Tasmanian Field Naturalists' Club.

Easter Camp-Out,

1909

To Wineglass Bay, Freycinet Peninsula

(East Coast, Tasmania).

REPORT ON EASTER CAMP-OUT
By E. A. Elliott, Hon. Secretary.

BOTANICAL NOTES
By L. Rodway, Government Botanist.

NOTES ON THE BIRDS
By Robert Hall, C.M.Z.S.

GEOLOGY OF WINEGLASS BAY
By A. D. Mackay.

ZOOLOGICAL RESULTS
By T. Thompson Flynn, B. Sc.

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GROUP OF MEMBERS.

FRONT ROW (reading from left to right):—Masters Rigby, E. Shoolbridge, H. V. Bayly, H. B. Bayley, Lord, Lines, Crookall, Kelly, Armstrong, Ogilvie, Watchorn, R. Shoolbridge.

SECOND ROW:—Misses M. C. Fraser, H. M. Elliott, I. B. Mather, M. Walker, J. Walker, L. Roberts, E. Robey, M. May, Button, D. Todd (back), Nairn.

THIRD ROW:—Misses Wrigley, Parrett, Mesdames Parrett, W. E. Taylor, Wrigley, Monsur, E. O. Rowland, Misses G. Rogers, E. Ross, F. Lazarus, A. Gulline, May, Nairn.

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Tasmanian Field Naturalists' Club.

Easter Camp-out to Wineglass Bay, Freycinet Peninsula, 1909.

By E. A. ELLIOTT, Hon. Secretary.

In 1906 the club first visited the Schoutens (comprising Freycinet Peninsula and Schouten Island), when an Easter camp of some 42 members was formed. Everyone was then so well pleased that it was decided to again visit this locality.

The Easter of 1907 found members at South Bruni Island, while in 1908 they went to Maria Island, and in drawing up the syllabus for the present session it was unanimously decided to go to some part of the Schoutens during 1909. With a knowledge of the locality, and also bearing in mind the large and increasing number of members in the club, the committee had little hesitation in chartering from Messrs. Holyman and Sons the steamer Koonookarra. It was made evident at the outset that many of the lady members wished to go, and to this the committee agreed. The original intention was that all the ladies should sleep on the vessel, but it was urged that bad weather might compel the steamer to leave the camp site, and seek shelter elsewhere, and as the ladies preferred to have a camp on shore, arrangements were made for this to be done.

An early forecast as to the number of those who would go was about 60, but as the date of departure drew near, and the trip was made widely known, the number rose until the full strength of the party, including the cooks, etc., was 85. This probably forms a record for a private camping party in Tasmania, and that the whole function was a complete success—not a single hitch occurring—proves on how firm a base the Field Naturalists' Club is established.

Midnight on Thursday, 8th April, found the members on board the Koonookarra, and a few minutes later the vessel started on the trip. The East Bay Neck Canal was passed in the early grey of Good Friday morning, and the sun rose while steaming through Blackman's Bay. The weather was beautifully fine, and everyone enjoyed the run to Maria Island, where a stay of half an hour was made, and two members were picked up. From here it was found to be rather a long way to Mayfield station, on the mainland, where two more joined the party, and a supply of fresh milk and cream was received. From thence, about 1 p.m., the course was shaped almost due east for Schouten Passage.

As we drew near to Schouten Island most of those on board seemed pleased that the original idea of camping there had been abandoned in favour of Wineglass or Thouin Bay, which lies on the eastern side of Freycinet Peninsula. This Bay forms a break in a most formidable sea front of rugged red granite mountains, which, viewed from the ocean side of the peninsula and island, show high cliffs, absolutely void of vegetation, going sheer down into the sea, and having bold water of 40 fathoms close to the face of the cliffs. Granite peaks and boulders jut from the midst of vegetation on the hills (the highest being Mount Freycinet, over 2,000ft.), and form scenery of great beauty—scenery of another type to that which generally prevails in Southern Tasmania. How richly coloured are these purple hills, caught in the rays of setting sun, surrounded by the sea of blue and green, and fringed at ocean's edge with seething surf. Pencil, brush, or camera cannot carry them away, therefore let many come to see them in their natural beauty, might, and grandeur, for then only can their charm be understood.

Wineglass Bay lies between Mount Hazard on the north and Mount Freycinet at the south, and has a fine beach of white quartz sand from one to two

miles in length. There is a narrow neck of land behind this beach, and on the other side of the neck Hazard's Bay is met. This isthmus is generally low lying, and has a large fresh water lagoon upon it, but behind the beach at Wineglass Bay there is a slight rise covered with low shrubs, adding considerably to the attractiveness of the scene. At the south end of the bay a creek runs down from Mount Freycinet, but at the time of our visit the mouth of this creek was blocked with sand, and the fresh water in it filtered through the beach into the sea.

The vessel dropped anchor at about 3.30 on Good Friday afternoon, near the south end of the beach. The boats were at once lowered into the water, and the landing of the party, together with their impedimenta, was proceeded with. Tents were erected in two places, the larger camp, of some fifteen tents, for the gentlemen, and at the end of the beach four were set up for the ladies

The first meal in camp was served under slight difficulties, owing to the late arrival at the camp site, but during the next day much was done towards putting the camp in order, and breakfast and dinner were afterwards served in a manner befitting so important a camp of the club. At one meal a menu card was even presented to the delighted diners. A novel feature of the camp was the fact that a bugle sounded early each morning, and was also employed to call members to the meals.

The whole party rallied round the camp fire each evening, when enjoyable socials were held. There were many in the party who attended in other interests than those of science, and a camp fire social appeals to everyone, whether naturalist or not. Once Mr. Hall spoke on some of our native birds for a little while, and another time Mr. Tarleton gave us an account of his meeting with the Kelly gang while he was manager of a bank in New South Wales. Members sang solos and choruses, and also recited, and Mr. H. Richardson supplied cornet solos. On Easter Sunday evening hymns were sung.

On Saturday morning members woke to the varied calls of the bush, or else to the break of the slight swell upon the beach. Later on the steamer was used for dredging in Wineglass Bay for several hours, but the shells taken were very few; neither were the results of dredging rich in other invertebrate life, but of this Mr. Flynn will treat later. On Saturday afternoon the vessel proceeded round the Lemon Rock at the entrance to the bay, where we had some deep sea fishing for several hours. Perch, rock cod, and gurnard were in largest numbers amongst the fish caught.

Others who had not gone in the vessel busied themselves with their various hobbies, or else, forming themselves into parties, and taking their lunch, visited the many places of interest, such as Mount Freycinet, Hazard's and Cole's Bays, and the hills on every side, which needed a fair amount of labour to ascend. During other days in camp each party, hearing of the joys of places not yet visited, used every endeavour to see as much as possible in the all too short time that remained, and make the most of the glorious weather that prevailed. Some were more inclined to keep in the neighbourhood of the camp, content with the charming scene around them, or busily depicting on canvas the beauties of the place.

Those who were fond of fishing were continually out in the boats, and enough fish were caught for an even larger party. Real trumpeter were taken in the kelp near the camp, besides other fish above named, and crayfish were taken at both ends of the beach. Mention must be made of a large blue pointer shark, which ran itself ashore while chasing fish amongst the kelp. It was seen from the steamer when about to commence dredging, and two boats were sent to the scene, and having killed the shark, it was taken on board, and later towed to the beach near the camp. It measured some seven feet in length.

On Easter Monday a strong easterly wind blew right into the bay, with sufficient strength to make further dredging impossible, so that those who had been looking forward to this were compelled to occupy themselves otherwise.

It was decided to make a big effort to leave camp early on Tuesday morning, so that the canal might be reached before it became too late to pass, and to the credit of all, it may be said that this was done, the boating of the luggage commencing before sunrise, and the boats returned to the steamer for the last time before 9 a.m., when the return trip was immediately started upon.

The natural history work will be dealt

A CAMP SCENE.

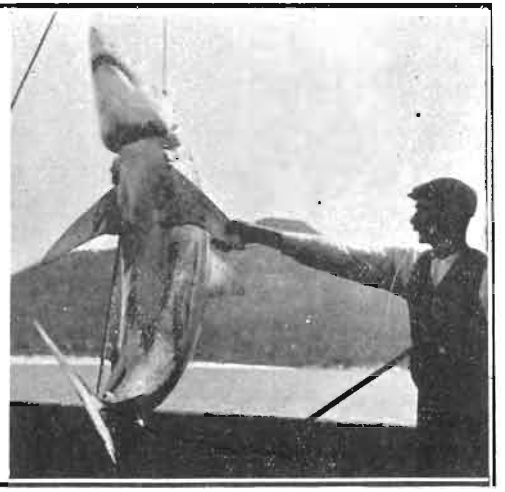
PREPARING TO RETURN.

A BUSY TIME IN CAMP.

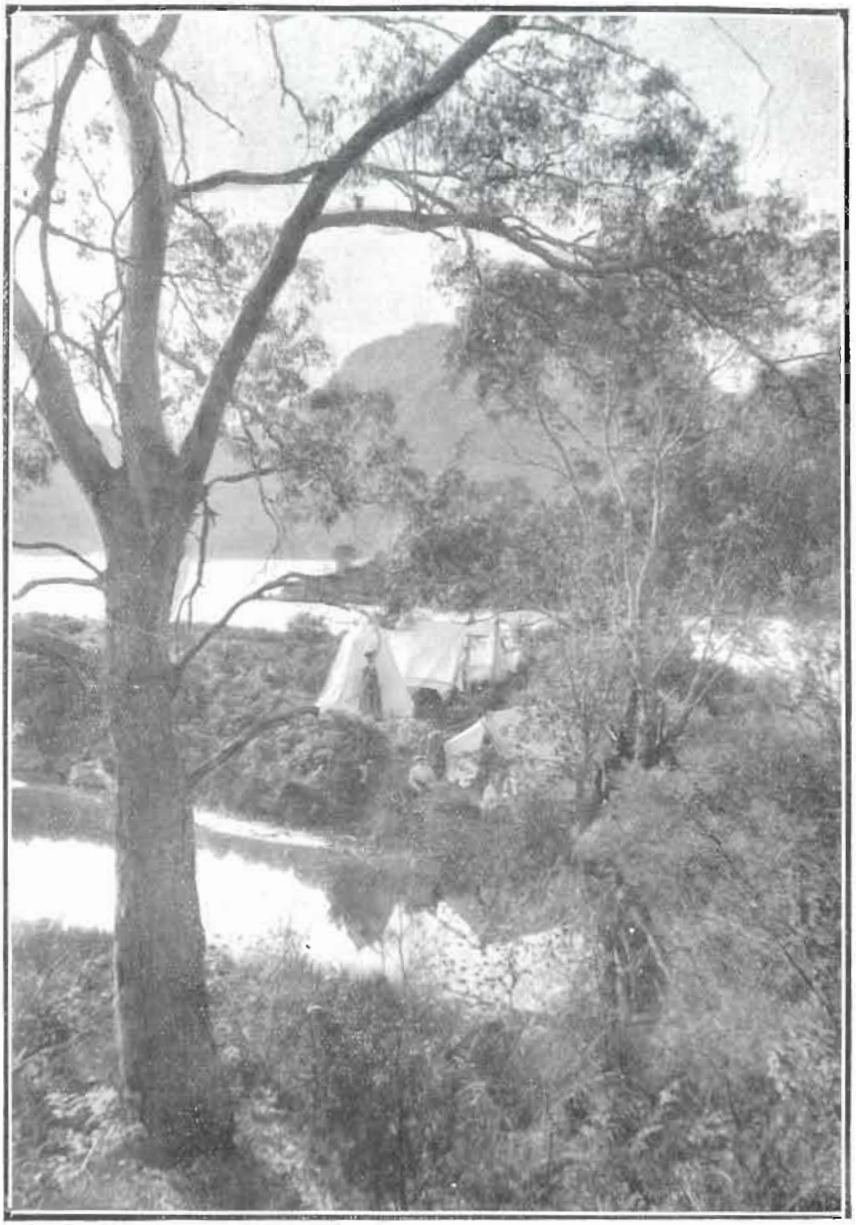
THE COOK'S QUARTERS.

THE DESERTED VILLAGE.

"BEACHED."



LANDING THE SHARK ON BOARD.



THE LADIES' TENTS AT THE CAMP

with by the experts who took part, but before closing the portion of the report allotted to me, I wish to urge again the necessity of permanently reserving the Schoutens as a national park, with the control vested in trustees, and placed under the care of rangers. The locality is at present nominally reserved by the Government, but shooting is beyond doubt carried on, and even that worse enemy to game, the snarer, seeks his prey on this "preserve." As secretary of the club, I know that I am only voicing the unanimous wish of members and a large number besides, in stating that a permanent sanctuary for animals and birds should be made in Tasmania, and, of course, bailiffs should be appointed to see that the law is enforced. We are sure that no better spot than the Schoutens could be found for such a reserve, and it should be given to the people of the State to visit and camp upon, and enjoy themselves as we all have done.

BOTANICAL NOTES.

(By L. Rodway.)

Freycinet Peninsula does not offer an extensive variety of flowering plants to the collector. This is not at all surprising from the nature of the soil. The hills are formed of granite, and the disintegration of this rock does not form a rich soil fit for the support of exacting species, and the flats consist of a few inches of humus on a subsoil of barren sea sand. Yet, though the number is limited, some of the plants are of exceptional interest.

The only coniter is the Oyster Bay pine. It is not a true pine, but belongs to the Cypress family. Its distribution in Tasmania is very limited, and appears to be confined to the peninsula and adjoining mainland. We met with isolated trees in most of the lower country, but no extensive patches. The tallest were from 30 to 40 feet. The other trees were manna and peppermint gums.

An interesting myrtle is widely distributed—Thryptomene micrantha, a pretty little pale green broom-like shrub. It is the only member of the genus found in Tasmania, and appears to be confined to this district. It is of exceptional interest, for it is found nowhere else in the world.

Our only Kunzea, K. corifolia, is also found here.

Acacia sophorae occurs on the sand dunes, and assumes quite a procumbent habit. This is unusual, and does not appear to be due to the rigors of prevailing winds. In similar localities in much more exposed places it is erect. Possibly the absence of nutritious subsoil may be the cause.

A robust form of the common sow thistle appears on the shore. The same form occurs at Recherche. Sow thistle is generally classed with introduced plants, but this form appears indigenous. The same condition has been noted in New Zealand.

Carnivorous plants are fairly plentiful. The common butterfly plant grows about the swamps, and in the water develops copious leaves, covered with utricles. Droseras are numerous, especially the pigmy species, and D. spathulata appears in some spots.

One of the prettiest shrubs is the euphorbiaceous Phyllanthus gunii, with slender branches and elegant pale green leaves. Orchids are varied. Our only dendrobium, D. striolatum, grows on nearly bare granite boulders. It is a striking object with its long, cylindrical, hard leaves, which can only be likened to porcupine quills. One of the party gathered a fine specimen of our rare Spiranthes Australis, and another of Lobelia Browniana.

Blackboy, which is also, unfortunately, called grasstree, is here in abundance. Also the rare cutting grass Gahnia Microstachya, while on the western shore appears the grass Zoysia Pungens. This grass is distributed from North China to Tasmania, but does not appear south of the Schoutens. On the eastern shore are a few plants of Hakea rostrata. It is very like a coarse form of our common but endemic H. epiglottis, but its cone bearing stigma removes all chance of confusion.

On the shores of Wineglass Bay the rapid deepening of the water and cleanliness of the floor, afford a poor collecting ground for seaweed. Of course the two kelps, Macrocystis and Laminaria, are here. Also may be gathered the interesting fucoid Splacnidium rugosum and Hormosira, the latter with its constant parasite Notheia anomala. On this plant, in some places was a dense covering of the Myxophyceous plant Leibleinia, affording a

home for a number of interesting diatoms.

If the seashore was relatively barren, the lagoon towards Hazard Bay was teeming with algal life. The beautiful bulbochaete, many forms of pleurococoi, and myxophyceae were in abundance. In the gelatinous masses of this was entangled a copious flora of diatoms and desmids. Amongst the former were many species of tabellaria, eunotia, navicula, and nitschia, whilst amongst the latter were cosmarium, staurastrum, xanthidium, euastrum, and a host of others. Here is a rich field, waiting the leisured scientist, of hundreds of unrecorded species, only asking to be gathered. Fungi are poor, especially parasitic forms.

Freycinet Peninsula would form an ideal national park, and some day it must be done; only more's the pity that the delay has been so long that the native fauna has been well nigh exterminated. In making this a beauty spot and home for our marsupials and game birds, the far-seeing Government of the future should not overlook the condition of local tree growth. Our native trees in this locality, as already pointed out, are few in number, and not of imposing stature. A very great deal can be done by suitable planting to not only beautify the district, but make it a source of wealth. The flats from Cole's to Sleepy Bays, and from Hazards to Wineglass should be planted with forests of suitable timber. This would be very inexpensive if properly carried out, and the beauty and protection to game would alone repay the cost. The hillsides, till they become too barren, would afford good situation for forests of oak, beech, and pines. Every year we neglect this work is regrettable. Doubtless we can still live without exerting ourselves, but we owe a duty to the future. Why should we be the only people to still slumber?

NOTES ON THE BIRDS.

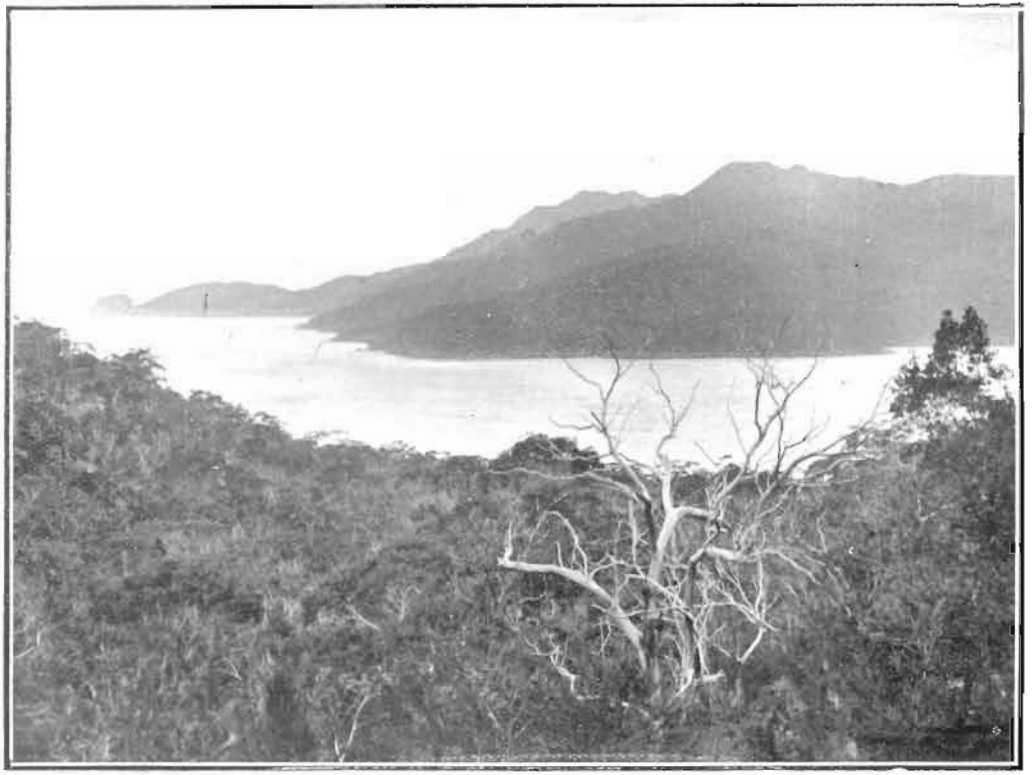
(By Robert Hall.)

Thouin, or Wineglass, Bay has an easterly outlook from a peninsula jutting into the sea. For that reason one must expect to see a few or many of the sea-birds closely attending an ocean beach. Studying the bird-fauna of the peninsula, one finds fresh water species upon the few lakes irregularly distributed. Apart from the fresh water and marine birds there are a number of land forms. The total of the birds upon the bay, out at sea, and the land adjacent, made thirty-three species, according to our observation from this camp.

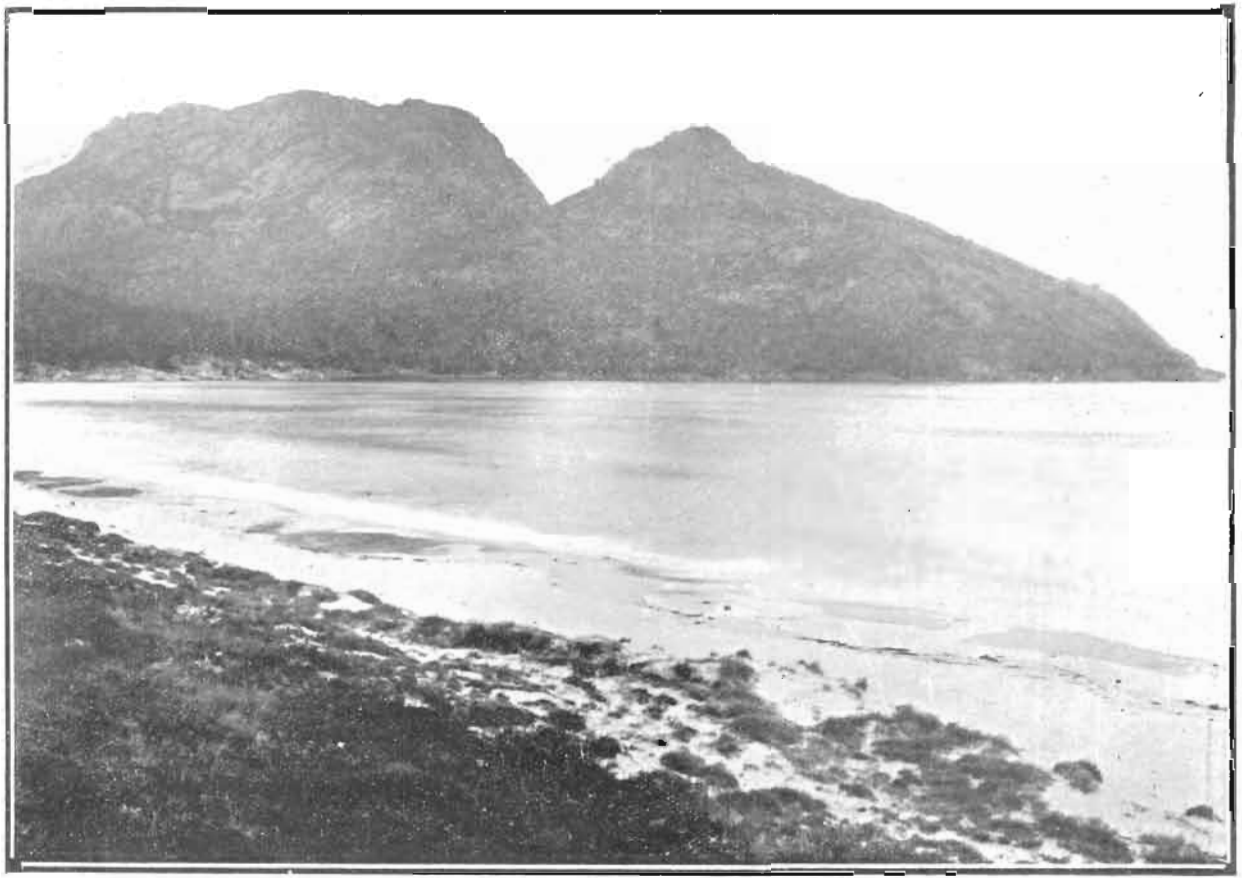
The country is very rough, almost altogether granitic, and devoid of a plentiful supply of bird food. The vegetation has very little variety; the climate is a dry one. We should hope that plants of greater and more economic variety will be introduced to serve as food for more animals. Perhaps our forest department will see its way towards planting a variety of rich flowering eucalypts for the birds of the future, and cow-clover in the low country. We should bear in mind that this is to be our great national park, and it will need some building up. At the present time it is held as a game preserve, but no area of land with so little cost of upkeep is so advantageous as this peninsula to serve the people's interests as a national park. It simply needs to be vested in trustees for all time to remain the assured natural haunt of the indigenous animals of Tasmania when all other resorts have passed away. The sister States are making their preparations for just one generation ahead. What are we doing?

The principal food supply for birds at the present moment on the peninsula is to be found in the honey-bearing banksia trees, therefore, the most numerous family is the honey-eating or meliphagidæ. Our camping-ground being placed in a grove of graceful banksias we woke in the early morning with the sweet voice of the spine-bill honey-eater (1), and the guttural notes of the brush wattle-bird (2), while just in the distance the strangely hard notes of the wattle honey-eater (3) called clearly through the atmosphere, and every day their predominant notes became more familiar to us. The wattle honey-eater is peculiar to Tasmania. Its nearest relative is upon the other side of Bass Strait. There the lobes attached to the side of the head are not nearly so conspicuous as with our bird. As a matter of food supply they are just as eagerly hunted. The voices of the wattle and spine-billed honey-eaters are strongly contrasted, one being as richly sweet as the other is unduly harsh.

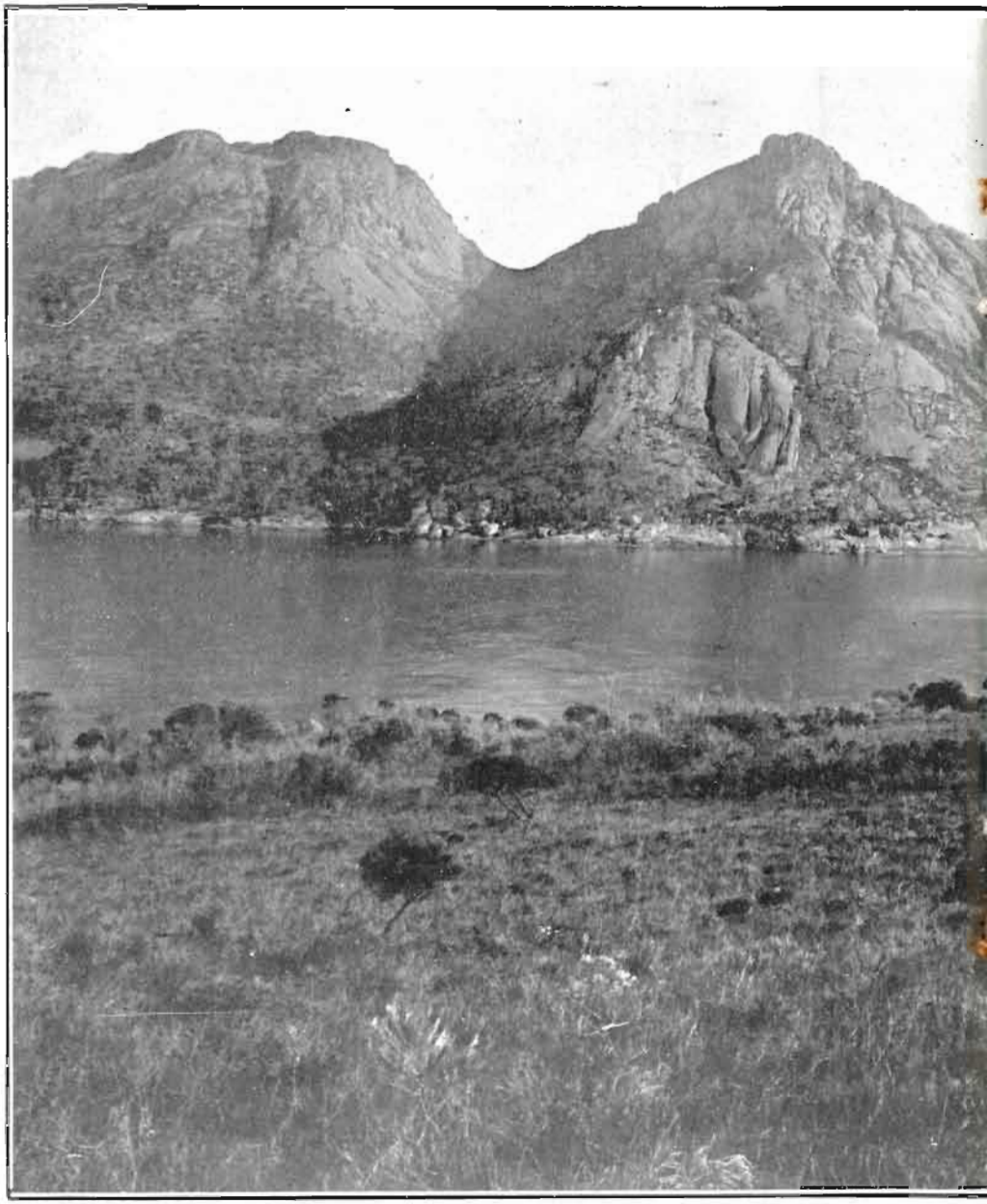
VIEW OF WINEGLASS BAY FROM MOUNT HAZARD.



THE SOUTH SIDE OF ENTRANCE TO WINEGLASS BAY.

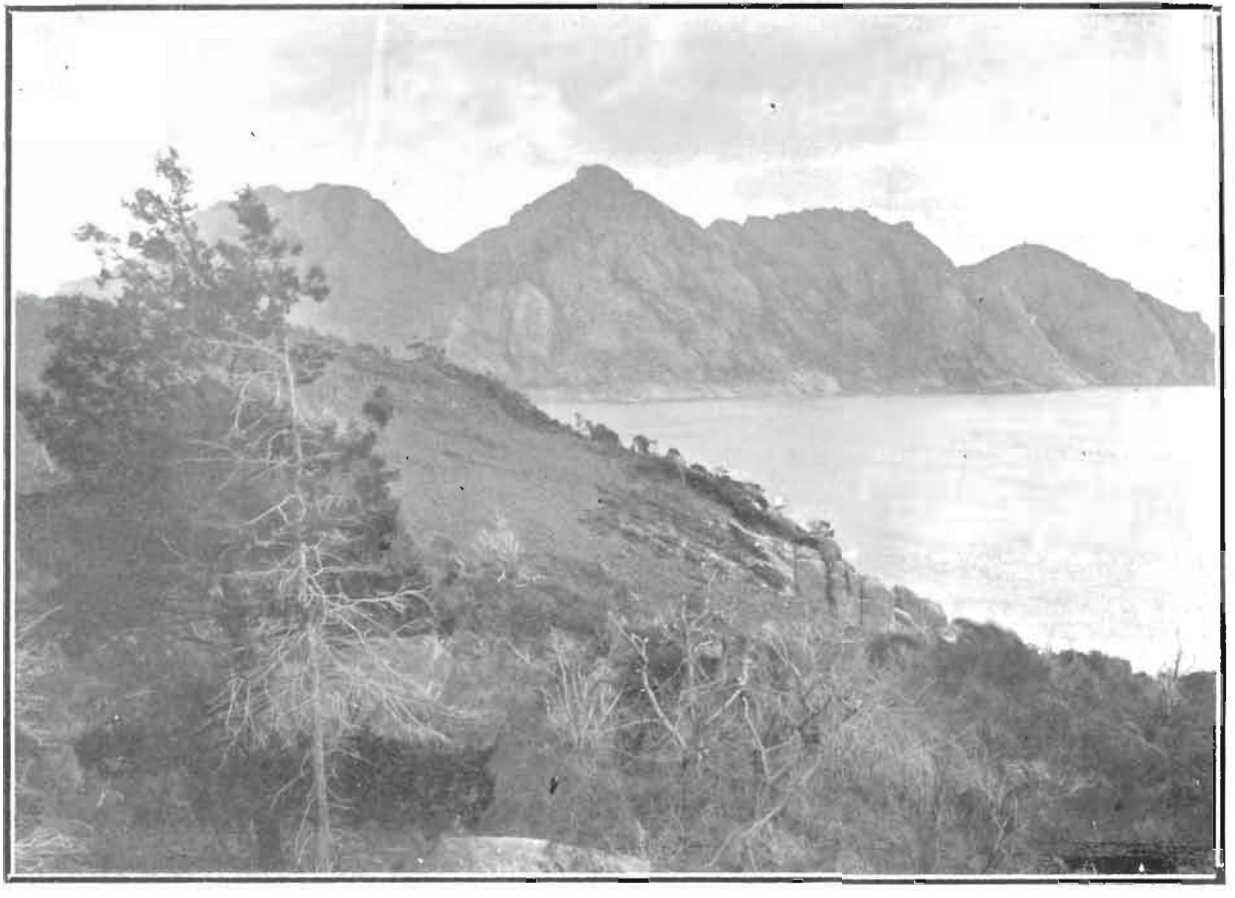


MT. HAZARD FROM WINEGLASS BAY.



ENTRANCE TO WINEGLASS BAY, FREYCIN

ET PENINSULA (FROM THE SOUTH-EAST).



SHORE BETWEEN WINEG

The honey-eater intermediate in size is the Tasmanian honey-eater (4), known as the horse-shoe. It is also found on the banksia fringe of S. Victoria. In the tree directly above the cook's camp we could see and hear the strong-billed honey-eater. It was hunting for small insects. The most conspicuous of all the birds about our camp was the New Holland honey-eater (5). It had plenty of action in its voice, but little music. Early and late the deafest of us could hear this little bird, at least twice in the day, with its clamour greatest first and last. The Dutch voyagers specially refer to this little striped bird.

A prominent part of the anatomy of this family is in the structure of the tongue: it terminates in a brush, which is useful either to abstract insects from the flowers, or by means of a series of fine tubes, to draw the nectar from the flower within its mouth.

Apart from the honey-eating family, we met a bird with a similar tongue—the sordid wood-swallow (6). This little bird, beautiful in everything but its name, was found gracefully flying about a mile from the camp. Judging by the plumage of certain ones, it had been their nesting ground. Beneath the bushes over which the wood-swallow was soaring the blue wren (7) was quietly moving. This usually bright little bird is quite without its voice of springtime, and had moulted its coat of blue. In certain seasons the young male wren will moult early and get its blue quickly; this year we could not see those signs.

Above the same ti-tree wood the fairy martens (8) were quickly gliding (or its next of kin, the tree marten). We were not able to distinguish the species on the wing. If it were the fairy marten, it is the first record of the bird being found so far south in Tasmania. It is a pretty sight to see a cluster of the retort-shaped nests of this exquisite little bird.

Our camp was sadly wanting in the voices of those birds which are known to sing, and sing well in the spring, e.g., we had the whistling shrike thrush (9). At Easter time this grey bird has little, if anything, to say for itself, while in the spring few birds can compare with its liquid song of the dawn.

We had some compensation, however, in the autumn singer, the butcher bird or collared crow-shrike (10), the male bird only, having the collar, unfortunately, it kept in the distance.

The smallest warbler was the brown tail (11). There was a family among the bushes of our drinking creek, where we could hear the parents introducing the young ones, in a continuous twitter. This little bird builds a dome-shaped nest, and acts as the foster-parent of the bronze cuckoos. We heard no cuckoos, and could only suspect that they had migrated northwards.

Occasionally we caught glimpses of the little field wren (12) that seemed to have a dread of leaving the low bushes. No sooner would it rise to view than it would sink out of sight, remaining so till one's patience was exhausted. This wren lays a strangely-coloured egg in a well-hidden nest.

We met but one species of robin—the scarlet-breasted (13). Of the diamond birds we can record two species, the allied (14) and the spotted (15). The former bird is known as a destroyer of scale insects; it is a pleasant sight to see them travelling along the branches in search of this food. With this genus both sexes take part in building the nest. At times they tunnel into a bank, and when the excavators have got about two feet in, they continue to work in the dark, and eventually make their home comfortable. At other times these birds will build in the hollow of a tree; these are the allied species.

Occasionally on the wind came the caw of a raven or a crow—which we do not know, as they can only be identified in the hand.

The strong "clank" of the hill crow shrike would locate this bird without any difficulty on the part of the observer. Their ways were generally shy, even in this quiet part. The only parrot seen was the yellow bellied parrakeet (17), the only species of the parrot family in this locality. A few were passing a quiet autumn immediately behind the camp.

The ground-loving bird of the hillside was the spotted ground thrush (18). It frequents the dry areas, where there is much powdered granite. It nests upon the ground, and when disturbed rises with the burr of a quail, so well-known to sportsmen.

Flying high above all these birds we saw the spine-tailed Swift (19)—the

bird that nests in Japan, comes to us in November, and leaves again in March (generally). This year it is later.

Soaring majestically, even higher than the swifts, were the wedge-tailed eagle (20), and the white-bellied sea eagle (21). Some of our party visited the nest of the latter, which was placed in a tree close to the water's edge on the north side of the bay.

Among the birds of the lakes, we observed the black Swan (22), and a species of duck; apparently the Australian wild duck (23). Owing to the dryness of the past season, the Swans did not appear to have nested on these lakes, but there were many remnants of the nests from the previous year.

We now leave the birds of the lake for those of the bay and the sea.

Altogether, nine species were observed. Each day, about our fishing nets in camp, we had two species of gulls, the Silver (24 and the Pacific (25). The latter had a family of three, young, and all brown; the adults are mostly snow-white. It takes these young birds three years to mature into the clear black and white plumage of the adult.

Upon the rocks of the stormy coast, the white-breasted cormorant (26) would sit, without fear of the thundering ocean. Soaring in the distance were two white birds, diving vertically at intervals—one was the Bass Straits tern (27), the other the Australian gannet (28), or solan goose, as it is called in European waters.

The first bird will nest upon the sand-beaches, in or near the bay, while the second will nest on the islands in Bass Straits. They will congregate in as many as 2,000 birds, and lay their eggs.

On the beach we found dead specimens of two species of ocean birds, the little penguin (29), and the whale-bird (30). The latter bird comes to this shore in the evening, and during nesting time will lay its single white egg in a burrow in the ground. During the daytime, one parent will sit quietly upon the egg, until evening, when its mate comes in, either to take its place, or feed it. This bird is a member of the petrel family, just as the mutton-bird (31) is: each kind comes to the shore in the evening in vast numbers. Flinders records a flock of the mutton-birds to number 150 million, while the present writer has seen many millions of the whale-bird flying into land with the setting of the sun in Kerguelen Island. Such a sight as these millions of living snowflakes present, with the reflection of the dying sun upon them, streaming to their nesting ground, is, indeed, wonderful, and not easily forgotten.

The greatest of all the sea-birds is the wandering albatross (32); several patrolled the blue waters of the Peninsula, never caring to come into the bay. They had in their company, a second and smaller albatross, known to us as the shy (33) or cautious species. Both performed their beautiful, wheeling flight as well-known to the ancient mariner as to any member of our modern expedition. The ease and grace of the flight is to-day a living wonder to all who see it. Even the higher mathematician has gone into pages of figures to supply the explanation of such ease, grace, and impetus. The shy albatross nests in a little colony upon Albatross Rock in Bass Straits. The bird is said to be found only in Tasmanian waters.

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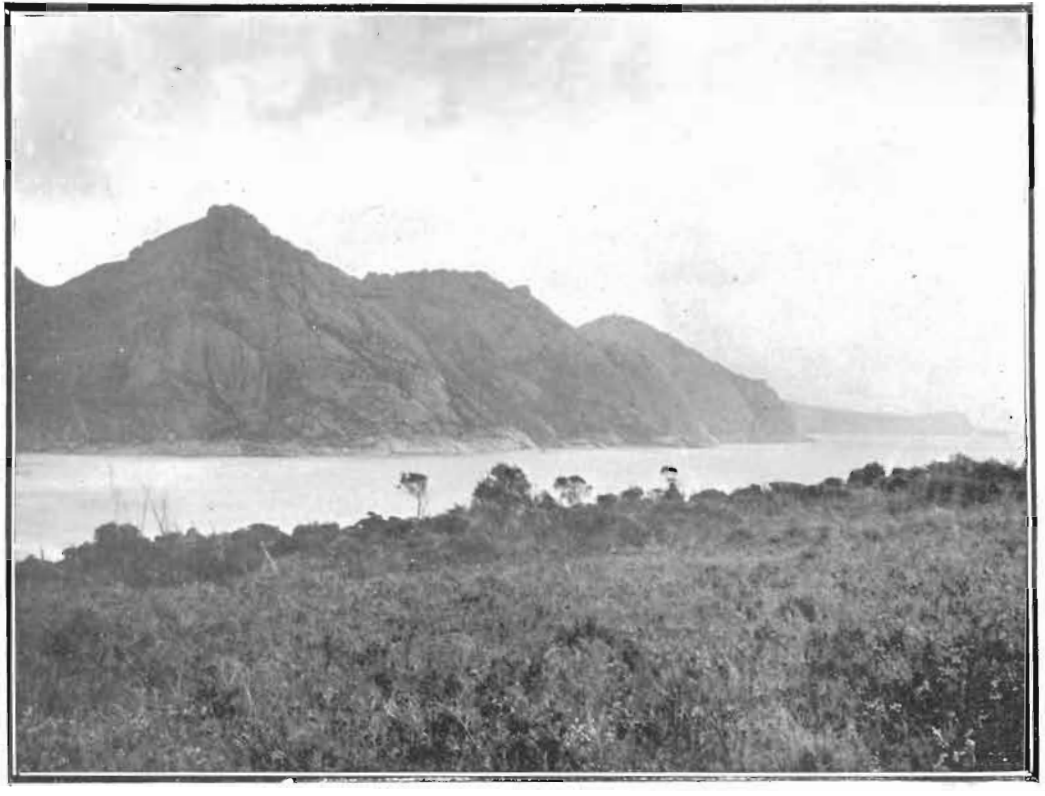
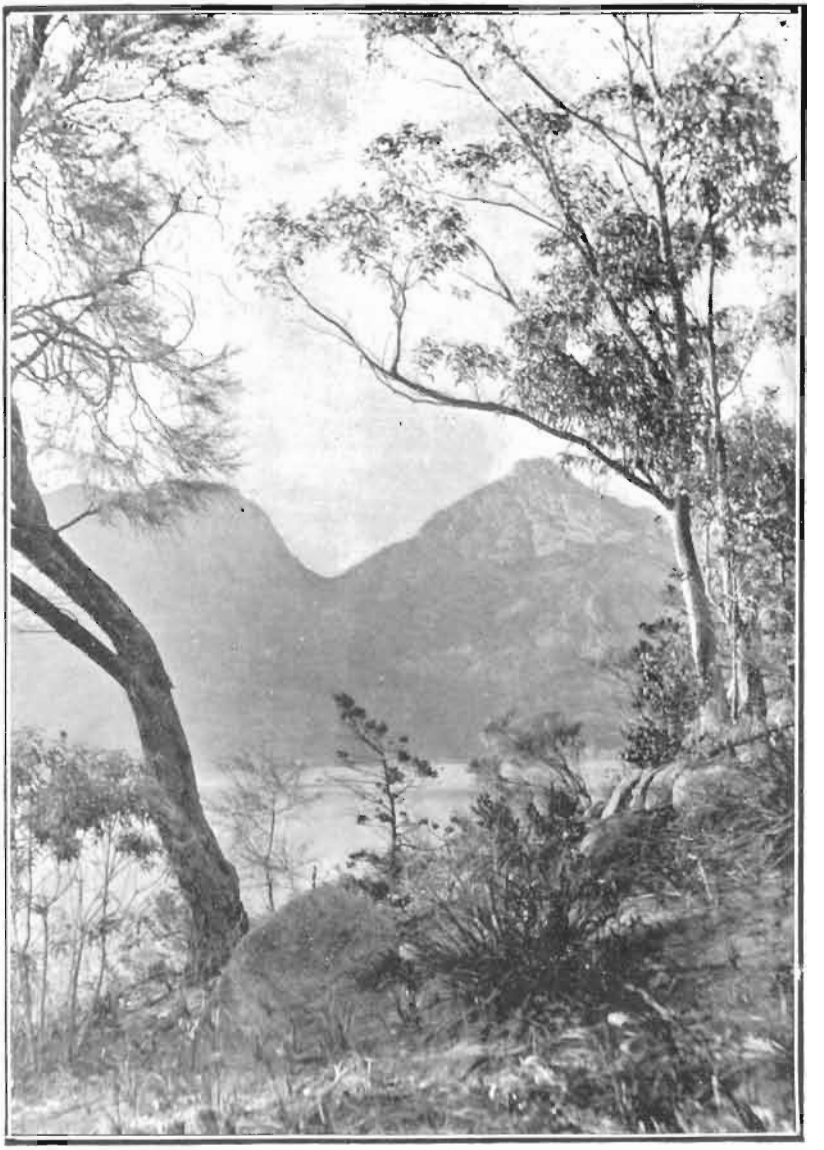
1. Acanthorhynchus tenuirostris.
2. Acanthochaera mellivora.
3. A. inaurus.
4. Meliornis australasiana.
5. M. novæ-hollandiæ.
6. Artamus sordidus.
7. Malurus cyaneus.
8. Lagenoplastes (?).
9. Collyriocincla vectirostris.
10. Cracticus cinereus.
11. Acanthiza diemenensis.
12. Calamanthus fulizinosus.
13. Petroica Leggii.
14. Pardalotus affinis.
15. P. punctatus.
16. Strepera arguta.
17. Platycercus flaviventer.
18. Cinclosoma punctatum.
19. Chætura spinicaudus.
20. Urœtus audax.
21. Haliætus leucogaster.
22. Chenopus atrata.
23. Anas superciliosa.
24. Larus jamesonii.
25. L. pacificus.
26. Phalacrocorax leucogaster.
27. Sterna bergi.
28. Sula Australis.
29. Eudyptes minor.
30. Prion desolatus.
31. Puffinus tenuirostris.
32. Diomedea exulans.
33. D. cauta.



THE NORTH SIDE OF ENTRANCE TO WINEGLASS BAY.



VIEW FROM SOUTH END OF WINE GLASS BAY.

THE GEOLOGY OF WINEGLASS BAY AND NEIGHBOURHOOD.

(By A. D. Mackay.)

Wineglass, or Thouin, Bay is situated on the east coast of Freycinet Peninsula, in the midst of a strip of granite that stretches in a broken line from the tin districts of the north-east to the Hippolyte Rocks off Tasman Peninsula. It is probably one of the most picturesque spots in all Tasmania. A deep bay worn out of a granite mass, and surrounded by mountains from 1,500 to 2,000 feet high, forms an ideal spot for both the artist and the scientist.

It would appear that the flat between Wineglass and Hazard Bays was once covered with water. South Freycinet was then in much the same state as Schouten Island is now. Later, when the land had risen, sand was carried there and bound together by vegetation. There is little doubt that the lagoon was formed by the sand dunes blocking the escape of rainwater from the hills and flat itself.

The sand forming the beach at Wineglass Bay is very white, and is composed almost wholly of rounded particles of quartz, together with a little rounded felspar, and scales of mica. Shell fragments are conspicuous by their absence. Essentially it is a disintegrated granite. The sand at Hazard Bay is more yellow in colour, and contains more felspar, as well as numerous shell fragments.

Our granite is considered to be of Lower Devonian age, that is, soon after the close of the Silurian. It occurs extensively in the north and east, and underlies the whole of the West Coast.

At Wineglass Bay the granite varies considerably. The typical rock is a fairly dark red rock, containing biotite, quartz, and orthoclase, both red, light yellow, and white. It is fairly coarse in structure, the orthoclase crystals being generally about one-third of an inch in length. Crystals were obtained up to an inch and a half in length. One of these was almost certainly a plagioclase, either albite or oligoclase. Reversions of the normal order of crystallisation were noticed, but may be due to decomposition of the felspar. The rock may contain tin, but in the absence of a rock analysis it is impossible to say. Also very little can be said about its structure without a microscope slide.

The top of one of the hills presented an interesting example of temperature erosion. Owing to the different heat expansions of the minerals quartz, felspar, and mica, the daily variation of temperature reduces the whole surface of the rock to a granular condition, when it is easily removed.

The rock near the north end of the beach is not a red granite, however, but a grey. The typical rock is rich in biotite, while the felspar is white or light brown to yellow. Reversions of the normal order are frequent. It also contains numerous veins of quartz two inches wide or less, and of pink felspar in width up to a foot, and containing flat crystals of biotite an inch long. These veins preserve sharp boundaries and are frequently faulted. Besides these veins, numerous secretions were observed of an oval shape, and some four inches across. They are of a fine texture and dark colour, and consist largely of biotite. They are possibly the first products of solidification of the granitic magma.

Between the grey granite and the pink normal granite is a red granite, which, like the rest, varied somewhat. It is very rich in felspar, and contains muscovite, as well as a little biotite. It is thus a 'two mica granite.' It contains green chlorite, which shows that decomposition has begun. It is coarser than the normal granite, and the orthoclase is frequently twinned. In places it had a rounded structure, all the minerals forming roughly equidimensional grains. This is a granulitic structure, and probably results from motion during solidification.

At the southern end of the beach, near the camp, the rock is fairly fine. It contains pink orthoclase, dark quartz, and bright yellow muscovite: also a brown decomposition product, and chlorite. Small patches, about six inches long, were observed, in which the minerals had crystallised on a larger scale than the rest. Some of these contained vughs in which a drusy structure was apparent. Reversions of the normal order were met with, but may only be due to decomposition of the felspar.

The Coles Bay granite is very like the normal granite, but contains more red felspar. It also contains light yellow and white felspar, biotite, quartz,

and chlorite. In one place it gave way gradually to a grey granite containing white orthoclase, frequently twinned, quartz, biotite, chlorite, and a finely-divided reddish-brown mineral.

On the geological map of Tasmania Coles Bay is marked as being on the contact between the granite and diabase, thought to be of cretaceous age, and of frequent occurrence around Swansea. As no diabase was seen, it is evident that the sea at Coles Bay must have advanced some distance into the granite. Diabase probably appears on the point between Coles and Hazard Bays. On the map, again, Hazard Bay is marked as being in diabase. An inspection showed that the country rock, at the north end at least, was granite of a similar character to that observed at Wineglass Bay; but small, waterworn nodules of diabase found on the beach show that the diabase is not far away.

ZOOLOGICAL RESULTS OF THE EXPEDITION.

(By T. Thomson Flynn, B.Sc.)

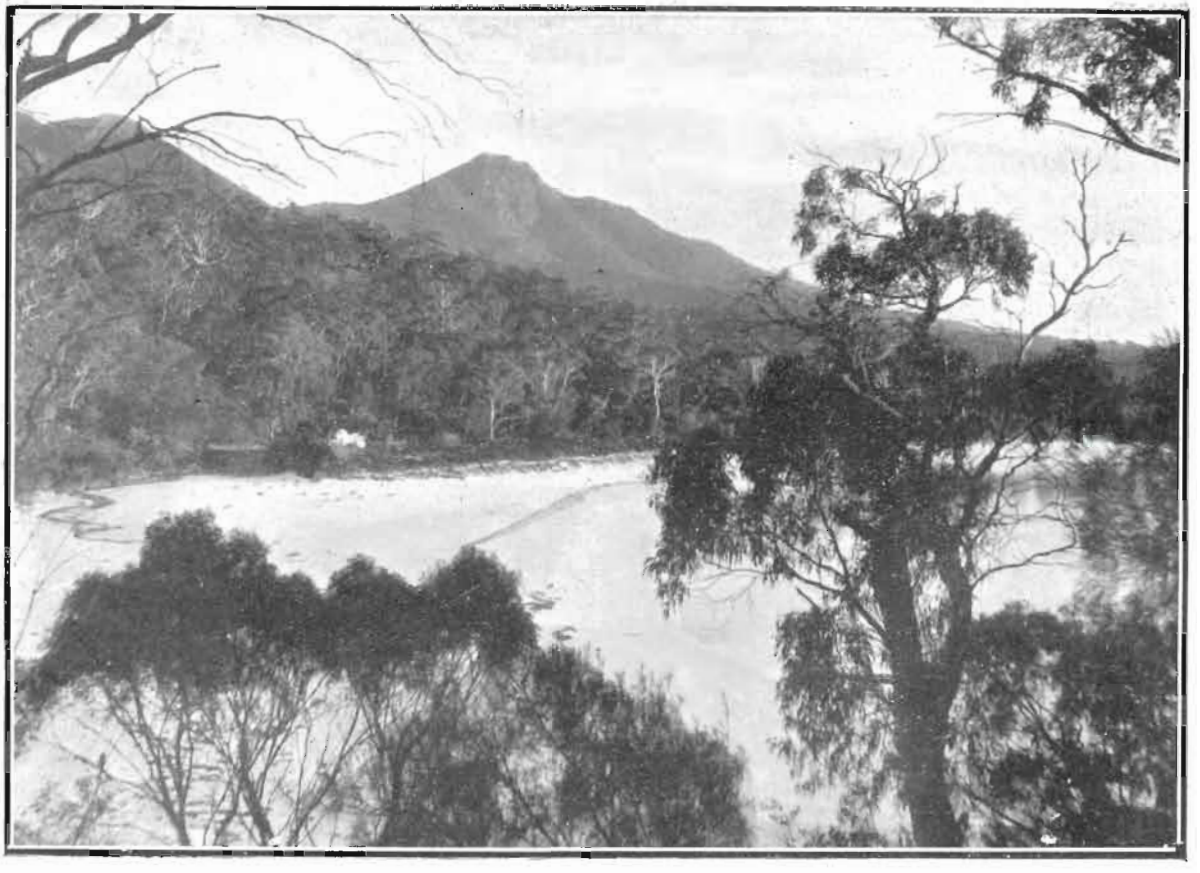
So little has been done of late years on the fauna of Tasmania, and such a great deal remains to be done, that it is a matter for congratulation to the organisers that the recent trip of the Field Naturalists to Freycinet Peninsula was, from a biological standpoint, undoubtedly a success. In some respects, however, the zoological results were disappointing; the dredging was poor, and the surface tow-netting was only passable. However, the poor results of the former were, probably, to be attributed to the fact that the floor was principally of white sand, which allows of very little marine life beyond shells, other forms having a partiality for oozy, muddy, and weedy bottoms.

The life of the surface water, obtained by dragging a surface net after the boat, was not as plentiful as it would have been in the warmer parts of the year, but some interesting material was obtained, including examples of a "one-eyed" crustacean, called Cyclops (which, though microscopic, is one of the cousins of the ordinary crayfish), and some developing eggs of a marine worm, well worth study.

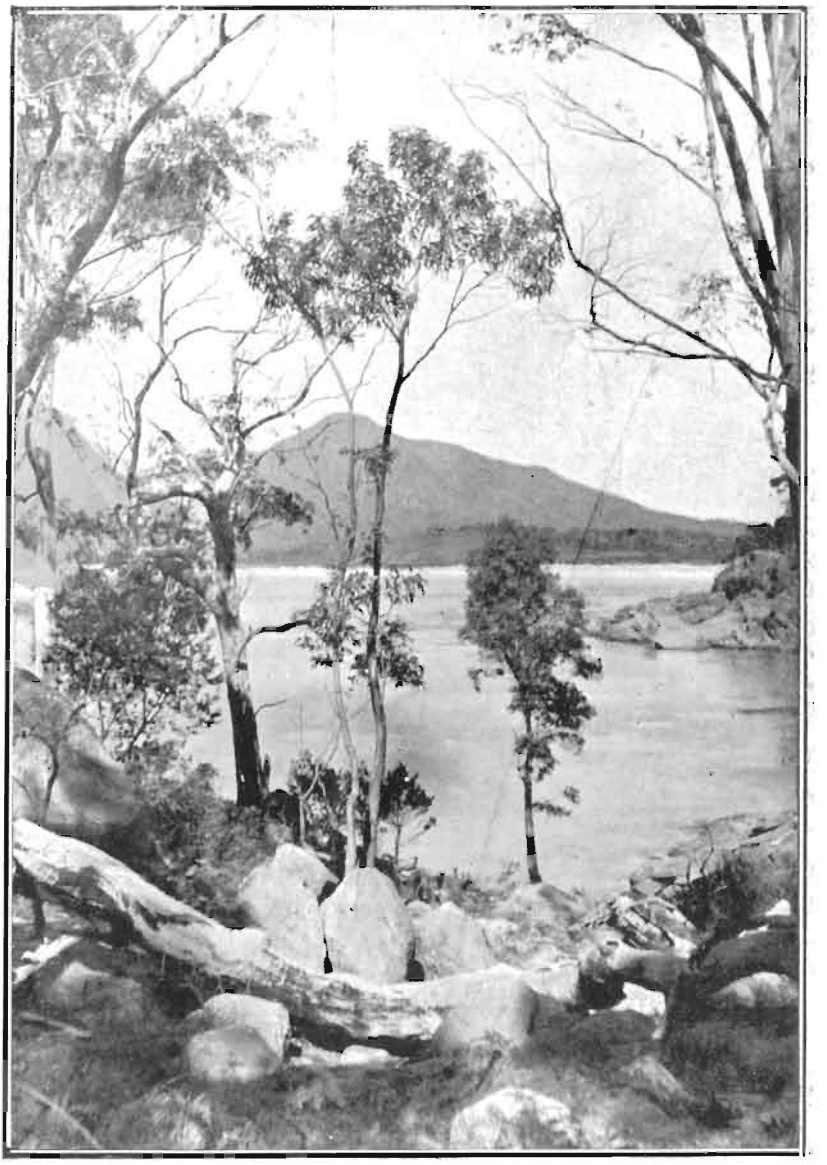
We arrived at Wineglass Bay on the afternoon of Good Friday, and on the following morning some of the party reported having found a number of "jelly fish" stranded on the beach. On examining the specimens I was agreeably surprised to find that they were examples of a large species of Salpa, which, so far from being a jelly fish, is a somewhat distant relative of man himself. To look at the adult animal one would hardly imagine such a fact to be true, but as is often the case, it is only on studying the development of the creature that its real place in Nature can be determined. Its relation to man and higher animals is based on the fact that in its young state it posseses a structure known as a notochord or chorda dorsalis, which is common in their embryonic condition, to man and other mammals, birds, reptiles, fishes, and related animals. In most of these, however, it is aborted by the time the animal reaches the adult stage.

This structure often occurs in fishes; take the backbone of a fish and separate two of the portions composing it (vertebræ); they will be found to be concave, and in the hollow between will be seen shreds of some material which has been used or dried up. This substance is the vestige of the notochord. In the larval fish it stretches right from the head to the extremity of the tail. As the fish develops the notochord becomes replaced by the backbone, which gradually grows round it.

The larval Salpa posseses a similar notochord, which disappears as the animal grows older, but the very presence of it in the young animal is sufficient to determine it as a near relative of the higher animals—the vertebrates. There are a number of other points worth noticing about this interesting little animal. It has a most peculiar and complex life history. The adult Salpa is somewhat cask-shaped, with a series of muscle bands round the body, causing contraction, this again causing movement through the water. It possesses digestive, nervous, and reproductive systems. This form gives rise to a young Salpa, which is quite different in some respects to the parent, and thus, instead of being the origin of free or separately swimming forms, grows out into a long chain which, when examined, is found to consist of a number of these animals joined together. They now swim about in long chains, with a sort of serpentine move-



MT. FREYCINET FROM SOUTH END OF WINEGLASS BAY.



MOUNT FREYCINET FROM NORTH END OF WINEGLASS BAY.

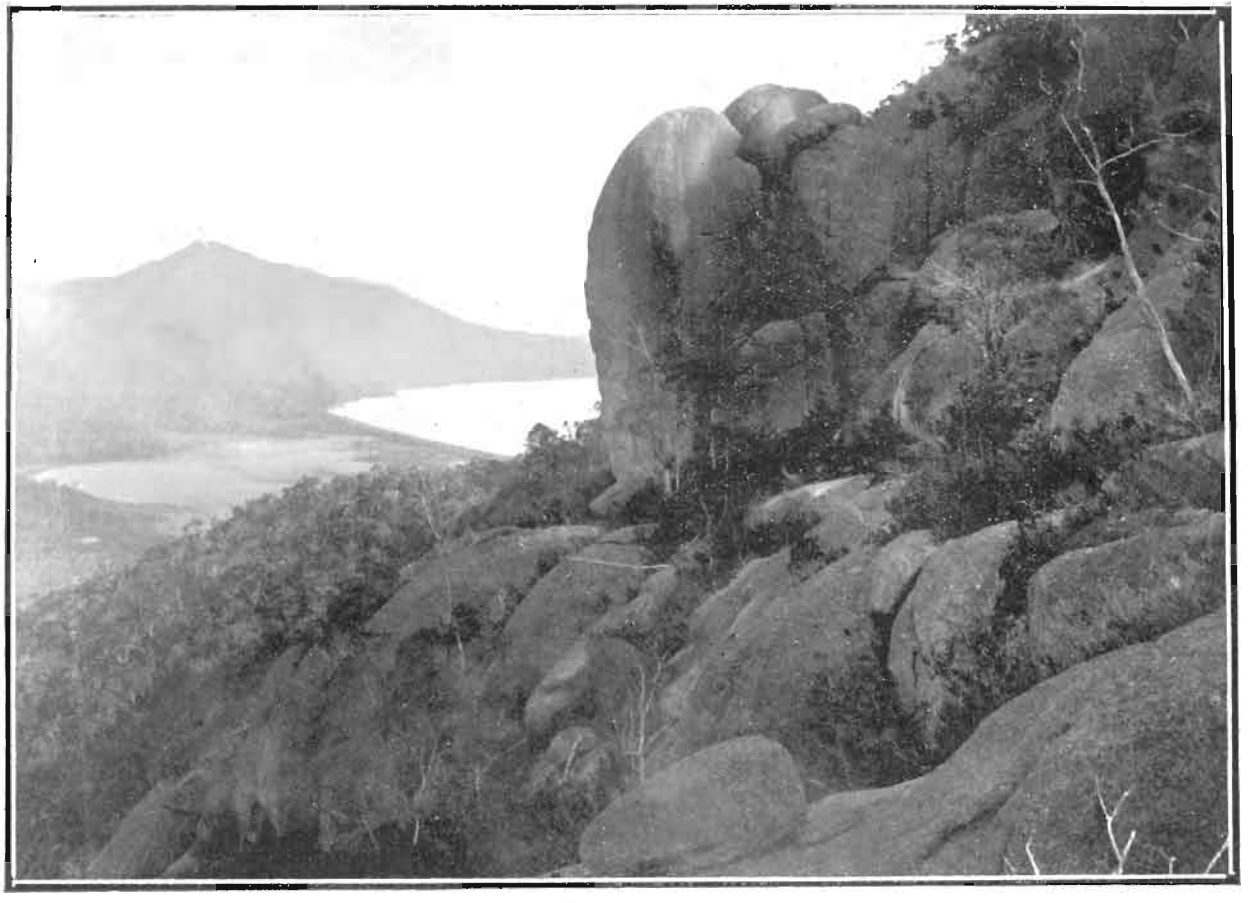
ment. About a month ago they were very plentiful in the harbour at Hobart in this form. When they grow up they separate, and begin their life history anew.

The whole of the next day was spent by another ardent naturalist (Mr. Rodway) and myself in searching the shore and further inland for material. Here our success was more pronounced. Specimens were got of a new Phreodrilid worm (cousin of the earthworm), and what was of more interest to myself, a small Planarian worm. This is a very small flat worm-like animal which crawls about like a snail, but its most peculiar point is that its mouth lies, not at the head end of the body, but in the middle of the under-surface, and it habitually moves about with part of its "stomach" protruded through its mouth, forming a sort of proboscis

Among the shore material were a number of Nemertine worms, nearly related to the above Planarian, having a somewhat similar proboscis: this is at the head end, and is furnished with lancets or stinging organs. There were also specimens of polyzoa—animals which live together in tubes from which their tentacles wave, and into which, when disturbed, they are able to retract, often covering their retreat by closing the tube with a kind of lid. A number of specimens were got unexpectedly: a shark, caught by one redoubtable fishing party, yielded a whole crop of tapeworms and other parasites: the barracouta was found to harbour numbers of round or thread worms, and in the body of the rockcod some relatives of the same animal, which causes fluked liver in sheep, were obtained. Those of the party who prowled along the beach at night were surprised to find numbers of a small luminous animal, which on examination was found to be an interesting kind of sandhopper. When put in a collecting tube, one of these creatures was capable of lighting up the whole tube with a beautiful bluish glow, and it took some considerable time of immersion in spirit to "put its light out." Numbers of other specimens were obtained, but of no special interest.

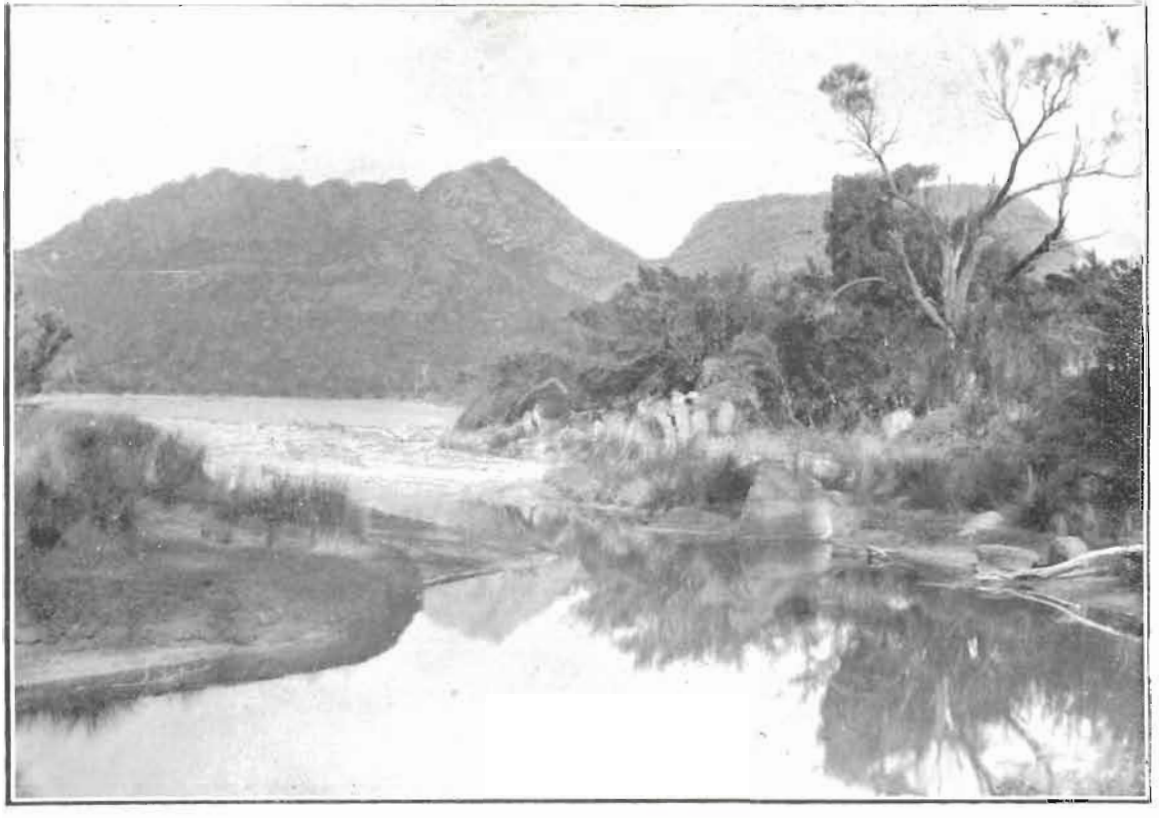
On the whole, the results of the trip were good, and serve to emphasise the benefits of such excursions as these in a place like Tasmania where the invertebrate fauna has been so greatly neglected. There is plenty of scope for dredging and other collecting in the estuary of the Derwent itself, and it behoves this energetic little association to take upon itself—there being no others to do it—the work of systematically collecting and examining the comparatively unknown material so close at hand.

Note.—The illustrations accompanying this article are taken from photos. by Messrs. J. W. Beattie (on pages 13, 14, 15, 16 and 17, 18, 21, and 28); R. C. Harvey (on pages 3, 10, 22, 25, 26, 29, and 30); and E. A. Elliott and B. R. Walker of camp scenes.



BOULDERS ON MT. HAZARD.

BEACH AT HEAD OF COLE'S BAY.



VIEW FROM HEAD OF COLE'S BAY.