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## Tertiary Fossil Forest at Macquarie Plains

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### ABSTRACT

AT Macquarie Plains, Tasmania, cliff and road exposures in a youthful landscape show that at least nine eruptions of basalt or basaltic tuff occurred in the area late in the Tertiary. Fossil wood is found on two horizons, the higher occurrence being that of opalized trees (*Cupressinoxylon hookeri* and others) in a coarse tuff in position of growth, forming part of a fossil forest.

### INTRODUCTION

Quarrying operations on the Dobson Highway, half a mile east of Macquarie Plains Railway Station, recently revealed a number of opalized trees in breccia and tuff. Opalized trees were first discovered in the Macquarie Plains area by Mr. R. Barker, of the original "Rose Garland" property, before 1842, and were reported on by Joseph Hooker (1842), surgeon on H.M.S. "Erebus". Several years later Strzelecki (1845) recorded more observations, including those of moulds of trees in basalt and of at least two basalt flows. Moore (1853) also noted them but added no fresh observations. Strangely enough, Johnston makes no comment on them in his "Systematic Account of the Geology of Tasmania" (1888) except to record Hooker's and Moore's papers. The trees seem to have been rediscovered several times since, judging from local comment.

The "Barker Tree" was sent to the Great Exhibition at the Crystal Palace in 1851, after which it was donated to the British Museum of Natural History. This specimen was described by Arber, in 1904, who noted that it was nine feet long by three feet wide.

The latest rediscovery was brought to the attention of the author by a report received from Sir Rupert Shoobridge of a piece shown to him by Mr. L. G. Martin, of Macquarie Plains. Since then many people have collected from the cutting, including Mr. F. A. Peterson, who collected a piece of wood 15 in. long, and about 7 in. in diameter, which he donated to the Tasmanian Museum in 1954.

The author wishes to acknowledge with many thanks the assistance of Miss E. M. Smith, of the Geology Department, who looked up the old literature, and of Mr. A. H. Spry, of the same department, for assistance in the field.

### PHYSIOGRAPHIC NOTES

This area is of considerable physiographic interest, as some of the post-basaltic history of the River Derwent can be read here. The higher hills to the north-east and the south-west with gentle to steep slopes cut in Permian and Triassic rocks or dolerite contrast with the lower areas of steep cliffs of basalt, giving way sharply to the flat plains of the Tertiary lake sediments or river alluvium near the rivers.

The main drainage in the area is the Derwent River, with the Styx River joining it just below Macquarie Plains railway station. The valley of the Derwent is narrow and steeply-cliffed with only occasional flat areas of deposition at or just above present river level. There are numerous insequent tributaries in the Tertiary basalts and lake sediments. Thus the Derwent River here is high in a local valley tract. Fine slipoff and undercut slopes are shown by the Derwent, especially beside the Lyell Highway near Gretna. A preliminary stage in the development of an undercut slope is frequently the formation of landslides where basalt with well-developed vertical jointing overlies soft Tertiary sands and clays. These landslides may be seen very well in the cliff facing the Dobson Highway half a mile north of Macquarie Plains Railway Station and in Lands Dept. photo Ellendale, Run 8, No. 24154. Rapids are present near the Lyell Highway and at other places along the Derwent so that the river has locally not reached maturity. Although the general course and valley of the Derwent here strongly suggest incised meanders, the straightness of parts of the river, as at Macquarie Plains where it flows straight south-westerly for a mile, is an anomaly.

The valley of the Styx River around Bushy Park and Macquarie Plains is wide and flat and is a local plains tract mainly developed on Tertiary lake sediments. The course of the river is very meandrine, and at least one ox-bow lake has been formed. Some deposition appears to be taking place on the inner curves of the meanders now and the stream is usually aggrading in this area. Two terraces can be seen in the valley around Bushy Park, one 6-10 ft. above stream level and the

other about 20 ft. above the first. The slope from the higher one to the lower is still very sharp, suggesting that the last is of no great antiquity. The top terrace is not much dissected either, and it is therefore probably not very old.

The hills of basalt are frequently terraced due to the superior resistance to erosion of the lava flows as compared to the tuffs or lake sediments. The original surface of the lava plain is probably exposed on top of the hills as suggested by the accordance of the levels of the tops of the hills for some miles up and down the stream. Because part of the original surface still remains, the topography is considered to be still youthful.

The history of the Derwent and its tributaries in this area has been briefly treated by Edwards (1939, p. 193) and the following is a considerable amplification with some differences. After the eruption of the last lava flow we may envisage the area as consisting of wide basalt plains between steep hills of older rocks. The Styx entered this plain from the hills several miles south-west of Glenora railway station and flowed along the south-eastern margin of the plain for about four miles before turning sharply to the south-east, where it continued to flow along the junction between the basalt and the older rocks to join the Derwent near Macquarie Plains. Due probably to pre-basaltic erosion, the Tertiary lake sediments were higher on the south-western side of the old Derwent Valley, so that the basaltic cover was thinner and the Styx River cut through the basaltic plain to the lake sediments more quickly than the Derwent itself and was thus able to develop a local plains tract. The Derwent immediately after the eruption of the last basalt flow meandered along the north-eastern side of the plain till it reached the resistant dolerite spur near "Rose Garland" where it swung sharply to the south-west and flowed right across the plain until it impinged on the south-western margin where it swung back across the plain. The Derwent has since cut down into the plain incising the meanders. A time of still-stand in base level was responsible for the development of the 30 ft. terrace. A later reduction in base-level was responsible for the 6 ft. terrace.

In the future, due to the enlargement of the meanders, the Derwent is likely to cut through the narrow divide just north of Bushy Park to join the Styx, leaving several miles of the Derwent course as a large ox-bow lagoon.

## STRATIGRAPHY

The succession of the rocks in the immediate vicinity of the fossil forest is summarised as fig. 1 and the position of the sections is shown on the map, fig. 2, which also shows a general sketch map of the geology and physiography of the surrounding areas.

*TERTIARY LAKE SEDIMENTS.*—The only previous author to remark on the lake sediments has been Johnston (1888), who described briefly fossiliferous lignites and clays from near the junction of the Styx and Derwent Rivers. In the same publication he mentioned clays with leaf and fruit impressions from a road cutting near Glenora and figured some of the leaves. The probable locality of this find is indicated on the map.

Lake sediments are also exposed in the banks of the Derwent in a number of places. The most northerly occurrence examined showed a cause conglomerate near river level and this is overlain by a feldspathic sandstone. The conglomerate is about 6 ft. thick and is poorly sorted with rounded to sub-rounded boulders of dolerite, quartz and quartzite. Basalt was looked for but not found. Although some boulders had a high sphericity, many of them were discoidal or flattish in shape, and there were signs of imbrication, indicating currents from the west or a west facing shingle beach. The latter hypothesis is preferred but no positive evidence on the subject can be given. The conglomerate is overlain by a friable brownish-yellow to dark-brown feldspathic sandstone. The sandstone is medium-grained with good sorting and sub-angular to sub-rounded grains. It contains quartz, weathered feldspar and white mica in a clayey matrix, and is veined with earthy calcite. Thick laminae and very thin beds are present and some cross-bedding, again suggesting currents from the west, is present.

In a section a quarter of a mile to the south of this one, white to yellow or brown clayey sandstone is shown. It is much thicker than at the first locality and there is no conglomerate exposed. This may be due to alluvium cover near the present river.

*PLIOCENE VOLCANIC ROCKS.*—Overlying the sandstone in the first section is a thick flow of basalt. At the base it is very vesicular with some aragonite in the vesicles. The vesicular zone passes up gradually into a zone showing good columnar jointing. This zone is about 4 ft. thick and is followed by about 48 ft. of hackly jointed basalt. The top eight to ten feet of the flow are vesicular and the top 6 in. tends to be glassy and scoriaceous. This sequence of zones within the flow is very similar to that seen in the new excavations at the eastern end of the Plenty Bridge, but was not repeated in any of the higher flows. The top 3 ft. is weathered more than the rest of the flow.

A thin layer of claystone follows. This is yellowish to brown at the base and dark grey near the top. It contains wood fibres and stem impressions. The overlying basalt is very vesicular for about a foot, and near the base there are signs of ropy and pillow lava. At or near the base of the flow are numerous cavities up to 20 in. across and over 4 ft. deep which have, in places, been filled by concentrically

laminated ironstone concretions. The basalt appears to have ridden up over some objects, formerly occupying the cavities, and it is noticeably finer-grained at contact with these, as well as having radially arranged vesicles up to 4 in. long over them. Some of the cavities branch and others have impressions on the walls suggestive of wood. It is suggested that these were originally trees knocked over and then overridden by the basalt and carbonised by the heat of the flow. The carbon was later removed by oxidation and some of the cavities filled with concretions of iron hydroxides.

This flow is succeeded by tachylytic tuffs and breccias. The top of the flow is very vesicular and somewhat more weathered than the rest of the flow. Where the top surface is well exposed, as in the road cutting, it is seen to be covered in a number of places by a thin veneer up to a few inches thick of sand and clay. The top of the lava apparently had a relief of a few feet as shown by the exposures in the road cuttings. The sand and clay member had leaf impressions and in many places the top inch or two has been heavily stained with iron.

The succeeding tachylytic breccia and tuff formation contains the opalized trees. It consists largely of irregular, angular, poorly sorted fragments of tachylytic and vesicular basalt, but contains also fragments of Triassic sandstone and Jurassic dolerite. The tuff shows cross bedding which dips in a southerly direction. Because of the lack of rounding and any other sign of water action, this cross bedding is considered to be of aeolian origin. The opalized trees apparently grew in the underlying sandy clay, as they can be traced to within a foot of this band, but then begin to show signs of disintegration, which can be traced down into clay and produced cavities in the clay. The increasing degree of disintegration shown near the band of sandy clay may be due to the freer movement of groundwater along that band. The opalization of the trees took place after they had been covered by tuff. The silica may have been derived by leaching of the basaltic tuff by slow moving groundwater. At least twelve trees have been observed to date in a vertical position. They vary from one inch up to 15 in. in diameter. In one case a branch was found in position on the trunk. The tallest portion of a tree yet found is about 20 ft. high, but considering the diameter and the angle of convergence of the sides some of the trees must have been over 60 ft. in height.

The tree presented by Mr. Peterson to the Museum showed over 380 growth rings. Considering the very much larger diameter of some of the other pieces which have been found, the forest could well have been growing for over a thousand years before it was overwhelmed by the volcanic ash. On an A.N.Z.A.A.S. excursion in 1949, Mr. F. S. Colliver, of the University of Queensland, found several fragments of

bone in the breccia in the road cutting but no more have yet been found. There are at least three species of wood in the breccia, including one described by Arber in 1904 as *Cupressinoxylon hookeri*.

In the section (fig. 1) along the south-eastern bank of the river dolerite *in situ* was found at one place, and in another more than 30 ft. of Tertiary sandstone was followed by only 15 ft. of basalt, and then the lower leaf-bearing sandstone. This would indicate some relief of the pre-basaltic surface.

Over 200 ft. of continuous section are exposed in the cliffs on the north-western side of the river, but the base is not exposed as it is covered by river alluvium. The lowest unit is a massive basalt which becomes more vesicular in the top 3 ft. The top surface is irregular but there is no sign of weathering. The second unit is another flow of basalt with the basal half inch tachylytic followed by a zone 1 ft. thick of basalt with long cylindrical vesicles. The top 3 ft. is very vesicular and the surface is very irregular. Some weathering may be present at the top surface and there is an accumulation of limonite in the joints near the contact.

A pillow lava forms the third flow. Pillow lavas have been recorded in the Tertiary of Tasmania only once before, at Liawenee Canal by Voisey (1949). The pillows here are up to 6 ft. in length, oval and with radial cylindrical vesicles and concentric lines of spherical vesicles. The pillows fit into one another and have tachylytic margins. The top few feet of this flow are very vesicular.

Another massive basalt follows with a ropy, tachylytic lower surface and long cylindrical vesicles near the base. The top is very vesicular. A thicker, more massive, but more vesicular flow follows and is succeeded by a thin bed of sandy clay.

This bed of sandy clay is variable in thickness from about one inch to 2 ft. and consists of clay with some sand. The colour varies from white to red and in many places there is some evidence of small concentrically banded concretions of aluminous and ferruginous material. The top is commonly very iron-rich and this association suggests incipient lateritisation. Leaf and stem impressions are common.

A thick tachylytic tuff overlies the plant bearing sandy clay. The tuff is roughly bedded and sorted and contains lenses of breccia with fragments up to a foot in length. While these fragments are predominantly of tachylytic and vesicular basalt, fragments of dolerite and quartz sandstone were also seen. The fragments in the tuff and breccia are very angular and there is no evidence of deposition by water. Cross bedding was seen in this unit and was mainly directed from the north. Near the base of the tuff a number of long, cylindrical cavities up to 18 in. or 2 ft. in diameter and horizontal in disposition are present.

FIG. 1 - SUMMARY OF STRATIGRAPHY NEAR  
MACQUARIE PLAINS.

LEGEND




SEDIMENTARY ROCKS

-  CLAY & SAND
-  CONGLOMERATE

PYROCLASTIC ROCKS

-  TUFF & BRECCIA

IGNEOUS ROCKS

-  BASALT
-  PILLOW LAVA
-  DOLERITE

VERTICAL SCALE

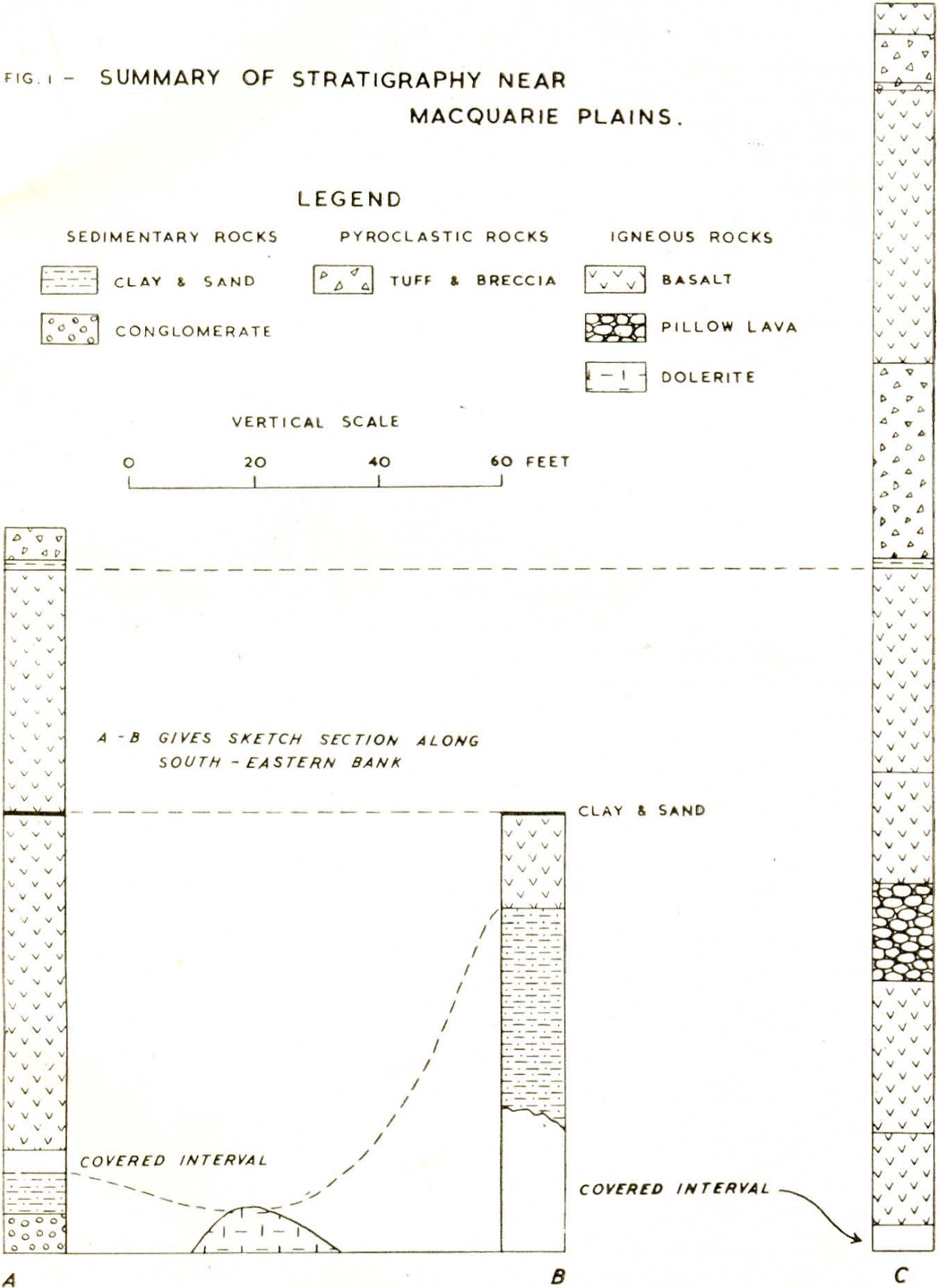
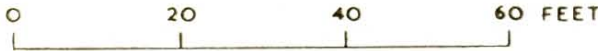


FIG. 1.—Summary of Stratigraphy of Derwent Valley near Macquarie Plains.

Some of these branch, and it is suggested that they are the cavities left by the solution of fossilised trees. Their axes lie mainly in a north-westerly direction.

The tuff is followed by a flow of massive basalt which is vesicular near the top. Another tuff overlies the basalt. The basal foot of this tuff is medium-grained, thinly bedded and cross-bedded while the rest of the unit is coarse and thickly bedded. The section is completed by a flow of massive basalt.

## GEOLOGICAL HISTORY

The history of the Macquarie Plains area began in the Triassic Period (about 190 million years ago) when sand and volcanic ash were deposited together in swamps and lakes in which peat was also accumulating. These rocks of the New Town Coal Measures are now exposed at Gretna and Plenty. A few million years later they were intruded by large masses of dolerite, such as are exposed in the road metal quarry a quarter of a mile north-west of the Rosegarland Hotel, and in the bed of the Derwent half a mile upstream from Macquarie Plains Station. A long period of erosion followed, of which there is no direct evidence in the area, and then early in the Tertiary Period (more than fifty million years ago) faulting caused the development of large valleys, running north-westerly with a gentle slope from the north-east, as is shown by the exposures in the road cutting at Plenty, and a steep south-western scarp. In these fault valleys lakes quickly developed. Lake Glenora probably stretched from slightly north of Glenora, south-easterly at least as far as a dolerite promontory at Macquarie Plains, and perhaps around the south-western end of this to Plenty. The western shoreline probably lay a few miles south-west of Glenora and ran north-east almost to Bushy Park where it turned and ran south-easterly again. The north-eastern shoreline, which was probably an irregular one, lay just south-west of Gretna. Against the north-eastern shoreline gravels were deposited as a shingle beach and as the lake waters rose sand was deposited on top of the shingles. Clays and peats were deposited in the central parts of the lake, which was finally drained by the development of the embryonic Derwent River, as set out by Hills and Carey (1949; p. 36). After a period of erosion of the lake sediments by the Derwent, probably flowing more or less straight south-westerly through Macquarie Plains, basaltic lava was poured into the valleys carved in the lake sediments. This probably took place much less than ten million years ago during the Pliocene Epoch (Hills and Carey, 1949; p. 36).

The source of the flows and ash showers has not yet been found, but from the consistent southerly dip of the cross bedding in the tuffs, some of the volcanic centres lay to the north-east, perhaps almost along



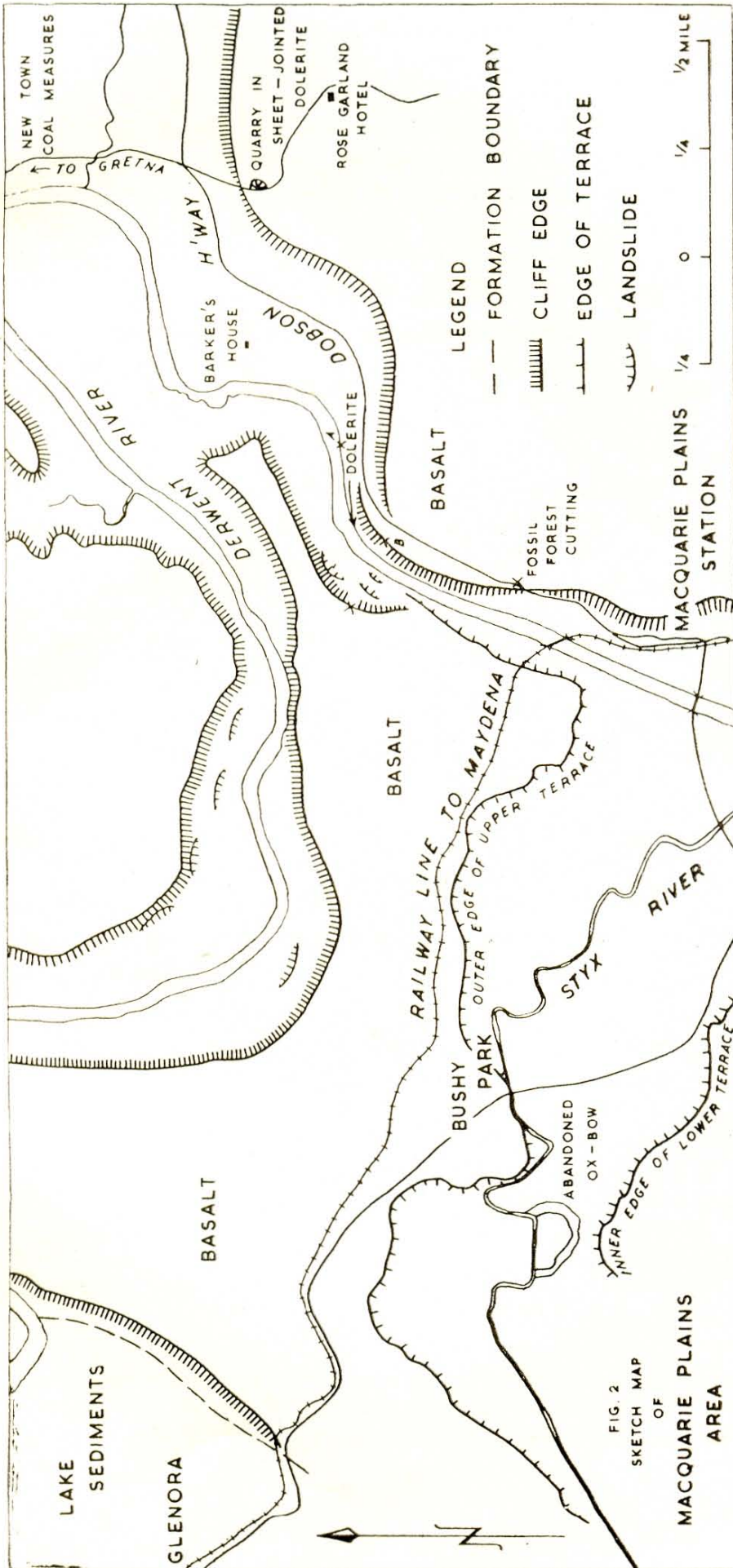


FIG. 2.—Sketch map of Macquarie Plains Area, Derwent Valley, from Glenora to Rosegarland, showing position of "Fossil Forest" cliffs.

the north eastern shore of the old lake. At least four lava flows were poured out, the third into an ephemeral lake, if one can judge from the pillow lava.

Following the pouring out of the lava after the pillow lava, a lake or swamp developed on the basalt surface and sand and clay accumulated in it, together with leaves and twigs. After this lake had been drained or dried up another lava flow covered the area and another lake developed on the surface of this new flow. Again sand and clay were deposited and the flora of the time is partly represented by the leaves and twigs found in the sediments.

After the lake disappeared, these sands and clays became the soil, supporting a forest of cypress-like pines and probably she-oaks and other trees. Marsupials roamed through this forest. This forest lived for at least 400 years and probably over 1000 years in a climate that was certainly humid and may have been monsoonal, to judge from the incipient lateritisation of the soil. Then an explosive eruption somewhere to the north-east or north-west violently expelled a dense cloud of ash over the forest. The force of the explosion knocked over those trees growing in the area which is now the north-west bank of the Derwent, but was spent by the time it reached Macquarie Plains, so that the trees were left standing but submerged in ash. Another lava flow followed, and then there were several ash showers in rapid succession, and finally another lava flow. All told, there were at least nine eruptions in the vicinity of Macquarie Plains. Whether this was the last one in the area is not known but it seems very likely that it was, because the tops of most of the basalt covered hills form a gently sloping surface at about this level. The Derwent then began to carve down into this basaltic plain, in places depositing gravels consisting essentially of basalt pebbles, but generally incising its original meanders into the plain until the present topography was developed.

#### LOCALITY INDEX

	Quadrangle	No.	Lat.	Long.
Bushy Park	Ellendale	74	42° 43'	146° 55'
Glenora	Ellendale	74	42° 41'	146° 52'
Gretna	Ellendale	74	42° 41'	146° 57'
Liawenee Canal	Great Lake	53	41° 52'	146° 41'
Macquarie Plains	Ellendale	74	42° 43'	146° 56'
Plenty	Styx	81	42° 44'	147° 00'

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## TASMANIAN FIELD NATURALISTS' CLUB

(Founded 1904)

Meetings are held at the Royal Society's room, Tasmanian Museum, Hobart, on the third Thursday in each month, except in December and January.

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# Recent Records of Tasmanian Flowering Plants

By WINIFRED M. CURTIS.

THE new "Tasmanian Flora" which is now being written will contain some 400 species in addition to those described by Rodway in *The Tasmanian Flora* of 1903. Of this total about 225 are introduced plants. The remaining species are native plants, of which 75 are due to the separation of entities previously grouped together under one specific name, and about 100 are new records, nearly half being orchids. Certain of the plants in these groups were recorded by Rodway in a series of papers published in *The Papers and Proceedings of the Royal Society of Tasmania* during the years 1903-1936. However, many species, including the seven following, are more recent discoveries.

## LEGUMINOSAE. (*Pultenaea palacea*, Willd. var. *sericea* Benth.)

This is an undershrub with slender wiry branches spreading horizontally for a foot or more before turning upwards. The numerous leaves are linear to narrow-elliptical with pointed apex, 1-2 cm. long, and like the young branches, lightly covered with silky hairs. The flowers, which are similar to those of other Tasmanian representatives of *Pultenaea*, are borne in terminal heads, and are conspicuous, having an orange-coloured standard and crimson keel.

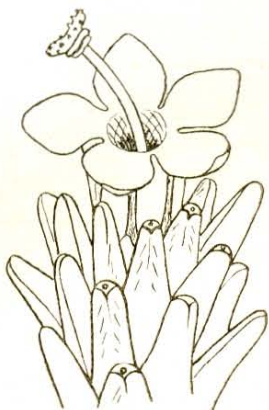
The species was found by Mrs. M. Cameron, in Oct., 1949, at Bridport, where plants are common in wet sandy heaths. It is recorded from Victoria, but in Tasmania is apparently confined to the North.

## MYRTACEAE. (*Leptospermum rodwayanum*, Summerhayes and Comber)

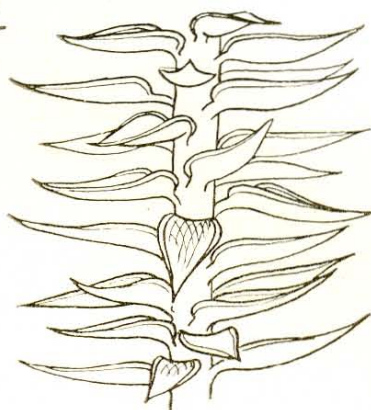
Tasmania has eight or nine different tea-trees, some of which are very variable and consequently difficult to classify. This species, which is local in distribution, is characterised by the large size of its flowers and fruits. It is a much-branched shrub 6-15 ft. high. The leaves are ovate to obovate, 1.2-1.8 cm. long, rather thick, the younger ones at least often greyish-green in colour due to a light covering of short silky hairs. The flowers are about 2.8 cm. in diameter. The fruit is at first somewhat fleshy but ripens to form a capsule, at least 1 cm. in diameter, with a thin woody wall, the top being markedly convex and opening by 5 valves.

*Leptospermum rodwayanum* was collected by Mr. H. F. Comber in April, 1930, at Coles Bay, where it grows on granite rocks at an altitude of about 1,000 ft., and was named in honour of Leonard Rodway,

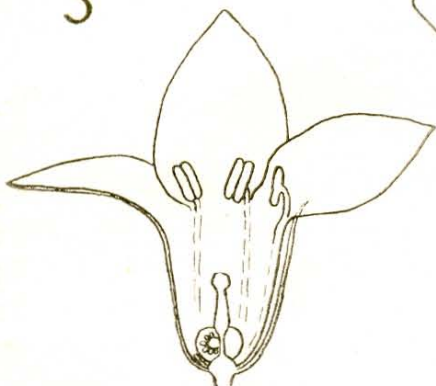
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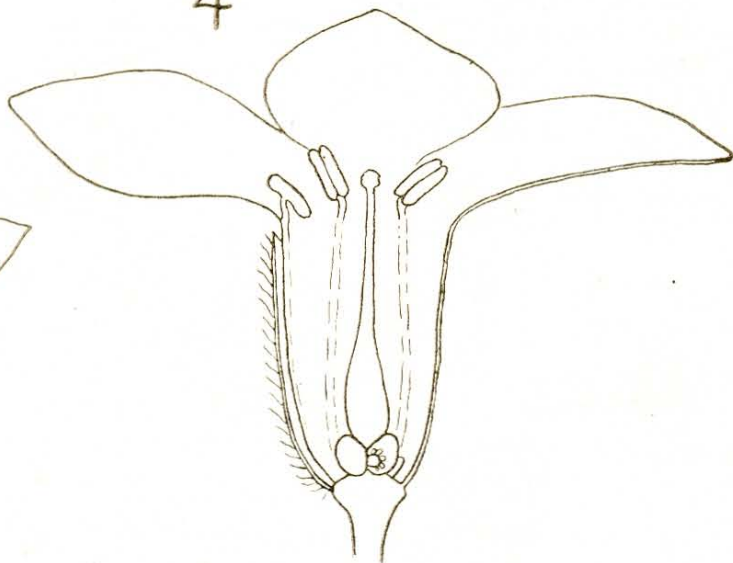
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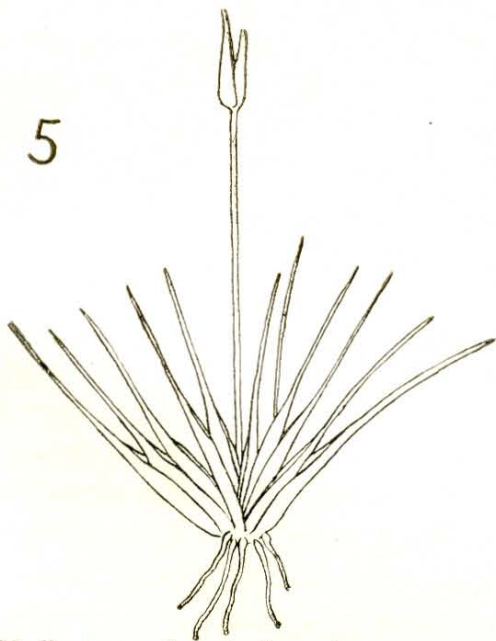
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4



5



6



1. *Phyllachne colensoi*, flowering stem, x 5.

2. *Epacris marginata*, branch with leaves, x 2.

3. *E. marginata*, half flower, x 5.

4. *E. barbata*, half flower, x 5.

5. *Centrolepis minima*, plant, x 1½.

6. *C. minima*, carpels, x 8.

### STYLIDIACEAE. (*Phyllachne colensoi*, Bergr.)

With the addition of *P. colensoi* to our flora, five species of cushion plants are known from the State. Cushion plants are a characteristic feature of Tasmanian mountains but they are so similar in growth form that it is only when flowers are seen that species can be identified easily. This plant may be distinguished by the leaves which are linear, thick, widened at the base and slightly flattened at the apex, below which is a glandular pore. The flowers, characteristic of the family Stylidiaceae, have stamens united with the style: the column so formed is conspicuously exerted (Fig. 1).

This species was identified from material collected by Mr. C. G. Elliott, in Feb., 1947, from the summit of Mt. Rufus. The record of *Phyllachne* from Tasmania is of interest for the genus is one confined to the widely separated land masses of the southern hemisphere where it is known in New Zealand, the Auckland and Campbell Islands, and Fuegia.

### EPACRIDACEAE. (*Epacris marginata*, Melville) and (*Epacris barbata*, Melville).

Heaths are a conspicuous feature of Tasmanian vegetation in spring and occasional plants may be found in flower throughout the year. The opportunity to examine collections of material from the more inaccessible localities in the South and West of the State resulted recently in the recognition of two new species. Both are allied to *Epacris heteronema*, Labill. and had previously been included under that name.

*E. marginata* is a much-branched shrub usually 3-4 ft. high with stout branches bearing closely imbricated leaves. The leaves are ovate, slightly concave, less than 1 cm. long, the apex acute and pungent, the base cordate, grey-green in colour, glaucous, with a narrow hyaline margin. The flowers, which are honey-scented when fresh, have a short style like that of *E. heteronema* (Figs. 2, 3).

The type material of this species was collected by Miss J. Somerville from the slopes of Brown Mountain, Tasman Peninsula, in April, 1946, during the Tasmanian Field Naturalists' camp at Safety Cove that year. Further material was sent by Mr. W. H. Clemes, from Eaglehawk Neck.

*Epacris barbata*, Melville.—This is a showy plant, 3-4 ft. high, slightly branched, bearing numerous flowers which are larger than those of most Tasmanian heaths. The flower is characterised by the silky hairs on the calyx. The style is long and swollen towards the base (Fig. 4).

The type material of the species was collected in Oct., 1946, at Coles Bay, where the plant is abundant and familiar to all who have enjoyed the spring flowers on the sandy heaths there.

**CENTROLEPIDACEAE.** (*Centrolepis minima*, T. Kirk) and (*Gaimardia setacea*, Hook.f.)

The family Centrolepidaceae comprises four or five genera, with about 30 species found only in the southern hemisphere, mainly in Australia and New Zealand. The plants are inconspicuous, very small, and have been likened to grasses, sedges or even mosses. In Tasmania some species of *Centrolepis* are common annuals in sandy heaths, other species of *Centrolepis* and *Gaimardia* are abundant in sub-alpine bogs where they may cover considerable areas, forming soft green cushions several feet in diameter and 1-2 in. thick.

*Centrolepis minima* illustrates the characters of the genus. The plant grows in small dense tufts and has a slender flower stalk 2-3 cm. high. The leaves are shorter than the flower stalk, linear, and in this species are arranged in two opposite rows. The flowers of a *Centrolepis* are borne in the axils of two bracts which terminate the flower stalk. Each flower consists of one stamen and 1-12 carpels and is sometimes surrounded by 1-3 papery scales. The carpels are superimposed in two rows (Figs. 5, 6). In *C minima* each bract subtends only one flower without scales and with 2-5 carpels.

Plants were found by Mr. R. Cruickshank in Jan., 1953 on the shores of Lake Pedder. The species is recorded in New Zealand from the shores of lakes.

*Gaimardia setacea* Hook.f.—This is the second species of *Gaimardia* to be recorded from Tasmania, it is found also in New Zealand. *G. fitzgeraldii* described and illustrated in *The Tasmanian Flora* is an endemic species discovered and named by Rodway. *G. setacea*, found in Tasmania in Jan., 1944, is a similar but more slender plant, the leaves terete and not flattened, terminating in a hair which is therefore less conspicuous than in *G. fitzgeraldii*.

Both species are abundant in Mt. Field National Park, in swampy hollows on the moor East of Lake Dobson, they are probably widespread in sub-alpine bogs.

# Two New Waders in Tasmania

By LEONARD E. WALL.

**T**HE GREY-TAILED TATTLER (*Tringa brevipes*).—The first record of the species in Tasmania was obtained by Mr. H. M. Wilson and the author at Ralph's Bay, South Arm, on October 24, 1948. This bird is one of the migratory waders, which arrive on our shores during the spring months and remain throughout the summer. In the autumn, they return to their homes in the northern hemisphere for breeding.

A field description in eclipse (non-breeding) plumage is as follows:—Length, 10½ inches; upper, medium grey, with dark grey wing primaries; rump and tail uniform with back; no white bar on wing; underparts, pale grey breast, fading to white on the abdomen and under-tail coverts; legs, yellow and of medium length; bill, black and straight, and slightly longer than tarsus.

It is extremely difficult to separate this species from the Wandering Tattler (*Tringa incana*) in eclipse plumage, the only distinguishing feature being the nasal groove, which occupies about half the length of the bill in the Grey-tailed, and three-quarters of the length in the Wandering Tattler. This diagnostic feature was checked by Mr. Wilson with the aid of 18x binoculars.

The species is solitary in habits, and is rarely seen in the company of other birds. On many occasions it has been found on a shingle beach not frequented by other waders, and will only mix with others (always Golden Plover) after repeated disturbances. By reason of this habit of shunning company it has not been seen frequently. It has also a curious habit of perching on pieces of driftwood which lie embedded in the sand. I have often seen it alight close to one of these and then walk to and hop on to it, and I think it is probably an attempt at concealment. It is certainly easy to overlook its presence in such a position.

When first seen this bird was immature, measuring about 8 in. in length, but attained full size during the summer months, during which it was seen on four occasions. It was seen also twice during the following winter, on June 5 and August 21, 1949. In the autumn of 1950 it could not be found, and was believed to have migrated, and I did not expect to see it again. It was recorded, however, on October 14, 1950, and is believed to be the same individual as it showed a preference for the same shingle beach and the same pieces of driftwood as did the original. Further observations were made on November 25 and on February 25, 1951. On the latter occasion, it was flushed from the shingle beach and flew to and alighted on a stake standing in the water. It is the only occasion on which I have seen a wader perform



this feat. During the winter of 1951 I paid only one visit to South Arm and Ralph's Bay Neck, and failed to find it, but it was again recorded at South Arm on December, 22, 1951.

On April 15, 1952, I found a tattler at Ralph's Bay Neck, feeding on the lagoon on the east side of the causeway, and it was seen also by Mr. M. S. R. Sharland and Mr. C. C. Lawrence during the next few weeks. Several members of the Field Naturalists' Club observed the bird in the same locality on October 18, during one of our regular monthly excursions. On a visit to the same spot on November 15, I was able to approach within 50 ft. of it, and with the aid of 7x binoculars to identify it as a Grey-tailed Tattler by the length of the nasal groove.

Early in 1953, Mr. Ian Rowley, of C.S.I.R.O., took up residence at Pipeclay Lagoon, and from that time has almost daily records of waders at Ralph's Bay Neck, including many observations of the tattler. His last record of it is on May 26, at which date it was beginning to assume breeding plumage, which varies from eclipse plumage by the addition of transverse bars of grey over the entire under-surface, except for the central abdomen and under-tail coverts. Subsequent searches for it have failed. The tattler has not been seen at South Arm since it was first recorded at Ralph's Bay Neck, and it is reasonable to assume that it is the same individual.

This bird has now been seen in Ralph's Bay, either at the Neck or in the South Arm area, during five consecutive summers and during two of the intervening winters. During the other two winters I have no records of it, but in one of those (1951) I made only one visit to the area. As it is known to have altered its feeding ground (in the autumn of 1952) I think that it probably remained here throughout the whole period of four and a half years, but may have moved to another locality during the winters of 1950 and 1951, when it was not observed. There are many quiet bays in the vicinity of the Derwent Estuary where it could easily go un-noticed.

**EASTERN, OR LESSER KNOT** (*Calidris canutus*).—The first observation of the Eastern Knot in Tasmania was made on November 1, 1953, while I was watching other migrant waders at Ralphs Bay, near South Arm. Three of these birds were feeding at the edge of the tide with some Golden Plover and Curlew Sandpiper, and although the day was dull I was able to determine almost all the features of their plumage and to identify them from the written description I made on the spot. Six other birds which I saw earlier that day as they flew along the beach were, I believe, also of this species.

A field description (in eclipse plumage) is as follows:— Length, 10 in.; upper, medium grey with pale edges to the feathers; rump, white, barred greyish-brown; tail, grey; wing-stripe, narrow white; breast,

pale grey, slightly streaked; abdomen, whitish mottled grey-brown at sides; undertail coverts, white; eyebrow, whitish; bill, black and straight; legs, dark brown and short. The bill is about the same length as the legs. The straight, stout bill and short legs give the bird a distinctive appearance, and these, and the white rump, barred grey-brown, are diagnostic features.

A fortnight later I visited the area again, in company with Mr. Ian Rowley, and we found a lone bird resting on a log at high tide, and Mr. Rowley confirmed the identification. On that occasion most of the birds on the mudflats were very restless and we were not able to examine the flocks to see whether any others of the species were present.

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#### MEDIUM-BILLED PRION INLAND

On July 25, 1953 a Medium-billed Prion (*Pachyptila salvini*) was picked up in an orchard on Mr. G. Terry's property, "Slateford", Hayes, in the Derwent Valley. It appeared to have been dead for not more than two days.

Prions are birds of the open ocean, and records of them from inland areas are uncommon, but not unknown. It is, however, a puzzle to learn how this bird found its way inland. Enquiries from the Hobart Weather Bureau have revealed that the prevailing winds during the four days preceding the discovery of the bird were from the north-west, varying from moderate to gale force, except for a mild south-westerly change of about three hours' duration on July 24. It seems unlikely therefore that it would have been blown up the Derwent, as would appear the most likely explanation, especially if strong southerly winds had been experienced. The distance from Hayes to the mouth of the river is about 35 miles. The only other apparent explanation is that it was blown inland from the West Coast during the gales of July 21 and 22, but this would involve an overland journey of at least 70 miles, traversing the most rugged mountain country in the State. This, too, seems improbable.

The specimen is now in the collection of the Tasmanian Museum, Hobart.

Tasmania, all the strata were not left horizontal, and from the camp we noticed the dip of  $2^{\circ}$  to  $3^{\circ}$  in the rocks of the nearby scarp (see text-figure 2).

Sometimes the country rock would not stand the strain of the intruding dolerite, and big vertical cracks or faults developed, so that some blocks of the country were raised in relation to others, and some fell. Such a fault probably caused the scarp referred to above, while another probably caused the very straight east shore of Port Arthur. Faults can account for the fact that as you travel from Eaglehawk Neck to Safety Cove on almost the same level, you pass from marine Permian rocks (about 225 to 190 million years ago) at the Neck to Triassic lake deposits (about 190 to 140 million years ago) at Port Arthur township, to Permian again at Point Puer, and back to Triassic in the Safety Cove area.

### NATURE'S MONUMENTS.

Where the ocean has eroded cliffs, grand headlands of dolerite rise in places as much as 1,000 feet directly from the sea. Their vast columns of dark rock are Nature's monuments, telling of the time when invading molten rock shook Tasmania's foundations. From a distance the columns look like the 6-sided columns formed when volcanic lava cools at the surface, but actually they are formed by two sets of joint planes (N-S and WSW-ENE) and so are essentially quadrilateral. The sea and weathering agencies have eroded the dolerite along these joint planes, thus accounting for the alignment of many of the physical features. Remarkable Cave and the Blowhole gulch are expressions respectively of these two systems of joint planes. From the map (text-figure 2) it can be readily seen that if a grid be made up of lines running in these two directions, they would coincide with a large percentage of the features of the landscape.

### KEY TO TASMANIA'S SCENERY

The distinctive beauty of Tasmania's landscape (different from anything to be seen on the mainland), is due to the dolerite. Cappings of this resistant rock form the craggy heads of the Western Tiers and many other notable peaks. Dolerites account for many bold headlands, wide plains and plateaux, steep valleys and rugged hillsides. The Safety Cove camp added a little to the dolerite story. Mr. A. B. Brownell and Mr. C. B. Widdicombe found on the Port Arthur shore a dyke of fine-grained rock cutting vertically up through the coarse-grained dolerite. The dyke looks like basalt, but Mr. Alan Spry of the Department of Geology, University of Tasmania, kindly cut thin sections of the rock and determined it as a fine-grained dolerite. Apparently

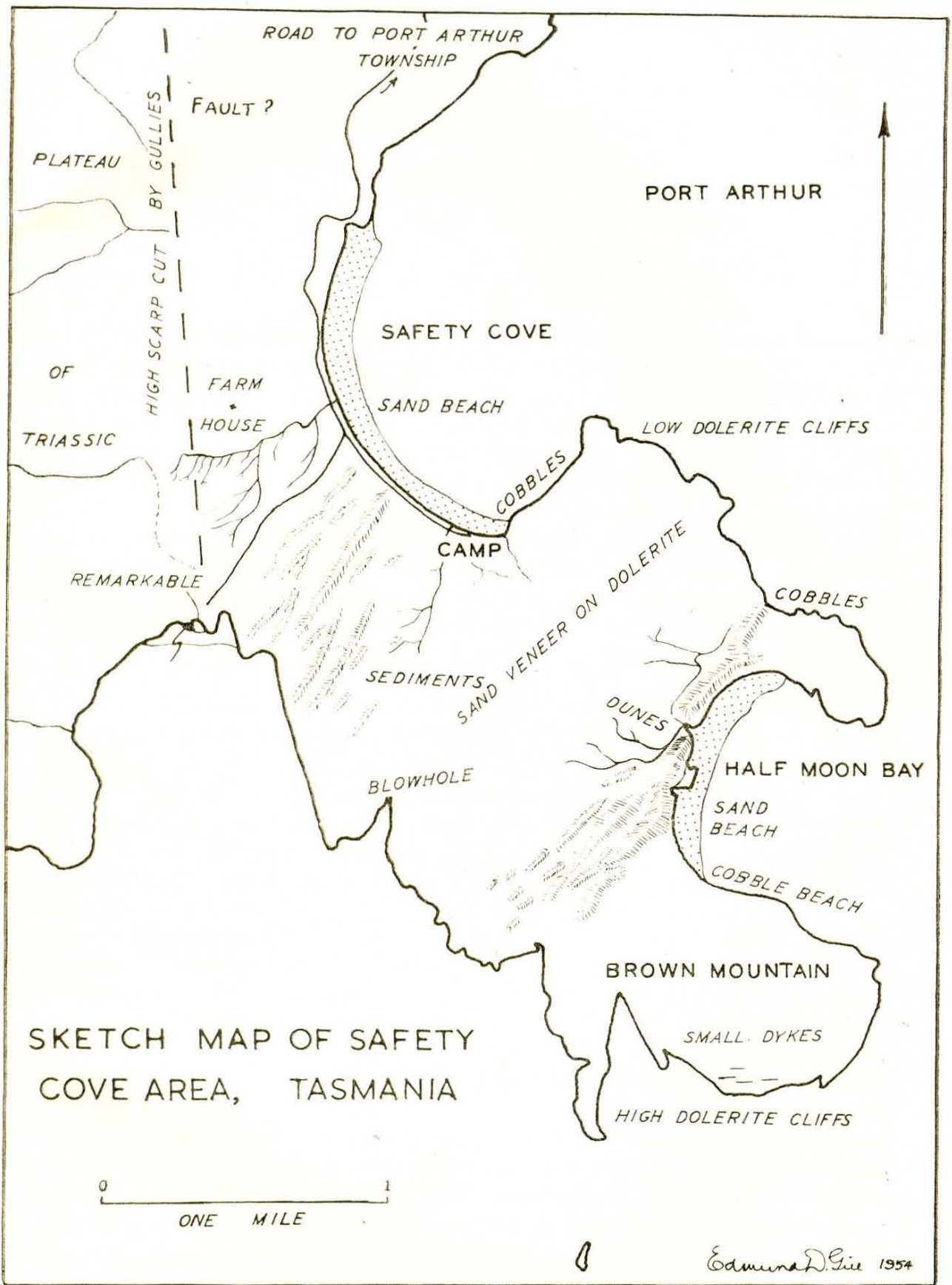


FIG. 2.—Geological sketch map of Safety Cove area, near Port Arthur, south-eastern Tasmania.

after the main dolerite mass had intruded the country rock and solidified, a further invasion by the dyke rock took place. There is a whole swarm of these dykes in the Safety Cove area, but the one mentioned is the largest observed.

#### EVIDENCE OF CHANGING CLIMATE

Wrinkles on our faces (if any, of course) may be a sign of advancing years, but the wrinkles on the face of the earth we call sand dunes are a sign of youth. The camp at Safety Cove was sited on wind blown sand, and between that spot and Remarkable Cave there is a series of dunes whose sharpness attests their youth. A similar series occurs behind Half Moon Bay. The immature soil on these dunes is a further clue to their recent formation. On the other hand, they are vegetated, fixed immobile except where man has destroyed the plant cover. Since the dunes were formed, there must have been some change in climatic conditions. Where the sand moved freely (as shown by the long straight sharp crests), it is now bound down by vegetation which was probably induced by increased rainfall. There is an interesting story to be worked out from these dunes, but they must await the coming of some other geological Sherlock Holmes to collect clues, as there was not time to do so during the Easter Camp.

#### DOCUMENTS OF TASMANIAN PRE-HISTORY

High on the steep spur on the west side of Remarkable Cave, Mr. and Mrs. L. E. Luckman found an aboriginal workshop. There lie numerous implements, made, or in the making, which are documents that inform us about the history before our history—of the times when the aborigine was master of the land. The natives discovered that where the dolerite had invaded the country rock and hardened it (see text figure 1), stone suitable for the manufacture of implements could be found. Collecting such raw materials nearby, the natives took them to this sandy spur (they liked the sandy places), which became their workshop wherein their implements were fashioned. To study these implements, and the cores and chips left over from their manufacture, is to discover how they were made, and so to see the ideas in the minds of the blackfellows, and the traditions of their craftsmen. These stones can speak, telling of the culture of a simple people to whom they were a very real and valuable part of life. It is a pity we know so little of this ancient race. Erosion is fast removing this and many other important records of this extinct people, and it is strongly urged that arrangements be made for the study of the midden and workshop sites before they are wiped out forever. At the Remarkable Cave site scrapers of various sizes up to 5½ inches long (with secondary chipping), cores, chips, and heavy dolerite hammer stones (brought up from the beach) were collected.

# Notes on the Flora of Safety Cove

(With sundry new records for the area)

By J. H. WILLIS,

National Herbarium of Victoria

## *Introduction.*

FROM the time of its establishment in 1830, Port Arthur has been the venue of various distinguished botanical collectors. Among those who may be mentioned are, the visiting J. Backhouse (1832), J. D. Hooker (1840) and Dr. W. H. Harvey, of algal fame, (1854), the local authorities, Rev. J. Bufton (1891/4) and L. Rodway (1913, 1918, 1920 &c.). As a result of successive camps held on Tasman Peninsula since the inception of the Tasmanian Field Naturalists' Club in 1904, several reports have been published on floristic features of the region, particularly in the vicinity of the popular camp site at Safety Cove. Earlier accounts imply that the Cove holds little that may not be seen growing in the neighbourhood of Hobart. True, this area does not bear comparison with occurrences elsewhere of more spectacular flowers, like Waratah, Mountain Iris, Gordon Lily and the larger orchids. But a survey made by Miss Janet Somerville and Mr. Charles G. Elliott during Easter 1946 [see detailed report in *The Tasmanian Naturalist*, n.s., Vol. 1, pt. 1, pp. 1-6 (May, 1946)] recorded 113 species of higher vascular plants for Safety Cove, including many of undoubted interest. These were arranged systematically according to Leonard Rodway's *Tasmanian Flora* (1903), with vernacular names also given and the abundance or otherwise of each species in the major plant communities of the area (dune, cliff, heath, rocky headland and swamp) indicated.

## SCOPE OF THE 1954 SURVEY.

A primary objective during the jubilee camp in April, 1954 was to extend the work begun in 1946, observing if possible the present status of all the 113 plants listed then, and adding to the total number of species. It was also hoped to begin a census of lower cryptogamous plants, such as the mosses and fungi of the region. A. B. Cribb (Botany Department, University of Queensland) had made a detailed study of the marine algal flora at Port Arthur in October, 1951; so, pending publication of his findings, it was considered unnecessary to attempt the collection of seaweeds, which also require special techniques.

Apparently no attention had been given hitherto to the sandstone escarpment west of Safety Cove, where there are still good survivals of the "fern gully association" within pure Messmate forest (*Eucalyptus obliqua*).

Behind Briggs's historic farm-house and, within a mile of the camp, is an excellent treefern gully, rich in shade—and moisture-loving plants, particularly bryophytes. Cascades of permanent water are there, and Mr. L. G. Briggs pointed out the remains of a water race which once carried a domestic supply to the farm buildings in early convict days. He kindly permitted several members from the camp to explore his fern gully, and in consequence 22 higher plants and several mosses were added to the general flora of Safety Cove.

Botanical results for the whole camp period were most encouraging: 38 species of higher fungi, 24 mosses, and an addition of 162 flowering plants and ferns to the census of 1946, bringing the known vascular flora up to 275 species.

Naturalised alien plants (weeds) to the number of 21 species were also noted; but none of these seems aggressive or to have had any adverse effect upon the indigenous vegetation, and most are quite localised. The shrubs *Pelargonium radula* (Point Puer ruins) and *Lupinus arboreus* (more conspicuous at Eaglehawk Neck) were probably introduced as garden ornamentals at a very early period, yet they have never spread far. Doubtless, a visit to this area during Spring-time would serve to augment the species list, particularly with seasonal plants like orchids or small ephemerals which are not in evidence at all during Easter (at the end of the long dry summer period).

The compilers described their 1946 list as "by no means complete." Nevertheless, it is astonishing that they should have missed such widespread plants as White Iris or Butterfly Flag (*Diplarrhena moræa*) and Blackwood (*Acacia melanoxylon*) which are abundant and conspicuous, respectively, right against the campsite. The sedge family (*Cyperaceæ*) with six species and grasses (*Gramineæ*) with only three, had been very inadequately observed in 1946; it was possible to add 17 species to the former and 15 to the latter group (aliens excluded). Six orchids were added to the previous tally of seven species, while two or more representatives were found in each of the families (*Cruciferae*, *Rhamnaceæ*, *Droseraceæ*, *Rubiaceæ*, *Gentianaceæ*, *Lentibulariaceæ*, *Chenopodiaceæ*, *Euphorbiaceæ*, *Juncaceæ* and *Centrolepidaceæ*, which did not appear at all in Somerville and Elliott's list. This is surprising in view of the fact that Rodway mentioned several carnivorous *Drosera* and *Utricularia* species in his report on the Easter camp-out of 1913.

All except the following 17 species were noted again in 1954:

*Boronia pinnata*, *Pultenæa gunnii* (var. *bæckeoides*), *Myriophyllum elatinoïdes*, *Leptospermum flavescens* (var. *nitidum*), *L. rupestre*, *Eucalyptus ovata*, *Mesembryanthemum australe*, *Olearia lepidophylla*, *Brachycome decipiens*, *Ozothamnus*

*rosmarinifolius* (var. *ericifolius*), *Leucopogon ericoides*, *Epacris stuartii*, *Pterostylis concinna*, *P. recurva*, *Caleana minor*, *Restio oligocephalus*, \**Psamma arenaria*.

It is presumed that some of these have become rarer, perhaps even disappeared, within the past eight years; but others may be attributable to misdeterminations.

## FEATURES OF SPECIAL INTEREST

The most significant botanical discovery of the Easter camp-out concerns Bog Clubmoss (*Lycopodium carolinianum*) which was first recorded for Tasmania by J. D. Hooker [*Flora Tasmaniae* 2: 157 (1858)] with the remark—"boggy places; not uncommon". No subsequent collector ever succeeded in finding the species again, and Leonard Rodway wrote in his *Tasmanian Flora* of 1903 (p. 280):

This plant [*L. clavatum*, var. *fastigiatum*] has been confused with *L. carolinianum*, which probably does not occur in Tasmania.

Actually, *L. fastigiatum* and *L. carolinianum* are abundantly distinct—in habitat, habit, appearance and texture—and there is little likelihood of their ever being confused, even by the veriest novice. The latter, except for its erect, slenderly-stalked fertile strobili, is *utterly prostrate*, creeping over the bare peaty mud in heathland swamps and securely anchored thereto by numerous deeply-penetrating lateral roots. So firm is the anchorage and so brittle the prostrate stems that it is a frustrating business to secure good herbarium specimens intact; the adhering mud must be carefully washed away before pressing can be attempted. This remarkable plant was found in a heathy moorland bog, south-east of the camp and about half way to Brown Mountain. Associate plants were *Lycopodium laterale* (erect and never brittle), sedges, *Drosera* and *Xyris* spp., all dominated by small, moribund, fire-scarred bushes of yellow bottlebrush (*Melaleuca squarrosa*); no occurrences were observed in other quite similar swampy tracts. *L. carolinianum* is known from all the mainland States—but chiefly from single localities—and is everywhere considered a rarity. To find it again in Tasmania, thereby vindicating Sir Joseph Hooker's early record (perhaps even from Port Arthur, where he collected in the spring of 1840) is a matter for jubilation, and dried specimens have now been lodged in the herbaria at Hobart University, Melbourne and Sydney Botanic Gardens.

Another humbler plant, previously known from the type collection only was the rock-loving moss *Macromitrium rodwayi* (described from the "entrance to Port Arthur" in 1922). This was found again in its original locality—perhaps even the original dripping rock ledge!—on the small south-eastern headland of the Cove and not far from camp. Unfortunately, no fruits were available; but the purplish-brown colour, contortion and plication of the leaves are characteristic.



From Briggs's fern gully came the large, striking, plume-like moss, *Rhizogonium spiniforme*. Rodway in his monograph "Tasmanian Bryophyta" (1913) records this from Tasman Peninsula only; but it is a common moss throughout the fern gullies of southern Victoria, and is almost certain to occur in other parts of Tasmania.

Among the three dozen fungi noted, none was more interesting than an ochre-coloured, fleshy, terrestrial pore-fungus, in which the central stipe is ornamented by a network of high, anastomosing ribs. This has been identified as the Queensland species, *Boletus lacunosus*, which also extends to heathland in Victoria.

The dolerite massif of Brown Mountain (1½ miles S.E. of the camp site) certainly provides the botanical *pièce de résistance* of the whole Safety Cove area—a bald, steep, rusty-grey dome, destitute of soil except on the lower slopes and in clefts between the windswept, exfoliating slabs of rock. Moisture seeps from under the slabs; but the only moss evident in any quantity was blackish velvety *Campylopus bicolor*, while lichens were represented there by closely-appressed, crustaceous types, of which *Lecanora gelida* formed spectacular, apparently very old colonies—greyish "wheels" of growth, up to a foot in diameter on the rock surfaces.

Very dwarfed and quaintly distorted shrubs of *Banksia marginata*, *Hakea epiglottis*, *Pimelea nivea* and other species clung, like "bansai" productions, to crevices on the west face, defying the ferocity of gales. Here grew two remarkable heaths, *Epacris myrtifolia* and *E. marginata*, besides the commoner *E. impressa*; all were in flower, as was *E. lanuginosa* of neighbouring heathland swamps. *Epacris marginata* is the "*E. heteronema*" of Somerville and Elliott; it was separated and described as a distinct species by Dr. Ronald Melville as recently as 1952 [*Kew Bulletin*, p. 175], from specimens actually gathered by Miss Somerville at the Easter Camp of 1946. The only other known location for this very rare and distinctive heath is Cash's Lookout, Eaglehawk Neck, where W. H. Clemes collected it in November 1949. Stiffly erect, with robust bushy branches, *E. marginata* is seldom more than 2 ft. high; the regularly imbricate, broadish leaves are glaucous, spine-tipped, and white along their margins, while the white honey-scented flowers are borne in dense leafy spikes. *E. myrtifolia* is smaller, with shorter blunter dark-green leaves and fewer flowers. Bufton had collected both species in the early 1890's.

Port Arthur is also the type locality for that curious, woolly, minute-leaved and clubmoss-like shrub, *Ozothamnus scutellifolius* (now generally included under the "everlasting" genus, *Helichrysum*), and it was interesting to see it again in the original area, both on Brown Mountain and among sandstone rocks immediately behind the camp. All four rhamnaceous species of the region—*Pomaderris apetala*, *P. affinis*; *Spyridium obovatum* and *Cryptandra alpina*—occur on the Mount.

Rev. J. Bufton first found the *Cryptandra* there in 1893, presumably also at the summit, and it is singular that this insignificant, wiry, prostrate plant should otherwise be known only from alpine elevations in the State (e.g. around the Great Lake and at other altitudes exceeding 3,000 ft.).

The dainty little Tailed Greenhood orchid (*Pterostylis pedoglossa*) was found blooming in a meagre layer of shaded earth at the highest point on Brown Mountain, but also in swampy heathland on slopes behind the camp area. It is a rosette-forming autumnal species, remarkable for the long-filiform galea and exceedingly short bluntish labellum, and appears to be little known in Tasmania—Rev. H. M. R. Rupp's record in *Orchids of New South Wales* (1943) would seem to be the first, but no localities are given for the island State. *Leptospermum scoparium*, var. *eximium* is a stunted coastal development of Manuka in which the leaves have become almost rotund, the flowers, more numerous and larger than in the typical form; it was assigned varietal rank by B. L. Burtt in 1940 [*Botanical Magazine*, T. 9582], his material coming from near Port Arthur. This dense, handsome bush is conspicuous at Remarkable Cave, also on Brown Mount, and probably along the precipitous coastline between. Two other noteworthy occurrences at the former place are the very succulent, rosulate Native Plantain (*Plantago triantha*—syn. *P. brownii*), abundant about the sandstone cliffs, and the leathery Shore Spleenwort (*Asplenium obtusatum*) which flourishes in partial shade on declivities above the cave opening.

Along the sheer eastern precipices of Brown Mountain several unusual plants perch precariously above the boiling surf, and it is a feat of some danger to approach them, e.g. *Callistemon pallidus*, *Pomaderris apetala* and *Pentachondra involucrata*. Gentler northern slopes afford an occurrence of Tall Silver Peppermint (*Eucalyptus tasmanica*) where sand overlies the dolerite. This is doubtless the "small-fruited *Eucalyptus coccifera*" and "form of Risdon Gum" discussed by Rodway in his botanical notes on the 1913 and 1920 camps respectively—*E. tasmanica* Blakely was not described until 1934. The uncommon red-berried form of *Billardiera longiflora* was noted in woodland toward Point Puer.

#### MENACE OF BUSHFIRES.

Although Brown Mountain itself and Remarkable Cave are gazetted Scenic Reserves, the intervening heathland—so rich in flowers—is private property (or leasehold) used for depasturing cattle and sheep. Fires are lit time and again, to secure tender young growth for the animals; in fact, the whole area has been so frequently devastated by fires that the original plant cover has changed out of all recognition and virtually disappeared in many places—it is possible that several rare plants have been exterminated in this way and, of course, the insect and bird

life dependent on the plants suffer also. Shore-line fires, particularly around Half Moon Bay, seem to have been deliberately started by the occupants of fishing craft; these have swept up the northern slopes of Brown Mountain, decimating the stand of *Eucalyptus tasmanica* and much of the higher rock flora. It is most regrettable that a promontory of such singular botanical interest should be despoiled by repeated burnings, both from adjacent landholders and casual fishermen. Effort should not be spared to have the whole peninsula—from Remarkable Cave track to Brown Mountain—resumed as a strict sanctuary for native plants and animals, with exclusion of grazing.

#### SYSTEMATIC LIST OF ADDITIONAL RECORDS.

The following tabulation of species has been arranged according to Rodway's *Tasmanian Flora* (but with nomenclature brought up to date). It should be used in conjunction with the list published in *The Tasmanian Naturalist* of May, 1946, because it embraces *only* such records as are additional—limited space forbids a repetition of the species previously recorded. Vernacular names have also been dropped to save further space, and no synonymy is given. Naturalised alien plants are prefixed by an asterisk (\*), and habitats are indicated by capital letters after each name, thus:

D = dunes; C = cliffs; H = heathland; W = woodland;  
 S = swamps and ponds (also wet ground along creeks);  
 FG = fern gully (Briggs's); BM = Brown Mountain  
 (chiefly exposed dolerite).

Rare or very occasional occurrences are denoted by the letter 'r' in parentheses, but this does not apply to localised plants which may be frequent enough in the limited environment where they occur. Time did not permit such an intensive survey as to indicate the relative frequencies of all species throughout the whole area, much of which was not visited. The great frequency with which the author-citations "*Labill.*" and "*R.Br.*" follow species names recalls the extensive work in southern Tasmania of J. J. H. de Labillardiere and Robert Brown during 1792/3 and 1803/4 respectively. Species names with queries denote some uncertainty about the correct identification.

#### I. FLOWERING PLANTS.

##### RANUNCULACEÆ

\**Ranunculus repens* L.—S (camp site).

##### DILLENIACEÆ

*Hibbertia billardieri* F. Muell.—W

" *acicularis* (*Labill.*) F.

Muell.—H

##### CRUCIFERÆ

*Cardamine stylosa* DC.—C (r, near camp)

*Cakile maritima* Scop.—D

##### PITOSPORACEÆ

*Pittosporum bicolor* Hook.—W, FG

##### CARYOPHYLLACEÆ

*Sagina procumbens* L.—D (Half Moon Bay)

\**Cerastium vulgatum* L.—H

##### HYPERICACEÆ

*Hypericum japonicum* Thunb.—S

##### TILIACEÆ

*Aristolelia peduncularis* (*Labill.*)  
 Hook.f.—FG. (r)

- GERANIACEÆ  
*Pelargonium australe* Willd.—D, C  
 " \*radula L'Hérit.—(Pt.  
 Puer ruins)
- RUTACEÆ  
*Boronia parviflora* Sm.—S
- RHAMNACEÆ  
*Pomaderris apetala* Labill.—FG, BM  
 (r)  
*Pomaderris affinis* N. A. Wakefield—  
 W, BM  
*Spyridium obovatum* (Hook.) Benth.  
 —BM (r)  
*Cryptandra alpina* Hook.f.—BM (r)
- PAPILIONACEÆ  
*Gompholobium huegelii* Benth.—H  
*Sphaerolobium vimineum* Sm.—H  
 (behind camp)  
*Daviesia ulicina* Sm.—BM (r)  
*Pultenaea dentata* Labill.—S  
 " *juniperina* Labill.—D  
 (near camp)  
*Dillwynia glaberrima* Sm.—H  
 " *floribunda* Sm.—H (r)  
*Bossia prostrata* R.Br.—H  
 \**Trifolium repens* L.—H, S  
 \**Lupinus arboreus* Sims—H (occa-  
 sional, near road)
- MIMOSACEÆ  
*Acacia melanoxylon* R.Br.—W (r),  
 FG  
*Acacia sophora* (Labill.) R.Br.—  
 D  
*Acacia dealbata* Link—FG
- CRASSULACEÆ  
*Tillæa sieberiana* Schult.—BM
- DROSERACEÆ  
*Drosera spathulata* Labill.—S  
 " *binata* Labill.—S  
 " *pygmaea* DC.—S  
 " *auriculata* Backh. ex Planch.  
 —H
- HALORAGACEÆ  
*Haloragis micrantha* R.Br.—S  
 " *tetragyna* (Labill.) Hook.  
 f.—H  
*Myriophyllum propinquum* A. Cunn.  
 —S (ponds near camp & at Pt.  
 Puer)
- MYRTACEÆ  
*Leptospermum lanigerum* (Ait.)  
 Sm.—S  
*Leptospermum sericeum* Labill.—H  
*Callistemon pallidus* (Bonpl.) DC.—  
 BM (r)  
*Melaleuca squamea* Labill.—S (occasional  
 on Port Arthur road)  
*Eucalyptus tasmanica* Blakely—BM  
 (N. slope)
- ONAGRACEÆ  
*Epilobium billardierianum* Ser.—FG
- FICOIDACEÆ  
*Carpobrotus aequilaterus* (Haw.)  
 N.E. Br.—D, C  
*Tetragonia implexicoma* (Miq.)  
 Hook. f.—D, C
- UMBELLIFERÆ  
*Hydrocotyle hirta* R.Br.—W  
 " *peduncularis* R.Br.—S  
 " *muscosa* R.Br.—S  
 (pond near camp)
- Xanthosia pusilla* Bunge—H  
 " *dissecta* Hook.f.—H  
*Eryngium vesiculosum* Labill.—S  
*Daucus glochidiatus* (Labill.) Fisch.,  
 Mey. & Ave-Lall.—H (r)
- RUBIACEÆ  
*Coprosma quadrifida* (Labill.) Rob.  
 —FG  
*Opercularia varia* Hook.f.—H  
*Galium australe* DC.—D
- COMPOSITÆ  
*Olearia argophylla* (Labill.) F. Muell.  
 —FG  
*Olearia ?pinifolia* (Hook.f.) Benth.  
 —(r, Port Arthur road)  
*Olearia phlogopappa* (Labill.) DC.  
 —C (r)  
*Olearia lirata* (Sims) Hutchinson—  
 FG  
*Olearia ramulosa* (Labill.) Benth.  
 —H  
*Olearia glandulosa* (Labill.) Benth.  
 —S (r)  
*Lagenophora stipitata* (Labill.)  
 Druce—H  
*Brachycome aculeata* (Labill.) Less  
 —H, BM  
*Cassinia aculeata* (Labill.) R.Br.  
 —W  
*Helichrysum dealbatum* Labill.—H  
 " *apiculatum* (Labill.)  
 DC.—H  
*Helichrysum reticulatum* (Labill.)  
 Less.—C, BM  
*Helichrysum dendroideum* N. A.  
 Wakefield—W, FG  
*Gnaphalium luteo-album* L.—D, H  
 (near camp)  
*Gnaphalium japonicum* Thunb.—H,  
 W  
*Gnaphalium involucratum* Forst.—S  
 " \**candidissimum* Lam.  
 —S  
 \**Cirsium vulgare* (Savi) Ten.—D, H  
 \**Hypochoeris radicata* L.—H  
*Sonchus megalocarpus* (Hook.f.) J.  
 M. Black—D  
*Sonchus \*asper* (L.) Hill—D, H
- GOODENIACEÆ  
*Selliera radicans* Cav.—C, S
- LOBELIACEÆ  
*Lobelia anceps* L.—C
- EPACRIDACEÆ  
*Pentachondra involucrata* R.Br.—B  
 M (r)  
*Epacris marginata* R. Melville—BM
- PRIMULACEÆ  
 \**Anagallis arvensis* L.—H (near  
 camp)
- LOGANIACEÆ  
*Mitrasacme pilosa* Labill.—H
- GENTIANACEÆ  
*Centaurium pulchellum* (Sw.) Krause  
 —H, S  
*Villarsia exaltata* (Sims) F. Muell.—S  
 (foot of Brown Mt.)
- CONVOLVULACEÆ  
*Dichondra repens* Forst.—W (near  
 camp)
- LENTIBULARIACEÆ  
*Utricularia dichotoma* Labill.—S  
 " *lateriflora* R.Br.—S

## LABIATÆ

*Prostanthera lasianthos* Labill.—FG

## PLANTAGINACEÆ

\**Plantago lanceolata* L.—H

## CHENOPODIACEÆ

*Rhagodia baccata* (Labill.) Moq.—C

*Chenopodium glaucum* L.—S (r, near sea)

\**Atriplex patula* L.—D

*Salicornia australis* Sol. ex Benth.—C (near sea)

## POLYGONACEÆ

*Rumex brownii* Campd.—C (r, near camp)

*Rumex acetosella* L.—H

## LAURACEÆ

*Cassytha glabella* R.Br.—H

" *pubescens* R.Br.—W

## THYMELÆACEÆ

*Pimelea linifolia* Sm.—H

" *humilis* R.Br.—W

## EUPHORBIACEÆ

*Poranthera microphylla* Brongn.—C, W

*Amperea xiphioclada* (Sieb. ex Spreng. Druce)—H

## URTICACEÆ

*Australina pusilla* (Poir) Gaudich.—FG

## SANTALACEÆ

*Exocarpus cupressiformis* Labill.—W

## ORCHIDACEÆ

*Calochilus campestris* R.Br.—W (near Pt. Puer)

*Thelymitra pauciflora* R.Br.—H

" *venosa* R.Br.—S

*Cryptostylis subulata* (Labill.) Reichb. f.—S

*Prasophyllum nigricans* R.Br.—H

*Pterostylis pedoglossa* FitzG.—H, BM. (summit)

## IRIDACEÆ

*Diplarrhena moræa* Labill.—H, W

## LILIACEÆ

*Drymophila cyanocarpa* R.Br.—W

*Stypandra caespitosa* R.Br.—S

*Laxmannia sessiliflora* Dene.—H

## JUNCACEÆ

*Juncus planifolius* R.Br.—S (foot of Brown Mt.)

*Juncus caespiticius* E. Mey.—C (Remarkable Cave)

*Juncus bufonius* L.—H

*Juncus pallidus* R.Br.—S

*Juncus maritimus* Lam.—S (r, near sea at Half Moon Bay)

*Juncus articulatus* L.—S (camp site)

## XYRIDACEÆ

*Xyris muelleri* Malme—S

## JUNCAGINACEÆ

*Triglochin procera* R.Br.—S (r, pond near camp)

## ZOSTERACEÆ

*Zostera muelleri* Irmisch (shallow sea water)

## CENTROLEPIDACEÆ

*Centrolepis aristata* (R.Br.) Ræm. & Schult.—D (N.W. part of Cove)

*Centrolepis fascicularis* Labill.—H

*Centrolepis strigosa* (R.Br.) Ræm. & Schult.—H

## RESTIONACEÆ

*Hypolaena lateriflora* (R.Br.) Benth. S

*Restio complanatus* R.Br.—S

## CYPERACEÆ

*Schœnus apogon* Ræm. & Schult.—H, W

*Schœnus maschalinus* Ræm. & Schult.—S (foot of Brown Mt.)

*Schœnus nitens* (R.Br.) Poir.—C, H

*Tetralix capillaris* (F. Muell.) J. M. Black—S

*Elæocharis acuta* R.Br.—S

*Scirpus fluitans* L.—S (pond near camp)

*Scirpus cernuus* Vahl—H, S

" *inundatus* (R.Br.) Poir.—S

*Lepidosperma concavum* R.Br.—H

" *laterale* R.Br.—H, W

" *lineare* R.Br., var. *inopay*—BM

*Lepidosperma filiforme* Labill.—H

*Cladium acutum* (Labill.) Poir.—H

*Uncinia tenella* R.Br.—FG

*Carex appressa* R.Br.—S

" *pumila* Thunb.—D (r, at S.W. cr. Half Moon Bay)

*Carex breviculmis* R.Br.—BM

## GRAMINEÆ

*Microloena stipoides* (Labill.) R.Br.—H, W

*Tetrarrhena distichophylla* (Labill.) R.Br.—H

*Stipa mollis* R.Br.—W

" *muelleri* Tate—H

*Dichelachne crinita* (L.f.) Hook. f.—H, W

*Agrostis avenacea* Gmel.—D, C, W

" *billardieri* R.Br.—D

" *tenuis* Sibth.—H

*Deyeuxia quadriseta* (Labill.) Benth.—H, W

\**Aira caryophyllæa* L.—H

\**Holcus lanatus* L.—H

*Danthonia semiannularis* (Labill.) R.Br.—C (near camp)

*Danthonia caespitosa* Gaudich.—C (near camp)

*Danthonia setacea* R.Br.—BM

" *geniculata* J. M. Black—H, W

*Danthonia pilosa* R.Br.—H, W

\**Dactylis glomerata* L.—H

*Poa caespitosa* Forst. f. ex Spreng.—C, H, W

*Poa pœiformis* (Labill.) Druce—D, C

*Poa annua* L.—H, W

\**Briza maxima* L.—H

\* " *minor* L.—H

## II. CLUBMOSES AND FERNS

- LYCOPODIACEÆ  
*Lycopodium deuterodensum* *Herter*—  
 —H (r)  
*Lycopodium laterale* *R.Br.*—S  
 " *carolinianum* *L.*—S (r,  
 on heathy moor between camp &  
 Brown Mt.)
- ADIANTACEÆ  
*Adiantum æthiopicum* *L.*—W r, (be-  
 hind camp)
- DENNSTÆDTIACEÆ  
*Blechnum lanceolatum* (*R.Br.*)  
*Sturm*—FG  
*Blechnum fluviatile* (*R.Br.*) *Low*  
*ex Salomon*—FG  
*Asplenium flabellifolium* *Cav.*—FG  
 " *bulbiferum* *Forst.*—FG  
 " *obtusatum* *Forst.*—FG  
 (+Remarkable Cave)
- Rumohra *adiantiformis* (*Forst.*)  
*Ching*—FG
- GRAMMITIDACEÆ  
*Grammitis billardieri* *Willd.*—FG  
*Xiphopteris heterophylla* (*Labill.*)  
*Spreng.*—FG
- POLYPODIACEÆ  
*Phymatodes diversifolium* (*Willd.*)  
*Pic. Serm.*—FG
- DICKSONIACEÆ  
*Dicksonia antarctica* *Labill.*—FG
- HYMENOPHYLLACEÆ  
*Mecodium australe* (*Willd.*) *Copel.*  
 —FG
- GLEICHENIACEÆ  
*Gleichenia microphylla* *R.Br.*—S  
 (near camp)  
*Sticherus tener* (*R.Br.*) *Ching*—  
 FG

## III. MOSSES

- SPHAGNACEÆ  
*Sphagnum subsecundum* *Nees*—S  
 (pond near camp)
- FISSIDENTACEÆ  
*Fissidens asplenioides* *Hedw.*—FG  
 " *rigidulus* *Hk.f.&W.*—FG
- DICRANACEÆ  
*Dicranoloma billardieri* (*Schwgr.*)  
*Par.*—H  
*Campylopus bicolor* (*Horns.*) *Hk.*  
*f.*—BM  
*Campylopus introflexus* (*Hedw.*)  
*Brid.*—H, W
- POTTIACEÆ  
*Weissia controversa* *Hedw.*—C  
*Tortella calycina* (*Schwgr.*) *Dis.*—  
 H
- SPLACHNACEÆ  
*Tayloria octoblepharis* (*Hook.*) *Mitt.*  
 —H
- FUNARIACEÆ  
*Funaria hygrometrica* *Hedw.*—H, W
- BRYACEÆ  
*Bryum billardieri* *Schwgr.*—H, W,  
 FG
- BARTRAMIACEÆ  
*Bartramidula pusilla* (*Hk.f.&W.*)  
*Jæg.*—H (under banks near camp)  
*Philonotis tenuis* (*Tayl.*) *Jæg.*—C.  
 H, FG
- RHIZOGONIACEÆ  
*Rhizogonium spiniforme* (*Hedw.*)  
*Bruch.*—FG
- HYPNODENDRACEÆ  
*Hypnodendron arcuatum* (*Hedw.*)  
*Mitt.*—FG
- ORTHOTRICHACEÆ  
*Macromitrium archeri* *Mitt. ex Wils.*  
 —C (near camp)  
*Macromitrium rodwayi* *Dis. ex Weym.*  
 & *Rodw.*—C (near camp—Type  
 loc.)
- RHACOPIACEÆ  
*Rhacopilum convolutaceum* (*C.M.*)  
*Mitt.*—H
- PTYCHOMITRIACEÆ  
*Ptychomitrium mittenii* *Jæg.*—C  
 (near camp)
- THUIDIACEÆ  
*Thuidium furfurosum* (*Hk.f.&W.*)  
*Jæg.*—C, H, W, FG
- AMBLYSTEGIACEÆ  
*Drepanocladus aduncus* (*Hedw.*)  
*Moenk.*—FG
- BRACHYTHECIACEÆ  
*Rhynchostegium tenuifolium* (*Hedw.*)  
*Jæg.*—H, W, FG
- SEMATOPHYLLACEÆ  
*Sematophyllum amœnum* (*Hedw.*)  
*Mitt.*—FG  
*Sematophyllum homomallum*  
 (*Hampe*) *Broth.*—C, W, FG

## IV. HIGHER FUNGI

- AGARICACEÆ  
 (alphabetically arranged)  
*Amanita grisea* *Mass. & Rodw.*—W  
*Armillaria mellea* *Fr.*—FG  
*Collybia confluens* *Fr.*—W  
*Cortinarius archeri* *Berk.*—W  
 " *vinaceo-cinereus* *Clel.*—  
 W  
*Cortinarius subcinnamomeus* *Clel.*—W  
*Hygrophorus candidus* *Cke. & Mass.*  
 —W  
*Hygrophorus coccineus* *Fr.*—H  
*Hypholoma fasciculare* *Fr.*—W  
*Lactarius piperatus* *Fr.*—W  
 " *?serifluus* *Fr.*—W  
*Leptonia ?æthiops* *Fr.*—W  
*Mycena leptoccephala* *Fr.*—W, FG  
 " *subcapillaris* *Clel.*—FG  
*Omphalia chromacea* *Clel.*—H, W  
*Russula ?maria* *Peck*—W  
 " *purpureo-flava* *Clel.*—W  
*Stropharia semiglobata* *Fr.*—H

## CANTHARELLACEÆ

*Cantharellus brunneus* *Clel.*—H

## BOLETACEÆ

*Paxillus infundibuliformis* *Clel.*—W

*Boletus luteus* *Fr.*—(under pines at Briggs's)

*Boletus lacunosus* *Cke. & Mass.*—H

(r)  
*Boletus ?sinape-cruentus* *Clel.*—H

## POLYPORACEÆ

*Polyporus portentosus* *Fr.*—W

" *campylus* *Berk.*—W

*Poria* sp. (small white pores)—FG

*Fomitopsis ochroleuca* (*Berk.*) *Cunn.*

—C, W  
*Coriolus versicolor* (*Fr.*) *Quel.*—C,

H, W

*Coriolus ?zonatus* (*Fr.*) *Quel.*—FG

## THELEPORACEÆ

*Stereum lobatum* (*Kze.*) *Fr.*—FG

" *vellereum* *Berk.*—W, FG

## GLAVARIACEÆ

*Ramaria botrytis* (*Fr.*) *Rick.*—W

*Clavicornia pyxidata* (*Fr.*) *Doty*—FG

## LYCOPERDACEÆ

*Lycoperdon glabrescens* *Berk.*—H

*Gastrum ?saccatum* (*Fr.*) *Fisch.*—W

## SCLERODERMATACEÆ

*Pisolithus tinctorius* (*Mich. ex Pers.*)

*Coker & Couch*—H, W

## TREMELLACEÆ

*Tremella ?fuciformis* *Berk.*—FG

*Heterotextus peziziformis* (*Berk.*)

*Lloyd*—H, W

In conclusion, the author desires to register sincere gratitude to members of the Tasmanian Field Naturalists' Club Council, who invited him to participate as a mainland guest in this 50th Jubilee Camp. It was a pleasure to be associated with them, and other Club members, in the field and to have had the privilege of contributing—if even in such a small way—to the general usefulness of the 1954 visit to Safety Cove.

#### FEDERATION OF FIELD NATURALISTS' CLUBS

The inauguration of a Federation of Field Naturalist Clubs of Tasmania, at Easter, 1954, marked a distinct step towards consolidating the endeavours of the various clubs within the State. The Field Naturalist Clubs at Hobart, Launceston, Burnie and Devonport each appointed two of their members to the Committee and the Federation aims to provide a channel for a united voice or action in aiding conservation of natural features of importance.

When Mr. J. H. Willis of the National Herbarium, Victoria visited Flinders Island he advised that some of the flat heathy district be maintained in its present condition. The Federation placed a plea to this effect before the Scenery Preservation Board and we are pleased to know that a portion of the north-eastern coast of Flinders Island may be declared a reserve. This area is a distinctly different terrain from the Strezlecki Range National Reserve on the same island.

It was the unanimous decision at the first meeting of the Federation that, as Australia was so famous for its wealth of Eucalypts, *Eucalyptus globulus* should be adopted as the Tasmanian floral emblem.

# History of the T.F.N. Club

By LEONARD E. WALL

A PRELIMINARY meeting to consider the formation of a field naturalists' club in Hobart was held in the Royal Society's Room at the Tasmanian Museum, Hobart, on September 15, 1904, under the chairmanship of the Rev. H. H. Anderson. After Mr. A. M. Lea had outlined the objects of such a club, all present agreed that a club was desirable, and a committee was appointed to frame rules. The meeting then adjourned.

On September 26, this committee presented its recommendations, and the rules drawn up were adopted. Thus the Tasmanian Field Naturalists' Club came into being. Officers elected at this meeting were:— President, Dr. Gerard Smith; vice-president, Mr. S. Cledes; hon. secretary-treasurer, Mr. E. A. Elliott; committee, Messrs. E. S. Anthony, A. Conlon, W. M. Harrison, A. M. Lea, A. Morton and J. C. Smith.

The first field excursion held by the Club was to Cascades on October 22, 1904, and this feature of its activities has continued throughout the years. In addition to day trips the early members set a record, perhaps unique in Australia, in organising an annual camp extending over five days. These camps still held, at Easter have proved a great benefit, both from the scientific and social aspects.

Ladies took a keen interest in the Club from its inception, the first two being elected to membership on February 27, 1905. The local daily newspaper had much to say at the time about the behaviour of these "intruders" in a gentlemen's domain, but the publicity given seems to have served the Club well, as the membership had increased to 62 by the end of the first year—a very fine result.

The Club lost no time in making its presence felt in the community. One of its first acts was to protest strongly at the disposal of a complete set of Gould's "Birds of Australia" from the Public Library, Hobart, for a comparatively small sum. It was, unfortunately, too late to prevent the sale, but its prompt action impressed itself on the city fathers.

It was in September, 1906, that the Club decided to commence publication of its own journal, to be known as "The Tasmanian Naturalist", and the first was produced in May, 1907.

During the year 1907 discussion arose as to a suitable form of badge for the Club, and it was finally agreed to adopt the platypus as its emblem.



As far as existing records show, the year 1911 brought the total membership to 195, the largest number which has ever been on its Roll. It was during this period of great activity and interest in the Club that strenuous efforts towards the establishment of a national park in the Mt. Field area were brought to a successful conclusion, the reservation being declared in 1916. In consideration of the Club's active interest in the Park it was asked to nominate one member to represent it on the Board of Management, and Mr. Clive Lord was our first Board member. As well as representing our Club, Mr. Lord was the secretary of the Board from its inception up till the time of his death in 1933.

Protection of the State's fauna and flora has always been a primary concern of the Club, and it was with much satisfaction that the active campaigning in the early years brought about the passing of the Animals and Birds Protection Act, in 1920.

The attention of the Club was then focussed on the need for a large faunal reserve, and a special meeting was called on July 25, 1921 to launch a campaign for the declaration of the Cradle Mt.-Lake St. Clair National Park. Success was achieved when the reserve was proclaimed, in 1922.

The year 1925 brought the formation of a very active junior section of the Club, for which Mr. Norman Walker, a master at Hutchins School at that time, was largely responsible. The annual subscription was increased from 5s. to 10s. in that year.

Considerable difficulty was experienced in 1930 when the Royal Society's room became no longer available to the Club for its monthly meetings, and none was held from July to October, when other arrangements were made. It was at this time, too, that it was decided to alter the Club sessions to coincide with the calendar year, and as a result of the economic depression to revert to an annual subscription of 5s.

The Club's first Wild Flower Show was held in November, 1932, and proved to be most successful. With one or two exceptions this has been one of the principal activities each year.

The death occurred in July, 1933, of Mr. Clive Lord, one of the oldest members and a tireless worker for the Club. He was secretary and camp organiser during the years 1911-1927, and continued in the latter capacity until his death. He was president in 1931 & 1932. In recognition of his work in the interests of the National Park a memorial cairn was erected to his memory on the shore of Lake Fenton, in 1936.

Mr. Leonard Rodway, another senior member of the Club, died in March, 1936. His work as a botanist is well-known throughout Australia, and his help and guidance to other members were of immense

value. He was the Club's president for five years and vice-president for a further three. The Club was honoured later in 1937 when the governor (Sir Ernest Clark) accepted an invitation to become its first Patron.

Another step was the formation of a branch of the Club at Devonport, in June, 1937. This branch, forced into recess during the Second World War, now continues to flourish.

The outbreak of the Second World War caused a considerable curtailment of the Club's activities, including the abandonment of Easter Camps. In 1941, however, the Club reverted to monthly meetings, mainly due to the enthusiasm of Mr. M. S. R. Sharland, who had recently returned from the mainland and had taken over the office of secretary.

The death occurred in 1943 of Dr. A. N. Lewis, who had been a most ardent worker for the Club since its very early days. He was one of Tasmania's best-known geologists.

The immediate post-war years saw a great revival of interest in the Club, and the annual Easter Camps were reinstated to the calendar of its activities, the first being held at Safety Cove in 1946. The first of a new series of "The Tasmanian Naturalist" was also published in that year.

Further steps in conservation were made during 1949, with the formation of the Tasmanian Flora and Fauna Conservation Committee in Hobart, representation on the committee being from the Tasmanian Field Naturalists' Club, the Hobart Walking Club, the Royal Australian Ornithologists' Union (Tas. Branch) and the Royal Society for the Prevention of Cruelty to Animals, and with the launching of the Launceston Field Naturalists' Club in that city.

Evidence of the increasing interest in natural history came in 1952 when the Burnie Field Naturalists' Club was formed. In the same year the Scenery Preservation Act was amended, one of the new provisions was that one of the Board members should be nominated by the Royal Society of Tas., the Hobart Walking Club, or the Tasmanian Field Naturalists' Club, and it was pleasing to see Mr. J. B. Thwaites, a member of the Hobart Walking Club and of this Club, appointed to the vacancy.

For some years the Club had also been campaigning for greater representation of scientific interests on the Animals and Birds Protection Board, and it was with considerable satisfaction that we learned of the appointment of Dr. E. R. Guiler, then our president, and Mr. M. S. R. Sharland, then a vice-president, to the Board during 1953.

To honour the occasion of the Club's Jubilee in 1954 three special functions were arranged, firstly, Wild Flower Show and Photographic Competition in January; secondly, the Easter camp was bigger and

brighter than usual, with three leading naturalists from Victoria and representatives of other Field Naturalists' Clubs in Tasmania as official guests; and thirdly, a public meeting was held in Hobart Town Hall two days after the camp, when a capacity audience was treated to timely addresses by Messrs. P. Crosbie Morrison and J. H. Willis.

The election of Mr. M. S. R. Sharland as the Club's president in the Jubilee year was a fitting climax to the unceasing enthusiasm and work which he has given over a long period of years.

Mention should also be made of the only two original members of the Club who still take a very real interest in its activities—Dr. E. A. Elliott, of Lunawanna, and his brother, Colonel C. H. Elliott. Dr. Elliott was the first secretary, and held that post for seven years, and was later president (in 1919). He was elected a Life Member in 1940. Colonel Elliott was a committee member at one time, and has always shown a very real interest in the Club's work. He was elected a life member in February, 1954.

No account of the Club would be complete without a reference to its Easter Camps. The first of these was held at Bream Creek, in 1905, when the number of campers was very small. This form of excursion, however, gained favour rapidly and it soon became the chief event of the year, with large numbers of members and friends attending. Mr. H. F. Sargison has been chief organiser for recent camps, and his work, and that of his small band of helpers, cannot be over-estimated.

It has been a very pleasing feature of post-war camps that members of kindred clubs have joined with us, and it is hoped that this spirit of co-operation will continue.

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#### TASMANIA'S FLORAL EMBLEM.

SOME years ago Mr. E. T. Emmett, then chief of the Tasmanian Tourist Bureau, asked the Field Naturalists' Club to decide on a floral emblem for Tasmania, as he wanted to have it on the covers of tourist publications.

Apparently Tasmania has no such emblem, so after considerable discussion the club decided on the Blue Gum (*Eucalyptus globulus*). The branches of the club were consulted and they also sent in recommendations.

At the 1954 Jubilee Camp held at Safety Cove advantage was taken of the presence of members of branches to consider the question, and the Blue Gum was decided on.

# 50th Anniversary Camp

## GENERAL ACCOUNT

**D**ELIGHTFUL weather, distinguished visitors, and enthusiastic members, co-operated to make a most successful 50th Anniversary Field Naturalists' Camp, held at Safety Cove, near Port Arthur, from Thursday, April 15, to Tuesday, April 20th, 1954. Reports on the observations and geology are given elsewhere in this issue.

The organisation of this special jubilee camp required much work months in advance by the camp committee. The purchase of larger tents to accommodate the increased numbers was also necessary. Safety Cove was chosen as the place of unlimited possibilities, and had been the site of some previously successful camps.

Sheltered from the "southerlies" behind a well-clothed sand ridge at the south-eastern end of the beach, the little strip of ground affords an ideal spot for camping. There are scattered gum trees and flowering shrubs, extending from the beach up to the hills behind the flat, wood for cooking and camp fires, and a permanent water supply. The view from the dunes is exceptionally fine. It embraces the whole of Safety Cove beach, the strip of yellow sand extending in an arc to the rocky walls of the long headland of Point Puer, the edge of which is honey-combed with wave-washed caverns, while on the opposite side of Port Arthur estuary are well-clothed hills buttressed by weathered dolerite.

Although several of the campers who had been there before were well acquainted with its attractions, final selection of the site for yet another outing was practically unanimous, and it is a high tribute to the work of Mr. Harold Sargison, who bore the burden of the organisation, that the camp proved to be one of the most enjoyable in 50 years of the Club.

There were 95 in the party. It included members from the Burnie Club, under Mr. F. J. Swann, the president, from Devonport, under Mr. U. Champion, the president; and from Launceston, Mr. H. J. King visited the camp. One cook and two assistants were engaged to attend to an important aspect of any camp. There were 31 tents and one small marquee erected in rows for men and women, and a separate group for married people. There also was a large marquee that served to accommodate the party for meals and after-dinner talks in the light of the pressure lamps. There was a smaller marquee for cooking staff and the great accumulation of food and cooking gear.

Eight tons of food and equipment! That was the load we had to get transported over 60 odd miles from Hobart. It came by lorry and the last part over an unmade road formed of sand containing some awkward holes. Great was the relief on its safe arrival!

An advance party had got the camp in order, having arrived five days previously to erect tents and sort out the luggage and the main party turned up by motor bus about 11 o'clock on the night of Thursday, April 15. They found hot coffee and supper awaiting them and it was not long afterwards that all turned in to "lights out".

The club was privileged in having as guests Mr. Crosbie Morrison, the well-known naturalist and his wife; Mr. Edmund Gill, geologist, of the National Museum, Melbourne, and Mr. J. H. Willis, botanist, of the National Herbarium, Botanic Gardens, Melbourne.

On Good Friday everyone went to visit the Remarkable Cave. A heavy sea made the coastal scenery impressive. During the afternoon Mr. Briggs's farm and fern gully were visited. Owing to a cold night a concert was held in the marquee, interspersed with lectures on geology by Mr. Gill, and on additions to the plant list already recorded at past camps, by Mr. J. H. Willis. These talks were specially instructive and entertaining.

Easter Eve was spent at Point Puer, overlooking the old prison station of Port Arthur, which formed a pretty picture with the sun illuminating the yellow walls of the penitentiary and emphasising the autumn colours of oaks and elms. A few managed to get a brief trip to Dead Island, off the end of the point.

On Easter Sunday a church service was conducted by Mr. Gill, afterwards all walked to Half Moon Bay where a picnic lunch was served at the mouth of a creek; then, most climbed to the summit of Brown Mountain, whence a wide view was obtained of the coast, extending from Cape Pillar and Tasman Island in the east, to the distant end of Bruny Island and the Friars in the south-west, with the jagged line of Cape Raoul in the middle distance. At 6 p.m. it was discovered that two junior members had not returned to camp, so search parties set out with lanterns. After 30 minutes, calls were heard along the cliffs, the lost members had walked in a circle back to the beach and then sensibly followed the coast line to the camp.

On Easter Monday some of the campers revisited Mr. Briggs's farm. This was the prison farm for Port Arthur and contains many interesting stone buildings. In the afternoon a "museum" competition was held in the marquee, the winner of the senior section being Miss M. Westbrook.

Mr. Willis, an ardent collector, obtained a fine assortment of botanical specimens, and was very enthusiastic over finding a rare Club Moss. Mr. Gill interested members with his story of rock formations near the camp. Mr. Crosbie Morrison, with a movie camera, recorded studies, both human and nature. He also interested members with a lecture on "Ecology".

The camp never was short of fish, thanks to Messrs, W. J. Fergusson and F. Green. Flathead and barracouta were caught.

Always a feature of our annual camp, the camp fire concerts on this occasion, conducted in the evening round blazing logs in a natural basin among sand dunes, revealed new talent and many new songs. Mrs. L. Luckman and Mr. A. Yeoland led the singing with their piano accordions, and Mr. Burn Widdicombe did much towards the success of the concerts.

Using the work of past members as a guide, naturalists were able to follow special lines of investigation, or look for specimens which had not been recorded, or only rarely. The camp endeavoured to cater for all tastes. For those who wanted plants, the moors provided the rewards; others who wanted fishing, swimming, walking, or scenery were not denied and all were content. So it was natural that on the final day, when tents had to be dismantled and loaded for return to store, all should express regret that the holiday was over.

Personnel attending the camp were:—Messrs. M. S. R. Sharland (President), A. Hewer and F. A. Peterson (Vice-presidents), Harold F. Sargison (Hon. organiser), E. W. Cruickshank, H. K. Aves, A. Brownell, C. B. Widdicombe, A. Craike, L. Wall (Hon. secretary), J. A. Simpson, G. Barrett, F. Green, D. Gilbert, F. J. Swann, J. C. Ipsen, J. H. Willis, E. D. Gill, P. Crosbie Morrison, J. R. Skemp, D. S. Kennedy, D. Elliott, — McDonald, L. Luckman, W. J. Fergusson, H. E. Dean, N. McClelland, — Greenlaw, U. Champion, M. Hurburgh, L. W. Brasch, V. Wilson, — Webber, A. Yeoland.

Mesdames B. Widdicombe, M. O. Goldfinch, C. H. Elliott, G. Barrett, L. E. Wall, M. Webber, E. H. Stephens, N. McClelland, — Greenlaw, D. S. Kennedy, L. Luckman, M. Hurburgh, H. K. Aves, A. B. Brownell, A. K. Reid, E. Aschner, P. C. Morrison, E. Fleming, A. van Zalen.

Misses E. Barrett, B. Wall, M. Westbrook, M. Ibbott, M. Fraser, R. van Zalen, F. Waugh, L. Jensen, E. Kennedy, R. Hutton, H. Omond, H. & P. Hurburgh,, S. G. & E. Aves, E. Stephens, C. H. Mosey, A. Wilkinson, J. Reid, P. Hewitt, L. Goldfinch, M. Scott, S. Sargison, K. Sargison, J. Brownell, W. Buckle, E. Widdicombe, A. Wall, M. Griffiths, E. Vaughan.

Masters R. Hewer, B. Kennedy, F. van Zalen, P. van Dongen, D. Hurburgh,

Staff: Official cook, C. Theobald; assistants, Messrs. E. Franklin and B. Wherrett.

# Boronia Citriodora

or "IT'S ABOUT THYME"

by KELSEY AVES.

**E**VEN its scientific name is euphonious—the "lemon thyme" of our mountains! Try the name over for yourself—*Boronia citriodora*. Doesn't it trip lightly over the tongue? Then gently rub the leaves and inhale the fragrance of the lemons, added to that oily tang which so many of our bush plants have. Does it take you to the heights of Lake Dobson, or that corner of heaven called the Cradle Mountain plateau where you lay in the sun while the breeze whipped up the scent of our incomparable lemon-scented *Boronia*?

When did you see a lovelier flower? For sheer symmetrical perfection it surpasses all others. Four spreading petals in the form of a cross, glistening and radiant even to the naked eye, but iridescent and with a waxy patina when examined more closely with a magnifying glass. In the centre of the flower stands the style, and arching in graceful curves towards it are the eight stamens. I know of no other flower in which the arrangement of style and stamens is in itself so beautiful to look at.

Then take the buds clustering in the terminal axils of the leaves. Perfectly spherical they are and bright red in colour as they swell, clasped by their sepals of complementary green. As the buds expand, the red changes to pink and then usually to white in the mature flower, though plants with pink blossom are common.

Then, of course, there are the leaves, divided into three leaflets and with the oil glands which are responsible for that wonderful scent. And the whole bush, with its rounded, shrubby, typically alpine shape, attractive even when not in bloom.

In Tasmania, it has several near relations which also are beautiful, but which pale beside *citriodora*. There is the little *B. poygalifolia*, quite common, yet so small that it is often unnoticed, and the still less obvious *B. parviflora*. Around Waldheim, in particular, grows a *Boronia* (*B. rhomboidea*), which at first sight looks quite like the lemon-thyme, but its leaves are undivided and broad, and lack the lemon scent, though they have a pungent odour of their own when rubbed. So have the leaves of *B. pinnata*, common on the East Coast, especially at Eaglehawk Neck.

Native *Fuschia* (*Correa* sp.) Wax flowers (*Eriostemon* sp.) *Zieria*, and *Acradenia* in Tasmania are genera of the same family to which *Boronia* belongs, but the members of the family best known throughout the world are the citrus plants, orange, lemon, &c.

"Boronia", to most Tasmanians, means the Western Australian *B. megastigma*. For me the scent of this flower is rather cloying and I feel it is a pity that our own *Boronia citriodora* is not more generally known. Flowers, with their scents, have vivid associations. Kipling said—

"Scents are stronger than sights or sounds  
To make the heart strings crack".

Stocks in the evening will whirl me back to the garden of an old thatched cottage on the Sussex Downs, Daphne to heights in the Austrian Tyrol. But the scent of the "lemon thyme" will transport me to scenes in our own highlands, which could well prompt the old Indian greeting, "I see God in you".

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#### CLUB REVIEW, 1954.

**T**HE financial membership of the Tasmanian Field Naturalists' Club at the end of 1954 was 136, of whom 11 were juniors. It is pleasing to see increasing interest from school children, and while this continues the future welfare of the Club is assured.

At the annual meeting in February, 1954, Col. C. H. Elliott was elected a life member. He and his brother, Dr. E. A. Elliott, are the only two original members of the Club whose names still remain on the membership roll.

A Show and Photographic Competition was held in Hobart Town Hall at the end of January. Mr. Aves was responsible for the arrangements. The Photographic Competition was organised on an Australia-wide basis by Mr. A. M. Hewer, and was a most successful adjunct to the Wildflower Section.

Following a request from the Tasmanian Fauna & Flora Conservation Committee to the Hobart City Council that more native trees be planted on the Domain, the Club undertook to initiate such a plan, and on July 24 20 eucalypts were planted in a small area near the Crossroads. These appear to have established themselves well, and it is hoped that more will be planted.



# Notes on the Franklin Route

By J. S. LUCKMAN.

IN 1842 the Governor of Tasmania, Sir John Franklin, decided to make a journey overland from Hobart to Macquarie Harbour, on the remote West Coast. Up to that time the harbour had been accessible only by water and little was known about the wild country west of Lake St. Clair. The Governor's lively and adventurous wife insisted on accompanying him, a decision which was greeted with consternation and criticism by the citizens of Hobart. However, she duly made the journey, together with her maid, Mrs. Stewart, the party being out three weeks, during which time they endured many discomforts.

In December-January 1953-54, as a contribution to Tasmania's Sesquicentenary celebrations, six members of the Hobart Walking Club followed the route taken by the Franklins, and as president of the club I was expected to represent Lady Franklin! We followed the early part of Franklin's route—from Lake St. Clair to the beginning of the Frenchman's Cap track—by modern bus, but from that point were either directly on their route or within a half-mile or so of it, the general condition of the country being unaltered since their day, except for results of bush fires in some areas.

We covered many types of country—open buttongrass plain, bare quartzite ridges, virgin myrtle (*Nothofagus*) forests, dense *Bauera*, horizontal, and thick re-growth, all of which had their own interest in fauna and flora.

The Frenchman's Cap track passes through some lovely myrtle forest. Particularly attractive is the area around the junction of the Loddon Rivers where the dense overhead cover of the tall myrtle and Huon pines discourages much undergrowth and ground cover consists mainly of low "rattly" ferns and fine bushes of Laurel in full flowers. Every log and stone is covered with a thick carpet of bright green moss and the dark river slides silently between steep banks. Birds seldom frequent the denser parts of these forests but in the more open glade where we camped we noted the Brush Bronzewing Pigeon, Green Rosella, Grey Thrush, "Mopoke" or Spotted Owl and Scarlet Robin. The open quartzite ridges bore a lush growth of Swamp Heath, which was a bright red; white and mauve Bottlebrush, *Blandfordia*, and Umbrella Fern.

Leaving the track at Philp's turn-off, we continued down the Loddon plains to Franklin's "Detention Corner", and turned west to cross the steep ridges which divide the Loddons from the Lachlan Plains. Following up a creek through thick *Bauera*, some horizontal (*Anodopetalum*

*biglandulosum*) and attractive pink Laurel, we found easier going in virgin myrtle country where the ground was covered with "rattly ferns", their new growth ranging from delicate pink to bright bronzed—a fine sight. Here, too, were trees bearing berries like mauve silk crepe (*Cyathodes*). Soon we had hours of heavy going in dense "pear" scrub (*Pomaderris*) where progress was exasperatingly slow and nature observation reduced to a minimum. Another break into myrtle forest was a welcome relief and here we noted some fine specimens of tree ferns (*Dicksonia*) in the valleys. The myrtles were magnificent—hoary old giants covered with moss, and staghorn ferns growing thickly along their branches. Here we saw a Magenta Robin and were inspected by two talkative Black Cockatoos.

The western side of a high ridge treated us to a mixture of myrtle forest, horizontal hung with "old man's beard", dense *Bauera* as thick as a horse-hair mattress, a buttongrass knoll from which we had breath-taking close-up views of the southern side of the Frenchman, then a long, very steep descent through appalling re-growth complete with Cutting-grass (*Gahnia*) and hidden rotting logs, more *Bauera*, a creek with delightful mosses, ferns, and pink Laurel, then out on to the Lachlan Plains at last, where we surprised two Summer Birds (*Coracina nova-hollandiae*) and heard wrens and honeyeaters chattering about a snake.

The Lachlan Plains are not as "plain" as they appear from aerial photographs; indeed, they consist mainly of low knolls or mounds, many of which are topped by clumps of Eucalypts, and were covered with a glorious golden carpet of *Hibbertia*. Birds seen included the Scarlet Robin, "Summer Birds", Crescent Honeyeater, Grey Fantail, Fire-tail Finch, Skylark, and we think we heard a Blackbird. Several wombats took a great interest in our camp.

The plains are crossed by several creeks flowing to join the Jane River, which flows west along the southern edge of the plains. These creeks are bordered by native grasses and bright green herbage, and on one we disturbed a family party of five wallabies. The course of the Jane is dotted with huge residual blocks of quartzitic limestone, one of which, at the western end of the plains, is honeycombed with large caves. Birds were very numerous near the river.

The plains now gave way to the quartzite ridges of Deception Range, on top of which were a good display of purple *Hewardia tasmanica*, *Dracophyllum*, and small tufts of dwarf pink and white everlastings (*Helychrysum*). "Fauna" consisted of march flies and rain-forest butterflies, with one lone wallaby jolted out of a nap under some bushes of White Waratah (*Agastachys odorata*). One blandfordia plant was found to have 48 blooms and buds.

An interesting find was an isolated group of yellow *Hewardia*. Two White Cockatoos were seen on the plains to the south. The saddles between ridges were covered with Buttongrass and stunted honeysuckle. From the ridge we dropped steeply for some hours through myrtle forest and horizontal. The top leaves of some Laurels were so red they looked just like *Poinsettia*, while Climbing *Epacris* grew along high logs for nearly 12 ft. and hung down in a close curtain effect for over 6 ft. It must be a wonderful sight when in flower. Near the river we found hundreds of Huon pine seedlings growing along old rotting logs.

The growth along this section of the Franklin River was alone worth the trip. On the northern, shady side were perfect rock gardens—everything covered with ferns and bright green moss, starred with tiny white flowers, while further up river the high smooth limestone cliffs were hung with long grasses and the cream flowers of *Milligania* and topped by scarlet spikes of *Blandfordia*. The forest, which grows to the water's edge, is all shades of green, with the young bronze-red growth of beech for accent.

Further upstream, where the Pigtrough joins the Franklin via a 50ft. waterfall, there is a fine moss glade where the trees are hung with long grey streamers of lichen. Here, too, were *Prostanthera* in flower, enormous Paperbanks (*Melaleuca*) and some fine eucalypts. Further up again, at the old Hydro survey camp, were big leatherwoods over 11 ft. in girth, and at night glow-worms moved among the ferns.

A very steep climb for some hours through typical myrtle forest brought us to high buttongrass plains. Further west, these gave way to dense *Bauera* and then bad horizontal—some of the worst bush of this type we had seen on the trip and we were very grateful for the track cut here by Hydro Surveyors some years ago. Another long steep descent through myrtle forest, where we saw one lone King William pine (*Arthrotaxis*) brought us to teatree and swampy bush, and so on to Eagle Creek and the Gordon River, where we camped beneath Huon pines and fine Blackwoods. Here the local fauna—a freshwater eel—provided us with a tasty tea.



# Wild Birds as Companions

By H. BOSS-WALKER.



ON several occasions during the last couple of years, members of the Tasmanian Field Naturalists Club have visited "Saint Chad", at Fern Tree, where they saw and fed the tame native birds. The following short account of these birds and their taming is the result of a suggestion that it would be of interest to readers, particularly those who have not had the opportunity of seeing them.

When we came to live at "Saint Chad" in April, 1947, we found that our predecessors had fed the birds regularly. So we carried on the work and erected a new bird table on the verandah rail, in good view from a window. Food was provided in the form of mash made by soaking crusts and stale bread in hot water and sweetening with sugar. In addition, pieces of suet and cheese were impaled on bent wires, to prevent their removal en masse.

In a short time, the old habitués found the feast in its new situation, and we were able to enjoy comparatively close-up views of an Olive Whistler (*Pachycephala olivacea*), a Yellow-throated Honey-eater (*Meliphaga flavicollis*), and a couple of dozen Silver-eyes (*Zosterops halmaturine*). During the following weeks, the table was also visited by Blue Wrens (*Malurus cyaneus*), Grey Thrushes (*Colluricincla harmonica*), Dusky Robins (*Amaurodryas vittata*) and Crescent Honey-eaters (*Phylidonyris pyrrhoptera*).

When spring arrived, Blackbirds (*Turdus merula*), and Brown Thornbills (*Acanthiza pusilla*) found the easily obtained, if not ideally suitable, food a great help in their family feeding problems. A notable event about this time also, was the visit of three Strong-billed Honey-eaters (*Melithreptus validirostris*), the advance guard of what were to prove our most popular avian attraction.

With the passing of the years, the food supply has also been availed of by Black-headed Honeyeaters (*Melithreptus affinis*), Yellow-winged Honeyeaters (*Meliornis novae-hollandiae*), House Sparrows (*Passer domesticus*), and, very rarely, Black Jays (*Strepera fuliginosa*) and Starlings (*Sternus vulgaris*). Other very rare visitors to the table have been Goshawks (*Astur fasciatus*) and Butcher Birds (*Cracticus*)

*torquatus*), attracted undoubtedly by the congregation of small birds, not by the inanimate food! We were relieved to see them depart on each occasion "empty-handed".

To give a complete account of the table's visitors, one should perhaps mention also the bees and ants, the Brush-tailed 'Possums which often lick the dish clean at night, and less attractive mammals of the rodent order which occasionally partake. These last are not appreciated by the birds or by us, but in an environment where cats are not tolerated, they enjoy a certain freedom.

Another feeding device has been added in the form of a length of fencing wire hanging vertically over the table and ending in a ring about eight inches in diameter. Suet or cheese is attached to a wire hook in the centre of the ring, and the birds make a very attractive picture as they attack the "bait" from every angle, like the spokes of an animated wheel.

So much for the table and its routine, which went on more or less the same for several years. Then, in January, 1951, when we were lunching on the verandah with visitors, with the birds nearby, someone got the idea of hand-feeding them. When everyone kept very still and a palmful of sugar was held out, the boldest Strong-billed Honeyeaters very quickly overcame their natural caution. And in a few days most of the flock were taking a keen interest in human hands or anything resembling one. This was quite evident when a tall nephew sleeping on the verandah awoke to find birds perching on his uncovered toes and searching for titbits between them!

A Yellow-throated Honeyeater also learnt quickly to feed from our hands, and subsequently several Crescent Honeyeaters became extremely tame. But the Silvereyes and Black-headed Honeyeaters were much more suspicious. The latter, indeed, made it perfectly plain by voice and gesture that we were intruders at *their* bird table. Eventually, however, patience was rewarded, and at the time of writing, two Blackcaps, three or four Silvereyes, a Yellow-throat, a Crescent Honeyeater, and perhaps two dozen Strongbills are eating from our hands.

It is specially gratifying that the birds are not particular about who feeds them, and will come almost as readily to complete strangers, giving much pleasure in this way. There certainly is something fascinating about the trust of wild creatures which are free to come or go, and the sensation of little claws gripping one's fingers and little beaks prying between them is an enjoyable one.

The close-up view of plumage patterns is another privilege obtained by hand-feeding. A female Crescent Honey-eater at 18 ins. distance is much more interesting than the dull-looking little creature hurrying round the garden.

The continual observation of the table has shown interesting differences in bird temperaments. The Yellow-Throats have lived up to their reputation for being bullies. Before the Strongbills arrived, one of these birds was a constant menace to the little Silvereyes, and was repeatedly seen to swoop down on one, hold it down with one foot, and peck it savagely. But when Strongbills are about, a Yellow-throat is quite deferential, waiting till its sturdy companions have eaten their fill, or perhaps sampling a little from the other end of the dish.

The Silvereyes will stand up to one another, with quivering wings and open beaks, and many a battle has been witnessed. The Olive Whistlers have a peculiar way of lowering the head and fluffing out the feathers and making a little run at any birds which they consider should not be at the table.

One characteristic of the Strongbills is their propensity for sudden and apparently causeless panic. One of them will "yell", and in a flash they all bolt for cover. In a few seconds they are all back at the table again. The performance may be repeated almost immediately. It looks like a kind of practical joke on the part of one of them.

One day we saw a sight which made us gasp. One of the Strongbills on the table seemed to be in a most pitiable plight. Its head was on one side, its beak gaping open, all its feathers fluffed up, and one wing almost turned inside out across its back. While we were conjecturing what could be wrong, another one began to have a similar "fit", and we realised that they were merely taking advantage of a little winter sunshine to get its warmth right down between their feathers to the skin. Since then it has happened fairly often, and has been observed in the Silvereyes too.

Some times in the jam-making season, the scum has been put out for the birds and has been much appreciated. If they remember their manners, everything goes well, but jam is very sticky stuff for little birds to walk in, and several rescues have been necessary. However, a visit to the bathroom and a sponging with warm water have put things right again.

The birds are very much at home all over the verandah, and with the slightest encouragement would share the entire house with us. Several attempts in this direction have been made, and one yellow-throated Honeyeater might be encountered at any time of the day, hopping from room to room. However, as no method of house-training birds seems to have evolved yet, we felt it wiser to draw the line somewhere. Not that the rule is hard and fast, though, and no bird has been prevented from coming in occasionally to take a little carpet pile to line its nest with, or to have an argument with a "rival" in a mirror.