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the **VICTORIAN** **NATURALIST**

Vol. 86, No. 10

October, 1969



Published by the

FIELD NATURALISTS CLUB OF VICTORIA

In which is incorporated the Microscopical Society of Victoria

Registered in Australia for transmission by post as a periodical

45 cents



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

GENERAL MEETINGS

Monday, 13 October—General Meeting in National Herbarium, The Domain, South Yarra, at 8.00 p.m.

1. Minutes, Reports, Announcements.
2. Correspondence.
3. Subject for evening—"Geology and Other Aspects of Flinders Island", Mr. Keith Darragh, Palaeontologist—National Museum of Vict.
4. New Members—

(a) *Ordinary*:

- Miss S. Y. Askew, 30 Kellett Street, Northcote 3070. (Interest—Mammals.)
Mr. H. H. Bishop, 764 Centre Road, East Bentleigh, 3165. (Interests—Botany and Microscopy.)
Mrs. R. Byass, 23 Kingston Road, Surrey Hills 3127.
Sunday Reed, "Heide", Bulleen 3105.
Mrs. D. M. Schnabl, Alva Avenue, Park Orchards 3114. (Interest—Botany.)
Mrs. M. Wolf, 37 Windsor Avenue, Bentleigh 3204.
Miss J. Woodley, C/o Nurses' Home, Prince Henry's Hospital, Wells Street, Melbourne 3004. (Interests—Mammal Survey, Microscopy.)

(b) *Joint Ordinary*:

- Dr. E. W. Brentnall and Mrs. H. M. Brentnall, 70 Victoria Crescent, Mont Albert 3127. (Interests—Botany, Birds, Marine Biology.)
Miss H. Ford and Miss E. Lowe, 36 Studley Street, Maidstone, 3012.
Mr. & Mrs. A. Godward, Flat 2, 60 O'Shanassy Street, North Melbourne 3051.

(c) *Country*:

- Mr. C. M. O'Donnell, "Pink Earth", Porepunkah, Vic. 3740. (Interest—Mammal Survey.)
Mr. G. Swan, 112 Waratah Parade, Narraweena, N.S.W. 2099.

5. General Business

6. Nature Notes and Exhibits.

Monday, 10 November—Aboriginals of North and Central Australia, Sir Baldwin Spencer's films of 1913 to illustrate subject.

GROUP MEETINGS

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

Wednesday, 15 October—Microscopical Group Meeting.

Friday, 31 October—Hawthorn Junior F.N.C. in Hawthorn Town Hall at 8 p.m.

Monday, 3 November—Entomology and Marine Biology Group Meeting.

Wednesday, 5 November—Geology Group Meeting. Subject: "Geological Literature, Old and New" by Mr. G. Carlos.

Thursday, 6 November—Mammal Survey Group Meeting in Fisheries and Wildlife Dept. Library at 7.45 p.m.

Friday, 7 November—Preston Junior F.N.C., 251 High Street, Preston, 8 p.m.

Thursday, 13 November—Botany Group Meeting.

Friday, 14 November—Montmorency District Junior F.N.C. Meeting in Scout Hall, Petrie Park, Montmorency, at 8 p.m.

F.N.C.V. EXCURSIONS

Sunday, 19 October—Cardinia Creek. The coach will leave Batman Avenue at 9.30 a.m. Fare \$1.50. Bring one meal.

Tuesday, 4 November—President's Picnic. The coach will leave Batman Avenue at 9.30 a.m. Fare \$1.80. Bring one meal and a snack. Bookings with excursion secretary.

Friday, 26 December, to Sunday, 4 January—Mt. Beauty. A coach has been chartered for this excursion which will remain with party for use in day excursions to the Bogong High Plains, Mt. Hotham and other places. Accommodation has been booked at the Mt. Beauty Chalet for the coach party at \$6.00 per day dinner, bed and breakfast with picnic meals available at 50 cents. The inclusive coach fare of \$20.00 should be paid by the November general meeting to the excursion secretary all cheques being made out to Excursion Trust. Accommodation to be paid for individually.

The Victorian Naturalist

Editor: G. M. Ward
Assistant Editor: P. Gahan



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Front Cover:

The display of the Lyrebird is always breathtaking, no matter how often one watches; and the cover illustration shows the famous "Spotty" giving one of his last performances before his unfortunate death.

October, 1969

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On the Australasian Chelidae (Chelonia)

by E. H. BLACKMORE

Boulenger's Catalogue (1889) has for many years been a standard taxonomic work on the Australian Reptilia, and on the Chelidae in particular. However, it has now become apparent that the principles on which that work was based are largely out of date. This article is an attempt to tentatively revise the interspecific relationships of certain members of this group.

There can be little doubt that *Chelodina fitzinger* is much the most distinct Australasian chelid genus. In its very large cervical length, small parietals, weak mandible, enclosed intergular and four-clawed manus, *Chelodina* is set off sharply from the other three genera, *Emydura*, *Elseya* and *Pseudemydura*. Consequently its generic status cannot be questioned.

Goode (1967) transferred *latisternum* and the related *novaeguineae* from *Emydura* to *Elseya*. His definition of *Elseya* is to some extent preferable to that of, for example, Wermuth and Mertens (1961), and has been adopted here, but I am inclined to think the *Elseya* and even *Pseudemydura* cannot be maintained as generically distinct from *Emydura*. The differences between these genera (in intergular size, rugosity of neck skin, etc.) are certainly differences of degree only, while, as Goode (1967) has pointed out, presence or absence of a median alveolar ridge is not a character of major importance. However, I have retained Goode's arrangement, for the present at least.

Chelodina fitzinger

1826. *Chelodina fitzinger*. Type *Testudo longicollis* Shaw.

This genus includes two more or less well defined groups, typified by *C. longicollis* and *C. oblonga*. There is no evidence that the two groups contain more than a single species each.

Chelodina longicollis (Shaw).

1793. *Testudo longicollis* Shaw. New Holland = nr. Sydney, N.S.W.

1835. *Chelodina novae-hollandiae* Dumeril & Bibron. New name for *longicollis* Shaw.

1855. *Chelodina sulcifera* Gray. Australia.

1856. *Chelodina sulcata* Gray. Australia.

1888. *Chelodina novae-guineae* Boulenger. Katav R., Papua.

1914. *Chelodina steindachneri* Siebenrock. Marloo Station, DeGrey R., W.A.

1922. *Chelodina milly-millyensis* Glavert. Milly-Milly Ck., Murchison R., W.A.

Geographically, *longicollis* has a Basso-Torresian distribution somewhat similar to that of the terrestrial marsupial *Petaurus breviceps* Waterhouse. The species probably exhibits only clinal variation; in texture of dorsal

neck skin, degree of recurving of marginals, depth of carapace and plastral width, *novaeguineae* is intermediate between *longicollis* s.s. and *steindachneri*. Consequently no subspecies are here recognized.

Range: northern and eastern Australia, south in the east to Adelaide, and in the west to Geraldton; not as yet recorded from the Kimberleys; southern New Guinea; Roti, nr. Timor; doubtless elsewhere in Indonesia.

Chelodina oblonga Gray.

If *Chelodina longicollis* poses unusual taxonomic problems, *C. oblonga*

C. oblonga oblonga Gray.

1841. *Chelodina oblonga* Gray. Western Australia = nr. Perth.

1855. *Chelodina colliei* Gray. Swan R., W.A.

South-western Australia from Moore R. to Albany.

C. oblonga expansa Gray.

1857. *Chelodina expansa* Gray. Australia.

Murray-Darling Basin: western N.S.W., northern Vic., south-eastern S.A., southern Qld.

C. oblonga rugosa Ogilby.

1890. *Chelodina rugosa* Ogilby. Cape York, Qld.

1915. *Chelodina intergularis* Fry. Australia.

Arnhem Land; northern Qld.

C. oblonga siebenrocki Werner.

1901. *Chelodina siebenrocki* Werner. German New Guinea. New Guinea.

Elseya Gray.

1867. *Elseya* Gray. Type *Chelymys dentata* Gray.

Only two species of *Elseya* will be recognized here, as *latisternum* and *novaeguineae* contrast with *dentata* in having a more V-shaped rostrum, no-alveolar ridge, pointed cervical tuber-

cles and a broader carapace; the depressed and posteriorly serrated carapace of *latisternum* may possibly be a pedomorphic character.

Elseya dentata (Gray).

1863. *Chelymys dentata* Gray. Victoria R., N.T.

1871. *Euchelymys sulcifera* Gray. North Australia.

Judging from the available information, it seems probable that *dentata* is continuously distributed in northern Australia. This is the typical Torresian distribution pattern; it has been customary to distinguish subspecies within species of this type on a politico-

geographical basis, but closer study usually reveals clinal variation only. Most occur in New Guinea, though *Pseudomys delicatulus* (Gould) is an exception.

Range: probably throughout northern Australia from Gympie to Broome.

Elseya latisternum Gray.

E. latisternum latisternum Gray.

1867. *Elseya latisternum* Gray. C. York, Qld.

1871. *Euchelymys spinosa* Gray. N. Australia.

1931. *Emydura signata* Ahl. Brisbane, Qld.

North-eastern Australia, south to about Grafton.

E. latisternum novaeguineae (Meyer).

1874. *Platemys novae-guineae*. Meyer. New Guinea.

1911. *Emydura schultzei* Vogt. German New Guinea = Tami, N.E. New Guinea.

1914. *Emydura branderhorsti* Ouwens. South New Guinea.
Throughout New Guinea.

Emydura bonaparte.

1836. *Emydura bonaparte*. Type *Hydraspis macquarrii* Gray.

Apart from the dubious *E. australis*, only one species seems to be included in the genus: *E. macquarrii*. As in the case of *Chelodina*, it is impossible to justify the specific status currently given to other taxa.

Emydura macquarrii (Gray).

Some authors have regarded *krefftii* as merely a clinal variant of *macquarrii*; but as the Great Dividing

Range should provide an effective distribution barrier, *krefftii* is probably subspecifically distinct.

E. macquarrii macquarrii (Gray).

1831. *Hydraspis macquarrii* (sic) Gray. Macquarie R., N.S.W. Murray Basin; western N.S.W., northern Vic., south-eastern S.A.

E. macquarrii krefftii (Gray).

1871. *Chelymys krefftii* Gray. Burnett R., Qld.
North-eastern Australia south to Kempsey, N.S.W.

E. macquarrii subglobosa (Krefft).

1876. *Euchelymys subglobosa* Krefft. Amama R., Papua.

1888. *Emydura albertisii* Boulenger. Katau R., Papua.
Throughout New Guinea.

? Emydura australis (Gray).

1841. *Hydrospis australis* Gray. Western Australia.

1842. *Hydraspis victoriae* Gray. Victoria R., N.T.

A revision of this species would be beyond the scope of this work. The maxilla, uniquely, extends back to totally cover the vomer, which casts doubt on its placing in *Emydura*; in view of colour and morphological variation, more than one species may be included here; while it has often been confused with *E. macquarrii krefftii*, which is superficially similar. However, some preliminary comments on the distribution will be given here.

Typically, *australis* occurs in the rivers of the Northern Territory and north-western Australia; I have no doubt that it also occurs in Queensland, where, however, it has been confused with *krefftii*. Mehely (1898) recorded what was probably this species from Papua, under the name of *krefftii*; it is also known from Cooper's Creek, in South Australia.

This central population is interest-

ing, but not unique, since two Torresian mammals—*Lagorchestes conspicillatus* Gould and *Rattus tunneyi* (Thomas)—are also recorded from the central region. However, neither is known to occur in New Guinea, which suggests that the Cooper's Creek and

Papuan populations of "*E. australis*" may not be conspecific.

Range: probably throughout northern Australia, though not recorded east of Normanton, Qld.; Cooper's Ck., S.A.; Astrolabe Bay, Papua, and doubtless elsewhere in New Guinea.

Pseudemydura siebenrock.

1901. *Pseudemydura siebenrock*. Type *Pseudemydura umbrina* Siebenrock.

Pseudemydura umbrina Siebenrock.

1901. *Pseudemydura umbrina* Siebenrock. Western Australia.

1954. *Emydura inspectata* Glauert. Bullsbrook, W.A.

Williams (1958) has convincingly demonstrated the specific identity of *umbrina* and *inspectata*.

Range: south-western Australia from Moore R. to Albany.

SUMMARY

The nomenclature of the Australasian Chelidae is reviewed in accordance with modern taxonomic principles. A number of species recognized by most recent authors are synonymized with *Chelodina longicollis* (Shaw), *C. oblonga* Gray and *Emy-*

dura macquarrii (Gray). The generic status of *Euseya* Gray and *Pseudemydura* Siebenrock is questioned. *Euseya novaeguineae* (Meyer) is relegated to subspecific status under *latisternum* Gray. No revision of *Emydura australis* (Gray) is attempted.

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"Wildlife" Index Available

Indexes for Volumes 1 and 2 of this magazine, edited by the late P. Crosby Morrison, are available from the Book Sales Officer, F.N.C.V., at a cost of 30c ea.

Some Animated Figures

by DICK HUDSON*

(Illustrations by Author)

"There are several other sources of enjoyment in a long voyage which are of a more reasonable nature. The map of the world ceases to be a blank: it becomes a picture full of the most varied and animated figures. Each part assumes its proper dimensions . . ."

Charles Darwin, "Voyage of H.M.S. Beagle".

Most people enjoy a complete change of scene, and my wife and I looked forward greatly to a voyage from Australia to England over seas that we had never crossed to places that we had never visited. It was many years since we had been to sea and, as confirmed bird-watchers, we intended to make the best of this opportunity to study some sea-birds.

We left Melbourne on the S.S. Canberra, 45,000 tons, 27 July, 1966. We spent much of the following morning trying to identify places that we had visited by car on the east Gippsland coast as far as Mallacoota and Gabo Island. We passed the latter at 11 a.m. and soon after mid-day crossed the entrance to Twofold Bay; but after lunch we reached unfamiliar parts. Early in the day two Black-browed Albatrosses, *Thalassarche melanophrys*, accompanied the ship and a single Wanderer, *Diomedea exulans*, continued with us as far as Montague Island. By the time that we entered Sydney Harbour it was, unfortunately, dark, but we were able to follow our progress by the lights. We tied up at Circular Quay about 11.30 p.m.

As we were delayed in Sydney for several days, we had a splendid opportunity to take a last look at Australian land-birds. In the Botanic Gardens we found Jackie Winters,

Microeca leucophloea, Magpie-larks, *Grallina cyanoleuca*, Welcome Swallows, *Hirundo neoxena*, White-plumed Honeyeaters, *Meliphaga penicillata*, and introduced Red-whiskered Bulbuls, *Pycnonotus jocosus*. At Taronga Park we met a family of Superb Blue-wrens, *Malurus cyaneus*.

Eventually we left Sydney at mid-day on 3 August. After we had cleared the Heads we noticed a Great Skua, *Catharacta skua*, among the flock of Silver Gulls, *Larus novae-hollandiae*, that flew in the wake of the ship, and about 4 p.m. there was a petrel, possibly Solander's, *Pterodroma melanopus*, flying with us on our beam, but too far away for certain identification. The two following days, whilst we traversed an oily Tasman Sea, were overcast with periods of light rain. During both days a couple of Wanderers were seen from time to time. We reached Auckland at 9 a.m. on the sixth.

Here, the most frequent gull around the harbour appeared to be the Dominican, *Larus dominicanus*; but whilst on shore a flock of Silver Gulls was seen in a grassed field. Driving in the hills at the back of the town we saw tall tree-ferns and extensive clumps of manooka tea-tree. In Auckland we found House-sparrows, *Passer domesticus*, a few Blackbirds, *Turdus merula*, and fewer starlings, *Sturnus vulgaris*. We were disappointed at failing to detect any indigenous, New Zealand land-birds.

Leaving Auckland that evening we set course for Nukualofa in the Tonga Islands. Two smallish dark al-

* Former Editor of *Vict. Nat.*: 1964-66.

Flying Foxes
... in a
group of
Casuarina
equisetifolia.



Fig. 1

batrosses were around the stern on the following day. They might have been the Sooty, *Phoebia fusca*, but could not be identified definitely. On the following day we saw no birds at all.

After passing through a long twisting channel between coral-reefs Nukualofa was reached at 9 a.m. on the ninth. We went ashore in one of the ship's boats and toured part of the island in a somewhat decrepit bus. Most tropical food-crops are cultivated, and there were many nondescript pigs, miniature goats, a few mongrel cattle and a surprisingly large number of ponies. Swifts resembling the Palm Swift, *Cypsiurus parvus*, of Africa and Asia, were seen among the trees and in a small tree near the beach was a bird that in Australia we should have identified as a Varied Triller, *Lalage leucomela*. A large party of Flying Foxes was photographed in a group of *Casuarina equisetifolia* at the "Bat Village". Back on board a tern, probably a Crested, *Sterna albifrons*, was the only sea-bird observed. We sailed in time to clear the channel before dark. For the next four days we were at sea. The first of these was our extra

day, our second ninth of August, the result of crossing the date-line. Soon after mid-day we passed Fanuatapu Island (W. Samoa) to port. Except for two sightings of a small bird, flying low in the distance and soon settling on the sea, we encountered no birds during these four days.

On the afternoon of the thirteenth we tied up in Honolulu and made at once for the Foster Gardens. Unfortunately these closed at 4 p.m. and we only had about ten minutes inside. However, there and around the Iolani Palace we were able to watch the very common little Barred Doves, *Geopelia striata*, to identify Common Mynahs, *Acridotheres tristis*, House-sparrows and feral pigeons and to study the less common Bulbuls and Silvereyes. These last two were first seen on the flower spikes of a N. Queensland tree, the Octopus or Umbrella tree, *Brassaia actinophylla*. The bulbuls resembled the Red-whiskered, that we had known in India (and Sydney) and the Silvereyes, with the brownish wash on the flanks were remarkably like the Australian *Zosterops lateralis*.

On the following morning we journeyed by bus over the hills to enjoy

the view from Nuuanu Pail, descended to the beach at Kailua and returned to Honolulu by the coast road and Waikiki. Except for a patch of rain forest, the tree-trunks of which were draped with fine phyllodendrons, on our ascent, much of the vegetation consisted of introduced species, including eucalypts. Among the other tropical plants noticed in suburban gardens there were some magnificent varieties of hibiscus.

We sailed at 1 p.m. and, shortly after clearing Rabbit Island, we were able to identify five Brown Boobies, *Sula leucogaster*, flying low over the water. During the next four days the weather became gradually cooler and no birds were seen until we approached the entrance to Juan de Fuca Strait when four gulls appeared in the dusk. By 6.30 a.m. on the 19th we were tied up in Vancouver. The gulls around the quay appeared to be Herring Gulls, *Larus argentatus*, but on shallow water near the Lion's Gate Bridge was a party of smaller gulls in post-breeding and immature plumage that were probably Bonaparte's Gull, *L. philadelphia*.

Vancouver has a most beautiful setting enclosed as it is by wooded hills to the north and east. A little snow lingered on the higher peaks. The extensive parks add to the attractions of the town and we enjoyed a fine tour that took us up to the Cleveland Dam among the Douglas Firs, *Pseudotsuga menziesii*; Hemlocks, *Tsuga canadensis*; spruces, *Picea* sp.; Red Cedars, *Tsuga occidentalis*; maples, *Acer* sp.; and Dogwoods, *Cornus* sp. Some Barn Swallows, *Hirundo rustica*, were flying over the dam. On a baulk of timber in the harbour area stood a Great Blue Heron, *Ardea herodias*. In the Queen Elizabeth Gardens an American Robin, *Turdus migratorius*, was collecting worms in its beak to

feed to its young and, in another park, a Common Crow, *Corvus brachyrhynchos*, watched carefully a man on a seat eating his lunch. A few House-Sparrows and many dark feral pigeons were present in the town.

We left Vancouver at 5 p.m., in time to watch our progress between Vancouver Island and the mainland coast where Canada meets the United States. The setting sun illuminated the snow of Mt. Baker, and just after dark we rounded the lights of Victoria. During the 20th. we proceeded south skirting the hazy coast and by 7 o'clock on the following morning, we had passed under the Golden Gate Bridge and were approaching our berth in San Francisco. Here the gulls were mainly the Californian, *Larus californicus*. We saw our first Brown Pelicans, *Pelecanus occidentalis*, a species that we were to meet several times in other ports. This pelican has the habit, unusual for the family, of diving for its prey like a gannet. Individuals are frequently attended by a gull apparently hoping to pick up an overlooked morsel; but although many dives were watched and the gull alighted as the pelican surfaced, we never saw the gull obtain any food. There was a Belted Kingfisher, *Megasceryle alcyon*, on the pier. On shore we saw three Snowy Egrets, *Leucophoyx thula*, paddling at Sausalito and House-Sparrows and a Barn Swallow in San Rafael. Feral pigeons were common in the city itself. On returning to the ship, we identified around the berth a Herring Gull and several Heerman's Gulls, *Larus heermanni*, a Royal Tern, *Sterna maxima*, and several Forster's Terns, *S. forsteri*. In the afternoon the mist came in through the entrance to the Bay. We left at 7 p.m. On the following day we tied up in Port Los Angeles just before noon. Many Brown Pelicans were seen diving in the harbour. They

were attended by one or two large gulls in brown, immature plumage. Here we saw some Heerman's Gulls, *Larus heermanni*, before leaving the ship to spend the afternoon at "Marineland", a place that all who are interested in natural history should visit if they have the opportunity. We were astonished to learn that porpoises, dolphins and even a False Killer Whale could be taught to perform in the way that they do here and, in addition to the circus "turns", Marineland provides excellent facilities for viewing these mammals and many species of salt-water fish through glass panels in the walls of the enormous tanks. In the grounds we found Starlings, House Sparrows and feral pigeons. In addition there was a metallic, dark blue bird with a white iris and a longish tail, the outer webs of the outer feathers of which were widened towards the tip. This we identified tentatively as a Brewer's Blackbird, *Euphagus cyanocephalus*. After we had returned to the ship, we saw a party of Forster's Terns, a species that can be distinguished from other terns by the nature of its harsh call.

We sailed at 8 p.m. and during the following two days had only occasional glimpses through the mist of cliffs and mountains as we passed

those parts of the Lower Californian and Mexican coasts that projected towards us. Some flying fish and porpoises were seen, but no birds.

On the 25th. we could see hills and green coastal flats to port and about 12.40 p.m. we entered Acapulco harbour and about 1.15 p.m. we anchored off the port. Nearby there were six Brown Pelicans standing on a group of rocks. Overhead were two female Magnificent Frigate-birds, *Fregata magnificens*. On shore we saw on a flat roof two Boat-tailed Grackles, *Cassidix mexicanus*, and a number of feral pigeons. No House-Sparrows were observed. Half a dozen eagles, possibly the Golden, *Aquila chrysaetus*, were circling high in the sky. During the day there was a considerable migration of *Catopsilia*-like butterflies. The Canberra sailed at dusk.

Early on the following morning we could see the distant shores and hills as we passed down the coast of Mexico, but after 11.30 a.m. we were out of sight of land. Except for a small white bird, too distant to identify, during the afternoon, we saw no large form of life. A large hawk-moth, 10 cm. in wing-span, was discovered under the games-deck roof. No land and only one distant bird was seen on the next day; but on 28

Tropical
vegetation
on the bank
of the Panama
Canal approaching
Pedro Miguel lock.



Fig. 2

August we had much to interest us. We passed a number of islands and rocky promontories off the coast of Panama before we finally tied up in Balboa at 7.15 p.m. The tops of the islands were covered with forest, which in some cases clothed surprisingly steep slopes down almost to sea-level. We met several ships and were often accompanied by Brown Boobies. Approaching Balboa we saw four Brown Pelicans and a couple of Magnificent Frigate-birds before we passed under the bridge, the centre of which is 201 feet above the water. At dusk, bats were flying around the go-downs along the quay.

The next day, 29 August, was the highlight of the voyage: we passed through the Panama Canal, 42 miles from shore to shore. As we started to move with the assistance of a tug at 7 a.m., we noticed six Black Vultures, *Coregyps atratus*, flying around or resting on the roofs of the sheds. The thickly forested hills were shrouded in mist. Near the edge of the water there was lush tropical vegetation, a coarse "cane-grass", mangroves and clumps of bush. We saw an American Egret, *Casmerodius albus*, a race of the White Egret of Victoria, and small plover with much white in the open wing, as we entered the channel. After about four miles we came to the Miraflores lock, a double lock in each compartment of which the ship is lifted 27 feet.

Ships are pulled into and out of the basins by electric "mules", and as the Canberra is the largest vessel to pass through the canal with only 3 feet of clearance on each side of the lock, these operations require great skill. On the short grass around the lock were many Boat-tailed Grackles. Nearby we saw several Brown Pelicans and thought them paler than those that we had seen further north. Nine white-rumped swallows, which we have failed to identify, were noticed perched on electric-light wires. Between one and two miles further on we came to the single Pedro Miguel lock which raised us to a total of 83 feet above sea-level.

After a short wait to allow another vessel to come out of the Gaillard Cut, our tug began again to tow us along. The cut is eight miles long and, at its narrowest part where the walls are high, 300 feet wide. Further on the banks are lower with trees, a canna-like plant and that curse of boggy patches in tropical pastures, *Imperata cylindrica*. We saw two Turkey Vultures, *Cathartes aura*, one Tern and a number of Swallows, *Iridoprocne bicolor*. There was also a Belted Kingfisher sitting on a light-buoy. Soon after passing Balboa we entered Gatun Lake where we were able to proceed under our own steam. The atmosphere was "steamy", the vegetation on the banks and small islands tropical, and the distant view was obscured by haze. The



Gatun Lake.
 "... vegetation
 on the banks and
 small islands
 tropical . . ."

Fig. 3

birds seen were Tree Swallows, Least Terns, *Sterna antillarum*, and Vigua Cormorants, *Phalacrocorax vigua*. As we approached the Gatun Locks, a series of three which dropped us to the level of the Atlantic, we saw an American Egret. Around the locks were Boat-tailed Grackles and other land-birds, including the white-rumped swallows which we had encountered earlier in the day. We also saw three unidentified sandpipers there and on the shore of Limon Bay. We tied up in Cristobal at 4.15 p.m., had a look around the town, and sailed at midnight.

On 30 and 31 August we sailed N.N.E. across the Caribbean Sea. On the first day we saw no land or birds; but on the second we passed Cape Maysi, on the eastern extremity of Cuba, during the morning, and a number of small islands and reefs, parts of the Bahamas group, in the afternoon. A few unidentifiable gulls were seen in the distance. Early in the morning of 1 September we were close to Nassau where we came to anchor at 6.45 a.m. Nassau, on New Providence Island, is the capital of the Bahamas, and during the northern winter is a popular resort for wealthy Americans. By the time that a tender had taken us ashore it was becoming warm, and after an hour's sightseeing we were ready to sample the local beer. At the first hotel that we entered we were told that the bar did not open until November! We made a small tour around the town by taxi, visiting two old historic forts, Government House and other places of interest. Although we saw no land-birds there were many Laughing Gulls, *Larus atricilla*, around the port. We left Nassau about 6.15 in the evening, and by 6.30 in the morning of the 2nd were tied up in Port Everglades, on the coast of Florida, about 20 miles north of Miami. The harbour

area is mostly reclaimed swamp-land and nearby, at Harbour Beach, are the winter residences of millionaires with parking places for their yachts and launches in the canal at the back and their cars in the front. We identified a Boat-tailed Grackle, a Mourning Dove, *Zenaidura macroura*, a small party of House-Sparrows and some feral pigeons on shore. Amongst the trees we recognized *Casuarina equisetifolia*, coconut and other palms. There were many Laughing Gulls around the port and we saw one tern, probably a Forster's.

Soon after leaving the harbour entrance at 4.30 p.m. we saw the edge of the Gulf Stream: there was a distinct line of demarcation between the cloudy water along the coast and the clear, deep blue of the Stream. An hour and a half later we had a fine view of a waterspout off the starboard beam.

The rest of our voyage, across the Atlantic Ocean, was ornithologically disappointing. We were passing well to the south of the main post-breeding dispersal areas of the important North Atlantic pelagic species, such as the Kittiwake, *Rissa tridactyla*, and Fulmar, *Fulmarus glacialis*. During the first four days we saw no birds at all. We had a distant glimpse of Bermuda to the north of us at 7.30 a.m. on 4 September; but no other land was seen until we were approaching the Isle of Wight. On 7 September we saw a couple of birds flying low over the water too far away to attempt identification, and at 3 p.m. on the 8th, two distant, large greyish birds with long narrow wings were probably, on the basis of their flight pattern, Cory's Shearwater, *Procellaria diomedea*.

We arrived in Southampton at 7.15 a.m. on the tenth. So ended a most enjoyable voyage which had lasted six and a half weeks.

Book Review

The Drummonds of Hawthornden

by RICA ERICKSON

8½" x 5½". Pp. 183, plates 16 (four in colour). Lamb Paterson Pty. Ltd., Osborne Park, W.A., 1969. Price \$5.50

No person contributed more to the investigation of Western Australia's exciting and very colourful flora than James Drummond. At the age of 45, he arrived with the first settlers on the Swan River in June 1829 and thereafter devoted much of his remaining 34 years to exploratory work from Geraldton to Cape Leeuwin, inland to Kellerberrin, the Stirling Range, and along the southern coast as far east as Doubtful Island Bay. A prolific correspondence developed between Drummond and Sir William Hooker at Kew (England) to whom the former sent specimens of hundreds, if not thousands of species, many being new to science and now bearing the epithet *drummondii* after their discoverer. Prodigious quantities of seed were also shipped to nurserymen in Britain and western Europe. There is a brief account of this indefatigable explorer in the *Australian Encyclopaedia* Vol. 3 (1958); but Australian botanists have long wished for a worthy biography, setting out in detail the numerous journeyings of Drummond. That hope has now been fulfilled by the able pen of Mrs. Rica Erickson, whose illustrated books on insectivorous herbs, trigger-plants and the orchids of Western Australia are already well known and popular.

Living for many years at Bolgart, not far from Drummond's home-site, "Hawthornden", in Toodyay, Mrs. Erickson became fascinated by the story of this pioneering family, as rich and varied as any in a new colony and much better documented than most. A

flair for historical writing, artistic talent and a deep interest in botany have qualified her to produce *The Drummonds of Hawthornden*. Congratulations go to both authoress and publisher for an excellent book that holds one's interest from cover to cover. Not only is this a good biographical account of an important botanist but, as the dust-jacket truthfully observes, it is "a mirror of the times . . . a lively-written social history". With great sympathy and understanding, the hopes and fortunes, the frustrations and calamities of pioneer settlers are laid bare. There are gripping accounts of drought, fire, flood, heavy stock losses caused by toxic native plants, and encounters with natives, both friendly and hostile. Drummond's youngest son and companion on many excursions, Johnston, was murdered by an aboriginal in July 1845. If there be a theme underlying the story, it is surely the triumph of a human spirit over crippling deprivations, personal tragedy, heart-ache and the "tyranny of distance" in those times.

On several of his earlier expeditions James Drummond had joined forces with Ludwig Preiss, the visiting German botanist, and with John Gilbert who was collecting ornithological material for John Gould (in 1839 and 1842), his comments on these and other notables being of historic interest. In addition to wildflowers, he was captivated by the mosses and fungi of the West, and he made extensive collections of these lowly plants for

W. J. Hooker. After Drummond's death in March 1863, his son James shipped his rich private herbarium to Baron von Mueller in Melbourne, and to this day it remains a priceless asset in the National Herbarium of Victoria.

Mrs. Erickson tapped every possible source for her documentary material, and the number of references (six pages) listed at the end of the book is impressive. Of basic value were the 60 odd letters by James Drummond to Sir William Hooker, preserved at Kew Herbarium, while several old diaries in the archives of the Battye Library of Western Australia furnished a rich store of information. Four delightful

colour plates by the authoress portray flowers that held a particular appeal for Drummond; these are discussed at length in the quotations from his letters. It is a pleasure to read a book so attractively arranged and so free of typographical flaws as this. One can commend it with enthusiasm to anyone interested in Australian history, exploration or plant-life, and may we express the hope that it will keep green the memory of a remarkable old botanist to whom the Commonwealth owes so much.

J. H. Willis,

National Herbarium of Victoria

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The Bilby, *Thylacomys Lagotis* in Victoria

by N. SCARLETT

In the latter part of last century, James Dawson (1881), collected extensive vocabularies for three Western District Aboriginal dialects: *Dja:bwurung*, *Gurn'gobanud*, and *Bi:gwurung** (see map). *Gurn'gobanud* and *Bi:gwurung* were closely related dialects of the *Dhau'urdwuru* language (Mathews 1904); *Dja:bwurung* was very similar to the languages of north-west Victoria, such as *Djadjala* and *Wemba-wemba* (Hercus 1966).

Dawson's vocabularies included long lists of mammals, birds, insects, fish and reptiles, almost 400 separate entries all told. Under "Quadrupeds" he recorded an animal called in English "Jerboa or Bilboa", and known in all three dialects as *Ya:gar*. In his book he states that the *Ya:gar* was once numerous, living in mound communities on the plains.

There seems to be a strong possibility that the animal was actually *Thylacomys lagotis*: Dawson's "Bilboa" is an older or variant form of "Bilby".

Dawson gives its colour as brown and black, a fair approximation to the Bilby's fawn-grey body and fawn-grey, black, and white tail (Marlow, 1962).

Thylacomys lagotis has never been collected in Victoria. Krefft (1862) only collected specimens near Gol Gol in New South Wales, but he implied that it was once found south of the Murray. Marshall (1966), discussing the Western District of Victoria, says: "With the trees and the undergrowth went the Flying Squirrels, the Bilbies, the Bandicoots, the Potaroos, the

Paddymelons and all the others." Dawson's record provides some evidence to support Marshall's inclusion of the Bilby in the fauna of the Western District.

Unfortunately, *Thylacomys* has not yet been found among the sub-fossils of the Basalt Plains (Wakefield, 1964); this suggests that it may have had a rather localized distribution, perhaps in the drier parts of the area.

Over most of its former range the Bilby is now extinct, and it survives only in the more remote parts of the Northern Territory, Western Australia, and Queensland. There is therefore a tendency to regard it as entirely inland in its distribution. However, Wood Jones (1923) mentions that it was numerous in the immediate neighbourhood of Adelaide as late as the 1890's; and it was also present at Nalpa at Lake Alexandrina. The habitat of the Bilby in the centre is on plains of *Triodia* (*Spinifex*) and Mulga; in the south it was apparently found in savannah woodlands and tussock grasslands.

It must be emphasized that there are other possible interpretations of Dawson's record. The alternative English term for the animal—"Jerboa"—was often applied to species of *Bettongia*, small members of the Kangaroo family (see Wakefield, 1967). If the *Ya:gar* was a *Bettongia*, Dawson's description fits the burrowing *Bettongia lesueur* remarkably well. This animal has been recorded from several sub-fossil sites in the Western District, and Wakefield (1964) suggests it may have been present during the early period of settlement. Another, but rather more remote possibility is that the animal was the

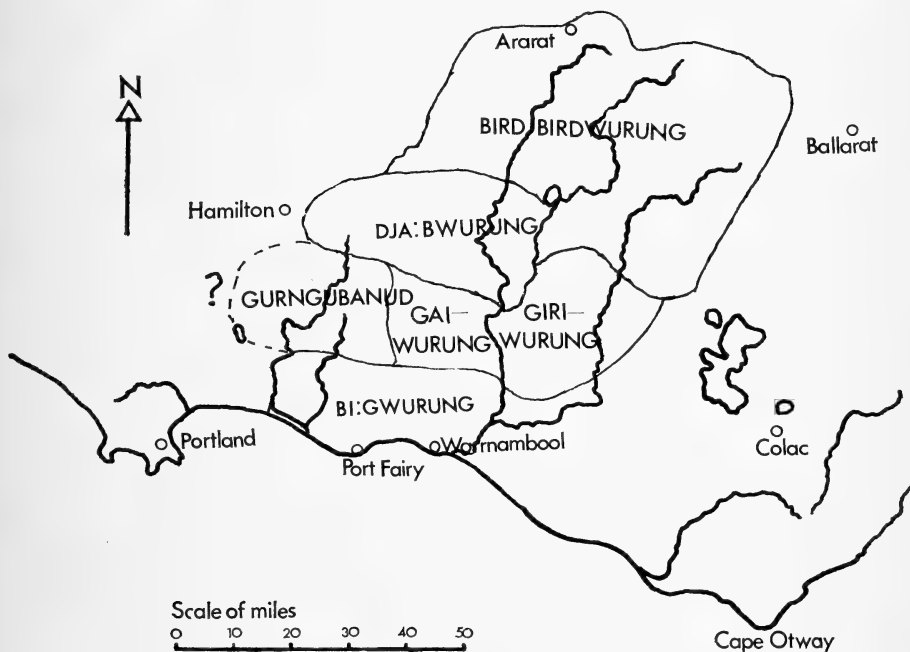
* The system of transcription is the phonemic system of Capell (Sydney), adapted for general publication. Ng is as in *hanger*; ngg as in *anger*; a colon indicates vowel length.

nest-building *Bettongia gaimardi*. Almost nothing is known about the habits of this mammal. If Dawson's "mound communities" were large aggregations of nest-material, rather than warrens of soil, he may have been referring to this animal.

Regardless of the correct interpretation of this particular record, a thorough examination of Aboriginal vocabularies for Victoria may well yield valuable supplementary information of past mammal distributions.

Apart from its biological interest, the Bilby is remarkable for the variety of its local names, which throw some light on the way popular names for native animals have developed. The name most commonly used today—Bilby—comes from western New

South Wales; Mathews (1902) records it as *bilba*, "a small kangaroo rat" for the *Yualeai* language, and it was probably also used in the related languages, *Gamilaraii*, *Wongaibon* and *Wiradhuri*, spoken over vast areas of the West. The word was adopted by the colonists during the great pastoral expansion into the area during the 1830's and 40's, and from there carried all over Eastern Australia. Overland contact between the Eastern States and South Australia was minimal in the early days of the South Australian Colony; the colonists in South Australia adopted the local Aboriginal term for *Thylacomys*. The *Narran'ga-Gaurna* word *binggu* (Tindale, 1936) was anglicised as "pinkie", which is (or rather was) the common



DIALECT DISTRIBUTION

name in the south of South Australia. In the centre the settlers adopted another native name—the *Wong-gangaru*, *Arabana* or *Gugarda-dhalga*. In various forms—"thulka", "talkie" "dulgite"—it remains in use.

The Aboriginal Names of the Bilby

It is interesting to note that Dawson's apparent confusion of *Thylacomys lagotis* and the Bettongs was shared by the Aborigines of South-West Australia. Wood-Jones mentions that the term *burdi* was often applied to both *Thylacomys lagotis* and *Bettongia lesueur* in the inland parts of Western Australia. For this reason, Kreffit's record of a Maraura (Darling River language) term *Yego* (c.f. Ya:gar) for *Thylacomys lagotis* cannot be used to identify Dawson's unknown animal.

ACKNOWLEDGEMENTS

I would like to acknowledge the help of Mr. J. Edge and Mr. F. Shirrefs of the Warrnambool Field Naturalists Club in drawing up a map of the Aboriginal dialects mentioned.

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"The Coolart Story"

AN EPIC OF MAN-MADE CONSERVATION

by W. A. DAVIS

The Coolart story is a 50-minute colour sound film in super 8 m.m. produced by William A. Davis for Survey Somers and the Victorian Ornithological Research Group.

Introduction

In these days of supposed human progress conservation is a word gaining in daily importance. When related to flora and fauna my broad definition of conservation would be:

"To preserve for future generations our unique flora and fauna by the careful preservation of habitats."

Protection of species in itself is important but the saving of the homes or habitats of these species is absolutely imperative.

We humans in our endless search for the material things of life tend to completely ignore basic realities of existence on this planet. Many of these realities are concerned with nature and her delicate balance. We irresponsibly contaminate our pastures and countryside by the indiscriminate spraying of deadly pesticides, we pollute our streams, rivers, lakes and harbours with toxic effluents. Even the very air we breathe is no longer pure and fresh. *We are in fact slowly destroying our own human environment.*

Members of our native fauna are the first victims of all this human thoughtlessness, particularly our beneficial water birds. Swamps are continually being drained in the convenient name of progress; thus the breeding habitats of these birds slowly disappear. As this happens we are forced to use more and more pesti-

cides to control our agricultural pests, and so nature's balance is slowly altered. A vicious circle develops, with the long-term losers being ourselves, the human race.

I ask the question, "would it not be better to revert back to natural control before the point of no return is reached?" A possible solution would be the creation of hundreds of conservation areas across the country to encourage the survival, and increase of these beneficial birds. The Coolart Lagoon is such an area.

The "Coolart Lagoon"

Here we have a unique creation of man. A classical example of what could be achieved on hundreds of farms throughout our rural areas by education of our farmers in the immense value of birds such as Ibis in pest control.

The potential of Coolart as a research area is without parallel anywhere. The fact that water levels could be controlled by man provides exciting possibilities in the quest for vital information on breeding colonies of Ibis, Spoonbills, Ducks, and other water birds. This is the information which the Fisheries and Wildlife Dept. is currently seeking.

From an educational viewpoint Coolart is ideally situated. Its close proximity to the Victorian Education Dept. children's camp at Somers provides nature study lessons for thousands of children annually from all over Victoria. The fact that these children can be shown breeding colonies of our most beneficial birds without even getting their feet damp

makes the preservation of this lake imperative. These children are the future naturalists, and the prospect of sowing the seeds of interest in only one child in every hundred is in itself sufficient reason for the preservation of Coolart Lagoon.

The Film—"The Coolart Story"

The film is not presented as a photographic epic. The purpose of the film is to make as many people as possible aware of the existence of Coolart, of what has been achieved so far, of what could be achieved in the future, and finally the doubtful long-term future of the lagoon in view of the tremendous development and soaring land values occurring in the Westernport district.

Systematic bird study in the Somers district and at Coolart has been carried out by members of Survey Somers as part of the activities of the Victorian Ornithological Research Group. This survey work commenced in 1961 and still continues. The film is possibly the culmination of all this activity. It took over twelve months of regular weekly filming to provide the necessary material.

After explaining the whereabouts of Coolart and tracing the early history, the film commences with Autumn and proceeds season by season as the year passes. The species inhabiting the lagoon are shown. When Spring arrives without sufficient rain to raise the water level, tension

mounts until in early September over an inch of rain provides the stimulus, and breeding of various species commences. The "Whitey" sequence follows; and the incubation, hatching, and growth to maturity of "Whitey" the White Ibis are followed week by week until he leaves the rookery. A short segment on the Royal Spoonbills follows.

Finally an urgent plea is made for the future of the area. The lagoon was created by the late Mr. Tom Luxton. It stands as a tribute to the foresight and dedication to conservation of this fine man. He was also an ardent bird lover, particularly of water birds. He took great interest in our survey activities and was delighted with the Coolart story. It was indeed sad that he passed from this world only one week after seeing the completed film in early April 1968. The film is humbly dedicated to the late Tom Luxton as a token of our sincere thanks. The property is currently being run by Mr. and Mrs. Roffey, daughter and son-in-law of Tom Luxton. They are maintaining the interest shown by Tom and have indicated that the lagoon will be retained for as long as is humanly possible.

The film will be made available to interested parties in natural history and conservation by application to—William A. Davis, 39 Fairlie Avenue, Macleod, 3085, Melb. Phone 43 2112.

TO AFFILIATED CLUBS

Will members of affiliated clubs, who receive the *Victorian Naturalist*, please direct the attention of officers to the following message:

Co-operation

It has been evident for a long time that more effective study of all aspects of Australian nature could result from

a simple arrangement between town and country. We now have affiliation in almost all the State and some beyond it.

Outside Melbourne, opportunity for frequent observation is greater. In Melbourne, we have the institutions where knowledge is stored.

The Council of F.N.C.V. is prepared to appoint a committee, with a representative from each study group, for liaison with affiliated clubs.

Each club is invited to appoint one liaison officer.

The liaison officer of the affiliated club would pass on requests and

Mr. A. J. Swaby, 20 Grovedale Road, Surrey Hills 3127 will act as convener in the initial stages and correspondence should be addressed to him.

PROPOSED CONSERVATION COUNCIL OF VICTORIA

Narrative

Public interest in conservation of natural resources in Victoria and the Commonwealth at large has been strong for years. Evidence for this is seen in the existence of the large number of clubs and societies devoted to some particular aspect of conservation, many of them having enjoyed an active and effective life for many years.

There is evidence, too, that this interest and activity is steadily increasing, but it is also evident that the impact these societies have, firstly on community thinking, and secondly on government, industrial and private action, is not as great as it might be because each has its own special interests and none can speak with authority for the whole conservation movement.

One of the major strengths of the conservation movement in Victoria is this diversity of active groups, but here also lies a major weakness. In Victoria we suffer from the fact that we cannot speak with one voice when issues of major public concern are being debated.

It is obvious that every effort should

reports of work and results. For F.N.C.V. a convener would receive requests and reports from liaison officers of affiliated clubs and pass them on to his members. He would also collect and pass on to the affiliated club or clubs the requests, suggestions and answers from F.N.C.V.

All concerned are assured that the work will be light for some years. When it increases, it should be easy to enlist and instruct more helpers.

be made to overcome this inherent weakness by the establishment of an administrative structure which will allow for effective co-operation and co-ordinated activity. This need has been amply demonstrated in recent months by the public debates on the Botanic Gardens and the Little Desert.

The establishment of the Australian Conservation Foundation has met this need at the national level but it seems unlikely that the A.C.F. will set up state committees in the near future and therefore we cannot look to this organisation to provide the basis for co-operative effort in Victoria.

Professor A. Swanson of the U.S.A., on A.B.C. as Guest of Honour recently said, "There is a need for more unity and effective co-operation between the private organizations interested in conservation. Australia has scores, probably hundreds of non-government organizations concerned with nature protection, birds, forests, national parks, soil and water conservation. These organizations are nowhere near as effective as they could be if they banded together and concentrated attention on their common interests—of far greater import-

ance than the differences that separate them."

In an attempt to bring about the establishment of some organization which could provide for this concentration of effort, an invitation was sent by the Director of the Natural Resources Conservation League, Mr. G. T. Thompson, to many conservation societies to send their representatives to a meeting held at the offices of the N.R.C.L. at Springvale on Thursday, 24 April.

The response to this invitation and the discussion between the representatives attending the meeting was very encouraging. At that meeting of some 45 individuals, members of 27 organizations, the following resolutions were approved:

1. That those present at the meeting approve the formation of an *ad hoc* Committee to consider the establishment on a permanent basis of a co-ordinating organization of a name to be determined.
2. That a Committee of five be appointed with power to co-opt. And in accordance with that resolution the following Committee was appointed: Mr. Ros. Garnet, Hon. Secretary, Victorian National Parks Association; Mr. D. J. Lee, Hon. Secretary, Field Naturalists' Club of Victoria; Dr. D. M. Calder, Senior Lecturer, Botany School, Melbourne University; Mr. H. G. Bleakley, President, Native Plants Preservation Society of Victoria; and Mr. G. T. Thompson, Director, Natural Resources Conservation League of Victoria. Convener. Mr. A. L. Godfrey, Assistant Organiser, Natural Resources Conservation

League of Victoria, was appointed to act as Secretary.

3. It was also resolved that the *ad hoc* Committee report to a general meeting to be held on the fifth Thursday in October (30/10/69) at the Brymay Hall, Church Street, Richmond.

Subsequently the *ad hoc* Committee met at weekly intervals during May and June and the preamble to their report follows.

Preamble

The proposed Conservation Council would provide a means for the co-ordination of the views and activities of conservation *organizations* in Victoria in a concerted effort to maintain and improve the quality of the human environment.

Membership of the Council by individuals is considered to be neither desirable nor necessary, but organizations interested in conservation should be afforded an opportunity to join and appoint voting delegates.

The Council must not be considered an off-shoot or part of any existing organization but should be completely free and independent.

It is envisaged that a member body might, as it thinks fit, take independent action on any matter regardless of the decisions of the Council, but in doing so it should not involve the Council.

To function as an autonomous body finance of the order of approximately \$12,000 p.a. would probably be required.

All interested people are invited to attend at Brymay Hall, Church Street, Richmond, on Thursday, 30 October, 1969.

Field Naturalists Club of Victoria

General Meeting

8 September, 1969.

Vice-President, Mr. T. Sault, was in the chair and about 75 members and visitors were present. Visitors and new members, Mr. Bishop, Mr. Wolfe and Miss Lowe, were welcomed by the Chairman.

The minutes of the August meeting taken as read on the motion of Mr. Woollard, seconded by Mr. Zerkler.

New members, whose applications had been approved by Council since the last meeting, were elected on the motion of Mr. R. G. Taylor, seconded by Miss Woollard.

Correspondence was received from Mr. Swaby on the subject of the Little Desert and from Miss Susan Whitlock asking for information about Falls Creek. In answer, Miss Whitlock was referred to reports in the "Victorian Naturalist".

The subject for the evening was "The Coolart Story", a sound-film, photographed and produced by Mr. W. Davis. A detailed account of the film and its story appears elsewhere in this issue. A short film of a Royal Ornithologists' Union annual bird banding expedition to Mud Island in Port Philip Bay was shown also. The Chairman thanked Mr. Davis for providing an opportunity for the Club to see his intensely interesting film, which all present endorsed by acclamation.

General Business

Mr. R. G. Taylor reported on the Public Meeting over the Little Desert held in the Melbourne Town Hall, to publicly protest against the Little Desert Settlement Scheme. A committee, to be known as "Save our Bushlands Action Committee", was formed. Mr. Taylor, as Treasurer of this Committee, will be glad to receive donations from those sufficiently interested, to cover expenses, such as advertising, which must be incurred through publicity. A deputation is to seek an interview with the Premier of Victoria. Highlights of the speeches at the meeting are to be published in pamphlet form and should be available shortly.

Mrs. Woollard, supported by Messrs. Ros Garnet and J. Baines, said that credit should be given, and placed on record, of the sympathetic publicity given by all the Melbourne newspapers in the controversy over the Little Desert matter.

Mr. Taylor brought to the notice of the meeting, the announcement in the newspapers, that the Government had abandoned the scheme to establish a licensed restaurant in the Royal Botanic Gardens.

The Secretary reported the following:

The oil industry is to publish a survey of the effects of oil pollution in coastal and estuarine waters.

The M.M.B.W. has asked for the Club's co-operation with their research work. Information is particularly asked for about the Maribyrnong Valley.

A meeting will be held at Brymay's on 30 October, 1969, in connection with a proposed "Conservation Council of Victoria".

Concern by a number of people is held because of the considerable subdivision of forested areas which is taking place in the Woori Yallock area; and between there and Yellingbo.

The Chairman reported that the Nature Show, held in Lower Melbourne Town Hall on 1, 2 and 3 September, 1969, was highly successful. Attendance at 6,980 was the second highest to date, the record being 7,300 in 1967. The Publications Stall under Mrs. Strong returned gross takings of just over \$500.

Mr. McInnes told the meeting that he would be unable to continue as a member of the Nature Show Committee and tendered his resignation. He would, he said, continue to work for the Show but not as a committeeman. Mr. J. Baines spoke of the splendid work done by Mr. McInnes in connection with the Nature Show over a number of years and moved that:

"This Club records its greatest appreciation of the splendid work done this year and in the past years by Mr. McInnes in connection with the Nature Show."

In seconding the motion, Mr. Woollard also spoke of Mr. McInnes' excellent and enthusiastic work. The Meeting carried the motion by acclamation.

Exhibits

Mr. Lee showed a sample of Brown Coal from Pawong Colliery, near Bacchus Marsh.

Mr. Alan Morrison showed a large Cup Sponge about 12" diameter and 12" deep, found at Broom, W.A., during his recent trip to North and West Australia.

Field Naturalists Club of Victoria

Established 1880

OBJECTS: To stimulate interest in natural history and to preserve and protect Australian fauna and flora.

Patron: His Excellency Major-General SIR ROHAN DELACOMBE, K.B.E., C.B., D.S.O.

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