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ADVENTURE BAY, SOUTH BRUNEI ISLAND.

Tasmanian Field Naturalists' Club.

Easter Camp-Out at Adventure Bay, 1922.

By CLIVE E. LORD, F.L.S.

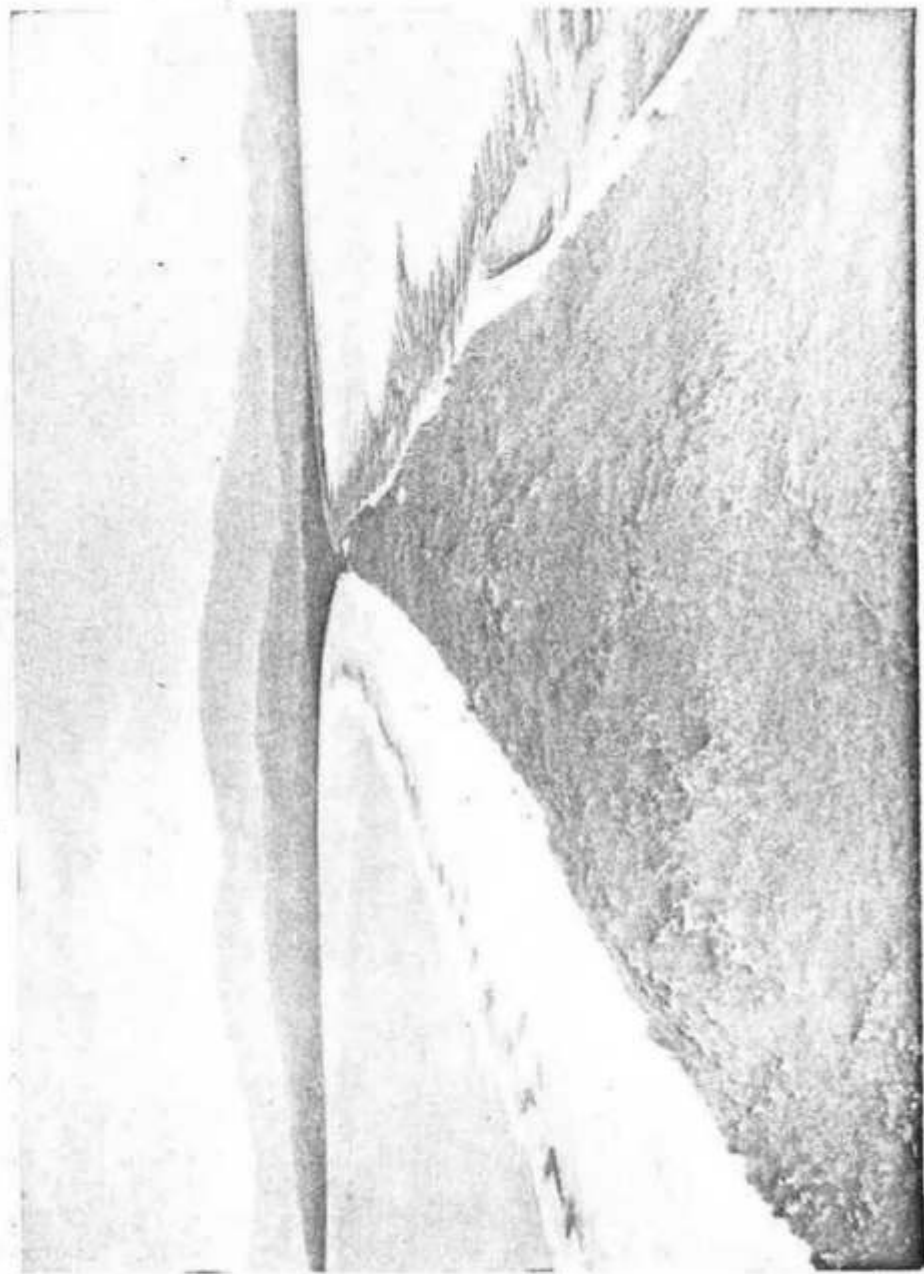
Around the coasts of Tasmania there are many beauty spots which offer a haven to naturalists or other kindred souls to whom the call of the open is not made in vain. Each Easter, for 18 years past, the Tasmanian Field Naturalists' Club has organised a camping trip to one or other of the coastal bays. Here the scientists can pursue their studies amidst nature's realm, and the less scientific members can spend their time admiring the ways of the wild without probing too deeply into its secrets.

Various localities have been visited, and the romance of the state's early history gives an added interest to such camping sites as Adventure Bay, Port Arthur, and Eaglehawk Neck; whilst for charms of scenery, Wineglass Bay, on Freycinet Peninsula ("The Schoutens"), will ever be remembered. It was here in 1914 that the record camp of one hundred members was held. The war era and the resultant economic position, however, have had their effect on the club's activities, and it has been found impossible to charter a steamer and have her at our disposal for the whole of the holidays. Within recent years, therefore, the club has had to conduct its camps nearer home. Last year Adventure Bay was chosen, and the locality proved so suitable that, in response to the expressed desire of many members, the committee decided to hold the camp there again this year. The success of the camp justified the selection.

For many weeks before Easter the organisation work was in progress, as there are many details to be arranged before a large camp can be held, and on Wednesday morning, April 12, the advance party of eleven members set out to prepare the camp for the main party who were to follow on Thursday evening.

The s.s. Togo arrived off the camp site—East Cove, in Adventure Bay—soon after midday, and the work of getting the camp impedimenta ashore immediately commenced. Owing to a strong westerly breeze, accompanied by rain squalls, the work was one of difficulty, especially when landing the luggage amidst the breakers on the shore. Whilst a section of the party assisted with the unloading, another section made a start to erect a few of the tents in order to provide shelter. Owing to the fact that the creek was in flood, it became necessary to carry a small dingy into the creek, and with the aid of several long battens and table tops a rough bridge was improvised, and the camp material carried across. Fortunately the rain gradually passed off, and except for a few showers little inconvenience was experienced during the construction of the camp. By the time darkness fell about a third of the tents had been erected, and a halt was called until next day. The evening meal was appreciated by all, and "blanket bay" was sought early. On the following morning the noisy notes of the wattlebirds were heard in the banksias around the camp, and soon after sunrise billies were being boiled for the early morning cup of tea. The camp site was the same as last year, with the exception that the large dining tent and camp kitchen were erected further to the east, and the club is once again indebted to Mr. Dorloff for permission to camp on his property.

East Cove is the small sandy bay at the eastern end of Adventure Bay. At its western end there are sand dunes rising from the sea beach, whilst half-way along Providence Rivulet cuts into the sand dunes, and then turns to the east, eventually reaching the sea at the



THE NECK, WHICH JOINS NORTH AND SOUTH SECTIONS OF BRUNY ISLAND.

eastern end of the cove. Between the angle of the creek and the hills, which rise at the side of the bay, there is a sandy flat, and it was here that the main camp was situated. On the western side of the creek, in a sheltered hollow in the sand dunes, the ladies' tents were pitched.

On Thursday morning the work of completing the camp was prosecuted with, and the first work undertaken was, the construction of a bridge across the creek. This was done by felling a suitable tree, splitting the trunk in half, and then hauling the timber to the creek, where they were rafted to the correct site and placed in position. A few spars and a rope hand rail completed this engineering effort, and allowed the creek to be negotiated with ease. Although the flood waters in the creek subsided very rapidly, the bridge was found very useful during the camp. During the day "Launceston" gradually grew, and by lunch time all the tents, with the exception of the large dining one, were in position. During the afternoon the work was completed, and numerous small details were attended to. The advance party did full justice to the evening meal, as one member had brought down a turkey, which was roasted in the camp oven, and partaken of with true "bush relish." An hour or so later a large signal fire was set going in order to act as a guiding light for the *Togo*, and by 2.30 p.m. she had arrived. The main party were soon ashore, enjoying tea and hot cross buns, before being conducted to their several canvas homes, north banksia and eucalyptus.

Before proceeding with the details of camp routine, it may be as well to pay some attention to the geography and history of the locality of the camp. The outlines of the early history of Adventure Bay were given in last year's report, so there is no need for repetition here beyond recalling the salient facts relating to the work carried out by each explorer. The work of Captain Bligh will, however, be dealt with in a more detailed manner, as his work merits more attention than has been paid to it in the past.

When Tasman discovered Tasmania in 1642 he attempted to anchor in Adventure Bay, but was driven to sea by a

nor'west gale. The French explorer Marion du Fresne passed along the south coast in 1772 without investigating the coastal bays, and it was not until March, 1773, that Captain Furneaux, in the *Adventure*, anchored in the bay and gave it the name of his ship. Captain Cook touched here in 1777, and eleven years later the First Fleet sailed past Sirius Bay on their voyage to found the first settlement in Australia. Captain Bligh, who had previously visited the bay as Cook's sailing master on the *Resolution*, anchored the *Bounty* here in August, 1788, and a year later Captain Cox, in the *brig Mercury*, passed along the south coast on his voyage of exploration. In 1792 Bligh once more anchored in the bay, and in the following year D'Entrecasteaux, who had discovered the Channel a few months after Bligh's visit, anchored in Adventure Bay during the course of his second visit to Tasmania. Hayes (1793) and Flinders and Bass (1798-99) both passed by Adventure Bay without anchoring there, but the French explorer Baudin in 1802 remained here for a few days in the *Geographe*.

With regard to Bligh's visits to Adventure Bay, the fact must be recalled that Bligh's work has to a large extent been forgotten. This is due to some extent to the after effects of the mutiny on the *Bounty*, and also to the fact that in later years, when Bligh was appointed Governor of New South Wales, he was deposed by the military. It is often stated that the latter event was caused by the severity of Bligh's rule, but an unbiased critic must take into consideration the manners of the period, and also the rather deplorable state into which the young colony had grown. The stir created by the revolt of the military in New South Wales caused the home authorities to take action, and, to quote Dr. Watson, the able editor of the *Historical Records of Australia*, "it forced them to immediate reforms. It indirectly caused the recall of the New South Wales Corps, which, by long residence, had become the most powerful, and perhaps the most evil factor in the community. It indirectly led to the reform of the law courts, to the removal of the restrictions on trade and commerce, and to the general betterment of the condi-



WATERGRESS VALLEY.



THE MOUTH OF THE CREEK.

tions of Bligh in the colony." In short, Bligh's period of Governorship advanced the progress of Australia in a very rapid manner, and the indirect results marked the dawn of a new era. It is with added interest, therefore, that we may recall certain of the details relating to his early voyages of discovery and exploration.

As Bligh had previously touched at Adventure Bay when sailing master on the *Resolution*, it was only natural that he made for the same anchorage when he touched at Tasmania for supplies of wood and water during the voyage of the ill-fated *Bounty*. This famous vessel, of 215 tons, had been placed under command of Captain Bligh, and the object of the voyage was the transportation of the breadfruit tree from the Pacific to the West Indies. On August 21, 1788, the *Bounty* anchored in Adventure Bay, and as soon as possible an inspection was made in order to ascertain the most suitable place to obtain wood and water. The site selected was at the west end of the beach, near where the present jetty stands. Present-day charts refer to this locality as Quiet Corner, owing to the sheltering effect of the high stone bluff which projects into the bay at this point. The stone forming the headland is remarkably rectangular in certain positions, which accounts for Bligh naming this point Hexastone Head. The water was obtained from a gully about sixty yards from the beach. Bligh states that the water was good, but was "merely a collection from the rains; the place is always dry in summer for we found no water in it when I was here with Captain Cook in January, 1777." Nevertheless, Bligh saw fit to chart the small creek which meanders to the beach at this locality by the name of Bounty Rivulet. Resolution River, where Captain Cook obtained water in 1777, was further to the north. Owing to the surf which broke on the shore considerable difficulty was experienced in getting off the wood and water. Whilst this work was in progress David Nelson and William Brown, the botanists of the expedition, made large collections during their excursions along the shore and amid the hills. A number of fruit trees were planted, including three young ap-

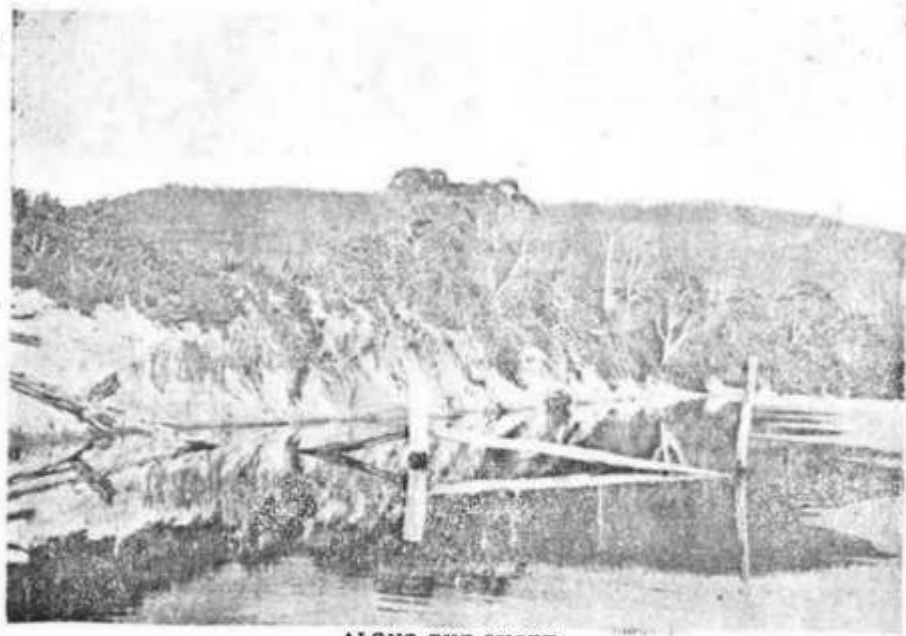
ple trees, nine vines, six plantain trees, a number of orange and lemon seeds, cherry stones, plum, peach, and apricot stones, pumpkins, also two sorts of Indian corn, as well as apple and pear kernels. The trees in the vicinity were also marked, and Nelson followed the circuit of the bay, planting in such situations as appeared suitable. Unfortunately the exact positions of the plantations were marked upon Bligh's chart of Adventure Bay, which was lost in the mutiny of the *Bounty*, but from his subsequent chart of 1792, together with the detailed description in the log of the *Providence*, certain of the localities can be fixed.

Near the watering place of the *Bounty*, which was at the head of the cove now known as Quiet Corner, potatoes, onions, and cabbages were planted. On the first of September some natives were seen in the distance, and orders were entertained that they would come towards the ship. Their non-appearance on the following day caused Bligh to go in a boat towards Cape Frederick Henry, where he had an interview with a party of aborigines. Later in the same day Bligh visited the high land above Penguin Island and obtained a view of a section of Strait now known as D'Entrecasteaux Channel. Owing to the error of Furneaux, Bligh considered this to be the Frederick Henry Bay of Tasman. The *Bounty* sailed from Adventure Bay on September 4 in continuation of her voyage to Tahiti. Some months later the famous mutiny occurred, which led to Bligh's voyage of 3000 miles through uncharted seas in an open boat.

Upon Bligh's return to England it was not long before he was placed in command of a second expedition. This time two vessels, the *Providence*, 420 tons, and the *Assistant*, 110 tons, were given to Bligh to command. It is of interest to note that Matthew Flinders, who was later to play such a prominent part in Australian exploration, was a midshipman on the *Providence*. On the 9th of February, 1792, the two vessels anchored in Adventure Bay, and as soon as the ships were moored Bligh went ashore to select the best places to secure his wood and water from. He decided to obtain this from Pounty Rivulet, as it was a le-



AT CAPE CONNELLA.



ALONG THE SHORE.

to obtain there than at Resolution River. Near the latter part of the rough shelter built by the aborigines was noticed, and also other indications which showed that the natives had recently been in the vicinity. The botanists of Bligh's second expedition were Messrs. Wilkes and Smith, and they did a large amount of collecting work. Nelson, the botanist, who had visited Adventure Bay with Cook in the Resolution and afterwards in the Bounty, had survived the perils of the mutiny and the boat voyage, but died of fever at Timor. A prominent hill near Adventure Bay was named Nelson's Hill by Bligh, in honour of the late botanist, as he was the first to ascend it. The description given of the locality in the log is as follows:—"The hill lies S. 10 deg. E., three miles distant as a bird flies, from the west end of the beach. The top is covered with smaller trees than the parts below, but none of the forest kind, so that the summit of it appears to be bare. On the top of the hill is a large oblong rock, on which a dozen men may stand with ease." This is evidently the hill which is at the present day locally known as Cook's Look-out, but there appears to be no valid reason why the original designation of Nelson's Hill should not be reverted to.

During the stay of the vessels in the bay Bligh had a small boat belonging to the Assistant carried into what he called "the lake." This is now known as Cook's Creek, a rather misleading designation, as Cook's shore parties were engaged further to the north. In reference to the nomenclature of Adventure Bay in general, it might well be noted that the glamour of Captain Cook's reputation has overshadowed all other explorers, without regard to the true facts of the case. "Cook's Creek," "Cook's Look-out," and the so-called "Captain Cook's Tree," are cases in point. Owing to the rough weather experienced, the work of obtaining wood and water from the Bounty and Resolution Rivulets had to be discontinued, and on the 14th of February Lieut. Portlock was sent to examine East Cove (the bay which is now generally spoken of as Durliff's Beach). As the surf was less here, the wooding and watering parties were sent

to this locality on the following day in order to complete the supplies. The bad weather meant more to Bligh than he realised at the time, for he states that had the weather been fair he would have taken the Assistant round in order to examine "the bay of Frederick Henry." Had he been able to do so he would have forestalled the discoveries of D'Entrecasteaux. During the stay in the bay a number of trees and seeds were planted, including nine fine young oaks about 8 inches high. They were planted in East Cove, on the slope of the hill on the left-hand side of the flat as you land about 20 or 30 yards from the water-side. A little below the oaks are planted five fig trees, three pomegranates, three quinces, and 21 strawberry. On Penguin Island and Grass Point we sowed fir seed, apricot and peach stones." The ships sailed from the bay on the 22nd, but returned owing to a mishap to the Assistant, and it was the 24th of February before Bligh sailed from Tasmania in continuation of his voyage, which was to prove successful as far as the introduction of the bread fruit to the West Indies was concerned.

The locality of East Cove, therefore, is clearly of historic interest, and this, added to the charm of the scenery, makes the locality an ideal camp site. Friday morning gave promise of a fine day, and plans were made for the campers to visit localities of interest. The main party went out to Cape Connella, whilst smaller parties preferred to spend the day fishing or on excursions to places nearer the camp. The track to Cape Connella follows the mill tram line for some distance, and then branches off through some dense forest country, where the tall and slender king ferns (*Cyathea*) are to be seen to advantage, and the more common form of tree fern (*Blieksonia*) is to be seen in hundreds.

We were fortunate in having as our guide Mr. P. W. Kellaway, of Bruny, who has recently opened up this and several other tracks in the vicinity, and was therefore able to point out the various beauty spots as we strolled through the dark niels of this cathedral of nature. Mr. Kellaway has a distinct eye for the beauties of nature, and, further, has a great faith in the isle of Bruny.



"THE CHEF."



THE LOCAL GUIDE.

The cheery optimism of our guide was a source of pleasure to all the campers.

After wading his way and the giant ferns and the towering trunk of the eucalypts, the track entered into more open country, and gradually a vista of the coast was obtained—low rugged walls of diabase which protect the land from the relentless forces of the southern ocean. Straggling the track finally emerges at the summit of Cape Camella, and one can look down a thousand feet to where the waves lap against the base of the cliffs. A stone thrown over by one of the party met the water with such force that the sound echoed and re-echoed amidst the caverns in the cliff face. It aroused a sea eagle (*Haliastur*), and sent it flapping out to sea, where the gannets could be seen diving for their prey, and occasionally a wandering albatross, with its immense wings, would sail past in the course of its graceful flight.

Lunch was partaken of amidst the scrub at the top of the cliffs. Far below the waves surged at our feet, and beyond the blue ocean stretched away, until it merged into grey, and the distant mists made it difficult to judge the exact horizon of sea and sky. To the west were the mountains, and these afforded food for discussion concerning the exact locality and nomenclature of the more distant peaks.

After lunch some of the party visited the blowhole, whilst others wandered along the cliffs before starting on the journey back to camp. By the time that the autumn evening was setting in all had returned to camp and gathered around the nestylone bars of the dining tent where the evening meal was served. In the evening a large fire was set alight, and a campfire concert was held.

On Saturday a number of parties were formed. Some preferred a quiet day by the sea shore, whilst others chose the mountains, and were guided to the summit of Mount Bruny by Mr. Kellaway. Smaller parties visited "The Neck"—the picturesque sandy strip connecting South and North Bruny. On the following day the majority of the

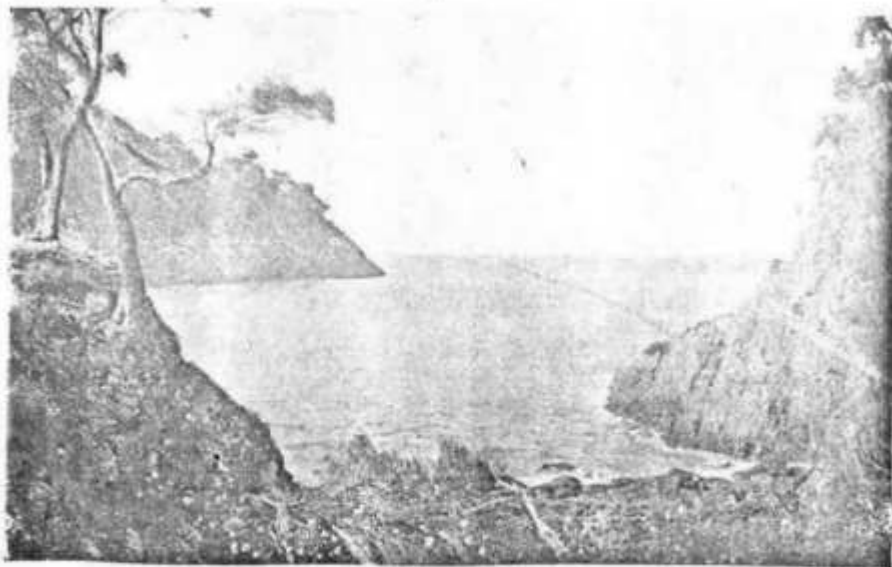
campers spent the day at Grass Point near Penguin Island. Some visited the island, and also examined the cliffs near Fossil Cape. After lunch an impromptu cricket and baseball match was played, the balls being cut out of the roots of bull kelp and the bat from the trunk of an eucalypt. Much amusement was caused owing to the unconventional nature of the game. In the evening of Grass Point is of interest to note the remains of the old whaling stations, another historical link with the past.

On Monday numerous parties were organised. One section paid a visit to the Adventure Bay sports, where we were glad to meet our old friend Mr. Pyans, who had charge of the proceedings. So each day passed, and as the weather was fine the campers were able to make the most of their stay. Such localities as Mylitta Waterfall were visited by sections of the camp from time to time, and places further afield had due attention paid to them, even Alouah and Lamukwana being reached by several of the members during their day excursions. At the close of the day members would assemble to do justice to the efforts of "Chef" Woodward, and his assistants, after which an adjournment would be made to the beach, where the usual campfire concert would be held. In addition to several able vocalists, an excellent phonograph (kindly brought by Mr. Sargison) contributed to the success of these evening "sing-songs." Several short impromptu lectures on historical and natural history subjects were given by members during the course of the evening socials.

On Tuesday morning it became necessary to prepare for the departure, and during the day the camp was dismantled and the impedimenta carried to the small jetty at the east end of the beach as a strong westerly wind was blowing, which would have made the work of boating all the camp gear off the beach a difficult task. It was late in the afternoon before the Togo arrived, and the boats were soon busily engaged in transporting the passengers and cargo to the steamer. All were safely on



NELSON'S HILL
(Commonly called "Cook's Look-Out").



A GLIMPSE OF PENGUIN ISLAND.

board before dark, and the journey to Hobart commenced. Apart from a slight roll when crossing Adventure Bay the return trip was a calm one, and the camp songs were once more sung to while away the time until the city was reached shortly after nine.

Last year, when concluding the camp report, I expressed the hope that a year hence many familiar faces would be grouped around the campfire at some chosen spot on our Tasmanian coast. That hope has been fulfilled, and I desire to express it again with regard to next year. For 18 years past the Tasmanian Field Naturalists' Club has or-

ganised an Easter camp. These outings afford members a chance of pursuing their collecting work, and the social side of the outings form an agreeable holiday. To carry out such camps many things are necessary. Apart from the organisation work there are numerous duties entailed by camp life together with the work of constructing and afterwards, of breaking up, camp. This work is almost invariably entered into in the true camping spirit by all the members, which fact tends greatly to the success of the outings, and gives promise that the camps of the future may be as enjoyable as those of the past.



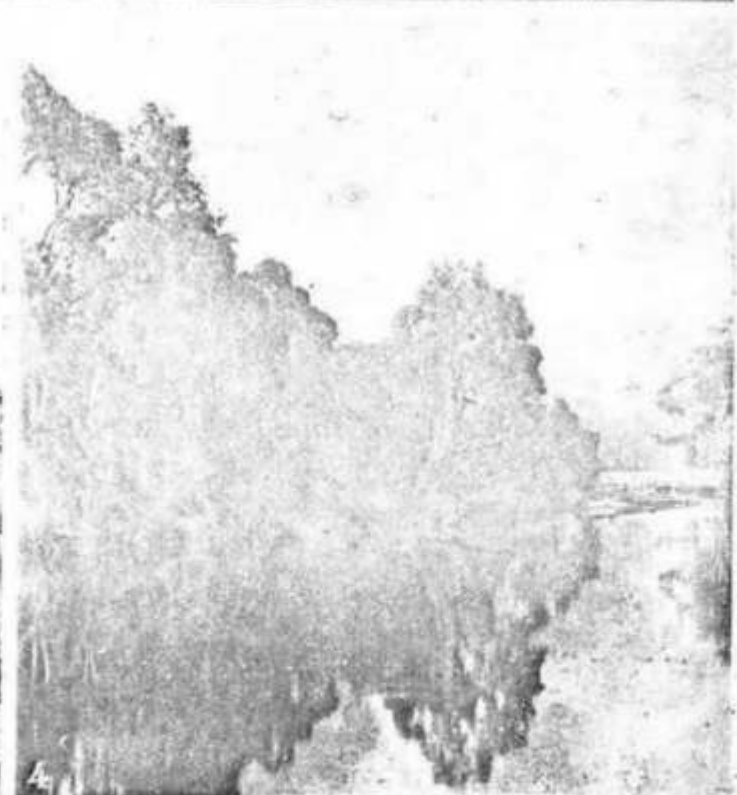
SKETCH OF SOUTH END OF ADVENTURE BAY, BASED ON BLIGH'S CHART OF 1792.





1. SOME OF THE CAMPERS.

2. "THE CHIEF."



LUNCH NEAR PENGUIN ISLAND.

4. COOK'S CREEK.

BOTANICAL NOTES.

By L. ROWAY, C.M.G.

In our last camp at East Cove we explored forests of Beech, which we reached by the old, half burnt tramway. This Beech is evergreen, while we have another species, which is common from Lake Fenton to the West Coast, that sheds its leaves in winter. This habit of shedding leaves is generally ascribed to periodic periods of dryness. Some species of Australian Figs, which are evidently warm land plants, shed all leaves during the regular period of drought to which they are subject. But Beeches are not plants native of warm localities. They are essentially cool district plants. It has been supposed that those which are deciduous in winter have acquired this habit, because the ground in which they were evolved was frozen, and therefore physiologically dry for them. A much more plausible reason is that, as a tree living in Polar regions would receive no direct sunlight for some months in the year, it was of great advantage to rid itself of leaves which were for that period not only useless, but a constant source of loss. So we have some reason to conclude that our deciduous Beech (*Fagus gunnii*) was evolved near the South Pole when that place had a genial, temperate climate.

In the Southern Hemisphere we have Beeches in three districts, the extreme south of South America, New Zealand, and Tasmania, but they nowhere exist in warm climates. In the Northern Hemisphere there is but one Beech, and

it is found throughout the whole north temperate zone, but does not extend into the tropics. These Beeches of the South and the solitary Beech of the North are evidently close relations, yet how did they spread across the tropics, while they most certainly could not live in a warm climate? Where was the genus evolved, and how did it pass the tropics? Was it that in those days there was neither frigidity at the Pole nor intensity about the equator?

The season of our camp was rather late for Orchids, but there was evidence that some kinds exist there in profusion. In particular in the Cutting-Grass Flat on the side of Cook's Look-Out (Nelson's Hill) there had been gorgeous specimens of Native Hyacinth quite two feet high, with the faded remnants of 20 or more flowers. Evidently this was also the home of many species of Fly Orchid.

One of the plants most worthy of notice both from its size and utility is the common Floating Kelp, which grows in such abundance about Penguin Island. In length it will beat any tree in the world, for under suitable conditions it often grows to 300 yards in length. In utility, independent of its service as a fertiliser, it is a great nursery for many of our food fishes, protecting them from the depredations of the voracious Gouta, and at the same time on its fronds grow lower structured organisms, which provide food for the mere trouble of gathering.

ORNITHOLOGICAL NOTES.

By S. W. CRANE, R.A.O.U.

The vicinity of the camp was quite a good place for birds, and, though nothing unusual was observed, 40 species were noted, and doubtless a number were missed.

The honeyeaters (*Myzophaginae*) were very common, and the white-bearded, or New Holland (*Meliphora Novaehollandiae*), with its distinctive black and white streaked breast, the familiar Crescent (*M. Australasiana*), and Spinebill (*A. Dubius*) varieties could often be seen feeding in the banksias which grew wherever the soil was sandy. The extraordinary notes of the wattle birds (*Anellobda*) proclaimed their presence from afar, as did those of the noisy miner, while the black-headed (*M. melanocephalus*) and yellow-throated honeyeaters (*P. navigans*) were also seen. The rarer tawny-crowned (*M. fulvifrons*) is to be found within a few miles of the camp, but I was unable to see it.

The scarlet-breasted (*P. leggi*) and dusky robin (*A. vittata*) were much more plentiful than the flame-breasted (*P. phoeniceus*), though all three frequented the clearings.

Treg martins (*P. nigricans*) were quite common for the first few days, but they apparently migrated northwards on Easter Sunday, as did the pallid cuckoo (*C. pallidus*).

One of the joys of the Australian bush are the early morning carols of the magpies (*Gymnorhina*) and butcher birds (*Craicticus*), in which respect we were well treated. The blue wrens were also heard, but not so much as usual, as a number of them were moulting. Green parrots (*P. flaviventris*) and rosellas (*P. eximius*) were the only psittacidae observed, though doubtless others are to be found in the vicinity.

Small flocks of brown-tailed (*A. diemensis*) and yellow-tailed (*A. chrysorrhoa*) tits frequented the small scrub, which was also the hunting ground of the harmonious whistling shrike thrush (*C. selbil*).

The summer bird or black-faced cuckoo-shrike (*C. pacirostris*) was to be seen in the taller trees doing its characteristic "sawing" of one wing at a time after making a short undulating flight.

Penguin Island was patronised by brown quail (*S. Australis*). The bracks were frequented by that wonderful stunt flier, the dusky fantail (*R. diemensis*), while our only Tasmanian bueh, the freetail (*Z. bellus*) and the ubiquitous raven (*C. australis*) comprise the last of the diurnal land birds observed. The spotted owl (*N. maculata*) was the only nocturnal bird seen. The camp fire was too abiding to wander far from it.

In connection with the sea birds it is interesting to note that Penguin Island was so named by Furneaux owing to a crested penguin (*C. chrysocome*) having been captured there. This bird is extremely rare in Tasmanian waters. The only other really authentic specimen was one captured at Devonport.

A few fairy penguins (*E. minor*) still inhabited the rookeries at the north end of the bay, but the vast majority had finished their nesting duties for the year and gone.

A blue sea eagle (*H. leucogaster*) was observed flying round the cliffs near Cape Connelley, while further out the wandering (*D. exulans*) and black-browed albatrosses (*D. melanophrys*) skimmed over the waves in their inimitable fashion. The clear-cut gannet (*S. Australia*) plunged from aloft with varying success, and black (*P. carbo*) and pied cormorants (*P. gouldi*) were also busy diving for fish. A few black swans (*A. atrata*) were seen flying in their characteristic V formation, and a couple of pairs of white-fronted herons (*N. novaehollandiae*) or blue cranes frequented the quiet backwaters, whence they lazily flapped away on being disturbed.



NEAR CAPE CONNELLA.

The Pacific gull (*G. pacificus*), both in the smart black and white mature and the dingier brown and white immature plumage, and the dainty silver gull were common. Three dottrells, the red-capped (*A.E. tropicilla*) and the rarer hooded (*A.E. monacha*) and the double-banded (*O. bicinctus*), the lower band be-

ing almost invisible at a short distance, flitted about the edge of the waves or prospected in the scummed left by the receding tide. Had not the trip in the boat been made in the dark on each occasion it is probable that several more sea birds would have been added to the list.



JETTY AT EAST COVE.



EAST COVE BEACH, THE SITE OF THE CAMP.
D'Entrecasteaux erected an Observatory in 1793 on the Point at the End of the Beach.



LOOKING SOUTH FROM CAPE CONNELLA.

USES OF A CAMERA.

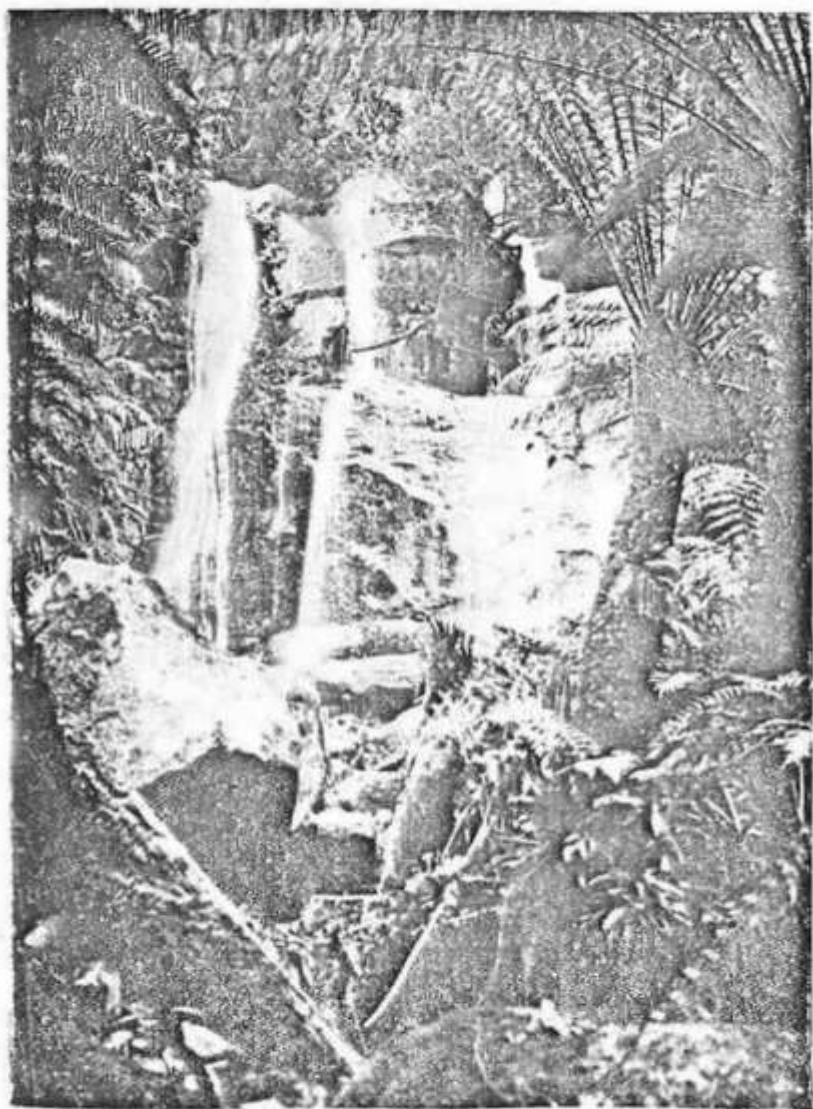
By J. C. BRAEDEN.

The camp at Adventure Bay, South Bruny, Tasmania, afforded excellent chances for those campers who had a camera. First of all there were pictures to be taken of the campers, and snap shots at random, with a lot left to chance as to what the result would be. This afforded the campers any amount of amusement. Then for the worker who wanted serious work, the field was unlimited. Early morning before the winds got up and the sun was still low in the sky, Cook's rivulet was a perfect paradise for the photographer. The water is dark-coloured, and the reflections are wonderful. Then there were beach scenes, sea scapes in a wonderful variety, with the sea sometimes a leaden colour, and at others just like the very highest polished silver. There were foreshore studies to be found even without looking for them. There were wild flowers and shrubs and ferns if the photographer felt like making pictures of them. There is Cape Connella, which is a place hard to beat for the variety of pictures to be made of its grand cliffs; also Fluted Cape rising about 1300 feet from the sea, made very striking pictures; and for distant panoramas, from the tops of the capes and the mountains, the panorama was very fine indeed. Some campers obtained excellent photographs at the neck, and at Mills' Reef (Alonnah) there were also fern glades and gullies with manferns of all sorts of mosses, which lend themselves to the making of pictures with a camera. Then the waterfall was a very pretty place to work in.

If the photographer cared for, or worked on stereoscopic photography, the place was suited to the subject in every way. Small picnic parties taken with the stereo camera are always very interesting; also the cliffs standing up from the sea in the stereoscope, make that branch of photography a very delightful study. Again on the Fluted Cape a number of rock columns made very good subjects for the stereo camera with the sea below and rocks in the foreground. A camera worker who really enjoys his work and is anxious to secure as many, and as good subjects as he can, could not fail to have a very enjoyable holiday. Then in the evening when the sun was towards setting, the most glorious sunset and moonlight effects were seen, and were taken by some of the workers.

A camera is a most suitable thing and a very desirable thing to have at a camp such as the Tasmanian Field Naturalists' Club had at Easter. I am sure that those who did not have a camera to take round, and to encourage them to go further and seek new places and scenes and pictures, must have missed a very great amount of the enjoyment to be got from the outing.

In conclusion, I may say that those who took photographs and had pictures to show the other campers, were very proud of the work that was produced from the camp, and the memory of the places and views will long remain with all of us, as of a most happy experience, and one which not one of the campers would have missed.



MAVISTA FALLS.

GEOLOGICAL NOTES.

By A. N. LEWIS, M.C., LL.B.

A second visit by the Field Naturalists' Club to Adventure Bay has given the geological section of the members an opportunity to follow up many of the observations made last year, an outline of which I had the privilege to contribute to the camp report of 1921, where I gave a general idea of the stratigraphy of Adventure Bay.

Further investigations of this branch of geology were carried out this Easter by members, and included in the observations made was the locating of the beds of marine fossils in the lower coal measures of Adventure Bay mentioned, and described by R. M. Johnston, but which we could not find last year. However, as I summarised the features of the stratigraphy of the district last year, and as these features have been very fully described by the late Mr. R. M. Johnston in his "Geology of Tasmania," and a paper published on the geology of Adventure Bay in the Papers of the Royal Society of Tasmania for 1886, and as the geological survey will probably publish some further observations in the near future I shall confine my remarks in these notes to the development of the topography of the area.

Here, as throughout Tasmania, the diabase is the key to the topography. The Director of the geological survey, and Mr. Nye in his Underground Water Papers, have given a key to the mechanism of the diabase intrusions in the centre of Tasmania, but their idea of a 4000ft. vertical uplift, followed by horizontal intrusions on a vast scale hardly explains many of the diabase occurrences in the south. The great question is this:—Is the diabase that forms Fluted Cape, for example, a laterally intruded sill from the great uplifting mass that formed Mount Wellington, or is it the top of a huge vertically thrusting mass that has not been pushed to the heights of the great masses inland? We may have theories, but the mechanism of the great diabase intrusions has yet to be worked out.

However it occurred, the boundaries of the diabase did not extend far to the south-east of the present shore line of South Bruny. Looking south from Cape Connella small patches of sedimentary rock can be seen still remaining in sheltered corners, just as it can be traced in tiny patches on Betsy Island, Tasman Island, and here and there in corners among the diabase cliffs of southern and south-eastern Tasmania.

Evidently the intrusion of diabase either stopped near the present shore line, and for some distance to the south-east the land surface was continued by sandstones, or else in the uplifting of the present land surface by the intruding diabase, great blocks of sandstone were carried from the floor of the sea. The action of the restless Southern Ocean has effaced most of the softer sediments, leaving only thin patches in sheltered corners. The erosion-resisting diabase has fared better, and, with the sandstone cleared from its face by the action of the waves, now stands in bold headlands rising 4000ft. sheer from the sea. Even this iron wall of diabase is yielding to the resistless action of the elements. Many jutting prominences show the level where once the line of cliffs stood. The sea, by eating into cracks and lines of weakness, has cut great gulches into the cliff face, and in places has entirely isolated columns of rock which now stand as outliers or sea-worn monuments, one of which, rising several hundreds of feet from the sea's edge, beneath Cape Connella, closely resembles the Pillar on the Cape of that name, discernible 15 miles to the eastward.

The original face of the diabase was very irregular, and doubtless many of the bays that indent the southern coast were caused merely by the sculpturing of softer sandstones by the waves which were rebuffed when they had eaten through to the solid diabase. Traces of metamorphic rock found in the passage separating Penguin Island indicate that here waves have eaten out a softer bed of rock and isolated the diabase island.



"THE CHAPERONES."



"IT IS NICE TO GET UP IN THE MORNING" (Camp Song).

A wonderful diabase sill, some 200ft. high, capped with the same thickness of sedimentary rock, stretches from the mainland at Passage Point right down the eastern coast line of North Bruny, doubtless underlying much of that island. There the diabase appears to disappear, or not to rise again for the 14 miles or so of Adventure Bay, and it reappears again at Fluted Cape. In the gap formed between the last-named one and Cape Frederick Henry the waves have cut out the land surface of soft sandstones and formed the wide sweep of Adventure Bay.

The "fluted" or "organ pipe" structure of many of the prominent diabase headlands forms a striking scenic feature. From a distance the diabase appears to have formed in columns, as is frequent with the basalts of the lava flows, but looking closer it is soon seen that the "columns" are usually irregular in shape, size, and angles. Most are roughly quadrilateral with the inner side merged in the general mass of the cliff. Often the edges are rounded off, and other geometrical figures are formed. But probably this columnar formation is not structural in origin, as with the basaltic columns of Burnie. "The Giants Causeway," Ireland, and elsewhere, but are merely due to erosion. These cliffs exposed to the sea are continually dripping with sea mists and vapours, and are exposed to the full effects of the hot sun, and the penetrating frosts. These great agents of erosion crack the rock surfaces along lines of weakness, which, in this diabase, appears to be in vertical lines through the mass at intervals of from two to six feet—lines of weakness caused, no doubt, by tensional stresses when the mass was cooling.

In the solid diabase there is no trace of columnar structure, but as the agents of erosion eat into a cliff face the cracks are widened, and deepened until a series of furrows are cut into the cliff. These give the columnar appearance from a distance. Near the top of the cliff, or on the outer edge of prominences, these erosion cracks meet at right angles to the cliff face, and so complete the column. In many cases on most diabase headlands residuals of diabase stand up often to 50ft. as columns. These have been iso-

lated by the enlargement of cracks until the surrounding rock has vanished. These columnar erosion residuals are to be seen best on the end of Cape Raoul. There are also several good specimens along the top of the cliff face from Penguin Island to Cape Connella.

A very noticeable feature of the topography of the district is the way in which the diabase prominences of Fluted Cape and Cape Connella, after rising 1000 feet sheer from the sea floor, slope very rapidly down nearly to sea level half a mile inland, forming in section a pyramid with its highest point on the top of the cliffs. This coastal battlement of rock is not a feature that may be expected, but it is found elsewhere around Southern Tasmania, although nowhere else is it so pronounced. A more usual development would be a gentle slope from the centre of the island to the sea, with perhaps a line of cliffs at the sea border down to which the land sloped.

The explanation of the reason for the sea edge being the highest land in the vicinity may be found in the development of the topography of the island. Almost certainly the diabase lifted great thicknesses of sedimentary rock, which after its intrusion lay above it, but have since vanished. Streams worked down this uplifted plateau in accordance with drainage levels caused by the uplift. They ate rapidly through the soft sandstones until they struck the harder diabase below, but then they had formed valleys from which they could not escape, and therefore had to keep on cutting through the harder rock. In time the softer overlying sandstones were entirely removed by tributary rills and rain wash, but the rivers had to keep on flowing in the original channels formed when they were eating through the sandstones. They are thus what are called "consequent" streams.

With the removal of the sandstones the intrusions of diabase stand out as residuals. These the rivers have little affected beyond generally rounding their contour. While the sandstones still covered the island the three creeks that flow northward into the south of Adventure Bay captured most of the drainage of the plateau. They were pro-



NEAR THE SUMMIT OF FLUTED CAPE.



MEMBERS OF THE CAMPING PARTY.

bally assisted in this work by the diabase ridges raising the land over where now run the Mount Bruny range and the land over Fluted Cape to a higher level than the land in the centre.

These streams have pushed their tributaries right to the eastern edge of the island on the cliff faces, and well to the south also. They have captured all the drainage of any rills that flowed seaward over the cliffs, and have carved the landscape into a basin around their heads, with its rim and highest edge running round the cliffs on the east and south, and along the Mount Bruny range on the north. Out of this basin ridges and points of diabase rise where the streams have not completed their work of removing the harder rock. These streams are still in the juvenile stage, but have cut well below the ground water level, and are good permanent flows of water, cutting into rocky beds with many waterfalls, and running in steep-sided gullies.

There is ample evidence at the mouth of these rivulets of a recent change in land or sea level. Each flows from its narrow mountain valley out on to a flat alluvial plain. The old sea edge can be traced passing inland some distance in large bays, the position of the shores of which can be traced where the hillsides rise steeply from the flats surrounding the mouths of the streams. Into these bays the rivulets have carried much sediment. Later the land has risen some 25 to 50 feet, or the sea has sunk to the same amount, and these accumulations of sediments have been left bare as delta-shaped flats filling the bottoms of valleys that were, apparently, bays of the seashore. Then the streams winding across these fertile flats with many a loop and bend have cut down ten or more feet to the new level of the sea, and the winds from the north have piled up new sand dunes across the levelled front of the new seashore.

By the south-eastern end of the lagoon that forms the mouth of Cook's Rivulet can be clearly seen a line of old sand dunes, now half a mile inland, and covered with a layer of peat, on which heath, grasses, and flowers are growing to-day. These sand dunes are formed by the action of the tides and estuary currents, which wear away the prominences of the coastline as they surge past, and deposit the grains of rock in the quiet bays, where their speed is checked. The wind catches the sand grains where the waves leave them, and piles up the great dunes which fringe all our coastal bays. The wind can drive these dunes inland, spreading desolation over the most fertile country, and the only protection for land behind dunes is a good binding of living vegetation on the dunes. The greatest care must be taken never to destroy vegetation on a dune, as the smallest gap may let the sand through to the destruction of the farms behind, and there is nothing more difficult to stop than a moving sand dune. Fortunately, in Quiet Corner, sheltered from severe winds, the sand dunes do not appear to be dangerous.

The narrow neck which joins North and South Bruny is probably merely a sand dune formed by the deposition of sediments carried by the tide into the bay where it was originally checked in its flow between the two land masses of the north and the south island by the drag of the neighbouring shores and by the shallow water between. The tide gradually filled up this shallow water, and the wind raised the dunes of the Neck, which are held in position by vegetation, but prevented from growing higher by the action of the wind. It is possible that a severe change in tidal or ocean currents would destroy the narrow connection.

ZOOLOGICAL NOTES.

By CLIVE E. LORD, F.L.S.

As regards general zoology, the vicinity of the camp did not yield a large percentage of the higher forms. This is doubtless due to the advance of settlement and its resultant effects upon the fauna.

The foregoing thought leads one to recall the fact that our marsupials are a steadily decreasing race, and it behoves students to take every opportunity they can in order to study the species as they exist to-day. The fate of the Tasmanian emu and the rareness of our forester kangaroo serve to recall the serious nature of the position. It must not be forgotten that the Australian realm is unique in the zoogeographical sense; in fact, it has been termed "the fossil continent." There exist to-day in Tasmania animals which are found only in a fossil state in other parts of the world. Between such divergent types as the marsupial wolf (*Thylacinus cynocephalus*), which still roams in small numbers amidst the rugged wilds of our western highlands, and the mountain shrimp (*Anaspides tasmanica*), which is to be found in our alpine tarras, there exists a range of unique species of absorbing interest to the scientist.

The entire Tasmanian land mammalian fauna is composed of marsupials, the only exception being the cosmopolitan bats (*Chiroptera*) and fine species of indigenous rodents. The monotremes, of course, also stand apart, but they only serve to accentuate the unique character of our fauna. Where else except in the Australian realm are found such primitive animals? Mammals which lay eggs! When we recall the fact that the first record of a monotreme being taken in Tasmania is that made by Bligh's expedition to Adventure Bay in 1792 our interest is quickened. No wonder that the porcupine anteater (*Tachyglottis*) which was secured by Lieut. Guthrie on February 7, 1792, appeared to puzzle the sailors, and was referred to as "an animal of very odd form." Had Bligh's men secured a platypus (*Ornithorhynchus*)—the second and only other repre-

sentative of the monotremata class—they would have doubtless been still further puzzled at the strange animals which occurred in the land of Van Diemen.

It is impossible within the limited space available to describe in detail any member of the species met with, considering the fact that the title of these notes opens up the whole field of the Zoological cosmos. No attempt will be made to do so, but a few outline notes on the higher marsupials of the Tasmanian zone may prove of interest and serve to arouse interest in our decreasing indigenous fauna.

The existing forms of our marsupials fall readily into two sections—the Diprotodontia, which have two large incisor teeth in the lower jaw, and the Polyprotodontia, which have numerous incisors in the mandible. The kangaroos, wallabies, and rat kangaroos, together with the wombats and the so-called Australian opossums (*Phalangeridae*), constitute the diprotodonts. The polyprotodonts which occur in the island are the native cats, the marsupial wolf, the Tasmanian devil, the bandicoots, and the marsupial mice.

Of the kangaroos, it is regrettable to note that these have so far decreased in numbers as to be almost forgotten by the average Tasmanian. The largest of the wallabies (*M. bennetti*) is the common "kangaroo." The scrub wallaby is the only other large member of the Macropodidae which occurs in Tasmania. The bettong (*B. cumiculus*) and the rat kangaroo (*T. tridactylus*) are fairly common species in most districts suitable for their methods of life.

The wombats (*Phascogomys*)—these massive "underground engineers"—are still common in many parts. These animals are often called "badgers," because they happen to resemble, in a superficial manner, a carnivorous animal of the old world which has totally different economic habits. The phalangers, which are generally called "opossums," owing to the superficial resemblance to the true