fawkner and his men to forestall the attack. (This incident will be described in detail in a later paper.) It is certain that Derrimut's warning hastened the end of his primitive way of life and the disintegration of his tribe. A massacre would have caused the withdrawal of any possible survivors and the settlement of Port Phillip could well have been delayed for years.

After receiving Derrimut's assurance that the belligerent tribes had left the area, Fawkner was able to proceed with his building programme. Derrimut was forthwith rewarded by the gift of food and clothing from the grateful settlers. In fact, these people fed and clothed him for the rest of his life. To further the friendship, Fawkner says he often took him in his boat when going on shooting forays, or down to the Bay. He, together with Baitbainger (Betbenjee), Negrinoui and Benbow, often formed a crew for Fawkner's boat and assisted to lighten the *Enterprise* in bad weather to enable her to get over the bar at the entrance to the channel near Williamstown. Derrimut quickly learnt to shoot game for Fawkner.

Fawkner took Derrimut for a trip to Tasmania in the next year, 1836. An extract from *Bent's News* dated September 24, 1836, reads:

The native from the Settlement who first visited Launceston with Mr. Fawkner was so pleased with what he had seen that on his return he induced two others to visit the colony. Mr. Fawkner later brought them to Hobart Town and introduced them to the Governor. They were presented with a drummer's dress—and proudly wore it. . . . One was an athletic young man Derrahmert, the other not so active, Baitbainger. Mr. Fawkner had them clothed in labourer's dress.

Daniel Bunce speaks of this incident when he says Tasmania was honoured by the arrival of some distinguished visitors from Port Phillip—the two chiefs, Derrimut and Betbenjee, accompanied by the tall and gigantic Buckley. This author quotes a singular instance of the effect of

strong drink upon these natives. He states that on their arrival both chiefs became extremely intoxicated and were very ill the following morning. Poor Derrimut was induced to taste "a hair of the dog that bit him"; and recommenced his debauch. Bunce further states that Derrimut "remains a drunkard to this day" (*Australasiatic Reminiscences*, Hobart 1857). On the other hand, Betbenjee was so disgusted with himself that he could never again be induced to taste spirits.

It would seem that the next few years in Derrimut's life were spent in and around the growing settlement. It appears strange that he was not a member of Captain Dana's Native Police, which Force was inaugurated on February 17, 1842. Of course, he was receiving a pension from the original settlers he saved, and was regarded with favour by the Europeans. When not under the influence of drink, he apparently was a likable person. The historian, Cooper, says that Derrimut was a well-known and popular figure in Prahran, and his constant companions were two aboriginal women and a number of miserable-looking dogs.

Drink continued to take a harder toll upon his constitution and we have a picture of a once-proud young savage turned to a dissolute, prematurely-aged man shambling around the streets of Prahran in his shabby, ill-fitting European clothes. Derrimut is said, however, to have retained a proud spirit and in spite of his pension would not accept the white men's ways completely. He retained his "freedom" to roam at will, even if it were only

around the streets of Prahran. A sad truth is that a black man in tattered garments looks infinitely worse than his white counterpart, and is held in contempt, even though his condition is a direct result of European contact.

In 1858 the Victorian Government appointed the Hon. T. McCombie as Chairman of a Select Committee of the Legislative Council to enquire into the Present Condition of the Aborigines. In the Minutes of Evidence there are some direct references to Derrimut. Mr. Hull, J.P., a District Magistrate, when questioned concerning an incident which had recently occurred, answered thus:

In consequence of my not bringing Derrimut to justice for spearing at me, they had great confidence in me. That was at a corroboree somewhere near where the new Military Barracks are now building, and his people flew upon him and threw him down upon the earth, and I walked off and escaped with my life. They knew that I was a Magistrate and expected that I should bring him up, but I did not do so, because it was my own fault; I did not know that he was the chief of the tribe and the head of the corroboree that was going on, and he was drunk, and I called him a drunken fellow, and he immediately took up a bundle of spears, one of which he threw at me, and it went into a tree close to me. My not taking any steps against him caused them to have great confidence in me, and they used to come to my store at the corner of Little Flinders St. by the Queens Head Public House, and look at me and say, "Good fellow you", and I found that I had their confidence.

Further on in the questionnaire proceedings, the Hon. T. McCombie queried Mr. Hull:

You have described a case where a chief attempted to kill you when he was in a state of inebriety; in this instance, do you think that it was



from a public-house or from a private individual that he got the drink?

*Answer:* I think that in that case it was from a publican. When I came back over the old punt-bridge, I said to the punt-keeper, "I have had a very narrow escape", and he said, "I was very sorry to see you going over that way; I thought you would come to some harm, for that man Derrimut is a very dangerous man when he is drunk".

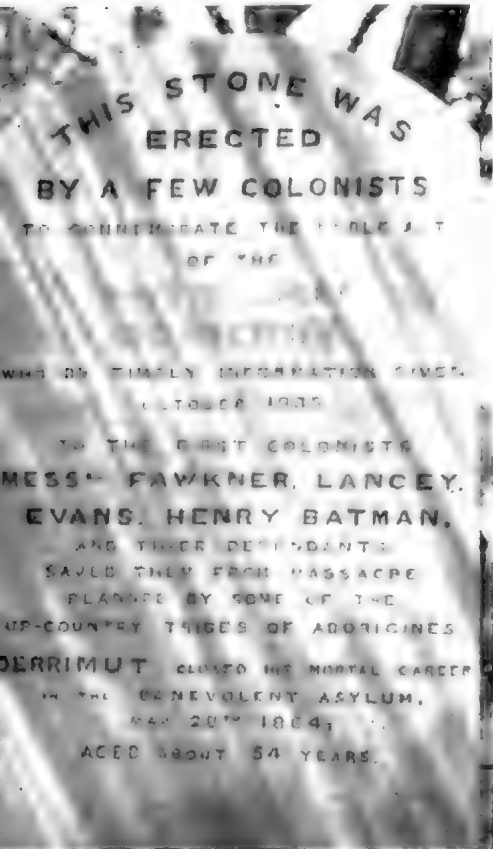
The remaining evidence given to this committee by Mr. Hull concerning Derrimut is also significant:

*Question:* Is there any further information you could afford to the Committee relative to the subject under consideration?

*Answer:* In the Select Committee which sat in Sydney many years ago, a black, who was supposed to be civilized and christianized, was examined before the committee, and if this committee could get Derrimut and examine him, I think he would give the committee a great deal of valuable information with respect to himself and his tribe, which would be very interesting; he speaks moderately good English, and I was told by a black a few days ago that he was still alive, and that he "lay about in St. Kilda". The last time I saw him was nearly opposite the Bank of Victoria, he stopped me and said "You give me shilling, Mr. Hull". "No", I said, "I will not give you a shilling. I will go and give you some bread", and he held his hand out to me and he said "Me plenty sulky you long time ago, you plenty sulky me; no sulky now, Derrimut soon die", and then he pointed with a plaintive manner, which they can affect, to the Bank of Victoria, he said "You see, Mr. Hull, Bank of Victoria, all this mine, all along here Derrimut's once; no matter now, me soon tumble down". I said, "Have you no children?" and he flew into a passion immediately, "Why me have lubra? Why me have piccaniny? You have all this place, no good have children, no good have lubra, me tumble down and die very soon now".

Derrimut's own words as repeated by Mr. Hull tell his own, and his tribe's, sad story more succinctly than I could. Incidentally, in the twenty-three years from the first contact with the whites, the membership of the Yarra tribe had dropped from about 300 to 33.

In May 1864, Derrimut was taken in a dying condition to the Benevolent Asylum, where he died on May 28. This institution at the time stood at the end of Victoria Street, but was later moved to Cheltenham where it continues to this day as the Mel-



Headstone of Derrimut's Grave, Melbourne General Cemetery

bourne Home and Hospital for the Aged. Derrimut was buried in the Melbourne General Cemetery, and the following inscription appears on the stone above his grave:

THIS STONE WAS  
ERECTED  
BY A FEW COLONISTS  
TO COMMEMORATE THE NOBLE ACT  
OF THE  
NATIVE CHIEF  
DERRIMUT

WHO BY TIMELY INFORMATION GIVEN  
OCTOBER 1835

TO THE FIRST COLONISTS  
MESSRS FAWKNER, LANCEY,  
EVANS, HENRY BATMAN

AND THIER DEPENDANTS:  
SAVED THEM FROM MASSACRE,  
PLANNED BY SOME OF THE  
UP-COUNTRY TRIBES OF ABORIGINES

DERRIMUT CLOSED HIS MORTAL CAREER  
IN THE BENEVOLENT ASYLUM,

MAY 28TH 1864:  
AGED ABOUT 54 YEARS.

[Note: Their is mis-spelt  
"thier" on the inscription.]

Later in that year, 1864, an application was made to the Trustees of the Melbourne Cemetery for a piece of ground to be set aside for the interment of aborigines. In the old cemetery the blacks had a corner allotted to them, but now, in the new ground, the bodies were buried in the space set apart for the Chinese and the practice of heathen rites by these people had led to some disagreeable results. Derrimut's grave stands beside a Chinese grave altar.

Derrimut's name has been perpetuated in a little hill just off the Ballarat Road (at Deer Park). This elevation was originally known as "Diarmid's Hill", and was renamed by the Morton Brothers who gave it the flattering title of "Mount Derrimut". This name they also applied to their pastoral property, thereby honouring the native Derrimut. His name is further commemorated in the Parish of Derrimut (proclaimed 1860), a street in Footscray and another in Sunshine.

## Further Sight Records of Leadbeater's Possum

By W. H. OWEN

In the course of spotlight surveys of population densities of the Mountain Possum (*Trichosurus caninus*) and the ring-tail (*Pseudocheirus peregrinus*), two sight records of Leadbeater's Possum (*Gymnobelideus leadbeateri*) have been made which provide a minor extension of its range in the west-central highlands of Victoria.

In July 1962 one animal was seen in Shining Gum (*Eucalyptus nitens*) forest at Ben Cairn at an altitude of 3000 ft. The shrub layer in this area is well developed, consisting of Silver Wattle (*Acacia dealbata*), Musk Daisybush (*Olearia argophylla*), Elderberry *Panax* (*Tieghemopanax sambucifolius*), and Christmas Bush (*Prostanthera*

*lasianthos*). The field layer consists of dense *Poa australis* tussock. When seen the possum was only a few feet above the ground in low scrub.

The second observation was made in Mountain Ash (*E. regnans*) forest along Black's Spur road in October. A single animal was seen in a mass of Wire Grass (*Tetrarrhena juncea*) supported by a stand of Mountain Correa (*Correa lawrenciana*). Again the possum was moving in the shrub layer a few feet above ground level.

As Wilkinson (1961) has pointed out, the absence of a gliding membrane, together with the club-shaped tail, spatulate digits, and prominent ears, readily distinguish *Gymnobelideus* from the Sugar Gilder (*Petaurus breviceps*) whose size, colour, and behaviour under spotlight observation are somewhat simi-

lar. Both the above observations were made from distances of less than ten feet.

These observations show that the distribution of *Gymnobelideus* extends from Lake Mountain at least 12 miles across to the western edge of the Mountain Ash forests from Black's Spur across to Ben Cairn.

Included in this area are the O'Shannassy, Maroondah and Badger weir catchment areas and the surrounding state forests. These areas have evidently harboured the build-up and spread of populations of *Gymnobelideus* which, although apparently never common, must have been reduced to extremely low numbers by the 1939 fires.

#### LITERATURE CITED

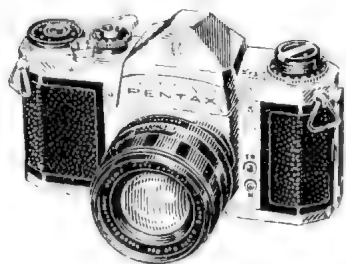
Wilkinson, H. E., 1961. The Rediscovery of Leadbeater's Possum, *Gymnobelideus leadbeateri* (McCoy). *Vict. Nat.* 78 (4): 97-102.

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# ALONG THE BY-WAYS With the Editor



These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.

## Kookaburras and Wattle-birds

These notes come from Mrs. J. D. Callaghan of Lorne. They illustrate the problem which smaller birds have of protecting their young in the face of the predatory inclinations of our kookaburras.

Hearing quite a commotion yesterday, in trees across the road, and seeing downy feathers floating on the light breeze, we investigated and saw a large kookaburra holding a small bird in its beak and vigorously battering it against the bough under its feet. Two other kookaburras, apparently young ones, were on boughs nearby, making raucous sounds and opening their beaks.

Then we saw two Red Wattle-birds, which only that morning had been in our garden feeding a younger one, flying about distractedly and attempting to attack the two younger kookaburras. Apparently the older one was too much for them, for they did not attempt to disturb it. There was no sign of the young wattle-bird, except the mangled corpse in the old kookaburra's beak. The kookaburra then

flew with its prey to a larger gum-tree nearby, and continued to batter it until it was practically inside-out and could be eaten without feathers being swallowed.

This morning we again saw kookaburras and wattle-birds in the garden. Another young wattle-bird was feeding in a scarlet bottle-brush (*Callistemon rigidus*) which is in full flower. A kookaburra—the same, we think, that had the young bird yesterday—flew down and perched on a tree stake several feet away. Immediately the two adult wattle-birds dived at it, but apparently without result, and then flew back and perched in a "yellow broom" (*Viminaria juncea*). Then the two young kookaburras came and perched nearby. One was driven off when a wattle-bird dived at it, and the second followed as the other wattle-bird got busy. Then the old kookaburra left. The young wattle-bird, in the meantime, kept on feeding in the bottle-brush, and it continued to do so for some time, with the parents on guard.

The kookaburras are apparently some of the several that come to be fed on scraps of raw meat. They seem to have replaced the magpies that used to come each day. Some of the latter

would take meat from my hand and even hop on to the platter when it was held out. Now it is the kookaburras that come whenever they hear the knife rattle on the wooden platter.

### Ejection of Nestlings

In these columns, in March and May last year (*Vict. Nat.* 78: 328-9; 79: 10), some discussion took place on the question of young birds returning to the nest after having left it. Here are some further comments, by Mr. R. A. Storer, who initiated the original item.

The swallows nested in the same position this year, under a penthouse roof covering a much-frequented path in our factory grounds. A brood was hatched and the young reached fledgling stage; then an interesting turn of events occurred. I noticed a group of work people watching the nest and, on making enquiries, was informed that they had been replacing the fledglings in the nest as the parent birds were ejecting them.

The fledglings, on being ejected, had nowhere to perch and alighted on the ground and could not rise again. The work people concerned had taken this as meaning that the fledglings were not ready to fly.

Although I watched the nest regularly last year and did not see anybody replacing the fledglings, it is pretty clear that this is what in actual fact happened. Also, I wonder whether the fact that the parent birds resort to ejecting the fledglings is the reason for them staying in the nest when replaced.

One wonders if it was the parents' action or some other event that caused the young birds to leave the nest in the first place. In any case, it is likely that subsequent handling of the fledglings further upset the parents. The result of it all seems to have produced an extremely mixed-up family.

### Birds at Wyperfeld

Following are some notes on ground-frequenting birds in the Wyperfeld National Park. Mr. H. R. Hobson of Rosebery, who made the observations on November 3, 1962, has written this report:

The place concerned is a particularly good bird area, with one of the largest Lowan mounds in the park. The birds had been working on the mound since July, when the centre was open. The two are never very far away, and when I arrived on the scene at 11 a.m., the "nest" was partly open. At about 1 o'clock, one bird was sighted near it, and when I returned at about 4 p.m. the structure had been heaped over for the night.

After my leaving the mound in the morning, the first bird recorded was the Shy Heath-wren (*Hylacola cauta*). Shortly afterwards, a party of Black-backed Wrens (*Malurus melanocephalus*) was encountered, with the prominent blue male leading.

The Crested Bellbird, *Oriocica gutturalis*) could be heard at intervals, and I am positive this bird will respond to even a poor imitation of its call. The male bird was seen low down on some of the dry wood that is plentiful in the particular area.

Next birds to be met were a pair of Chestnut Quail-thrush (*Cinclosoma castanotum*), accompanied by two young ones that could be triggered into flight by the slightest movement. There have been two pairs of quail-thrush in the area since my first visit, in July, and with caution I have learned to observe them, but the young birds are very wary.

The next encounter was important to me, as it concerns a bird that I had not met before though, in the two years past, I had walked at least fifty miles seeking it. Two Spotted Nightjars (*Eurostopodus guttatus*) had evidently been crouched together on the ground, and I saw them only when they flushed. They went straight up in the air, one to the left and one to the right. The left one flew only a short distance before grounding, and it provided an excellent observation.

# Frogs of the Melbourne Area

By M. J. LITTLEJOHN\*

Eleven species of frogs are found within 25 miles of Melbourne General Post Office. Most of them probably once occurred across the region of maximum urbanization, but, except in a few pockets (e.g. parks and golf courses), they have yielded to the drastic environmental change. The peripheral areas, however, carry a relatively natural assemblage, and it is in these parts that reasonable col-

lections can still be made. Although discussion centres on the frogs inhabiting a particular area, these species also form the major component of the frog fauna of western Gippsland and south-central Victoria (including Geelong and Ballarat).

The key and the descriptions are based on living adult frogs, and information on habitat, approximate breeding season, mating call and spawn is given for each species. Since our knowledge of the larval stages of Victorian frogs is still very sketchy, tadpoles are not considered. Average body lengths (snout-vent) of adult individuals, together with the range of variation, are given with each description. A short bibliography is listed at the end of the paper for those interested in obtaining further information.

\* Lecturer in Zoology, University of Melbourne.



Above:  
*Hyla*  
*verreauxi*,  
Verreaux's  
Tree Frog



Right:  
*Hyla aurea*,  
The Green and  
Golden Frog

**KEY TO SPECIES**  
(Based on living adults)

1. Pads or discs present on fingers and toes (Family: Hylidae) . . . . . 2  
No pads or discs present (Family: Leptodactylidae) . . . . . 4
2. Dorsolateral fold (along body at junction of back and side) present, snout long, conspicuous green and golden dorsal pattern . . *Hyla aurea*  
No dorsolateral fold, snout short, dorsal surface brown . . . . . 3
3. Finger pads wider than fingers, flanks pale to bright orange. *Hyla ewingi*  
Finger pads only as wide as fingers, flanks yellow with black markings. *Hyla verreauxi*
4. Metatarsal tubercle (shovel-like projection on underside of foot) present (toad-like burrowers) . . . . . 5  
No metatarsal tubercle . . . . . 6
5. Metatarsal tubercle fleshy, flat oval gland on leg . . *Limnodynastes dorsalis*  
Metatarsal tubercle sharp, black and horny, no gland on leg. *Neobatrachus pictus*
6. Large frogs (> 34 mm) lightly coloured in yellow-brown or olive . . . . 7  
Small frogs (< 33 mm) usually dark brown in colour . . . . . 8
7. Back pattern of several conspicuous brown and yellow longitudinal bands . . . . . *Limnodynastes peroni*  
Back pattern of olive green spots, a thin yellow mid-dorsal stripe sometimes present . . . . . *Limnodynastes tasmaniensis*
8. With the hind limb extended forward, the base of the toes reaches the snout . . . . . 9  
With the hind limb extended forward, the tips of the toes reach the snout . . . . . 10
9. Ventral surface granular, white with variable black patches. *Crinia signifera*  
Ventral surface smooth, greyish in colour, often with pink in posterior regions, particularly on flanks and upper legs . . . . . *Crinia taevii*
10. Throat and ventral surfaces of limbs orange to orange-red, rest of ventral surface marbled with black and white. *Pseudophryne semimarmorata*  
Entire ventral surface of body marbled with black and white, no orange on ventral surface . . . . . *Pseudophryne bibroni*

***Hyla aurea* (Lesson)**

*The Green and Golden Frog*

*Description:* A large long-legged species characterized by a green and golden dorsal surface, with scattered warts, and a pale mid-dorsal stripe. A conspicuous dorsolateral fold is present (at the junction of the back and the sides) and the sides of the body are covered with numerous flat warts. The inner surfaces of the flanks and thighs are greenish-blue. The ventral surface is white and of a granular

texture. The snout is long and pointed and the tympanic membrane (ear drum) is distinct. The toes are connected by a thin membranous web and the pads of fingers and toes are reduced. Breeding males have a brown pigmented patch (nuptial pad) on the inner finger. The form around Melbourne belongs to the subspecies *H. aurea raniformis*.

*Size:*

- Females—69.8 mm (61.5-81.9).  
Males—60.9 mm (57.3-64.8).

*Habitat*: Found throughout the area, usually associated with permanent swamps, dams and small streams, common along grassy margins.

*Breeding Season*: September to December.

*Mating Call*: A long low growl often followed by 2-3 short grunts; Males call while floating in open water.

*Eggs*: A large number of small pigmented eggs are laid in extensive mats which sink to the bottom of the pond.

### *Hyla ewingi*

(Dumeril and Bibron)

*Ewing's Tree Frog*

*Description*: A moderate-sized elongated frog with a short pointed snout and a broad head. The mid-dorsal area, from between the eyes back to the vent, is usually dark brown while the rest of the dorsal surface is a lighter brown. The ventral surface is white and granular. The backs of the thighs are yellowish to bright orange. Expanded pads are present on fingers and toes, being well developed on the former. The toes are connected by a delicate web. The tympanic membrane is visible. Breeding males have a light grey-brown vocal sac under the throat, and a dark pigmented patch on the inner finger.

*Size*:

Females—38.7 mm (33.9-45.5).

Males—33.7 mm (29.0-37.2).

*Habitat*: Common throughout the area, associated with temporary and permanent water. It is a good climber and is often

found on reeds or low vegetation along banks.

*Breeding Season*: April to December.

*Mating Call*: A series of about 10-20 rapidly repeated notes with a harsh pulsing in each note "wirr - wirr - wirr - wirr - wirr". Males call from a variety of positions, under cover of vegetation, along the water's edge, floating on debris and up in vegetation.

*Eggs*: Small pigmented eggs laid as bunches wound around submerged roots and grass stems and surrounded by a clear watery jelly.

### *Hyla verreauxi* (Dumeril)

*Verreaux's Tree Frog*

*Description*: Very similar to *H. ewingi* except for the following: The mid-dorsal patch, where present, is divided, particularly between the eyes, the finger pads are barely as wide as the fingers. On the flanks are conspicuous black markings on a diffuse yellow background. The vocal sac of the male is very loose and of a dark greenish-black colour.

*Size*:

Females—33.5 mm (30.5-36.6).

Males—35.2 mm (32.3-37.7).

*Habitat*: Similar to that of *H. ewingi*, but restricted to the eastern side of Melbourne.

*Breeding Season*: August to December.

*Mating Call*: Basically similar to *H. ewingi* except that it lacks the harshness characteristic of *H. ewingi* and each note becoming almost a whistle "cree, cree, cree, . . .". (The differences in



call are clearly evident when tape recordings are analysed on a cathode ray oscilloscope. Each note in the call of *H. ewingi* with a pulse rate of 50-60 per second, while those of *H. verreauxi* are at 110-120 per second.) Males call from the banks of ponds, often under cover of grasses and tussocks.

*Eggs*: Similar to those of *H. ewingi*.

### ***Limnodynastes dorsalis* (Gray)**

#### *The Bullfrog*

*Description*: Two subspecies occur within the area—*L. dorsalis dumerili* to the north and west, with a relatively uniformly dark brown dorsal surface, and *L. dorsalis insularis* to the east and south, with a pale mid-dorsal stripe on a variously patterned brown and golden background. The two forms intergrade near Whittlesea.

The bullfrog is of medium size and has a typical toad-like burrowing shape. The eyes protrude to some extent, the snout is rounded, and the tympanic membrane is indistinct. The ventral surface is smooth and white with scattered brown flecks. The toes are almost completely free of webbing and a large fleshy "shovel" is present on the under-



Above:  
*Hyla ewingi*,  
Ewing's  
Tree Frog



Left:  
*Limnodynastes*  
*dorsalis*,  
the Bullfrog

*Limnodynastes*  
*peroni*,  
The Striped  
Marsh Frog



side of the foot. One characteristic feature of this species is the large flat oval gland on the leg. In breeding conditions females have flanges on the second and third fingers while males have brown nuptial pads on the inner fingers.

**Size:**

Females—61.5 mm (56.3-66.7).

Males—56.3 mm (53.1-60.8).

**Habitat:** This species occurs throughout the area. It is a strong burrower and can be found only when it is breeding in dams and deep pools or along roads on warm wet nights.

**Breeding Season:** September to December.

**Mating Call:** A short banjo-like "plonk". Males call in water,

under cover of emergent and marginal vegetation.

**Eggs:** Numerous small pigmented eggs are laid in large white frothy floating egg masses (5-7" diam.).

***Neobatrachus pictus***  
(Peters)

*The Spadefoot Toad*

**Description:** A medium-sized frog with a rounded body, short legs and large protruding eyes. The dorsal surface is light brown with a variable pattern of dark greenish-grey spots or blotches; a pale mid-dorsal stripe may be present. The ventral surface is smooth and white with grey flecking on the throats of some individuals. The snout is short and rounded and the tympanic membrane is indistinct. The toes

are joined by a full fleshy web. Breeding males have nuptial pads on the two inner fingers. Characteristic features are the vertical pupil (in the other species the pupil is horizontal), and the sharp black shovel (metatarsal tubercle) on the underside of the foot.

*Size:*

Females—44.7 mm (41.5-47.2).

Males—46.4 mm (43.8-51.3).

*Habitat:* Found to the north and west of Melbourne. An efficient burrower, it is seldom seen, except on the roads during warm wet nights, and when breeding in dams and temporary pools.

*Breeding Season:* March to May.

*Mating Call:* A slow trill in which the notes consist of single pulses. Males call while floating in open water.

*Eggs:* Numerous small pigmented eggs in a large mass of semiliquid jelly (3-4" diam.), attached to submerged grass stems.

**Limnodynastes peroni**  
(Dumeril and Bibron)

*The Striped Marsh Frog*

*Description:* A large species with a striking brown and golden striped dorsal surface. The ventral surface is smooth and white. The snout is pointed and the tympanic membrane not visible. The toes are long and free. In breeding condition the females have flanges on the first and second fingers, while in the males the inner finger is stiffened and a sharpened bone projects through the skin.

*Neobatrachus pictus*,  
the Spadefoot Toad

*Size:*

Females—63.3 mm (58.5-67.7).

Males—64.2 mm (58.0-67.8).

*Habitat:* This species occurs in the eastern section of the area, associated with extensive shallow swamps in which there is plenty of vegetational cover.

*Breeding Season:* September to December.

*Mating Call:* A short soft "pop". Males call from water, under cover of tussocks.

*Eggs:* Numerous unpigmented eggs are laid in large floating frothy egg-masses (8-9" diam.), concealed under tussocks.

**Limnodynastes tasmaniensis**  
(Günther)

*The Spotted Marsh Frog*

*Description:* A slender species of moderate size with a pale smooth back on which are numerous clearly defined greenish spots. A fine yellow mid-dorsal stripe may be present. The ventral surface is smooth and white. The snout pointed and the tympanic membrane indistinct. The toes are long and free. In breeding condition females have flanges on the first and second fingers while males have a brown



*Limnodynastes tasmaniensis*,  
the Spotted Marsh Frog

nuptial pad on the inner finger and a loose yellow-green vocal sac under the chin.

*Size:*

Females—39·4 mm (34·2-43·3).

Males—36·6 mm (35·3-39·5).

*Habitat:* Found throughout the area in shallow swampy areas, dams and roadside ponds.

*Breeding Season:* August to January.

*Mating Call:* A single short sharp "click" similar to the sound produced by striking two stones together. Males call from open water with the head and large vocal sacs protruding.

*Eggs:* Numerous small pigmented eggs in small frothy egg-masses (2-3" diam.) floating in open water.

*Crinia signifera* (Girard)

*The Brown Froglet*

*Description:* The dorsal pattern of this small species is quite variable. At one extreme the back is smooth and uniformly brown, at the other two longitudinal ridges are present with associated light and dark brown bands. The ventral surface is granular and white with various black patches. The snout is pointed and the tympanic membrane indistinct. The legs are long as are the toes, and no webbing is present. Males in breeding condition have a dark grey to black throat.

*Size:*

Females—25·6 mm (22·8-27·7).

Males—20·7 mm (18·3-22·9).



*Habitat:* A very common species found throughout the area, particularly in shallow flooded situations.

*Breeding Season:* April to December.

*Mating Call:* A short pulsed cricket-like chirp, repeated rapidly. Males call from cover of vegetation along banks of ponds.

*Eggs:* Small pigmented eggs with a firm spherical jelly are laid separately and scattered across the bottom of the pond.

*Crinia laevis* (Günther)

*The Smooth Froglet*

*Description:* Small brown frogs with variable back pattern, generally brownish. Ventral surface smooth and light grey with darker grey mottlings. Ventral surfaces of arms and legs usually with bright pink patches. The snout is slightly rounded and the tympanic membrane is not visible. The toes are long and cylindrical and without a trace of webbing.

*Size:*

Females—28·6 mm (23·9-34·5).

Males—25·5 mm (23·4-27·0).

*Crinia laevis*,  
the Smooth Froglet

**Habitat:** Found to the east of Melbourne, probably an open forest species but occurring outside the present limits of such forest. During the breeding season it is found under litter in moist situations.

**Breeding Season:** April and May.

**Mating Call:** One or two long-drawn-out calls, followed by a series of short notes, thus: "wa-a-a-ark, wa-a-a-ark, ick-ick-ick-ick . . .". Males call from depressions under moist litter.



*Crinia signifera*,  
the Brown Froglet

**Eggs:** The large pigmented eggs each surrounded by clear jelly are laid in batches in moist litter in areas which will flood during early winter.

*Pseudophryne semimarmorata*  
(Lucas)

*The Southern Toadlet*

**Description:** A small burrowing species with short legs. The dorsal colour varies from choco-

*Pseudophryne semimarmorata*,  
the Southern Toadlet



late brown to dark olive green. Numerous large warts are present over the back. The ventral surface is smooth and mottled with black and white except on the throat, posterior part of abdomen and under surfaces of the limbs which vary in colour from bright orange to flesh. The toes are short and cylindrical; no webbing is present. There is no tympanic membrane.

**Size:**

Females—29·0 mm (25·0-31·4).

Males—25·5 mm (24·6-27·4).

**Habitat:** This species occurs in the east and south of the area. During the breeding season it is found in small tunnels under litter in similar situations to *C. laevis*.

**Breeding Season:** March to May.



*Pseudophryne bibroni*,  
Bibron's Toadlet

**Mating Call:** A short harsh "creek".

**Eggs:** Large pigmented eggs are laid in shallow burrows under litter, in situations which will later become flooded.

***Pseudophryne bibroni***  
(Günther)

*Bibron's Toadlet*

**Description:** Similar to *P. semimarmorata* except that the dorsal warts are fewer, and there is often a pair of boomerang-shaped ridges over the shoulder. The dorsal colour is light to dark brown. The ventral surface is mottled with black and white. Pale yellow or orange patches may be visible on the dorsal surface of the upper arm.

**Size:**

Females—26·7 mm (26·0-28·0).

Males—25·6 mm (22·5-28·3).

**Habitat:** Occupies similar situations to the north and west of *P. semimarmorata* with which it forms a narrow hybrid zone. This intermediate area runs from just east of Wallan to just west of Somerton.



**Breeding Season:** March to May.

**Mating Call:** Same as in *P. semimarmorata*.

**Eggs:** Same as in *P. semimarmorata*.

**BIBLIOGRAPHY**

- Cogger, H. G. (1960). *Frogs of New South Wales*. Australian Museum, Sydney.
- Copland, S. J. (1957). Australian tree frogs of the genus *Hyla*. *Proc. Linn. Soc. N.S.W.* 82: 9-108.
- Moore, J. A. (1961). The frogs of eastern New South Wales. *Bull. Amer. Mus. Nat. Hist.* 121: 149-386.
- Parker, H. W. (1940). The Australasian frogs of the family Leptodactylidae. *Novitates Zool.* 42: 1-106.

## F.N.C.V. Excursion to Western Victoria

By I. M. DIXON

On Saturday morning, August 25, thirty-two club members left Melbourne by chartered coach and travelled via the Calder

Highway as far as Castlemaine, turning west through Newstead, Carisbrook, past the Cairn Curran Reservoir, to reach the city

of Maryborough in time for lunch.

Much of interest was seen on the morning journey — the quartz-strewn soil of typical auriferous country, numerous Red Ironbarks (*Eucalyptus sideroxylon*) and miles of Golden Wattle (*Acacia pycnantha*).

After lunch, under the guidance of Mr. G. Williams, President, the local F.N. Club showed us the aborigines' wells—cavities at the foot of a sandstone outcrop, containing water even in drought times.

Walking through bushland, we found the Fairy Waxflower (*Eriostemon verrucosus*) blooming freely, *Tetratheca*, Holly Grevillea (*G. ilicifolia*), Golden Wattle, and sundews (*Drosera*) bearing their white flowers. A Yellow Robin's nest, two feet from the ground in a three-way crotch of a sapling, contained two blue-green eggs blotched with brown, and on the bank of a reservoir there was an extensive spread of purple hardenbergia (*H. violacea*).

In the evening the Maryborough Club showed slides of birds and flowers of the district, and an excellent film of a "tame" mistletoe-bird. Some slides were shown by our own members, and supper followed.

Next morning we left on the next stage of the excursion, pausing for twenty minutes at the Cosstick Wildflower Reserve on the Avoca Road. The drive to Ararat was full of interest: the gradual approach to the Pyrenees Range, Amphitheatre within a circle of mountains, Ben Nevis 2676 feet high on the left, the Dividing Range at 1121 feet and the approach to Ararat with

Golden Wattle on the roadside. The journey continued to the Grampians, and a picnic lunch at Hall's Gap was shared by kookaburras on the ground and watched by currawongs in the trees. Later, from Reid's Lookout, at 2330 feet altitude, we looked down over Hall's Gap.

After a scenic drive, the party reached Horsham and was greeted by Mr. C. Kraker, President of the Horsham Club, and other local members.

On Monday, under the leadership of Mr. A. Lindner, we travelled west, and beyond Natimuk crossed the last creek between there and the South Australian border. The route continued through level country—the best wheat-growing part of the Wimmera—and to the summit of Mt. Arapiles, a pile of quartz conglomerate rising out of the plain. From two rocky vantage points we looked down on Mitre Rock, the salt Mitre Lake, and on Lake Natimuk, which is fresh, while a Nankeen Kestrel hovered below us. The principal wattle in flower was *Acacia calamifolia*; here the Golden Wattle finished flowering there two months before. Also in flower were *Eriostemon verrucosus*, Flame Heath (*Astroloma conostephioides*), *Epacris impressa* and others.

In the afternoon we visited a corner of the Little Desert, too early in the season for many flowers, but with much promise of orchids later. The soil there is very sandy, scattered with tiny wind-rounded pebbles of ironstone. There is only low vegetation, but the ground is well covered with shrubs and small plants. On the way back, five

emus were seen in a paddock, and a notable feature of the day was the number of she-oaks (*Casuarina*) along the roadside. We paused for a few minutes at Lake Natimuk; on its waters were more than a thousand swans, with many cygnets, and also some Mountain Duck.

On Tuesday we visited first the Wail Nursery, and were shown over it by Mr. Dallitz. Many interesting trees and shrubs were seen, and a much longer time could have been spent there. At the Lowan Sanctuary, five miles from Kiata, Mr. K. Hateley was waiting with a fire lit. After lunch we inspected a last year's mound, then one on which the birds have been working since last May. No lowans were seen, but we were assured they would be watching. The material—dead sticks and leaves—is dragged to the mound along a regular trail, as could be seen by markings on the ground. Egg-laying begins in December and continues into February. With Mr. Hateley and the Jordan family as guides, we explored the sanctuary and adjacent area, seeing many flowers. A highlight was one solitary plant of the desert form of Rosemary Grevillea (*G. rosmarinifolia*). Half an australite was found in a wheel track; many have been found previously, but may have been carried there by tribesmen.

On Wednesday morning we took a north-easterly direction, alighting at a swamp near Murtoa, where Little Pied Cormorants were seen flying. A large Yellow Box (*Eucalyptus melliodora*) showed promise of profuse flowering, but unfortunately many of the buds were infested

with gall insects, and were swollen out of shape.

We lunched that day on the bank of the Wimmera River, and through steady rain drove past Taylor's Lake Reservoir and eventually, the rain clearing, alighted at a paddock (private property) on the road to Mount Zero, where we found many flowers, notably some beautiful Red Correa (*C. reflexa*) and a few waxlip orchids (*Glossodia major*). After a short stay there, we entered the "Bird and Animal Sanctuary" of the Grampians area, and in the bushland in the vicinity of Mount Zero spent the remainder of the afternoon. Our halt was near a disused quarry, from which a fine-grained white sandstone was obtained in past years. *Thryptomene* was flowering plentifully in this area, as well as Flame Heath, and Pine Heath (*Astroloma pinifolium*), and there were many banksias (*B. ornata* and *B. marginata*).

The evening we spent with the Horsham Club. Mr. Barber spoke on the Australoid people, slides on natural history subjects were shown by Horsham members, by Mr. E. Muir of Dimboola and by some of our own members, and the evening ended with conversation and supper.

On Thursday our guides were the Stawell Club, led by Mr. N. Bennett, president, and Mr. Miles, secretary. Mr. Miles, Senr., showed us koalas seated high up in slender eucalypts swaying in the wind. We alighted at Silverband Falls, and visited Delly's Dell with its soft Tree-ferns (*Dicksonia antarctica*). Lunch was at Hall's Gap, and in the afternoon we drove down



Plantation Road, alighting at Rose's Gap, where were found several greenhoods (*Pterostylis*) and a few helmet orchids (*Corybas*) in flower. Indications were that helmets would be plentiful a little later. After a stop at Golton Gorge Road, where more orchids were seen, we visited the aboriginal paintings at Flat Rock. These were described in the *Victorian Naturalist* of June 1956 (Vol. 73, pp. 21-23).

Friday was spent at the northern end of Black Range. Flowering thryptomene was widespread in the area (private property) and many other flowers were seen in the bush. We walked to Picnic Rock in the morning (not all of the party climbed it) and to Red Rock in the afternoon, from the top of which a view was obtained along the range and to Mount Talbot. Mr. Hardy of Portland was the leader that day, assisted by Mr. A. C. Beaglehole.

On Saturday morning we left Horsham en route to Ballarat. A brief halt was made at a wildflower sanctuary established by the Stawell Club. At Ararat we were met by Miss L. Banfield and Mrs. Hargreaves, who took us into the Town Hall to see a fine display of aboriginal relics, collected by the late Mr. L. J. Mooney and presented by his family. Leaving Ararat by the road past Mount Mistake—the dip of its crater outlined against the sky—and its close neighbour, Mt. Langi Ghiran, we hastened on to Ballarat, arriving in time for lunch.

That afternoon Mr. Grimmins of the Historical Society led the party to the lake, where water birds were studied, to the Bot-

anic Gardens, Eureka Stockade, and Black Hill Lookout. In the evening we were entertained by the Ballarat Club, under the chairmanship of the Vice-President, Mr. P. Day, who gave a talk on the geology of the district; Mr. J. Wheeler of Geelong spoke on birds, with slides illustrating them; and interesting slides on fungi and other subjects were shown by Mrs. E. Bedggood, secretary, and other members.

On Sunday morning we travelled to Slaty Creek, six miles north of Ballarat, accompanied by many members of the local club, and in the creek bed Mr. F. Strange gave a practical demonstration of the art of gold washing. This proved most exciting, as several grains of gold were obtained. We lunched there in very pleasant surroundings, Manna Gum (*Eucalyptus viminalis*) and Common Peppermint (*E. radiata*) being the dominant eucalypts, and after lunch left for home, guided by Mr. Bedggood's car for the first few miles.

This account of our 900-mile trip is necessarily brief. Many interesting things observed have been omitted, but they remain in memory and, to those with cameras, in pictures taken.

To the many members of affiliated clubs whom we met, we are grateful, for the stimulus of their company and knowledge of the country freely imparted. It is gratifying to know that throughout the state so many people are interested not only in studying, but in assisting to preserve, where possible, the natural beauties of the countryside.

# Field Naturalists Club of Victoria

General Meeting—January 14, 1963

The president, Mr. M. K. Houghton, was in the chair, and about one hundred members and friends attended.

Members stood for a minute in silence in respect for the memory of Mr. W. Hanks, who passed away recently. Mr. E. H. Coghill spoke of his long association with the club, which he joined in 1927. Mr. Hanks had a special interest in geology, particularly in volcanoes, his last lecture to the club on his South American trip being well remembered.

The president referred to the possibility of an increased club subscription to cover increasing costs, and the desirability or otherwise of requesting a government grant for the club as an educational institution. After some discussion, the matter was referred to the council.

The evening took the form of a members' Night, organized by Mr. E. S. Hanks. Mr. C. J. Gabriel gave a most informative talk on species of the molluscan *Teredo* or Shipworm, their ravages and possible means of prevention. Many specimens illustrated the talk.

Mr. H. A. Morrison showed beautiful coloured slides of Victorian wildflowers, including five species of *Caladenia*, a blue *Boronia*, *Putterlickia subalpina* and *Caleana minor*, which he had photographed in various localities. Mr. E. Swarbrick brought five colour slides of a number of species of spiders, and described characteristic features of them. Mrs. Pinches showed colour slides of Queensland flowers, birds and localities.

Mr. A. E. Webb spoke of the effect of fire at Kalbarra, and showed eucalypts coming up where his house had been burnt down, and a fine clump of *Stachhouisia* after the fire. Mrs. Z. Lee showed colour slides of Potato-orchids, Large Duck-orchid, Small Duck-orchid, Horned Orchid, a paper wasp, and views of the Den of Nargun. Mr. J. R. Garnet described Mrs. Garnet's slides of wildflowers of north-west Victoria, "craters" in the

Little Desert, a lowan mound, a Thorny Devil, monitor lizard, Noisy Miner and a Frogmouth.

Miss P. Carolan outlined many of the diverse plant communities on Wilson's Promontory, illustrated by fine colour photographs. Mr. E. R. Allan described his pictures of aboriginal cave and rock shelter paintings of the Gramplains area.

In general business Mr. J. H. Quirk appealed to members to refrain from purchasing anything derived from the slaughter of kangaroos—meat, or leather or fur articles. Miss J. Woolard passed on a message of greeting to the club from Miss M. Wigan. Mr. A. J. Fairhall spoke of the Bairnsdale F.N.C. publication *Clematis*, for which he would take orders.

Mr. J. A. Baines drew attention to newspaper reports of the Chief Secretary's comments on the development of Wilson's Promontory. After discussion, the matter was referred to the council to find out whether Mr. Rylsh was correctly reported and if so to take what action was deemed necessary. (Leaflets issued by the Wilson's Promontory Protection Committee were available at the meeting.)

Exhibits were from: Mr. A. E. Brooks: *Bursaria spinosa*, *Melaleuca hypericifolia*, *M. nasophila*, *Grevillea aquifolia*, *G. hookeriana*, *Coryca reflexa*, *C. lawrenceana*, *C. schlechtendallii* (syn. *turnbullii*), *Eucalyptus lehmannii*, *E. cladocalyx* var. *nana*, *Acacia rhetinodes*, *Baeckea virgata*, *Swainsona gelegifolia* and *Epueris longifolia*; Mr. A. J. Swaby: *Stipa elegantissima*, *Crinum flaccidum*; Mr. A. J. Fairhall: *Melaleuca pubescens*; Mr. A. Parkin: *Eucalytus megacornuta* (Warty Yate) from Ravensthorpe, W.A., *E. cooperiana* (Many-flowered Mallee) from Esperance, W.A., and an insect gall on *E. cudesmicoides* (Myallie, or Desert Gum), also from W.A.; Mrs. D. Parkin: Pagan Wasp from Granite Rock, near Bairnsdale; Mr. E. H. Coghill: Paper Wasp (*Polistes humilis*) and cells, from Freestone Creek, and a millipede; Mr. D. E. McInnes: *Calesturia* under the home-constructed microscope.

### Geology Group—December 5, 1962

For the final meeting of the year fifteen members were present, Mr. L. Angior in the chair. Mr. R. Dodds reported on the excursion to Anglessea on Sunday, November 17, when a visit was made to the Brown Coal Mine. The manager explained the workings of the project and specimens of coal and fossil were collected.

Mr. Angior was re-elected chairman for the ensuing year, and a syllabus was arranged for the first part of 1963. Arrangements were made for the disposal of the Hansen collection of specimens amongst members interested.

The main activity for the evening took the form of a "members' night", and the following exhibits were discussed: Collection of volcanic lavas and obsidian from Lipari Islands and U.S.A., pitchstone from Scotland, pumice from New Guinea (Mr. A. Cobbett); fluorescent display using a short-wave lamp with calcite, willenite and scapolite (Mr. I. Bunton); limestone from Green Gully, Keilor, showing foraminifera under stereoscopic microscope (Mr. D. McInnes); collection of minerals from India, including mica, garnet, feldspar, beryl, jade, galena, zinc and iron ore specimens from Tata Iron Works (Mr. L. Bairstow); agates and chalcodony (Mr. and Mrs. K. Cheslin); aboriginal artifact for identification of stone (Mr. A. Scott); zeolites from older basalt, Cape Schanck (Mr. T. Sault).

The meeting closed with the usual exchange of seasonal greetings between members.

### Microscopical Group—October 17, 1962

Mr. E. Le Maistre chaired this meeting which was attended by sixteen members. In the absence of a definite lecture the evening was devoted to a general discussion of microscopy.

Mr. D. McInnes pointed out to the group the unfortunate fact that young people these days were unable to obtain a simple and cheap microscope with low powers. Instead they or their parents are forced to buy instruments which have only objectives with very high powers of magnification which were of such low quality that

they only amounted to being "toys". Mr. H. Woollard informed the group that a tap was being made which would be the property of the group and would be available for anybody to use in cutting a thread in some metal tubing such as would take standard objectives. Thus it will be possible now to do something to help the young people to make their own microscopes and buy additional objectives of different powers as needed.

The possibilities of fluorescent microscopy were discussed and it was decided to have printed in the club journal an article on all the details needed to obtain such with members' own microscopes.

Mr. P. Genery gave a short talk on some interesting aspects of aquatic entomology and, with the aid of a projection microscope, displayed to the group some living specimens.

### Microscopical Group—November 21, 1962

A special film night was held at the C.S.I.R.O., Albert Street, East Melbourne. The first film, "The Biological Control of Insects", which won for the producer, Mr. S. Evans, an overseas award, is a film which not only has scientific interest but has such colour as to make its appeal much broader. Mr. Evans described the way in which the film was produced and stressed the point that it was a group effort in which many specialists participated. Each insect was filmed at the most dramatic part of its complicated life cycle, and that was not always easy. Some of the various episodes—especially one where a wasp was seen probing fruit for fruit fly larvae with its ovipositor—must have represented a lot of work and patience, but the final result was well worth it.

The second film, which was truly a microscopic study, was a colour time-lapse film, taken under phase contrast, of living cells from insect tissue, showing various cytological changes taking place. This film was played back a second time because of its particular interest to the microscopists present.

Then groups of members were shown Mr. Evans's camera and microphotographical unit, which consists of a Reichert microscope and a special stand to take a cine camera.

Mr. Evans explained that he used

the camera with its lens in when taking photomicrographs, and to overcome the curved field usually present (which is not noticed when the microscope is used optically but is ob-

noxious in photography) he used specially corrected lenses.

The meeting was well attended and all were most enthusiastic about the films.

## F.N.C.V. DIARY OF COMING EVENTS

### GENERAL MEETINGS

**Monday, February 11, 1963**—At the National Herbarium, The Domain, South Yarra, commencing at 8 p.m. sharp.

1. Minutes, reports, announcements, correspondence.
2. Subject for Evening: "Recent Biotic Provinces in the Eastern Pacific and their Fossil Equivalents", by Professor J. A. Valentine.
3. Election of Members:

#### *Ordinary Members:*

- Mrs. Margaret Lieberman, 11 Fulham Avenue, South Yarra (M. Allender/A. Grassick).  
Mr. F. J. Clendinnen, 72 Napier Crescent, Montmorency (E. H. Coghill/J. R. Hudson).  
Mr. F. Collet, 21 Tennyson Street, Highett, S.21 (E. Swarbreck/M. Houghton).  
Mr. Ernest N. Francis, 258 Waverley Road, East Malvern (E. H. Coghill/M. Houghton).  
Mr. Vladimir Jernakov, 23 Roxburgh Street, Ascot Vale (E. Swarbreck/H. Stewart).  
Mr. Peter G. Kelly, 260 The Boulevard, East Ivanhoe (E. H. Coghill/J. R. Hudson).  
Mr. A. F. Stewart, 23 Central Avenue, Moorabbin, S.20 (E. H. Coghill/J. R. Hudson).

#### *Joint Ordinary Member:*

- Mrs. F. Collet, 21 Tennyson Street, Highett, S.21 (E. Swarbreck/M. Houghton).

#### *Country Members:*

- Mr. Harry A. Dade, 10 Benson Street, Benalla (E. Harrison/E. H. Coghill).  
Mr. Robert F. G. Swinbourne, Box 210, Alice Springs (J. H. Willis/M. Allender).

4. Nomination for Membership.
5. General Business.
6. Nature Notes and Exhibits.
7. Conversazione.

**Monday, March 11, 1963**—"East African Animals", by Miss M. Field.

### GROUP MEETINGS, ETC.

(8 p.m. at National Herbarium unless otherwise stated.)

**Thursday, February 14**—Botany Group. Dr. M. Chattaway: "English Wildflowers".

**Wednesday, February 20**—Microscopical Group.

**Friday, February 22**—Hawthorn Juniors. At Hawthorn Town Hall. Mr. D. McInnes: "First Steps to Know Your Gum-trees".

**Monday, March 4**—Entomology and Marine Biology Group. This group meets in Mr. Strong's rooms at Parliament House. Enter through private entrance at south end of House.

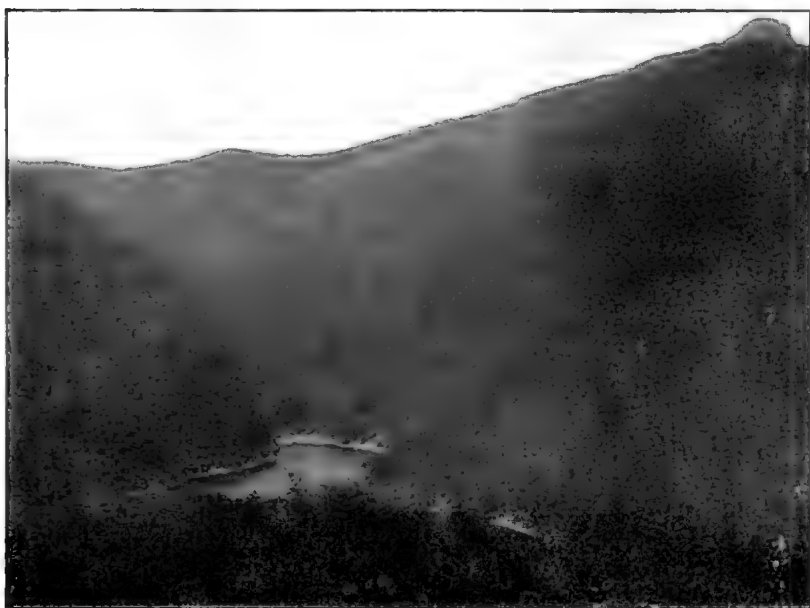
**Wednesday, March 6**—Geology Group. "Physics and Geology", by Mr. D. McInnes.

**Thursday, March 7**—Fauna Survey Group. At Fisheries and Wildlife Department, commencing 7:30 p.m.

The  
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2/6



Nest of Helmeted Honeyeater

The photograph was taken by Charles Barrett, along Cardinia Creek near Upper Beaconsfield, about thirty years ago. It is doubtful if the species survives there now. This picture, and several others, accompanied the articles that comprised a special issue of the *Naturalist*, in November 1933, devoted to *Meliphaga cassidix*, Victoria's one endemic bird.



# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.Sc.

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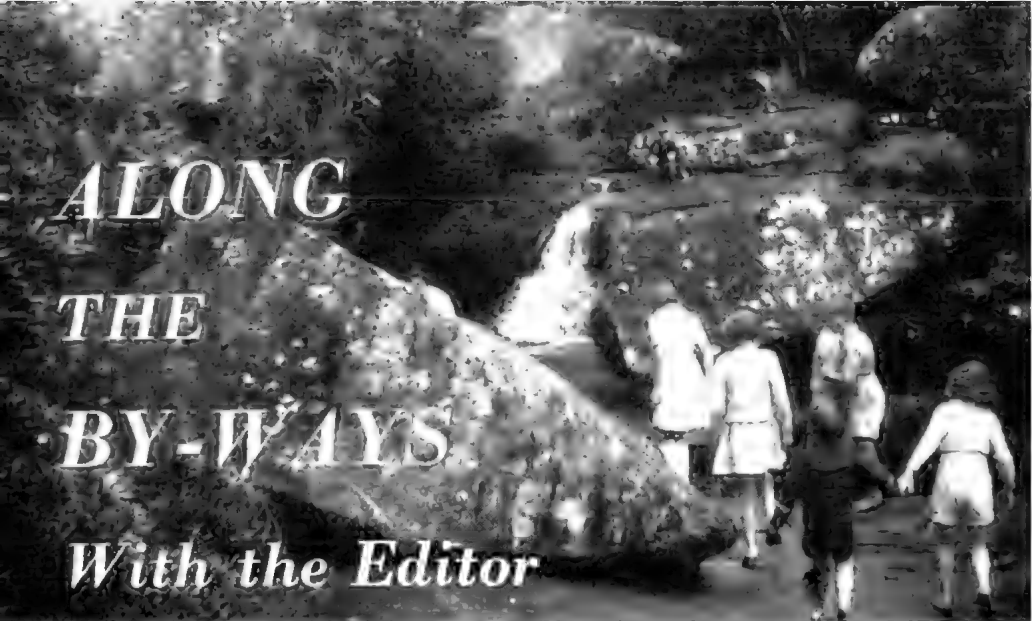
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### *Front Cover:*

A view of Tali Karng, looking east from Echo Point, on Riggall's Spur. The lake is half hidden by the upper part of the Barrier. Its area is about 23 acres, with a greatest depth of 150 ft. It is situated at an elevation of 3100 ft. above sea level, with the north-west knob of Mount Wellington rising 2000 ft. above it (on the right).

These comments, and the photograph, appeared in the *Victorian Naturalist* of June 1907, accompanying an article on the Mount Wellington district, by E. O. Thiele.



# ALONG THE BY-WAYS With the Editor

*These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.*

## Botanical Notes from Gippsland

With the formation of the Bairnsdale Field Naturalists Club two years ago, the natural history of eastern Victoria has been given its full share of attention. Here are some notes, and not a few questions, from one of that club's members, Mr. L. A. Fell of Metung:

Wildflowers have been particularly good in the East Gippsland region this past spring, and Bairnsdale naturalists have had some interesting travels to wildflower areas. Unfortunately, if anything has been impressed on us, it is the rapid advance of the bulldozer and the retreat of native vegetation. This is evident everywhere but particularly in the Dutson and Marlo Plains areas, both of which are particularly rich in species of some rarity.

South of Sale, through Dutson towards Loch Sport, on the strip of land between the Lakes and the ocean, are masses of native plants whose home is in the poor mineral-deficient areas of grey-white sandy loams. Apart from banksias and tea-tree (*Leptosper-*

*mum*), there were large areas of *Ricinocarpus pinifolius* (Wedding Bush; and why can't it be grown in gardens?), two beard-heaths (*Leucopogon*), *Astroloma*, *Brachyloma*, *Calytrix tetragona* in biggish patches, and *Dampiera stricta*. Among the rarer ones are *Thyptomene miqueliana* and *Boronia anemonifolia* (Lemon-scented Boronia). There are plenty of *Pimelia*, *Correa* and bush-peas. Why doesn't somebody get out a simplified identification list for *Pultenaea*, *Dillwynia* and similar groups? At present it is a botanist's job to identify them.

A few days after the Dutson excursion, I was up on the 2000-foot level, on a forestry road north of Bruthen, and saw apparently the same *Dampiera stricta* growing in a 40-inch rainfall area in heavy shaley clay. Does anybody know anything about the pH values that limit the growth of native plants? On this same mountainside was *Goodia latifolia*, but it was not seen until about the 30-inch isohyet, and this indicates that rainfall is a limiting factor in its spread, as I have never seen it much this side of Orhost (30 inches) along the Highway, but it is common as the rainfall increases further east. It does not like poor soil.



North of the Princes Highway, east of the Tambo River, the Colquhoun forest is an area of poor dry clayey soils that nevertheless has some wildflowers of interest. One of these is *Gompholobium huegelii*. In this area at any rate it grows only on soils with a clay base, and in this particular forest it seems to be attractive to kangaroo and wallaby, as every plant has the top nipped off. *Diuris sulphurea* also can be seen.

Along the coast, east of Marlo, I checked forty-two species of wildflowers, of which eleven were bush-peas or their allies. This area does not seem to have the rarities found around Dutton but is nevertheless most interesting.

At Lake Tyers a few days ago, within a small area, we found *Leptospermum laevigatum*, *L. coreaceum* and *L. attenuatum*. In the same area are quite a few bushes of *Elaeocarpus reticulatus*, the blueberry.

The problem which confronts the non-scientific naturalist when he attempts to identify species of *Pultenaea* or such genera which contain suites of similar species, is a very real one. It would be impossible to produce a really simple key to the fifty or more Victorian members of the bush-pea genus, or even to cover the two dozen of them that occur in East Gippsland. We can look forward however to the second part of J. H. Willis's *Handbook to Plants in Victoria*, in which keys to *Pultenaea* and other large groups will be presented with the maximum of simplification which is compatible with accuracy.

In justice to the wildflowers of the Marlo Plains, one must mention the abundance of Small Waxlip (*Glossodia minor*) in the early spring, the Bonnet Orchid and Furred Tongue-orchid (*Cryptostylis erecta* and *C. hunteriana*) in summer, besides such species as *Bossiaea ensata*, *Hybanthus vernonii* and *Leuco-*

*pogon esquamatus*, all of which may be seen in or about the 3-acre wildflower sanctuary near the Marlo racecourse.

We await Willis's book too, for a clear exposition of our twenty-odd Victorian species of *Leptospermum*. The Green Tea-tree (*coreaceum*) is confined to the north-west; and it is probably merely a variety of *L. laevigatum*. Furthermore, the true *L. attenuatum* is the paper-bark tree plentiful on the heathland flats of the Genoa district, whereas the widespread riparian shrub which used to pass under this name is correctly known as *L. sericatum*.

### Gannets of Cat Island

A note from Mr. Leonard E. Wall of Hobart, refers to the picture and comments published in the January *Naturalist*:

The photo on the cover shows Gannets nesting at Cat Island, and you ask whether they still breed there. As far as I know, a few, possibly twenty, were reared last season, but it is extremely doubtful whether that will continue for many years.

For about twelve years after the last war, the Tasmanian Fauna Board posted a warden on the island throughout the breeding season to prevent raids by fishermen, who used the birds for baiting their crayfish pots, and so try to build up the breeding population. This was not successful, and the Board reluctantly gave up the project two years ago.

We fear that the rookery is doomed.

### Abnormal Colouration in Orchids

Mr. Wall commented also on the notes published under this heading in the "By-ways" column of the same issue (*Vict. Nat.* 79: 264):

Your correspondent, T. L. Richardson, reports albinism in the Fringed

Spider-orchid, and asks whether the phenomenon is unusual. In my favourite orchid patch not many miles from Hobart I have frequently found caladenias (both *dilatata* and *caudata*) of a plain creamy colour. I have one of the latter growing in a pot.

### Flowers Interstate

Miss Jean Galbraith has been on a northerly excursion. Here are her comments on two very beautiful native wildflowers which, in Victoria, have very limited distribution:

It is interesting to see, in other states, plants growing abundantly which we regard as rarities.

For example *Goodenia barbata*, which few of us have seen growing in its East Gippsland habitat, is abundant north of Coonabarabran in New South Wales, where we walked through its stiff scarcely spreading bushes, up to shoulder high, dotted with large *Dampiera*-like mauve flowers and so glandular that they were noticeably rough to the touch.

Similarly, on top of a granite ridge in southern Queensland there were dozens of bushes of *Stylidium laricifolium*, not small ones as they are at Wingan Inlet but bushes up to a yard across, densely leafy, with flower-stems a foot or more above the leaves bearing clouds of little pink flowers.

The growth pattern of this giant trigger-plant is remarkable, and the size it attains depends on how long its enemies—bush-fires, browsing animals, and perhaps adverse seasons—allow it to grow.

In its first flowering season (probably at two years of age) the stem is undivided, about 18 inches high, and surmounted by an inflorescence something over a foot long and several inches across. After the inflorescence withers, four laterals grow from

its base, each attaining about 18 inches in length and producing its individual inflorescence.

Few plants are allowed to proceed further, but if they do, the geometric progression continues, and in its third flowering season, the trigger-plant has sixteen branches and sixteen inflorescences. One such plant was seen near Wingan Inlet in East Gippsland on December 5, 1948, and, though not technically good, its photograph is reproduced here to vindicate our Victorian colony of the species. With the scale of the picture half-an-inch to the foot, it can be seen that the plant is six feet high, its foliage spreading three feet and its inflorescences with a spread of four feet six inches.



Giant Trigger-plant near Wingan Inlet.

Photo: N. A. Wakefield.

# Sub-fossils from Mount Hamilton, Victoria

By N. A. WAKEFIELD\*

Between May 1961 and February, 1963, members of the Cave Exploration Society of Victoria and of the Fauna Survey Group of the Field Naturalists Club of Victoria made collections of sub-fossil bones in the main lava cave at Mount Hamilton, 110 miles west of Melbourne. Some of the material is now in the palaeontological collection of the National Museum of Victoria, and the remainder of it is to be placed there also. By this means, all the Mount Hamilton material will be kept together.

The tunnel system has yielded remains of about 290 native mammals, representing 26 species. Of these species, three are prehistoric, two are known as modern animals only from Tasmania, and another ten species are today no longer present in Victoria. A few of this last category have become extinct since European occupation of Australia. Some of the species represented have not been recorded previously for Victoria. Thus the animal remains from Mount Hamilton provide valuable data on past distribution of native mammals. Furthermore, the species represented indicate that climatic and vegetational changes have occurred in the locality during the period of deposition of the bones.

Much of the bone material was of the consistency of wet chalk, and many specimens were disturbed and crushed by cave explorers, while others were

fractured by handling in the process of collecting. When dried out, however, bones hardened and became quite durable.

Most of the Mount Hamilton specimens have become pigmented, and individual bones may be light orange in colour, for example, whilst others are dark reddish-brown. The rate at which this pigmentation has occurred in a specimen would depend partly on the wetness of its location, and this varies greatly throughout the cave system. Nevertheless, there is some correlation too between colouration and antiquity, so degrees of pigmentation are noted in the following discussion.

## SUMMARY OF SPECIES

### Family *Dasyuridae*

*Sminthopsis crassicaudata*. Three specimens were found, each with all or most of the skeleton present. One was a little pigmented, but two retained the colour of fresh bone. Today, the Fat-tailed Dunnart is scattered on the northern and western plains of Victoria.

*Dasyurus quoll*. There were skeletal remains of at least twenty individuals, the bones ranging in colour from ivory to red. The greater proportion of these appear to be quite modern.

The quoll population of south-eastern Australia was almost

\*Department of Zoology and Comparative Physiology, Monash University, Clayton, Victoria.

eliminated by an epidemic about 1902, but it survived on the Western District basalts until at least 1936 (Littlejohns, 1938).

*Dasyurops maculatus*. The species is represented by material of two or three animals, and all of it appears to be old—either strongly mineralized or deeply pigmented.

The "tiger-cat" survives in scattered localities in southern Victoria. During the past two years, it has been recorded several times about the Otway Ranges and once in the basalt country at Tyrendarra, towards Portland.

*Sarcophilus harrisii*. The Tasmanian Devil was well represented, and specimens were found of about sixty individuals. Much of the material is deeply pigmented, but many specimens appear to be quite modern. One mandible still had pieces of dried tissue adhering to the bone.

As a living animal, the species is confined to Tasmania. However, fossil and sub-fossil remains of it have been recorded from many places in southern Australia, including several localities in central and western Victoria. Radiocarbon dating has determined the age of the site of one Victorian specimen as 550  $\pm$  200 years B.P. (Gill, 1953).

*Thylacinus cynocephalus*. A maxilla, a dentary and some limb bones, presumably of the one individual, were found associated. The dentition was juvenile, with the posterior molars not erupted. The specimens are neither mineralized nor deeply pigmented, and therefore do not

appear to be very old. However, they were located in a relatively high dry position in the tunnel system.

As an extant animal, the thylacine too is exclusively Tasmanian. On the Australian mainland, fossil records indicate a previous distribution similar to that of the "devil", though there are fewer specimens of the former. In Victoria, thylacine remains have been found previously near Gisborne and along the lower Glenelg River. (Gill, 1953).

#### Family *Peramelidae*

*Isoodon obesulus*. There were skulls and mandibles representing about four adults and one juvenile, but the degree of pigmentation varied.

The Short-nosed Bandicoot is extant in near-coastal districts of Victoria and about the Grampians, but available information does not include the basalt plains in its present distribution.

*Perameles gunnii*. The Barred Bandicoot provided remains of about eighty individuals, the specimens ranging from modern-looking to apparently quite old. The species still survives on the western basalt plains of Victoria.

#### Family *Phalangeridae*

*Trichosurus vulpecula*. There were specimens representing three adults and two juveniles. One of the latter still had much black organic matter about the skeleton, but other material appeared to be quite old.

#### Family *Phascolomidae*

*Phascolomys mitchellii*. Skull parts were collected of two adults

and one juvenile, all apparently quite old. The Common Wombat is plentiful in central and eastern Victoria, but in the south-west it occurs only in isolated areas.

#### Family *Macropodidae*

***Bettongia gaimardi***. A strongly pigmented skull and a modern-looking ramus, both with juvenile dentition, correspond closely to sub-fossil specimens from Buchan (Wakefield, 1961) and to modern material from eastern New South Wales. As well, an adult maxilla was found, of the same species but with heavier dentition than in other adult Victorian specimens.

There are museum specimens of this bettong, taken in central Victoria about a hundred years ago, but it no longer exists in this state.

***Bettongia lesueur***. There are well-preserved skulls and mandibles of several individuals, all of which are deeply pigmented.

The "boodie" is a burrowing species, inhabiting semi-desert areas of Australia. There is no modern record of it for Victoria. Several, secured by the Blandowski expedition in 1867, have been labelled as from the "junction of the Darling and Murray Rivers", but they probably originated a considerable distance north of the Murray.

***Aepyrymnus rufescens***. In the Mount Hamilton lava tunnels, specimens of the Rufous Rat-kangaroo were more abundant than those of any other macropod. The species was represented by remains of at least twenty individuals, most of which were juvenile. In age, the

material appears to vary from fairly modern to quite old.

Last century, *A. rufescens* was known as a living animal in north-central and north-eastern Victoria, but it no longer survives in this state.

***Potorous tridactylus***. There was the skull of one juvenile individual and this shows a medium degree of pigmentation. The potoroo still exists in the Portland district and about the Otway Ranges, in southern Victoria.

***Onychogalea unguifer***. There were specimens of several mandibles and one maxilla, representing at least six individuals, all juvenile. Most of the material is deeply pigmented, but other appears to be fairly modern.

Troughton (1957) states that the distribution of the Sandy Nail-tail Wallaby is "from the Broome district of north-western Australia, around the Northern Territory, to the Normanton district . . . of Queensland", and that it is "almost entirely coastal".

Though far removed from the present habitat of the species, the Mount Hamilton material can be identified, amongst modern Australian macropods, only as *O. unguifer*. Compared with specimens from northern Australia, this Victorian cave material is similar in size and shape of the teeth which are present (lower incisors, premolars and some molars) as well as in shape and sculpture of mandible. In the southern specimens however, the coronoid process is broader than in those from the north.

*Onychogalea fraenata*. A dentary and a maxilla were collected, apparently belonging to the same individual. These are fragile but not pigmented.

In New South Wales, the Bridled Nail-tail Wallaby has been recorded as far south as Wagga, but there is no definite record of it as a living animal in Victoria.

*Thylogale billardieri*. There was a single mandibular fragment, with permanent dentition (premolar and four molars). It appears to be a comparatively old specimen, and the teeth are smaller than in a sub-fossil series of the species from the Portland district.

The Red-bellied Pademelon occurred in near-coastal areas of southern Victoria until about the beginning of the present century. It has died out completely on the Australian mainland.

*Protemnodon greyii*. The Toolache Wallaby was represented by the remains of at least seven animals: two adults, a sub-adult and four juveniles. Apart from the characters of the premolars and molars, the slightly perforated palate and the sizes of upper incisors were diagnostic in this material.

*P. greyii* was well-known as a South Australian animal until its extinction about 1927, and Finlayson (1927) reported its one-time occurrence "through a small strip of Victorian territory contiguous to the border". However, other than those from Mount Hamilton, no Victorian specimens are known, either modern or fossil.

*Macropus major*. Two maxillary fragments and a dentary, possibly of the one animal, are identified as the Grey Kangaroo. These have juvenile dentition and appear to be fairly modern. There are also pieces of maxilla, mandible, femur and tibia, comparable in size with corresponding parts of a large Grey Kangaroo, but not specifically identified. The latter lot is strongly mineralized and apparently much older than the former. The species is widespread in Victoria.

*Macropus cf. siva*. There were two dentaries, the molars of which are intermediate in size between those of modern kangaroos and of large wallabies. These are strongly mineralized and apparently quite old. One specimen was sent to A. Bartholomae of the Queensland Museum, who reported that it compares closely with *M. siva* De Vis, an extinct Pleistocene species.

**Giant Kangaroo.** A macropod foot-bone (distal phalanx of fourth digit) was found. In linear measurement it is about 20 per cent larger than the corresponding bone of a large Grey Kangaroo. A number of genera and several species of giant kangaroo have been described from the Pleistocene.

#### Family *Thylacoleonidae*

*Thylacoleo carnifex* (?). A single claw-bone (ungual phalanx) was found, measuring approximately 2½ inches long and 2 inches deep. Similar specimens from eastern New South Wales were attributed by Krefft to a

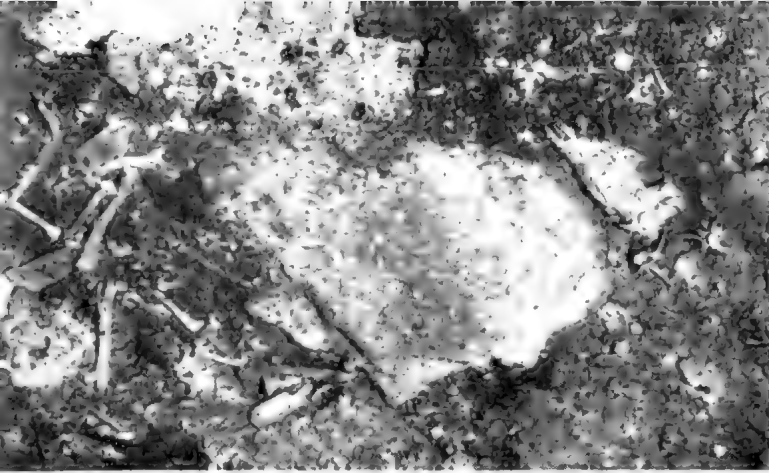


Figure 1.  
Skeleton of  
*Peromyscus*  
*gunnii* in lava  
tunnel at  
Mount  
Hamilton.  
This had  
been protected  
by a flat slab  
of basalt.

member of the Edentata (sloths) which he named *Mylodon? australis*. Owen and Lydekker have each suggested that they belong to *Thylacoleo*, the extinct "marsupial lion", but Etheridge (1918) states that two kinds of animal were represented in Krefft's material; and the matter is not yet resolved.

#### Family Muridae

**Hydromys chrysogaster.** The Eastern Water-rat, which is widespread in Victoria, was represented by one skull, apparently quite modern. There is a small lake about a mile from the site but no permanent water in the immediate vicinity of Mount Hamilton.

**Rattus lutreolus.** Two deeply pigmented skulls and a recent-looking dentary were collected. The Eastern Swamp-rat today has colonies in various parts of southern Victoria, including the Western District basalts.

**Pseudomys sp.** Remains were collected of about twelve individuals, which belong to the *australis-auritus-minnie* group of this genus. The material ranges

from deeply pigmented fragments to complete skeletons with much black organic material still persisting. Specimens, presumably of the same species, have been found in several other caves in south-western Victoria; and this rat probably survived in this region as recently as a century ago.

**Pseudomys sp.** Also represented in the Mount Hamilton cave is much material of a second *Pseudomys* species of unknown affinities. It represents an animal larger than the preceding species and apparently more plentiful. Remains of over thirty individuals were collected, most of which are moderately pigmented, but in one case there was a complete skeleton still covered with organic material.

Specimens of the same species have been found elsewhere in Western District basalt caves, and it too evidently survived there until modern times.

**Conilurus albipes.** Specimens of at least a dozen individuals were collected. They represented juvenile and mature animals and appeared to range from old to

Figure 2.  
Parts of  
skeletons of  
two quolls  
(*Dasyurus  
quoll*), in lava  
tunnel at  
Mount  
Hamilton. The  
bones had  
been partly  
eaten.



quite modern. Apparently no museum specimens of this large rabbit-rat, as a living Victorian animal, have been preserved, but there is evidence that it survived in this state until well after European settlement here (*vide* Parris, 1950, pp. 187-8).

#### *Introduced Mammals*

Skeletal remains of numerous rabbits (*Oryctolagus*), a few sheep (*Ovis*), a ferret (*Putorius*) and a domestic mouse (*Mus*) were present in the tunnel system.

#### MODES OF DEPOSITION

Amongst loose stone, in the tunnel that ends approximately 250 feet north of the entrance, there was an accumulation of leaves of banksia and blackwood. These could not have reached there by way of the present entrance. The specimens of *Thylacinus* and giant kangaroo were found at the same place. The large claw (supposedly of

*Thylacoleo*) came from nearby: about 200 feet north-west of the entrance. In these tunnels which lead off the "cairn chamber", were many fragments of large limb bones such as kangaroo femurs. This material was strongly mineralized and apparently very old.

These details indicate that previously the upper (northern) section of the cave system had at least one opening more direct than the present entrance and that there were connexions to the lair or lairs of predators strong enough to bring in pieces of big macropods and to crush their largest bones.

Most of the bones of modern species, but also some very old ones, were found in the lower passages, to the east, south and west of the present entrance. They were scattered in the tunnels, with no apparent pattern of distribution. In many cases complete skeletons were present (see figure 1). The



deposition of all or most of this material evidently took place when the cave had its present entrance, down which animals could enter, or fall, but through which they could not climb out.

As well as those that fell in, some of the dasyuroids ("devil" and quoll) may have entered the cave in pursuit of prey. Carcasses and even old bones would be eaten by starving animals, as is demonstrated by marks of gnawing on the bones of "devils" and by the partly eaten skeletons of the two quolls illustrated in figure 2.

Some trapped animals evidently lived for considerable periods in the cave, for there are accumulations of faeces on slabs of rock even in the remote southern tunnel leading to the "pool chamber". The scavenging of these individuals apparently cleaned up much bone material, for a major proportion of what was eventually collected was found under slabs of basalt that had fallen from the roof (see figure 1). Because of their size, specimens of "devils" (*Sarcophilus*) remained in comparative abundance, though even their mandibles often had the posterior processes broken off.

#### INDICATIONS OF CLIMATIC CHANGE

Today, the Mount Hamilton environment is well-grassed sheep pasture, devoid of trees except for shelter belts which have been planted. A few specimens of Silver-leaf Banksia (*B. marginata*) and Blackwood (*Acacia melanoxylon*) are growing in a small fenced rocky depression not far from the cave.

Bedrock protrudes here and there, and there are detached boulders and stones embedded in the soil. Occasionally depressions occur, with broken rocky sides, indicating present or past connexions with caves. Air draughts issue from crevices in some of these depressions.

In its natural state, before fencing and grazing, the Mount Hamilton area would have provided suitable habitat for *Sminthopsis crassicaudata*, *Dasyurus quoll*, *Perameles gunnii*, *Trichosurus vulpecula*, *Protemnodon greyii*, *Macropus major* and *Hydromys chrysogaster*. Probably in the same category are *Conilurus albipes* and the two species of *Pseudomys*; but these murids, and other species of the pseudomid group, seem to have suffered extinction, due to some factor unknown, during the early years of white settlement in Australia. In the Mount Hamilton tunnels, there were obviously modern remains of the eight smaller of these species (excluding the macropods). These were represented by unaltered bones, in some cases with associated organic matter, similar to the remains there of rabbits, sheep, mouse and ferret.

A second group of species comprises *Dasyurops maculatus*, *Sarcophilus harrisi*, *Isododon obesulus*, *Phascogale mitchelli*, *Potorous tridactylus*, *Aepyprymnus rufescens*, *Bettongia gaimardi*, *Thylogale billardieri* and *Rattus lutreolus*. From our knowledge of these as living animals, they all belong to somewhat wetter conditions and less open vegetation than the Mount Hamilton area would have pro-

vided immediately prior to European settlement. Some of these species may have inhabited the locality very recently, but none was represented in the lava cave by specimens that are obviously very modern.

*Bettongia lesueur* falls into a third category, being an animal of semi-desert regions. All relics of it at Mount Hamilton appear to be very old, and its one-time presence there indicates a period of drier climate than we have at present. The two species of *Onychogalea* too probably occurred in western Victoria when conditions were more arid than they are today.

A fourth category includes the giant kangaroo, the small *Macropus* (cf. *siva*) and the large-clawed species (*Thylacoleo* ?), all three of which presumably became extinct about the end of the Pleistocene. The *Thylacinus* may be grouped with these, for there is no evidence available of its survival on the Australian mainland within the past several thousand years, and it lives now only in high rainfall areas of Tasmania.

The grouping of the Mount Hamilton mammals into these four categories, and the inferences that are drawn regarding variation in climate and vegetation, can be aligned nicely with major fluctuations which occurred during the Holocene in south-eastern Australia according to Gill (1953a, 1955, 1955a). These papers include evidence of a comparative arid period between 4000 and 6000 years ago, followed by conditions wetter than the present of the order of 3500 years ago.

#### ACKNOWLEDGEMENTS

I wish to thank the Directors and staff members of the National Museum of Victoria and the Australian Museum, Sydney, and the Chief and Research Officers of the C.S.I.R.O., Canberra, for opportunities to examine comparative material in connexion with identification of specimens discussed in this paper. Some of the expenses of field work and other research were defrayed from the M. A. Ingram Trust and the C.S.I.R.O. Science and Industry Endowment Fund.

#### LITERATURE CITED

- Etheridge, R., 1918. The ungual phalanges termed *Myalodon australis* by Krefft, Spetazan Animal vel *Thylacoleo* by Owen, and *Thylacoleo* by Lydekker. *Ann. Mag. Nat. Hist., Ninth Series, 2*: 307-318, Pl. 18-20.
- Finlayson, Hedley Herbert, 1927. Observations on the South Australian members of the subgenus, "Wallabia." *Trans. & Proc. Roy. Soc. S. Aust.*, 51: 363-377.
- Gill, Edmund D., 1953. Distribution of the Tasmanian Devil, the Tasmanian Wolf, and the Dingo in S.E. Australia in Quaternary Time. *Vict. Nat.*, 70 (5): 86-90.
- , 1953a. Geological evidence in Western Victoria relative to the antiquity of the Australian aborigines. *Mem. Nat. Mus. Vict.*, 18: 25-92.
- , 1955. Radiocarbon dates for Australian archaeological and geological samples. *Aust. J. Sci.*, 18 (2): 49-62.
- , 1955a. The Australian arid period. *Aust. J. Sci.*, 17 (8): 204-206.
- Littlejohns, R. T., 1938. The bush by night. *Vict. Nat.*, 55 (1): 3-11.
- Parris, H. S., 1950. From Melbourne to the Murray in 1839. *Vict. Nat.*, (10, 11): 183-190, 203-210.
- Troughton, Ellis, 1957. *Furred Animals of Australia*, Sixth edition, Angus and Robertson, Sydney, p. 190.
- Wakefield, Norman, 1960. Recent mammal bones in the Buchan district—1. *Vict. Nat.*, 77 (6): 164-178.

# The Mount Hamilton Lava Caves

By C. D. OLLIER\*

The Mount Hamilton lava caves are among the most interesting in Victoria, if not in the world: they are the longest complete tunnel system, the most elaborate in plan, and they contain a wealth of well-preserved volcanic formations and mineral deposits.

The caves are situated on the southern flank of the extinct volcano, Mount Hamilton, at Nerrin Nerrin, about 30 miles west-south-west of Skipton and about 110 miles west of Melbourne.

To reach the caves from Nerrin Nerrin, pass the homestead and take a boundary track which runs anti-clockwise around the base of the mountain until a clump of trees on the southern flank is reached. These mark a closed depression, and the entrance to the caves is in open ground about 150 yards to the east. The entrance is a tight squeeze and involves a twelve-foot drop into the main chamber. Because of the lack of footholds near the bottom, a short length of rope is advisable, especially for the climb out. The wire netting and stones which block the hole should be replaced at the end of a visit. The entrance leads into a large collapse chamber floored with rockfall. This is in the middle of the system, and a number of passages lead from the chamber both uphill and

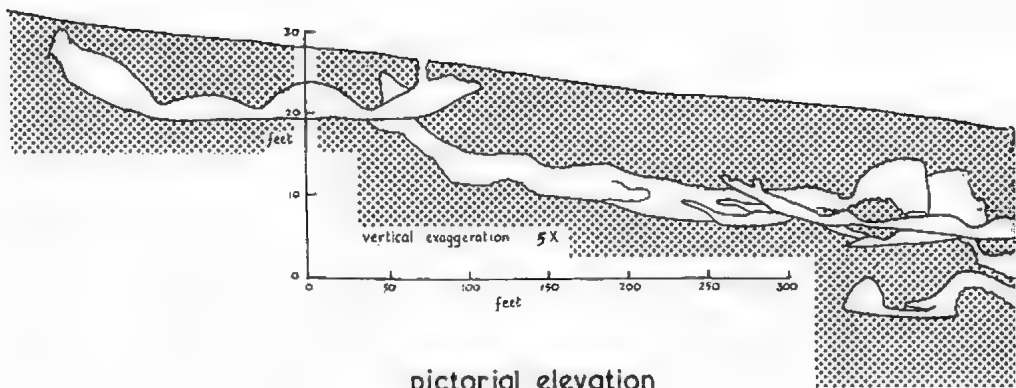
down. The passages repeatedly branch, an unusual feature of lava caves that is far more common in Mount Hamilton Cave than in any other lava cave so far described.

The aggregate length of all known passages in the system is 3162 feet and the total distance from the northernmost to the southernmost extremity is 1000 feet. The volume of air inside the cave is so large that a considerable draught blows out of the cave during the day and into it during the night.

The passages are typically tunnel shaped, and many are quite perfect in form with arched roofs up to 15 feet high, and smooth even floors up to 20 feet wide. The cross sectional shape is generally semi-circular but becomes horseshoe-shaped in one of the western passages. Some are remarkably straight in plan, and the best follow straight courses with uniform cross section for about 50 yards. Others are more irregular, and the passages are often linked by larger chambers. Branching and anastomosing are encountered, and a very fine example of a bifurcation, with a column left between two tunnels, is seen in the small passage east of the entrance.

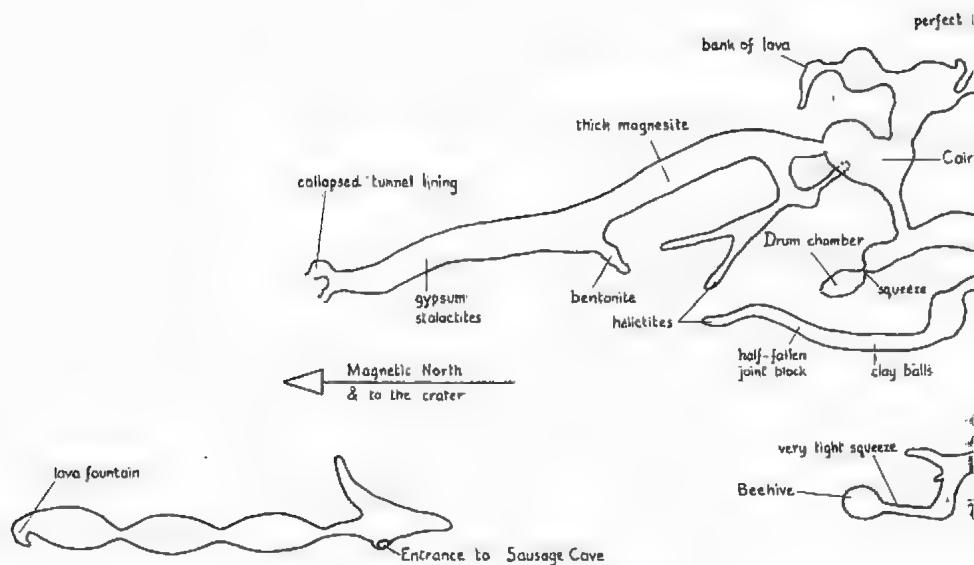
Some of the passages shown on the map are very low and can

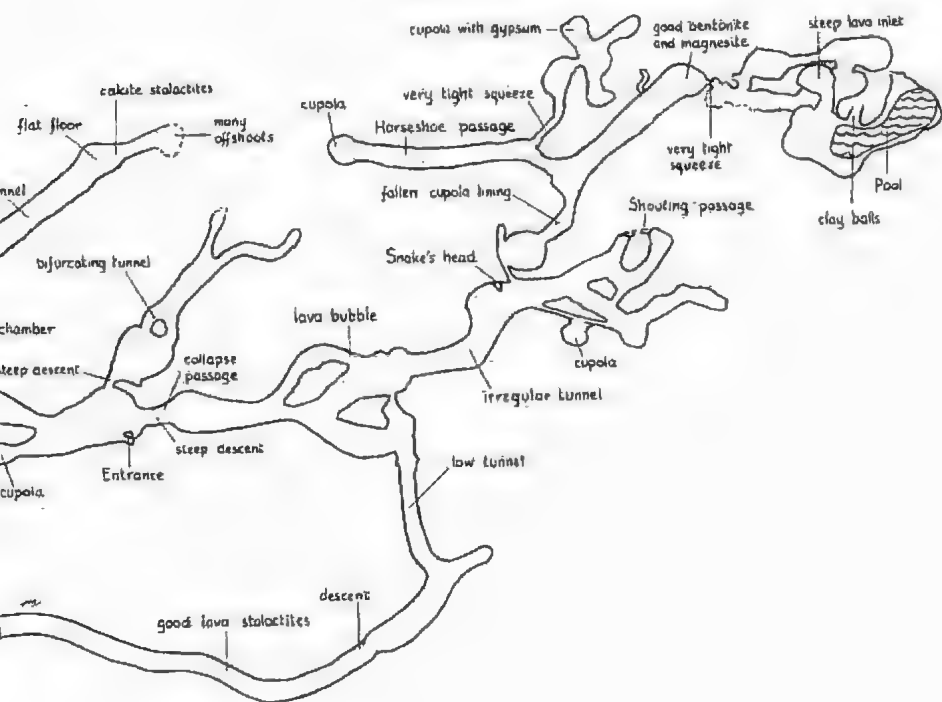
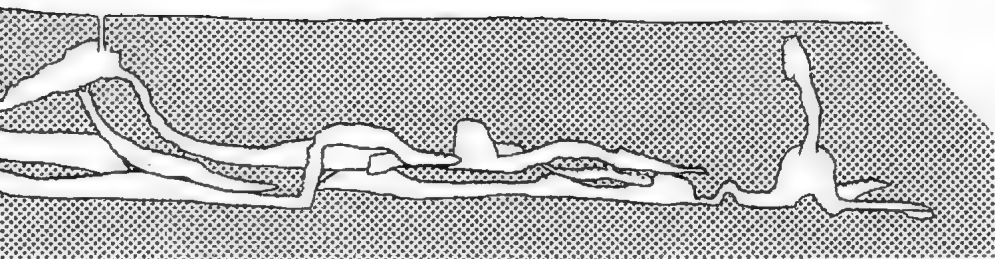
\*Geology Department, University of Melbourne.



## MOUNT HAMILTON LAVA CAVE

### plan





be negotiated only by slim people. The entrance to the Beehive is a good example and, incidentally, has a particularly rough lava floor to add to discomfort. Sometimes the passages expand upwards into domes or cupolas, which are frequently found at the end of passages but can also occur along their length. The Beehive is a very fine example, being about ten feet high, completely lined with an unbroken lava skin and almost circular in plan. The big chamber at the entrance is evidently due to collapse for, as seen in long section, the tunnels above and below appear to be continuous except for the floor of this chamber.

Small tributary tunnels join the main tunnel occasionally. These usually have a horizontal, lenticular cross-section and appear to have been squashed flat when they lost their lava, having been more circular when full. They usually extend for only a few feet, and sometimes there are vertical strands of lava joining the top and bottom surfaces, like treacle stretched between two pieces of bread.

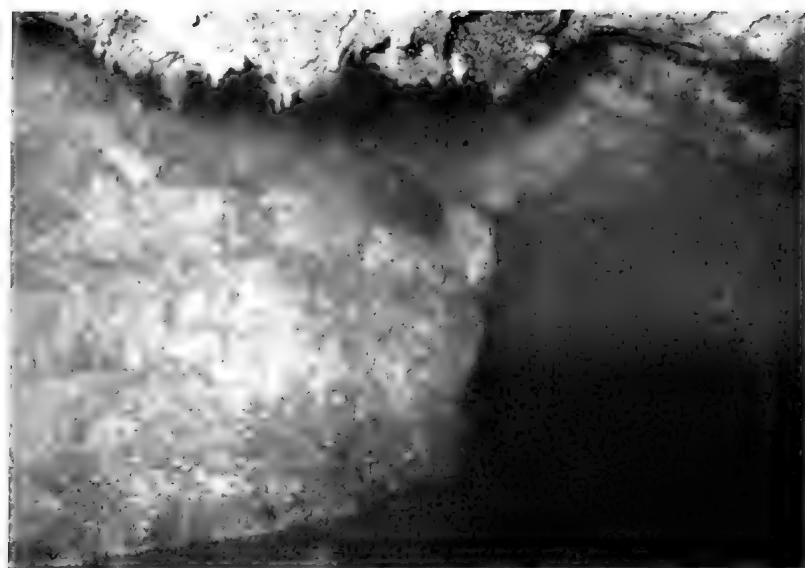
Many of the tunnels have a lining of lava, which was left behind when most of the lava drained away. It was evidently still somewhat liquid, and dripped down to form lava stalactites. These are fairly abundant in many of the passages, and are of different sorts depending on the viscosity of the lava from which they formed. Some are broad and stumpy, others are frothy and irregular, but none are very long. The biggest lava stalactite so far reported from

Mount Hamilton Cave is seven inches. The lining has sometimes pulled away from the wall of the tunnel. In one spot a large gas pocket was formed behind the lining and then burst, and the frothy flanges of the broken bubble are still perfectly preserved. In another place the lining of a cupola has collapsed in one piece, and now rests like an inverted cup of lava on the floor.

The mode of formation of the caves is very complex and will be described in detail elsewhere, but in brief they originate by something like the following mechanism:

The caves were formed after the surface of a large lava flow from the crater cooled into solid rock. (At Mount Hamilton the surface is very smooth, so the lava was emitted in large liquid sheets, not as viscous individual lobes as often happens.) Beneath the surface crust the lava was slower to cool, and so remained liquid for longer. When most of this lava had reached a viscous or plastic stage the remaining liquid lava became segregated in domes and cylinders. Then there was a breach in the lava crust, and the liquid lava ran out leaving voids or gas-filled chambers behind. For some reason they were not completely drained but remained partly full of lava at the end, so they have semi-circular cross sections. Since their formation there has been some rockfall, especially in the larger chambers, and there is an accumulation of rockfall debris on some of the floors.

Other interesting features of the cave are of non-volcanic



View of Pool Chamber at Mount Hamilton, showing lava stalactites and water.

*Photo: N. A. Wakefield.*

origin. Gypsum crystals occasionally line roofs and walls, and it is probable that they were once far more plentiful than nowadays, for the best examples are only found in remoter passages. The gypsum is usually in the form of curved, tusk-like crystals, and in a few places there are beautiful delicate helictites of gypsum, with branching spiral form, which grow up to five inches long.

It is to be hoped that future visitors will not collect or destroy these splendid formations, which, as far as Victoria is concerned at least, are unique to the Mount Hamilton Cave.

A few rather poor specimens of calcite stalactites are also found, mostly in the northern passages.

Rock salt is encrusted on the roofs of at least one passage, but the exact location of this mineral in the cave has been lost.

Many of the floors have a covering of clay, and in parts there is an abundance of beautiful specimens of a brown variety of bentonite, probably a type of nontronite. This occurs as small blocks, with very shiny surfaces revealing many parallel layers of clay, looking like highly polished wood. Bentonite, derived from weathering basalt, has a remarkable power to absorb water, which causes it to expand. If specimens from the cave are very gently heated to drive off water, cooled and then placed in water, they absorb water so fast that the blocks break up into small flakes with quite audible cracking sounds. The best specimens of bentonite are found at the end of the passage just north of the squeeze to Pool Chamber.

Many of the clay floors sound hollow, as in Drum Chamber, which is named from the noise

made by kicking the floor. Possibly the shrinking clay causes hollow spaces below the floor. In other places, as near the pool, the clay takes the form of clay balls which range from marble to cricket ball size, and may completely cover the floor.

In a few localities there are irregular deposits of white earthy material within the clay, which consist of magnesite, another mineral resulting from the weathering of basalt. Again, the best specimens come from near the squeeze north of Pool Chamber.

The cave has evidently been a death trap for many animals, and bones are quite common in some passages, especially south of the entrance. These include remains of several species no longer surviving in Victoria, and they will be described in a separate article.

North of the main cave is a smaller separate one, called Upper Mount Hamilton Cave, or Sausage Cave (because of its shape). Apart from a short broad branch near the entrance, it consists of a single straight cave running uphill. It is constricted both laterally and vertically in several places, so that there are narrow squeezes between several easy sections. At the top end the cave finishes in a chamber about ten feet high, with a small but impressive lava fountain where lava formerly entered the tunnel. The roof here is irregular and gives the impression of being very close to the surface, and gypsum helictites are fairly abundant.

Finally, visitors to Mount Hamilton may like to add extra

interest by climbing the slopes up to the crater itself, one of the best in Victoria. The whole system is one of the most notable features on this third largest lava plain in the world.

#### ACKNOWLEDGEMENTS

Thanks are due to members of the Victorian Cave Exploration Society for help in exploring and surveying the caves, and to Mr. W. Collins, manager of the Mount Hamilton Property, for his generous hospitality.

#### NOTES ON THE SURVEY

The cave was surveyed by prismatic compass, reinforced linen tape and abney level. Pool Chamber and Beehive Passage were surveyed by C. D. Ollier and K. W. W. Double, and the rest of the cave was surveyed by C. D. Ollier, P. Mathews and J. Noonan. The survey was plotted by C. D. Ollier and P. Mathews.

Plotting of caves presents difficulties because the width is variable and a floor level plan would not be the same as a roof level plan. The same problem is present with the cave profile, for the maximum height is not always in the centre of the passage, and might be considerably different from the average height. The map therefore shows accurate lengths and directions, but heights and widths are necessarily rather subjective. The pictorial elevation shows the passages as seen from the west, projected on to a north-south vertical plane. Some of the eastern passages are therefore hidden behind the western ones which are in front.



# Occurrence of the Western Pigmy Possum, *Cercaërtus concinnus*, in Victoria and New South Wales

By R. MARK RYAN\*

Thus far the known distribution of the Western pigmy possum, *Cercaërtus* (= *Cercartetus*) *concinnus*, embraces the south-western portion of Western Australia, north to Sandstone, north-east to Bulong, and east to Balladonia (Glauert, 1933) and near Cocklebidy (Lundelius, 1957); Kangaroo Island (Waite and Wood Jones, 1927) and the Mount Lofty Range in South Australia (Wood Jones, 1924). This form has not been known to occur east of the Mount Lofty Range.

On December 1, 1961, I collected an adult female specimen of *C. concinnus* on the edge of the Little Desert, approximately 6 miles south-east of Kiata, Victoria. Two weeks later, a juvenile female of this form was brought to the National Museum. This second specimen was collected by W. G. D. Middleton in the Wimmera Forest Nursery at Wail, Victoria. Subsequent examination of the collection in the National Museum yielded an additional four specimens of *C. concinnus* collected previously in other Victorian localities, and one from New South Wales.

The specimens examined indicate that in its eastern distribution *C. concinnus* ranges from Trentham Cliffs, New South Wales, across the Murray River

southward through Ouyen and the Little Desert, to Edenhope, Victoria (Figure 1). This is probably a continuous distribution from localities in the Mount Lofty Range, as there are two specimens of this form in the National Museum, collected at Purnong, South Australia.

This distribution includes much of the Mallee and Wimmera Districts of Victoria. Together, these contiguous areas are plains, characterized by warm to hot temperatures, and receive the lowest annual precipitation in Victoria. Increasing from north to south, the mean annual rainfall ranges from about 10 to 20 inches, and approaches 25 inches near Edenhope, the southernmost Victorian marginal record of *C. concinnus*.

The New South Wales and Victorian range of the Western pigmy possum is peculiarized by vegetation of the semi-arid mallee type in the north, mixed sclerophyll mallee and heath in the Little Desert, and scattered low layered woodland in the southern extremes, as described by Wood and Williams (1960). Scattered stands of the mallee tree, *Eucalyptus dumosa*, are found throughout the northern two-thirds of this range; *Bank-*

\* Curator of Mammals, National Museum of Victoria, Melbourne.

sia, *Xanthorrhoea*, and annual flowering shrubs are common throughout.

The Trentham Cliffs, New South Wales, specimen was found close to the ground in a mallee stump. At the edge of the Little Desert, the adult female specimen was secured from an

abandoned bird nest, approximately nine feet above ground, in a mallee tree. The immediate area was covered with a dense stand of mixed mallee trees and banksia. The specimen from Wail was found alive in a pile of dry leaves on the ground. This juvenile female measured 93.0 mm,

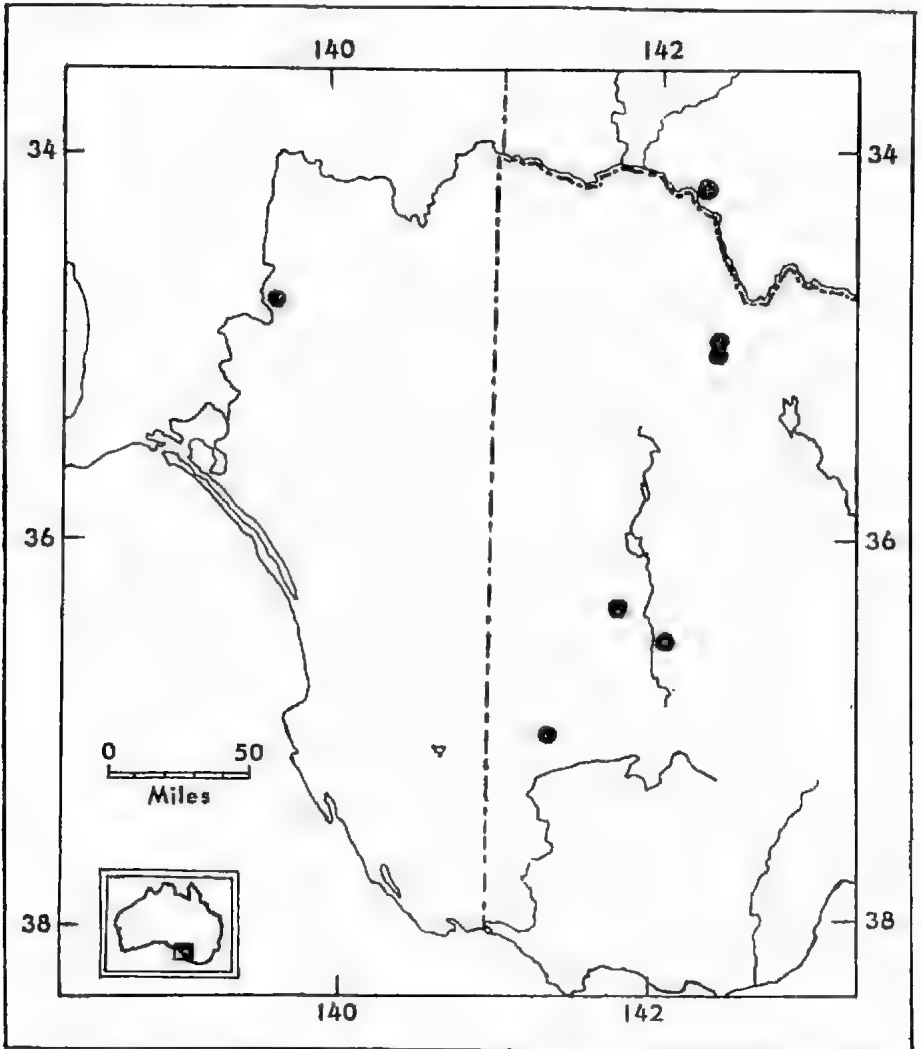


Figure 1—Map indicating the eastern occurrence of *Cercaërtus concinnus*.

TABLE 1  
Average and extreme measurements of 15 adult specimens of  
*Cercaërtus concinnus*.

Average measurements shown in bold face.

	Western Australia ♂♂, ♀♀			South Australia ♂, ♀			Western Victoria and New South Wales ♂, ♀♀		
Total length	166.7-	<b>168.6-</b>	202.0	142.7-	<b>155.3-</b>	168.0	±139.0-	<b>±150.2-</b>	165.6
Tail, vertebrae	80.0-	<b>87.0-</b>	86.0	71.3	<b>80.8-</b>	90.3	±73.0-	<b>±79.9-</b>	85.9
Hind foot	10.0-	<b>12.0-</b>	15.0	10.1-	<b>13.7-</b>	12.6	10.9-	<b>11.5-</b>	12.0
Ear from notch	13.0-	<b>14.1-</b>	15.0	13.3-	<b>14.5-</b>	15.3	±11.5-	<b>±14.3-</b>	16.1
Tail ratio (%)	89.9-	<b>108.5-</b>	127.5	100.0-	<b>191.1-</b>	162.1	102.1-	<b>114.8-</b>	124.5
Skull, total length	20.4-	<b>21.1-</b>	21.7	20.4-	<b>21.1-</b>	22.0	19.0-	<b>20.1-</b>	22.0
Skull, basilar length	77.7-	<b>18.5-</b>	19.2	15.0-	<b>18.0-</b>	19.8	16.6-	<b>±17.7-</b>	±20.5
Rostrum, length	0.6-	<b>7.1-</b>	7.6	6.7-	<b>6.8-</b>	6.8	5.7-	<b>8.6-</b>	7.2
Rostrum, breadth	3.5-	<b>3.9-</b>	4.1	3.7-	<b>4.0-</b>	4.2	3.5-	<b>3.6-</b>	3.6
Interorbital constriction	3.5-	<b>4.0-</b>	4.3	3.6-	<b>4.0-</b>	4.1	3.7-	<b>3.9-</b>	4.0
Zygomatic breadth	13.9-	<b>14.2-</b>	14.6	13.7-	<b>±13.9-</b>	±14.9	12.6-	<b>13.2-</b>	13.9
Braincase, breadth	9.2-	<b>9.5-</b>	9.9	9.2-	<b>±9.6-</b>	±10.0	±8.9-	<b>±9.4-</b>	9.8
Braincase, depth	8.6-	<b>8.8-</b>	9.1	8.0-	<b>9.0-</b>	9.0	8.4-	<b>8.8-</b>	9.2
Palate, length	9.7-	<b>10.3-</b>	11.0	10.0-	<b>10.1-</b>	10.2	9.3-	<b>9.6-</b>	10.0
Palate, breadth	3.7-	<b>4.1-</b>	4.3	3.6-	<b>4.1-</b>	4.2	3.7-	<b>3.9-</b>	4.2
Mesopterygoid	±1.9-	<b>±2.5-</b>	2.7	2.6-	<b>2.6-</b>	2.7	±1.4-	<b>±2.0-</b>	2.3
Bulla, length	5.7-	<b>6.5-</b>	7.0	5.6-	<b>6.0-</b>	6.4	5.2-	<b>5.8-</b>	6.9
Bulla, breadth	4.2-	<b>4.8-</b>	5.0	4.3-	<b>4.2-</b>	4.6	3.9-	<b>4.3-</b>	4.4
Between bullae	1.5-	<b>1.9-</b>	2.5	1.3-	<b>±1.8-</b>	2	1.2-	<b>1.8-</b>	2.1
Molar row	2.2-	<b>2.5-</b>	2.6	2.4-	<b>2.3-</b>	2.7	2.5-	<b>2.7-</b>	2.9

total length; 51.0 mm, tail. The Edenhope specimen, collected September 26, had four pouch young measuring 10.0 mm to 12.3 mm crown to rump. No natural history data are available for the other three Victorian specimens.

In a form as small as *C. concinnus*, ranging over 1500 miles (Western Australia to New South Wales and Victoria), one might expect geographical variation, or subspeciation, to be evident. Comparison of specimens from four localities in Western Australia with two from South Australia, the one from New South Wales, and the six from Victoria, however, indicates that *C. concinnus* does not vary significantly between the extremes of its distribution. Wide individual variation occurs, but specimens from the eastern

states are much the same in their average measurements as those from Western Australia (Table 1). Whatever morphological differences may exist are not demonstrated by the small series presently available.

Specimens examined — New South Wales, 1: Trentham Cliffs; Victoria, 6: Little Desert (approximately 6 miles SE. Kiata); 2, Wail, Ouyen, near Ouyen, Edenhope; South Australia, 2: Purnong; Western Australia, 7: Albany, 3, Nanarup, 2, Tambelup (W.A. Mus.), Manjimup (W.A. Mus.).

#### ACKNOWLEDGMENTS

Grateful acknowledgment is extended to Mr. H. F. Thomas of Irymple, Victoria, for useful data on the New South Wales specimen, and to Dr. W. D. L. Ride, Director of the Western Australian Museum, for the loan of specimens.

#### LITERATURE CITED

- Glauert, L., 1933. The distribution of the marsupials in Western Australia. *J. Roy. Soc. Western Aust.*, 19: 17-32.
- Lundelius, Ernest, 1957. Additions to our knowledge of the ranges of Western Australian mammals. *Western Aust. Nat.*, 5: 173-182.
- Waite, Edgar R., and Frederic Wood

- Jones, 1927. The fauna of Kangaroo Island, South Australia. 2. Mammals. *Trans. & Proc. Roy. Soc. South Aust.*, 51: 322-325.
- Wood, J. G., and R. J. Williams, 1960. Vegetation. In: *The Australian Environment*, pp. 67-84, 3rd Ed. C.S.I.R.O. & Melbourne Univ. Press.
- Wood Jones, Frederic, 1924. *The Mammals of South Australia*. Pt. II. Govt. Printer, Adelaide, p. 193.

## Field Naturalists Club of Victoria

### General Meeting—February 11, 1963

About eighty members and friends were present and Mr. M. K. Houghton presided.

A letter from the secretary to the Chief Secretary was read, expressing the views of the F.N.C.V. Council concerning Mr. Rylah's letter in the *Age* giving his ideas on the development of Wilson's Promontory. The reply to this letter was also read.

The secretary announced that the Council of the F.N.C.V. will make an application for a Government grant for the club.

The subject for the evening was "Recent Biotic Provinces in the Eastern Pacific and their Fossil Equivalents" by Professor J. A. Valentine, a Fulbright research scholar from the University of California. Though a province was originally defined in 1835 as an area within which 50 per cent of the population is endemic, the stature of province is now accepted if even a slightly lower proportion is endemic. Professor Valentine outlined the influence of temperature and salinity, and the causes and directions of vertical and horizontal currents in the ocean provinces. The talk was illustrated by maps projected by epidiastroscope. Mr. R. Dodds thanked the speaker for his informative lecture, and wished him well in his work in Australia.

Exhibits included a rust-coloured nymph of a long-horned grasshopper (Miss M. Allender); beetles from the Pyramids at Murrindal (*Metriorhynchus rhipidius*, and *Pseudolycaus haemorrhoidalis*) by Mr. Coghill; views of Bairnedale and Lakes Ent-

rance districts in 1922 to show changes in the tree cover since that time (Mrs. E. Bennett); and spines of sea urchins in different colour illuminations under the F.N.C.V. microscope (Messrs. D. E. McInnes and W. C. Woollard).

Ten new members whose names appear in the February *Naturalist* were elected.

### Geology Group—February 6, 1963

Twenty-three persons, including four visitors, were present, with Mr. L. Angior in the chair. The secretary paid a tribute to the late Mr. W. Hanks and referred to the illness of Mr. J. Mead. A letter was read from Mr. Clayton M. Smith, Pt. Huron, Michigan, U.S.A., offering to exchange fossils with members.

The subject for the evening was "Geology in Colour", and slides were shown and discussed, as follows: Pictures of minerals taken whilst under ultra-violet light, including calcite, willemite, uranium ores, copper ores, quartz crystals, polished malachite and galena (Mr. Ian Bunton); Hawksbury sandstone sections in Sydney area, glacial pavements and "stranger rock" at Derrinal (Victoria), stream formations at Beechworth, Werribee Gorge, granite headland and old water-wheel turned to stone at Point Leeuwin W.A. (Mr. D. Hemmy); micro-granite, contorted chert and manganese mine at Heathcote; limestone at Mt. Gambier, volcanic crater and surroundings of Mount Schanck (S.A.), concretions in Jurassic sandstone near Anglessea, lava flows at Stony Rises (Mrs. J. Cheslin); limestone ejectamenta in

lava from Mount Duneed (Mr. L. Angior). Picture of old survey tree stump in Snowy River area, volcanic stumps of the Warrumbungles (N.S.W.), opal fields at Lightning Ridge, sluffing for tin and sapphires (Mr. A. Cobbett).

**Exhibits:** Turquoise, moss agates, large quartz crystal (Mr. A. Cobbett); marble being used in new Spencer Street Railway Station (Mrs. J. Cheslin); zeolites (Mr. T. Sault); gneiss from Cape Leeuwin (W.A.), granite from Warby Range being used in extensions to Anglican cathedral at Wangaratta, (Mr. D. Henmy); limestone from Buchan (Mr. D. McInnes); various minerals from India (Mr. L. Bairstow); fossil sponge from Buchan (Mrs. M. Salau); punice from Tongarira (North Island, New Zealand) (Miss P. Young).

#### Fauna Survey Group—February 7, 1963

Fourteen members and friends attended this meeting which was chaired by Mr. N. Wakefield. Most members had reports to make about their activities over the Christmas period and points arising from their observations were discussed at some length. Mr. Wakefield made some preliminary comment on a *Naturalist* article to deal with Mount Hamilton area and informed the group that this particular locality warrants comprehensive examination with regard to Pleistocene and Recent bone deposits. Arrangements were made for a group excursion to Mount Hamilton to facilitate this.

Mr. J. McCallum commented on the discovery of a perfectly stratified series of bone and vegetable deposits in the Mabel Cave in East Gippsland. This discovery provides a further extension to the already considerable task involved in the analysis of East Gippsland material by the group.

#### Marine Biology and Entomology Group—February 4, 1963

Seventeen members attended the meeting, which was chaired by Miss E. Macfie. Apologies were received from Mr. M. Houghton and Mr. P. Genery.

It was announced that Miss Hupe Macpherson, Curator of Molluscs, National Museum, will give a series of lectures on marine biology for the Council of Adult Education, commencing in March, for a period of ten weeks.

Many interesting specimens obtained during the holidays were exhibited and commented on by members.

Mr. D. McInnes reported on the group outing at Beaumaris on Sunday, January 27. In spite of a very windy day the rocks yielded some interesting marine life. Mr. McInnes displayed the tubeworm, *Galeolaria*, under the microscope constructed recently by himself, Mr. Woollard and others, securing an excellent resolution of this beautiful little marine worm.

Mr. E. Coghill showed several species of insects, among which was a very early stage of a frog-hopper (one of the Cercopidae), and, on behalf of Mrs. Z. Lee, a paper wasp, *Polistes humilis*, taken near Bairnsdale.

Mr. R. Condon showed dragon-flies, damselflies and cicadas, while Miss L. White discussed an as yet unidentified polychaete worm.

#### Botany Group—December 13, 1962

The last meeting of the year was a members' night, when many slides were enjoyed, followed by a supper and conversazione. Mr. F. Zirkler showed attractive views of the English countryside, with such wildflowers as bluebells, crocuses, daffodils and orchids growing in lovely settings in woodlands, fields parks and by-ways. Miss McLaren showed Australian wildflowers in their natural habitats, while Mr. and Mrs. K. Cheslin had taken excellent close-ups of our native flora.

Mr. Hugh Stewart discussed specimens of the rarer plants of the Bairnsdale and Lakes district, his pressed material proving very useful to those who were soon to spend a week there on the club's excursion.

The chairman (Mr. J. A. Baines) extended a special welcome to Mr. Vladimir Jernakov, who, born in Omsk (Siberia), had spent over thirty years as curator of the Museum in Harbin (Manchuria).

## Botany Group—February 14, 1963

As Dr. M. Chattaway was unable to give her talk on English wildflowers, the subject was dealt with by further showings of colour slides taken by Mr. and Mrs. Zirkler on their recent tour. The famous Kew Gardens in their many aspects and activities were a highlight.

Mr. and Mrs. Cheslin showed many slides of acacias and eucalypts both common and less common, as well as

numerous other wildflowers. A remarkable exposed tree root on an Anglesea roadside created much curiosity.

The chairman welcomed Mr. Ralph Foster, a forestry officer from Leeds (Yorkshire), and Miss Pearce from Tasmania.

Miss Alison Hooke will lead a group excursion to Lysterfield and Kallista to study eucalypts, on Sunday, March 31.

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**THE VICTORIAN NATURALIST**. Except for about half the numbers of the first nine volumes (1884 to 1893), almost all back numbers of the journal are obtainable from the club. Assorted lots are available, dealing with particular subjects (mammals, birds, orchids, geology and anthropology).

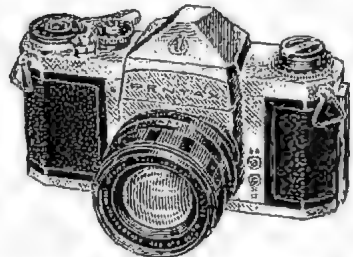
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April, 1963



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2/6



Magnificent stand of White Mountain Ash, *Laculiptas reginae*, in the Marysville State Forest

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# The Victorian Naturalist

*Editor:* NORMAN WAKEFIELD, B.SC.

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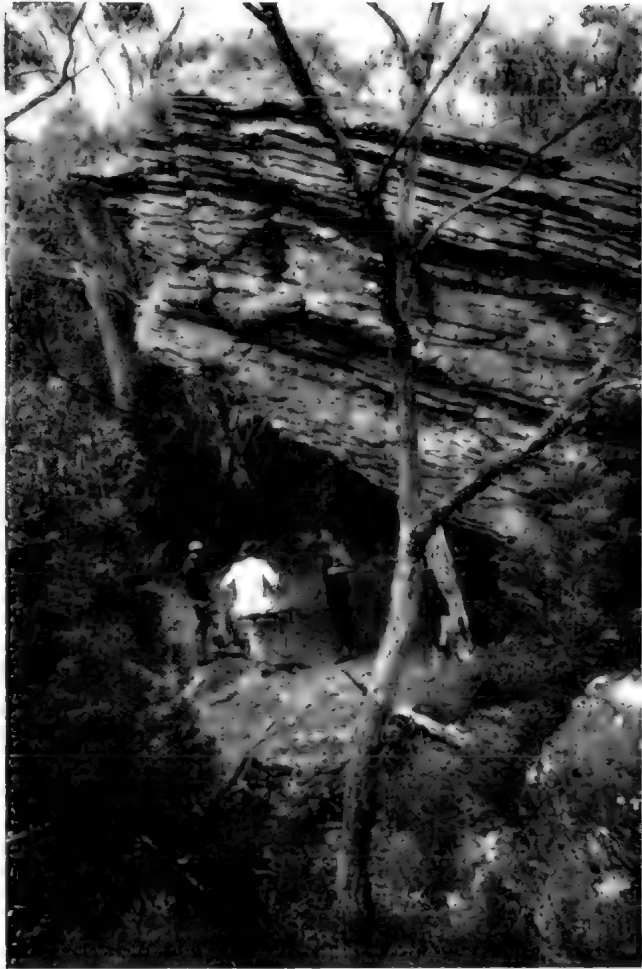
*Front Cover:*

These are Straw-necked Ibis, *Threskiornis spinicollis*, at Lake Borrie, near Werribee, Victoria. The rookery is within a sanctuary, which comprises part of the Melbourne and Metropolitan Board of Works Farm. (*Photograph: Fisheries and Wildlife Department.*)

## Black Range Shelters

By A. MASSOLA

Shelter No. 2.  
Black Range



Black Range is the name of a chain of hills, running parallel to and about twelve miles to the west of the Grampians. The Black Range has the same geological history as the Grampians, but lacks the unbelievable grandeur, the immense number of crags, and the fantastically shaped rock formations of the latter. Perhaps for this reason the motorist, speeding along the Henty Highway with this noble

skyline to the east, is often unaware of the hills visible in the west. Yet the Black Range is not uninteresting, once the highway is left behind and the sandy tracks of the foothills reached. The country is magnificent, and its fauna and flora make it a paradise for the bush walker and naturalist.

As far as is known this part of the country was originally the home of a group of the Buandik

tribe, whose collective territory reached from the north-western Grampians to beyond Mount Gambier. Some time before white occupation of the Wimmera, the Buandik had been dispossessed of the western Grampians and the country as far south as Coleraine, by the Jardwa, a Wimmera tribe. The taking over of another tribe's territory was rather a rare occurrence in aboriginal Australia. Wars were never waged for territorial aggrandisement; tribal boundaries were well known and respected, and the only territorial infringements were by marauding parties, who "invaded" the enemy country to seek revenge for imaginary or real wrongs, these latter generally caused through quarrels over women.

If any part of the country, for any cause whatsoever, had become depopulated, it would be inherited through intertribal marriages and inter-group alliances, the offspring of which would claim "right" to it, to all it produced, and to the animals upon it. The country could then pass to another tribe.

If, on the other hand, the land contained a totemic "centre" the initiated members of which had become extinct in the one tribe, then initiated members of the next group or tribe, or even, if none of these were available, members of an allied, or intermarrying totem, would be bound to "look after it". In this case they would continue to perform the sacred ceremonies at these places until the juvenile members of the original totem reached maturity. The ceremonies of

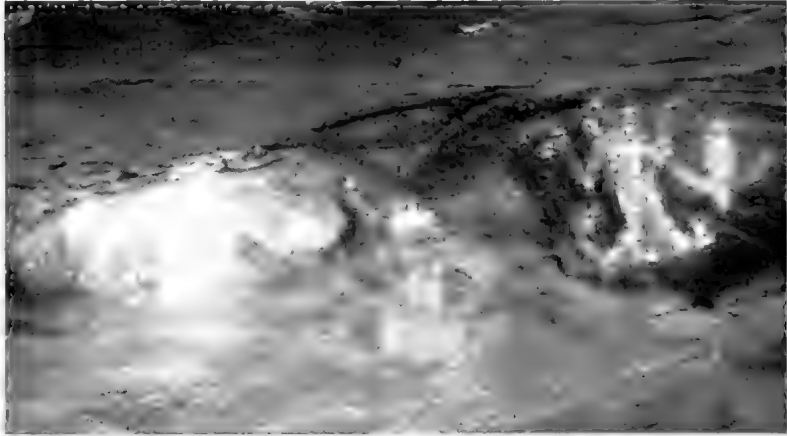
the several totems were generally known to the old men of the other totems, as they would frequently have been present as spectators when these were carried out.

Because of the peculiar conception beliefs (see "New Aboriginal Rock Paintings in the Victoria Range", *Vict. Nat.*, Vol. 75, p. 73, 1958), a new member of an extinct totem could be born generations after the last member had died, always providing that the totemic centre had in the meantime been properly "looked after" by the performance of the necessary ritual. The new-comer would be regarded as the rightful owner of the ritual and of the sacred myths of the totem.

It is impossible, at this stage, to arrive at a conclusion as to which cause led to this part of the country being taken over by a different tribe. There is no question, however, that when S. Carter established Glenisla the natives in occupation were the Jardwa, and that, as Carter himself stated in his "Reminiscences of the Early Days of the Wimmera", these natives knew nothing about the paintings on the Victoria Range, claiming that they were the work of the people who were there before them.

Although the aboriginies did not mention to Carter that there were any painted shelters in the Black Range, the existence of one had been rumoured for many years; the late A. S. Kenyon even conducting a search for it as far back as 1929. Although he was unsuccessful, the rumours continued, the last referring to

White figures  
in Shelter  
No. 2



a "cave" on the walls of which were painted some "hands", said to be in a faded condition.

Eventually my guide and companion of so many Grampian searchings, Mr. Ian McCann, of Stawell, by persistent enquiries, was able to gather enough information to warrant his leading a party\* in search of the shelter. Even so, I did not think that it would be our good fortune to see *two* shelters in the Black Range.

Black Range Shelter No. 1 proved to be located at Red Rock, northernmost extremity of the Black Range. It is a most commodious shelter, fully 55 feet long and at least 12 feet wide, facing north-east and with a floor of sandstone slabs and boulders. Judging by its proximity to a station homestead and the faint traces of faded red ochre on the wall, this must have been the shelter about which the rumours originated. We could not see any "hands" however, the only complete or recognizable figures

being the representation of a lizard, in red ochre, 8 inches long, and, about 35 feet to the north of it, a human figure, 9 inches tall, also painted in red.

There can be little doubt that the two surviving figures at shelter No. 1, belong to the Lizard style, so many examples of which are found in the Victoria Range, west of Glenisla. All the paintings of this class are executed in identical style, and appear to belong to the same mythological cycle. They are obviously the work of the same school, if not of the same artist. The only information these new examples added to our scant knowledge was that there must have been some mythological connexion between the Black Range and the Victoria Range.

The discovery of the second shelter had been communicated to me by Mr. Ellis Tucker, of Brit-Brit, the finder of the now famous Shelter of the Camp of the Emu's Foot (see *Vict. Nat.*, Vol. 77, p. 188, 1960). This second discovery was purely accidental. Mr. Tucker and other

\*Other members of the party were E. Tucker of Brit Brit, L. K. M. Elmore and K. M. Walker of Hamilton.

members of the Hamilton Field Naturalists Club were on a botanical excursion when they stumbled upon it.


Black Range Shelter No. 2. is situated on the north-eastern base of a single tor, some miles to the south of Shelter No. 1, on the north-western side of the main range. It is a beautiful shelter, 23 feet wide, 21 feet deep and 15 feet high at the entrance, the ceiling sloping back to about 8 feet. The floor is sandy and exhibits abundant signs of many fires, and many fragments of emu egg-shell were collected from the surface, together with a few stone flakes. The entrance of the shelter faces north-east.

The paintings on the walls are fresh-looking and in good condition. They represent two distinct periods, the older figures done in red ochre, and the new in white pipeclay, the latter often superimposed on the red paintings. At the top left are some indistinct symbols in white, then an oval 8 inches by 5½ inches, originally in red but later covered with white, enclosing a small bird track, barely one inch long, also in white. A little to the right there is a similar bird track, but almost two feet in length; then a stick figure 8 inches long, in red, and close to it two indistinct red marks. To the right of these are 14 bird tracks, spread over the wall, all in white. These range from two to five inches in length. At the right bottom corner of the wall, on a small ledge, are

three figures in dancing or running attitude, in white. At least one of these figures was superimposed over red, as this colour is showing through the white. Unfortunately, this part of the wall is being covered by a hard green stain, or lichen growth, which we were quite unsuccessful in removing. It is possible that other figures may have already been covered by this green stain. A low ledge, like a stone seat, runs along the base of the wall at this point. It is well polished by use.

The three white human figures are of the greatest interest. The fact that they are identical in style and execution to the Ghosts at Lah Arum, in the Northern Grampians (see *Vict. Nat.*, Vol. 78, p. 335, 1962) suggests that the one tribe was responsible for both examples. The red figures, on the other hand, belong to the Lizard style of the western Grampians. The fact that in this shelter the white figures and symbols are painted over the red, demonstrates that the white are the younger of the two; consequently the white figures must be the work of the Jardwa, while the red must belong to the earlier people, the Buandik.

While no known methods enable the paintings to be dated, thanks to this chance discovery of the Hamilton field naturalists we are at least in the position to know that there are two occupational strata in the Grampians. Further discoveries along these lines may ultimately reveal the full story.



# ALONG THE BY-WAYS With the Editor

These columns are available each month for your nature notes and queries. Address your correspondence to the Editor, "Victorian Naturalist", P.O. Box 21, Noble Park, Victoria.

## Wattles on Treeferns

This note comes from Mr. David J. Frost, West Gippsland Hospital, Warragul:

While exploring a gully at the foot of the Strzelecki Ranges, I observed two trees of blackwood (*Acacia melanoxylon*) each growing from the upper end of a trunk of Soft Treefern (*Dicksonia antarctica*). On examination, the roots of the trees were found to be partly embedded in the treefern fibre and extending to the ground. The ferns were approximately six feet high, and the blackwoods were ten to twelve feet high.

Several other examples were seen, where the same thing had occurred with Silver Wattle (*Acacia dealbata*), the latter being well established trees with only small remnants of the treeferns remaining. This method of propagation appears to be accidental, and I should like to know if it has occurred in other areas.

This sort of partnership is actually quite widespread. Seeds of trees, shrubs and smaller

plants germinate freely in the fibre of trunks of the *Dicksonia*. The Banyalla (*Pittosporum bicolor*), for instance, is often a lodger on treefern trunks, though blackwoods are the commonest ones.

## Occupation of Nests by Fledglings

Following the recent discussion in these columns (*Vict. Nat.*, vol. 79, page 295) of young swallows returning to their nests, Mr. J. R. Hudson has these comments to make:

I have been interested to read the notes in "Along the By-ways" on swallows returning to the nest after fledging. I have no information on the Welcome Swallow; but I have observed this behaviour with the Streaky-breasted Swallow (*Hirundo abyssinica unitatis*) in Kenya. A pair of this species used to nest on the verandah of our house, and for two

or three days after fledging the young returned to the nest in the evening. As the nest was up against the ceiling and had a long spout, rather like that of the Australian Fairy Martin, the young had some difficulty on the first evening in finding their way back. My wife and I have watched with some amusement how the parents demonstrated to the family, sitting in a row on the verandah rail, how to enter.

Returning to the nest is perhaps quite normal in the swallow family. The *Handbook of British Birds* (Witherby et al.) states under the European Swallow (*H. rustica rustica*): "Young, after fledging, return for a time to roost in the nest"; and the related House Martin (*Delichon urbica urbica*) apparently goes to extremes for "during breeding both parents generally roost in the nest, and young and old continue to roost in it until migration, even during incubation of second clutch".

On December 1, 1962, during the afternoon of a very hot day, a brood of three young goldfinches was out on the branch of a *Prunus* tree in our garden at Essendon. The nest was on the same branch and at dusk all the young birds were back inside. In this instance the fledglings had never moved far from home; but it would appear that returning to the nest is not restricted to the swallows amongst the nidicolous families of birds.

### Birds at Wyperfeld

Under this heading, two months ago (*Vict. Nat.*, vol. 79, page 295), some observations were published, which had been sent in by Mr. H. R. Hobson, of Rosebery. In a subsequent letter, Mr. Hobson points out that the proper name of the Black-backed Wren is *Malurus melanatus* (the mistake was an editorial lapse), and he goes on with these notes:

The lowan mound that I mentioned before was visited again on January 5, and a young bird was observed with-

in 300 yards of it. The chick was about six to seven inches high, with greyish-white spots on the wings and back; and it was very active, with legs well developed at that stage.

On February 16, another chick was seen within sixty yards of the mound. It was younger than the other had been, and I was able to follow it as it fluttered onto dry fallen wood and onto the ground again. I walked quietly after it until it hid under a dry stick and I was able to walk right up to it.

### Readers' Requests

Mr. F. N. Pears, of 24 Dunstan Street, Macleod, is undertaking a study of Victorian spiders, with particular reference to the Attidae (Jumping Spiders), and would like to receive specimens from any part of the state. Specimens may be sent alive provided the atmosphere of the container remains moist: a wad of slightly moistened cotton-wool may be included. Alternatively, spiders may be preserved in a 2:1 alcohol-water solution, or in methylated spirits to which a small quantity of glycerine is added. Date and locality are essential data, but any other observations would be most welcome.

Mr. Dennis M. Walsh, 15 Harrison Street, Box Hill North, a junior club member, wishes to breed butterflies, and would like to have eggs, larvae or pupae of species that feed on common trees and shrubs. Specimens of food plant, or information about it, should be sent with each specimen.

Note: The Editor thanks those who have contributed to these columns during the past year, and trusts that the mail-box will receive numerous equally interesting items for the forthcoming volume.

# Leopard Seals on Macquarie Island

By S. E. CSORDAS\*

At the beginning of last September a strange visitor came ashore in Port Phillip Bay. The daily papers, as they often do, gave the poor creature the wrong name and called it a "sea lion". In fact, this rare seal was a leopard seal and came from Antarctic waters.

The leopard seal, *Hydrurga leptonyx* (de Blainville) is the second largest of the true seals (Phocidae), which differ from the seals of Australian waters in being unable to turn the hind flippers forward to walk on land. It is easily identified by its large snake-like head, slender body and spotted coat which is usually dark grey dorsally and light grey ventrally (see photograph). Yearlings are  $5\frac{1}{2}$  to  $7\frac{1}{2}$  feet long, have an almost cylindrical body and a prominent dark stripe down the back. Adult males are up to  $10\frac{1}{2}$  feet, and adult females up to  $12\frac{1}{2}$  feet long; their fore-quarters are proportionately better developed than in yearlings. Three seals of unknown age and sex have been weighed at 606, 630 and 850 lbs.

Leopard seals are solitary animals, living and hunting alone, only coming together to mate. Even when several are resting on a beach or an ice-floe, they avoid each other's company, and when approached they raise their heads, show a mouthful of sharp teeth, and make a threatening "k-k-k-k" noise.

This seal was first described

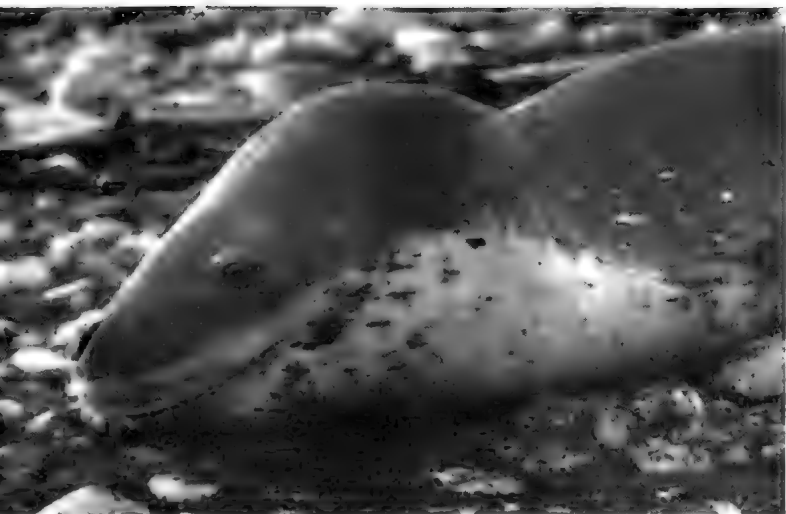
in 1820, from specimens collected at the Falkland Islands and South Georgia. At first thought very common, because of its wide distribution, it is now known to be one of the rare seals. The latest estimate (Schaffer, 1958) of the world population is 100,000 to 300,000 individuals.

It is widely distributed in the pack ice and cold waters around Antarctica, sometimes reaching the coast of that continent in summer and rarely coming as far north as Australia, New Zealand and South Africa. The most northerly record is from Lord Howe Island ( $30^{\circ} 31' S.$ ). In 1859 a ten-foot male was captured in the Shoalhaven River, south of Sydney, with a full-grown platypus in its stomach. In 1921, after a heavy gale lasting over a fortnight, five were ashore at different places on the south coast of New South Wales. In August 1959 one came ashore briefly on a Sydney beach. In Western Australia two have visited the mouth of Gairdner River, the first in October 1948.

Recent studies by Australian National Antarctic Research Expeditions at Heard Island and Macquarie Island (Gwynn 1953; Brown 1957) show that the greatest numbers of leopard seals have been sighted at these two islands; especially Heard

\*Medical Officer with Australian National Antarctic Research Expedition at Macquarie Island in 1956, 1957 and 1959.





Young leopard seal resting.

Island. A total of 936 leopards were sighted there in September 1951, and 542 in July 1952.

At Macquarie Island, where I spent three years, leopard seals come ashore between June and December. The total number seen for each of eight years is:

1949 . . . . .	93
1952 . . . . .	34
1953 . . . . .	10
1954 . . . . .	94
1955 . . . . .	234
1956 . . . . .	158
1957 . . . . .	60
1959 . . . . .	283

In some years the search was much more extensive than others (there was not much searching in 1953, for instance) but these figures show that leopard seals visit Macquarie Island in some numbers, during a northerly migration in winter. Although the figures can only give a rough indication of the numbers present in the neighbourhood of the island, these certainly fluctuate from year to year. Searches

were equally thorough in 1957 and 1959, but the totals are very different.

As the leopard seal is a rather clumsy animal on land, it usually comes ashore on gently rising sand or shingle beaches or low-lying rock platforms. At Macquarie Island in 1955, 1957 and 1959 I checked the beaches near the ANARE station daily and other nearby beaches weekly, but most of the coast was only checked occasionally, when other expedition members or I had the opportunity.

Dr. A. M. Gwynn (1953) observed that in 1949 the first arrivals at Macquarie Island were young seals, and a large proportion of them were females. My investigation confirmed this. Most of the leopard seals I saw were under 8 feet long, so they must have been only one or two years old. In each month there were more females than males (Table 1).

To follow the movements of these seals and to find out how

Table 1. Monthly Leopard Seal Counts

Year—1959	Females	Males	Sex unknown
July .. ..	23	8	6
August .. ..	17	12	23
September .. ..	21	9	9
October .. ..	12	7	18
November .. ..	13	2	10

long they remained at the island, I marked as many as possible with alcohol-soluble "Vaxoline" dye. The results showed that most stayed ashore for only one day and a few for two to four days at a time, but that some stayed around the island for over a month. For example, in 1957 a very young female was seen twelve times between July 29 and September 21, and in 1959 another female was seen 21 times between July 19 and August 30. The majority remained within five or six miles of their first landing place. When they come ashore they may be tired after a long journey or possibly have full stomachs and need a rest for digestion.

In early summer the mature animals return to the pack ice around the Antarctic Continent, and presumably breed there. This has not been proved by actual observation, but no birth has ever been observed on sub-antarctic islands or on the continent—which leaves the pack ice, which is the leopard seals' main home. The pupping season is thought to be October–November, and as ships rarely penetrate the pack ice before January, the lack of observations is not surprising. Indeed, few pups of the much commoner crab-eater seal have been seen either. Some authors suggest that birth

takes place in the sea, but as Brown (1957) comments:

According to the available records, no seals, whether Otariidae, Odobenidae or Phocidae, have ever been known to bring forth their young in the sea, and there is no evidence to indicate that the leopard seal is an exception.

Even the well-known harbour seal of Europe and America, whose pups can swim when an hour old, has to give birth on land.

At Heard Island, which lies in colder water than Macquarie, leopard seals are present all the year round, and in winter there are many adults, including pregnant females. Like many other animals, it is the young leopard seal which travels farther than the adults; the latter prefer to stay close to their breeding place, the pack ice, and not to explore. It is interesting that in 1911–13 the Australasian Antarctic Expedition killed several pregnant females at Macquarie Island (Ainsworth, 1915), although none come ashore there nowadays. Fifty years ago, the cold Antarctic water probably extended to north of the island, instead of stopping well south of it as at present.

In the water the leopard seal is recognized as one of the faster seals. When out on snow covered land it propels itself with its flippers, and can reach a speed equal to a man's trot. On



Gentoo penguins standing around a sleeping leopard seal. at a safe distance.

sand it cannot use its flippers but moves like a caterpillar, arching the back and thrusting with the tail, at a slow walking pace, but it needs a short rest every 10-20 feet.

The leopard seal is carnivorous, preying on medium-sized sea animals such as squid, fish, penguins and smaller seals. It feeds at sea, and has never been seen eating on land, though Gwynn photographed one eating a dead elephant seal pup at the water's edge. An adult female, caged on land, would touch neither live nor dead food.

Many observers since Levick (1915) have watched leopard seals waiting offshore near the landing places of Adelie and other penguins, to catch them as they go to sea. At Macquarie Island they wait for the resident King penguins in the same way. As a King stands about 3 feet high it is a large prey for a single leopard. Penguins once caught are usually roughly

shaken out of their skins before being eaten. I often found empty penguin skins inside-out on the beach. However, the seal still swallows large amounts of feathers, which are characteristic of its faeces on Macquarie Island. Even on land, penguins seem to recognize their enemy, for I never saw them closer to a leopard seal than about ten feet, though they walk close to and even scramble over other seals. I once tried to chase a group of Gentoo Penguins towards a resting leopard seal, but they made a wide circle around it.

Leopard seals are reported to attack other seals, such as crab-eaters, on ice, and they take pups of elephant and probably other seals that are washed out to sea before being able to swim. There are some records of them attacking man, although none that I have seen did more than threaten. Ponting (1922) irritated one

Rockhopper  
penguin  
investigating  
a resting  
fur seal.



to such an extent that it chased him and finally had to be shot; similarly, one of Shackleton's men was attacked on an ice-floe. In the Falkland Islands, leopard seals from time to time are reported to attack a boat or even leap into it and attack the occupants. As Hamilton (1939) wrote:

. . . it is extremely likely that the humans concerned took the first step by assaulting the seal,

for at Heard Island leopard seals followed boats several times, quite inoffensively, possibly for a free meal.

The leopard seal has only one natural enemy, the killer whale. I have seen a few come ashore with fresh wounds, which could have been made only by killer whales. Even to man, the leopard seal has no commercial value, because of its scattered

distribution and poor yield of blubber for oil.

#### ACKNOWLEDGEMENT

My thanks are due to Miss S. E. Ingham, C.S.I.R.O. Div. of Wildlife Research, for her valuable advice and for correcting my manuscript.

#### REFERENCES

- Ainsworth, G. F. 1915. See Mawson.  
Brown, K. G. 1957. The Leopard Seal at Heard Island 1951-54. *ANARE Interim Reports No. 16*: 1-34.  
Gwynn, A. M. 1953. The Status of the Leopard Seal at Heard Island and Macquarie Island, 1948-1950. *ANARE Interim Report No. 3*: 1-31.  
Hamilton, J. E. 1939. The Leopard Seal, *Hydrurga leptonyx* (De Blainville). *Disc. Reports, Vol. 18*: 239-264.  
Mawson, Douglas. 1915. *The Home of the Blizzard, Vol. 2*: 167-254. On Macquarie Island, by G. F. Ainsworth.  
Scheffer, V. B. 1958. *Seals, Sea Lions and Walruses*. University Press, Stanford, California.

# Extension of Range of *Pseudomys apodemoides*

By R. MARK RYAN\*

The small grey native mouse, *Pseudomys apodemoides* (subgenus *Gyomys*), is known from specimens Finlayson (1932, 1944) obtained in South Australia: at the type locality, Coombe, and at Pringatoola, 27 miles WSW of Coombe. I am not aware of any additional published records of this form, although Finlayson (1944) anticipates its distribution over a wide area.

While reorganizing a portion of the collection of mammals in the National Museum, I found a skin and skull labelled *Mus musculus*, but which proved to be a specimen of *Pseudomys apodemoides*. The skin and skull are of a young adult male collected by K. V. Hately in the Little Desert, south of Kiata, Victoria, September 24, 1957. External measurements are: total length, 147 mm; tail, 77 mm; hind foot, 21 mm; ear, 15 mm. When compared with Finlayson's descriptions and with two metatype specimens in the National Museum, the mouse from the Little Desert is almost identical with typical *P. apodemoides*.

In our collections there is an additional, previously unidentified, juvenile skin of a mouse, likewise collected in the Little Desert. Although lack of its

skull precludes positive determination, the specimen appears to be *P. apodemoides* as well.

These specimens, especially the former, constitute an extension of range of this species about 85 miles SE of the type locality.

The habitat of *P. apodemoides* in South Australia, as described by Finlayson (1944), is very similar to the Little Desert. Average annual precipitation near Coombe is about 20 inches; in the Little Desert, about 15.5 inches. Sandy soil is characteristic of both localities. The low undulations and isolated hills mentioned by Finlayson are replaced by distinct sand ridges in the Little Desert. The dry heath type of vegetation is common to both areas, although the flora of each is distinct in many species. A description of the Little Desert is available in D'Alton (1913).

#### LITERATURE CITED

- D'Alton, St. Elroy. 1913. The botany of the "Little Desert", Wimmera, Victoria. *Vict. Nat.*, 30: 65-78.  
Finlayson, H. H. 1932. Preliminary descriptions of two new mammals from South Australia. *Trans. Roy. Soc. S. Aust.*, 56: 168-171.  
Finlayson, H. H. 1944. A further account of the murid, *Pseudomys (Gyomys) apodemoides* Finlayson. *Ibid.*, 68: 210-224.

\*As defined by Thomas, O., *Proc. Zool. Soc. Lond.*, 1893: 241-242.

\*Curator of Mammals, National Museum of Victoria, Melbourne.

## "Marine Molluscs of Victoria"

J. Hope MacPherson and C. J. Gabriel

[Published by University Press in association with the National Museum of Victoria, 1962. xv + 476 pages including 486 line figures. 9s by 6in., cloth bound, with dust jacket. Price, 63 shillings.]

The compilation of a book which gives anything approaching a comprehensive coverage of the families, genera and species of the marine molluscs of a country with several hundred miles of coast, is a task that might daunt the boldest. To appreciate the magnitude of the work, one must recall that the phylum Mollusca, with its several classes, is comparable to the Chordata which contains all the vertebrate groups—amphibians, reptiles, fish, birds and mammals.

The book is much more than an enumeration of species. In the introduction, the authors set out concisely the basic features of the Mollusca and distinguish, with clear illustrations, the five classes which are to be treated. Notes on collecting and preserving specimens are given, as well as principles of taxonomy. The four major classes of the five that are dealt with, each has an introductory description, again with illustrations, to begin the respective sections of the book. Orders are indicated, without description, but diagnostic features are given for most families. The important genera are described and the remainder listed, and in each case the type species is given.

The common and conspicuous species are each described fully and illustrated. Victorian localities are given for each, followed by general notes, including an enumeration of the other Australian states round which each has been recorded. And names are suggested for popular use. This treatment constitutes the main part of the book, and it is supplemented throughout by brief descriptions of related forms, and lists (with localities) of all other Victorian species.

Under this system, major treatment is given to 36 of Victoria's 70-odd

chitona (Amphineura), 265 of our (approximately) 680 univalves (Gastropoda), two of the several tusk-shells (Scaphoda), 168 of our (about) 280 bivalves (Pelecypoda), and 11 of the 30 or thereabouts local Cephalopoda (squids, etc.).

In analysis, we find 481 species fully described and illustrated, within what is, in effect, a comprehensive checklist of the Victorian marine molluscan fauna—about 870 species—systematically arranged in genera, families, orders and classes.

The main body of the book is followed by five pages of bibliography, setting out the most important recent books and papers on temperate Australian molluscs. A comprehensive glossary follows, covering eight pages and including explanations of almost 300 technical terms. The encyclopaedic nature of the whole work is demonstrated by the final section: an index which runs to 43 pages and includes about 5000 items.

In his foreword, the recent Director of the National Museum, Charles W. Brazenor, indicated that the book was suitable "for use by the beginner"; and the authors, in their preface, say that it will be "of use to the interested layman". This is very true, provided that the beginner and layman concerned intend to make a reasonably serious study of our molluscs. While the book—with its generally simple presentation and the glossary of terms—can truly provide their needs, from the very beginning of interest in the subject, its wealth of data and comprehensiveness ensure that it will also be in constant use no matter how advanced their interests and studies become.

One feature of the book stimulates a line of critical thought. The attempt

by the authors to provide common or popular names for 481 molluscan species has produced something that is sorely quite impractical. Names such as "d'Orbigny's Rissocina" and "Deshayes' Mylitta" will never be accepted into popular usage for *Rissocina d'orbignyi* and *Mylitta deshayesi*. "Pandora-shaped Myadora" (for *Myadora pandoraformis*) and "Myadora-shaped Thracia" (for *Eximiothracia myodoroides*) would confuse rather than help the laymen for whose use they are intended. One cannot but help wondering what might be the nature of the "False Tooth Shells" and the "Angel Wing Borers"; and "Assimilated *Lucina*" is certainly not a suitable translation of *Wallucina assimilis*.

As it is presented in the book under review, the system of popular names for shells is reminiscent of lists of Victorian birds published last century. For instance, in the first volume of the *Victorian Naturalist* (1884), we note the "White-eye-browed Pomatostomus" and "Jardine's Campephaga" for our White-browed Babbler and Cicada-bird.

The interested layman will accept names such as trochus, periwinkle, whelk, spindle, murex, wentletrap and volute, which are already in our language (*Concise Oxford Dictionary*). He will readily use such ones as top-shell, dog-whelk, tulip-shell, bubble-shell, sand-snail, etc., for other genera or groups of species; and with equal readiness he will accept for popular use short euphonious generic names such as *Ancilla* and *Myadora* (but not *Cryptopax*, *Ischnochiton*, etc.).

Furthermore, to distinguish certain species, he will accept one normal English adjective to qualify a group name—to produce a title such as Wavy Top-shell, Doughboy Scallop, Pear Helmet or Thin-ribbed Cockle. But he will not use such adjectives as appear in "Glabra Mitre", "Bicarinata Helmet" and "Dunker's Spindle-shell", because they are not current English words; nor will he adopt unwieldy assemblages such as "Ophiome Hidden Bubble Shell" and "Mestayer's Tropicated Spindle".

When the beginner or the interested layman comes to the stage of applying correctly the great number of simple

names which should be available for our molluscan groups and for certain conspicuous species, he will have served a long apprenticeship to the subject and will be ready to use proper technical names during his further studies. It is therefore not necessary to invent common names for every species.

While *Marine Molluscs of Victoria* is not a book for the person with only a passing or superficial interest in sea-shells, it is a *must* for all whose interests advance beyond that. It will be acquired by a large number of naturalists in Australia and, besides, will provide the stimulus for many to take up seriously the study of our molluscs. It will find a place, and constant use, on the book-shelf of the scientist and in scientific reference libraries throughout the world.

The book is a great credit to its authors, Miss J. Hope MacPherson, Curator of Molluscs at the National Museum of Victoria, and Mr. G. J. Gabriel, Honorary Associate in Conchology at the same institution. It will always stand as a monument not only to their technical knowledge but to the many years of painstaking industry which they have devoted to its compilation.

The Museum artist, Mr. G. J. Browning, well deserves the recognition which has been given him on the title page. In execution, his illustrations are the work of a master of his craft and, according to the authors, are "accurate to the last degree".

As must be expected in a major technical work of this kind, a few minor details have escaped the proof-readers. For example, on pages 232 and 403, two genera (*Paracuneus* and *Thracidora*) are wrongly indented, and the former is misspelt and therefore misplaced in the index; while on page 318 the specific name of *Venericardia rosulenta* has slipped through with a capital letter. But the book is an outstanding credit to the craftsmanship of the printers, Brown, Prior, Anderson Pty. Ltd. of Melbourne.

Authors, artist, National Museum and printers are to be congratulated on an outstanding production.

—N. A. WAKEFIELD

## Field Naturalists Club of Victoria

### General Meeting—March 11, 1963

The president (Mr. M. K. Houghton) was in the chair, and about ninety members and friends attended.

The secretary announced that three areas, totalling 250 acres of State Forest in the Labertouche locality, had been set aside as flora reserves following representations to the Forests Commission by Councillor Bloye.

The subject for the evening was "East African Animals", by Miss M. Field, who had visited national parks which in East Africa can be up to 30,000 square miles in area. Based in Nairobi, Miss Field travelled by plane and car to such otherworldly places as Ngorongoro Crater and National Park, Murchison Falls National Park, localities near Mounts Ruwenzori and Kilimanjaro, and "Tree-tops" in Elizabeth National Park. Magnificent colour slides of the wonderful mammals and birds at intimately close quarters delighted everybody.

Mr. J. H. Quirk thanked Miss Field and pointed out that instead of the two per cent. of territory given to national parks in Africa, here we had less than half of one per cent.

Mr. C. J. Gabriel exhibited a minute univalve shell with sand grains, *Scalioia bella*, from North Queensland, and a larger bivalve covered with mud particles, *Granicorum attonitum*, from Evans Head, N.S.W. Mr. E. B. Stewart showed a parasitic insect from kookaburras in the Howqua hills.

One new member, Mr. Maxwell P. Sorelle, of Dutton Park, Queensland, was elected.

### Botany Group—March 14, 1963

Twenty-five members attended the meeting, which was held in the main Herbarium hall for the better display of the many pressed specimens illustrating the lecture, given by Mr. A. B. Court, on "Acacias". The speaker traced the history of the genus, since the first species was taken back to England by Dampier in 1689, to the present day. The total number of Australian species is now over 610, while about 500 species are native to other parts of the world.

The variability of the genus was demonstrated by specimens exhibited, such as *A. morabifolia* (with the tiniest phyllodes), *A. dunnii* (with enormous phyllodes), *A. glaucoptera* (with winged stems instead of either bipinnate leaves or phyllodes) and *A. tetragonocarpa* (with seeds square in section and flowers single instead of in globular heads).

The club president (Mr. M. K. Houghton) thanked the speaker on behalf of members, and promised to bring before council the suggestion of the group president (Mr. J. A. Baines) that the club obtain for the use of groups at their meetings a microscope similar to the one recently devised by Mr. D. McInnes and Mr. W. Woollard.

### Microscopical Group—January 16, 1963

There were sixteen members at the meeting, which was chaired by Mr. E. LeMaistre. It was decided that an election of office-bearers be held at the February meeting.

Mr. D. McInnes then brought the group up to date on developments with the "club microscope". He demonstrated his model, which was illuminated with an ordinary household globe and fitting. It was possible to obtain simply every type of illumination: bright field, dark field and top lighting, and Mr. McInnes then demonstrated how each was obtained.

The approximate cost of the various components are:

- Sliding "bush" for lens tube, £1/-/-
- Eye-piece, £1/10/-
- Objective, £2/15/-
- Box (used as frame for microscope), £3/-/-
- Lamp, etc., 10/-

It was resolved that a letter be sent to the council of the club asking for remuneration to Mr. W. C. Woollard for the cost of having the "tap" manufactured.

Mr. Woollard then demonstrated his model, which had for illumination a small globe powered by a transformer. Most felt that this would be



safer, especially for children, although it would add about £2 to the cost.

Various specimens were exhibited under six microscopes, but all present were astounded at the excellent wide field and depth of focus obtained by the two models of the club microscope.

#### Geology Group—March 6, 1963

Twenty members were present, with Mr. L. Angior in the chair. Three visitors were welcomed, including Mr. Allan Smith of the Ringwood Field Naturalists Club. An interesting letter from Mr. L. Bairstow, relating his geological experiences on the north-west frontier of India and in Afghanistan, was read by the secretary. Arrangements were made for members to attend the club's excursion to Werribee Gorge on Sunday, March 17.

The subject for the evening was a talk by Mr. D. McInnes on "Physics and Geology". The speaker first dealt with the value of earthquake waves in demonstrating the structure of the earth. The structure of the continents was explained on the arc theory, and the talk closed with a description of

sedimentary slumping on the continental shelves.

**Exhibits:** Identification of specimens from India, per Mr. L. Bairstow, including pink tourmaline, garnets in schist, copper pyrite, fluorite with rare structural banding, calcite and ruby corundum (A. Cobbett). Specimens from Mr. Cobbett's own collection were also shown for comparison, Manganese, gypsum, bauxite and red sandstone from India (L. Bairstow). Magazine and Walking Club's booklet on Snowy River area with map (R. Hemmy). Fossil from Pleistocene deposit at Port Campbell showing part of a crustacean (A. Scott).

#### Fauna Survey Group—March 7, 1963

Fourteen members and friends attended the meeting, which was chaired by Mr. N. A. Wakefield.

Mr. Wakefield informed the group of many interesting discoveries on a trip made to south-western Victoria and South Australia during December last. These included several bone deposits in South Australia; unfor-



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Unfortunately, time was insufficient to allow full examination of them.

Mr. H. E. Wilkinson reported to the group a successful spring trip to the Leadbeater's Forest area with Mr. G. Pizzev. Mr. Pizzev continued his discussion of a report of recent palaeontological investigations in the Campedello area and he exhibited some of the Pleistocene fossils which were collected.

Interesting sub-fossil material from the Mount Hamilton cave was exhibited, including an ungual phalanx or clawbone of a large extinct mammal, possibly *Thylacoleo*.

Miss J. Furphy, the group secretary, asked the meeting for leave of absence until November. This was granted and, in the interim, the position will be filled by Mr. R. McQueen.

## Library News

Owing to continuing ill-health, Mr. J. J. Meade has resigned the position of honorary assistant librarian; the librarian would be glad to hear from any members interested in filling this important vacancy. In the meantime, members are requested to return loans promptly, signing each item off in its respective place in the loan book. Mr. D. E. McInnes will fill the vacancy of geology group librarian (which Mr. Meade also held), and we are most grateful to him for his assistance. David Woodruff is continuing as fauna survey group librarian for 1962/63. Other study group librarians for the year are: botany group—Mr. J. A. Baines; marine biology and entomology group—Mr. R. Counihan.

## F.N.C.V Diary of Coming Events

### GENERAL MEETINGS

**Monday, April 8, 1963**—At the National Herbarium, The Domain, South Yarra, commencing at 8 p.m. sharp.

1. Minutes, reports, announcements, correspondence.
2. Subject for evening: "Victorian Heathlands", by Professor J. S. Turner.
3. Election of Members:

#### Ordinary Members:

Mr. Graham J. Collins, 264 Bridge Road, Richmond. (Interest: Fauna.)  
Mr. Ian S. Gillespie, 28 Wild Cherry Road, Carnegie. Introduced by Mrs. F. Lewis.  
Miss Wilga Holdsworth, 14 Holding Street, Beaumaris, S.16. Introduced by Mr. and Mrs. E. S. Hanks.

#### Joint Ordinary Member:

Mrs. I. S. Gillespie, 28 Wild Cherry Road, Carnegie. Introduced by Mrs. F. Lewis.

#### Country Members:

Miss Elsie Belton, S.S. 3096, Mannerim, via Geelong.  
Mrs. Denise Clynne, 7 Catalpa Crescent, Turrumurra, N.S.W. (Interest: General.)  
Mr. Ronald Warlock, Box 133, Ararat. Introduced by Mr. E. Bedggood.

#### Junior Member:

Miss Sylvia L. Harvey, William Street, Beechworth. (Interests: Botany, Geology.)  
Miss Jennifer F. Bullar, 10½ Asling Street, Gardenvale.

4. Nominations for membership.
5. General business.
6. Nature notes and exhibits.
7. Conversation.

**Monday, May 13**—Members' Night: "Bairnsdale Excursion".

### GROUP MEETINGS, ETC.

(8 p.m. at National Herbarium unless otherwise stated.)

**Tuesday, April 9, 1963**—Botany Group: Mr. T. B. Muir, of the National Herbarium, will speak on "Using a botanical key". The meeting is being held two days earlier than usual on account of Easter.

**Wednesday, April 17**—Microscopical Group: "The Ultra Structure of Cells", by Dr. G. Christie.

**Friday, April 26**—Hawthorn Junior F.N.C. At Hawthorn Town Hall. "Reptiles", by Mr. D. Woodruff.

**Wednesday, May 1**—Geology Group: "Radioactive Minerals", by Mr. A. Cobbett.