

L. E. Wall.



Tasmanian Field Naturalists' Club

EASTER CAMP, 1920

To Safety Cove (Port Arthur)

TASMANIA

GENERAL REPORT

By **CLIVE E. LORD**, Hon. Secretary

BOTANICAL NOTES

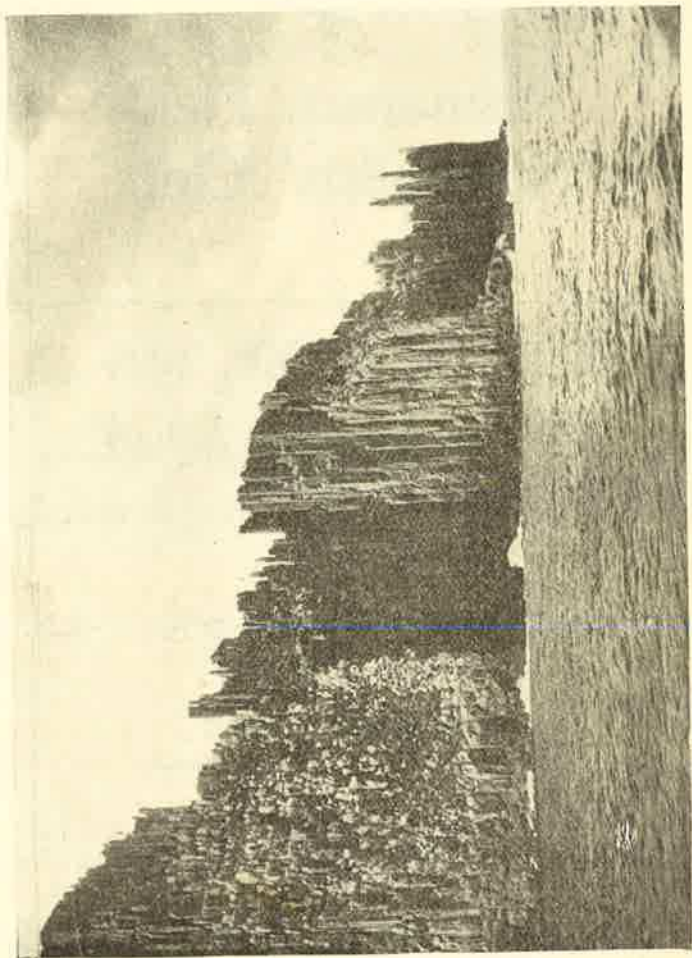
By **I. RODWAY**, C.M.G., Government Botanist

GEOLOGICAL NOTES

By **A. N. LEWIS**

ZOOLOGICAL NOTES

By **CLIVE E. LORD** and **H. H. SCOTT**



Cape Raoul, Tasman Peninsula.

LIST OF CAMP MEMBERS

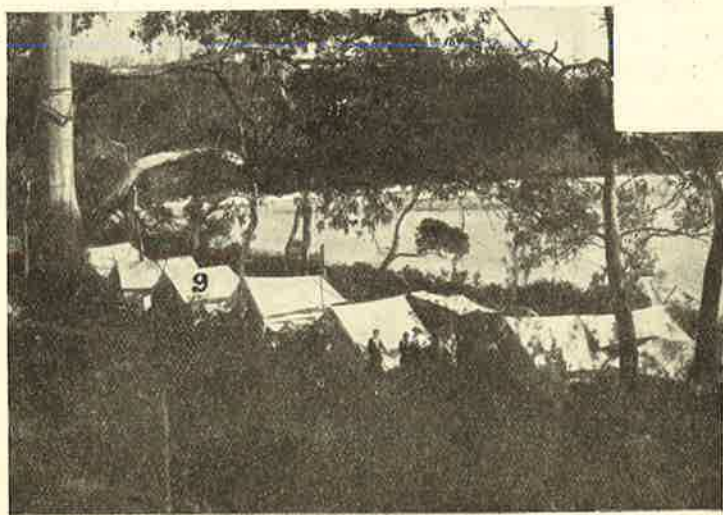
MR. L. C. ABBOTT.	MR. C. LORD.
MR. W. ABBOTT.	MISS A. MONTGOMERY.
MR. R. ATKINSON.	MR. S. H. McPHEE.
MISS O. BARNARD.	MISS M. MOORE.
MR. R. N. BEEHDHAM.	MISS E. POCOCK.
MISS M. BROWNELL.	MR. A. C. PROPSTING.
MR. F. B. CANE.	MR. G. L. PROPSTING.
MR. C. CHEPMELL.	MRS. J. REID.
MR. W. H. CLAMES.	MISS A. REID.
MISS J. COLLIER.	MR. J. REYNOLDS.
MR. J. R. CRANE.	MR. L. RODWAY.
MR. S. W. CRANE.	MISS A. ROWNTREE.
MISS D. CUTHBERTSON.	MISS M. SAGASSAR.
MR. E. CRUICKSHANK.	MISS E. SAGASSAR.
MISS W. CRUICKSHANK.	MR. H. SARGISON.
MR. I. DORUM.	MR. P. SCOTT.
MR. A. S. GILBERT.	MR. S. SHARLAND.
MISS I. HARRIS.	MR. R. STOPS.
MR. E. HARRISON.	MISS TRAVERS.
MR. H. S. INNES.	MRS. E. WALLER.
MISS J. KNIGHT.	MISS C. WALKER.
MR. A. N. LEWIS.	MR. R. WOOLLEY.

ASSISTANTS

MR. W. WOODWARD.
 MR. V. MOLROSS.
 MR. L. WOODWARD.



The Campers.



The Camp Site.

Tasmanian Field Naturalists' Club

EASTER CAMP OUT, 1920

By Clive E. Lord, Hon. Secretary

The term naturalist in its widest sense means a lover of nature. Not only the collector who goes forth to gather specimens for his collection but also those who delight in the innumerable glories of the open way. The bold scenery of sea-shore and mountain are sufficient for some, but others prefer to examine more critically, with the result that every inch of country yields examples of its flora and fauna to those who seek. A camp amidst some section of the primitive bush offers much to the naturalist. Chances of adding to his collections, of extending his knowledge, and, above all, of spending an extended period in the heart of Nature's realm. The Easter excursions of the Tasmanian Field Naturalists' Club offer such opportunities to the naturalist and are taken every advantage of. For the past sixteen years regular excursions have been held, and the extent of these may be gauged from the following list of places visited and the number who attended:—

- 1905—Bream Creek; camping party, 9.
- 1906—Cole's Bay (Freycinet Peninsula); camping party, 40.
- 1907—South Bruny; camping party, 27.
- 1908—Maria Island (Soldier's Point); camping party, 27.
- 1909—Wineglass Bay (Freycinet Peninsula); camping party, 84.
- 1910—Cole's Bay; camping party, 97.
- 1911—Southport; camping party, 60.
- 1912—Maria Island (Darlington); camping party, 69.
- 1913—Safety Cove, Port Arthur; camping party, 80.
- 1914—Wineglass Bay; camping party, 100.
- 1915—Maria Island (Darlington); camping party, 36.
- 1916—Eaglehawk Neck; camping party, 36.
- 1917—Wedge Bay; camping party, 33.
- 1918—Safety Cove; camping party, 38.

1919—Eaglehawk Neck; camping party, 39.

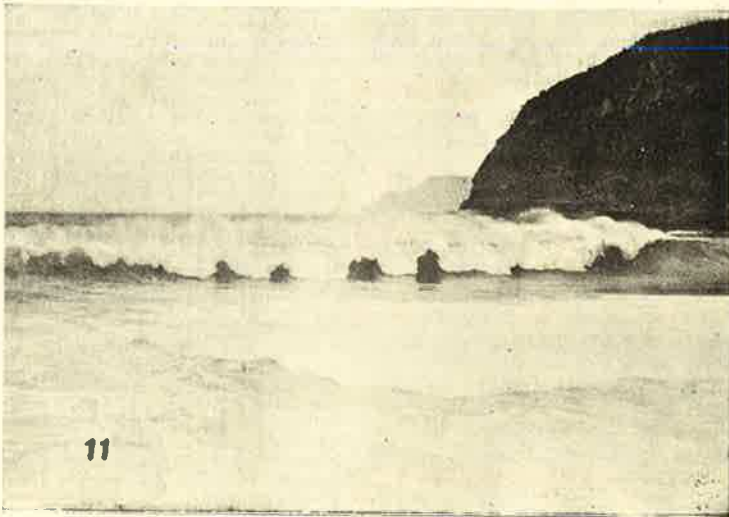
1920—Safety Cove, Port Arthur; camping party, 47.

During the war period only small camps were held, and now the shortage of shipping and the era of high prices make it impossible to visit localities as far away as was done before 1914. After due consideration, Safety Cove was chosen as the camp site for 1920, and on the morning of Wednesday, March 31, an advance party of fifteen members left Hobart in the s.s. Reemere, to prepare the camp. Fortunately fine weather was experienced, and the members of the party were able to enjoy the steam across Storm Bay. Near Cape Raoul numbers of dolphins were seen, and the photographers of the party had a very busy period attempting to secure photographs of the evolutions of these aquatic mammals. Lunch was partaken of as we crossed Maingou Bay, and soon the cliffs of Brown Mountain, one of the flanking sentinels of Port Arthur, were abeam, and the vessel steamed into the sheltered waters of the Port, eventually anchoring in Safety Cove at half-past 1, after an enjoyable trip of five hours. All hands were soon busy transporting the camp impedimenta ashore, and a miscellaneous collection of packages began to accumulate on the beach. After partaking of some light refreshments, thoughtfully provided by the ladies of the party, the campers set to work erecting tents and getting the camp in order. This work was continued until darkness fell, and the Easter moon appeared to gild the waters of the cove, and cast soft shadows in the clump of eucalypts among which the camp was pitched. After tea and a stroll along the beach, Blanket Bay was sought, in order to prepare for the work of the morrow.

Thursday morning gave every promise of fine weather, and after an early swim and a welcome meal, all set to work to



Breakfast Time in Camp.



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Breaking Wave, near the Remarkable Cave.

complete the work of preparing the camp. This took most of the day, and towards evening all was ready for the reception of the main party, who were due to arrive some time after midnight, as they did not leave town until 7 o'clock. Looking at the camp from the hill to the south-east, it made a pretty picture. The silver waters of the bay terminated in an arc of white sand, behind which rose a small sandbank, which again dipped before rising to the hillside. In the sheltered dell so formed grew a number of eucalypts and it was amidst these that the tents, nineteen in all, were pitched.

The main party of the campers arrived in the early hours of Good Friday morning, and it was some time before all lights were out and the call of the spotted owl was the only sound that challenged the roll of the surge along the shore. In the morning Chief Woodward and his assistants had a busy time, and while breakfasting the members made plans for the day. Some decided to go exploring amid the gullies of the hillsides, others along the shore, while the main party decided to picnic at the Remarkable Cave. The cave is situated on the coast, towards Cape Raoul, and there are some splendid scenic views in the vicinity. On former occasions we had been able to walk right through the cave to the beach beyond, but this year, upon descending into the bowl-shaped opening leading to the cave, we were surprised to find that all the sand had been washed away. The floor of the cave was about five feet lower than formerly, water-washed boulders gave place to sand, and the ocean rollers surged through from the sea. After spending most of the day in this vicinity the party returned to camp.

On Saturday the chief excursion was to Port Arthur. It was here that the historians of the party were able to tell the history of the many old buildings, relics of the convict days, that are to be found there. Port Arthur was named after Colonel George Arthur, who did so much work elaborating "the system" during his administration of Tasmania from May 14, 1824, to October 30, 1836. It must be remembered that Tasmania, or, as it was then known, Van Diemen's Land, was, together with the other Australian colonies, a dumping ground for the surplus and undesirable population of the Mother Country. Many notable criminals were transported to these shores, but, on the other hand, many were sent out for purely trivial offences. The policy of transportation was to a large extent one of forced emigration and colonisation of new possessions. As is well

known, the occupation of Van Diemen's Land was forced on the British authorities owing to fear of the French making a prior claim. Further, the idea of colonisation with the aid of forced convict labour had been brought under the notice of the French Government many years before. Charles de Brosse, in 1756 drew up such a scheme, and the eventual occupation of the Australian zone by the English was carried out on very similar lines to those proposed half a century before by the learned Frenchman. Colonel Sorell had founded a station at Macquarie Harbour, in order to isolate the most undesirable of the convict population, but, owing to its situation, Colonel Arthur decided to abandon this, and concentrate the main settlement on Tasmania's Peninsula, with the result that the initial settlement was made in September, 1830. Gradually the whole of the peninsula, of which Eaglehawk Neck formed the key, was linked up, and many sub-stations founded. The main station, however, was at Port Arthur, the present name of the settlement being Carnarvon. It is here that one sees the ruins of the past. The church, the prisons, the residences of the officers and men, together with many attendant structures, which were all in use eighty years ago, are now mostly in ruins, and serve to waken in many minds a desire to know more or less of their history.

An excellent view of the settlement is to be obtained from Scorpion Rock, a small hill behind the church. Here most of the members assembled and studied the panorama which spread out as a map before them. In the foreground lay the ruins of the church, one of the most picturesque relics of the old regime. This building was designed by a prisoner, who preferred to be known by the name of Mason. He afterwards received his pardon, and practised as an architect in Sydney, where he was very successful. The church, which would accommodate 1500 persons, had an eventful history, which commenced during its erection, as there were two murders committed, one while the trenches were being excavated, and a second while the roof was being put on. One of the convict workmen was also detected making spurious coin from the lead. In front of the church, and near the shore of the bay, are the ruins of the large penitentiary, which was capable of accommodating 557 prisoners within its walls. Beyond this the walls of the magazine still stand, and towards the point the Commandant's residence remains. To the right are to be seen the ruins of the hospital, the asylum, officers' quarters, and the model prison, while across the waters of the bay lies Point Puer. It was here that the boys from



Safety Cove Road, Port Arthur.

ten to eighteen years of age were stationed, and taught various trades in the workshops, etc. As many as 800 boys were detained on the Point at one period. At the extremity of Point Puer lies Dead Island, the last resting place of 1,769 bodies, of which only 180 are stated to be those of "free people." The surroundings of the township are picturesque in the extreme, and seeing them, as we did, on a beautiful autumn day, we could not help regretting that such a beautiful spot had such a tragic history. Port Arthur is already famous from a historic standpoint, but as the years roll on, and the ruins of the old buildings crumble away, the locality should become famous for another and more worthy reason—its picturesqueness.

On the following days various excursions were held to places of interest in the vicinity of the camp, such as Brown Mountain, Half-Moon Bay, the Blowhole, etc. Every advantage was taken of the good weather experienced, and the excursions made from the camp were enjoyed by all. All places in the near vicinity of the camp, both on seashore and hillside, were visited by one or more parties during our stay, and when the general assembly took place round the dining tables for the evening meal, the results of the various outings would be compared. The work of one section was always particularly inquired into. This was because they usually had to report a large catch of fish, which made them very popular at breakfast time next morning.

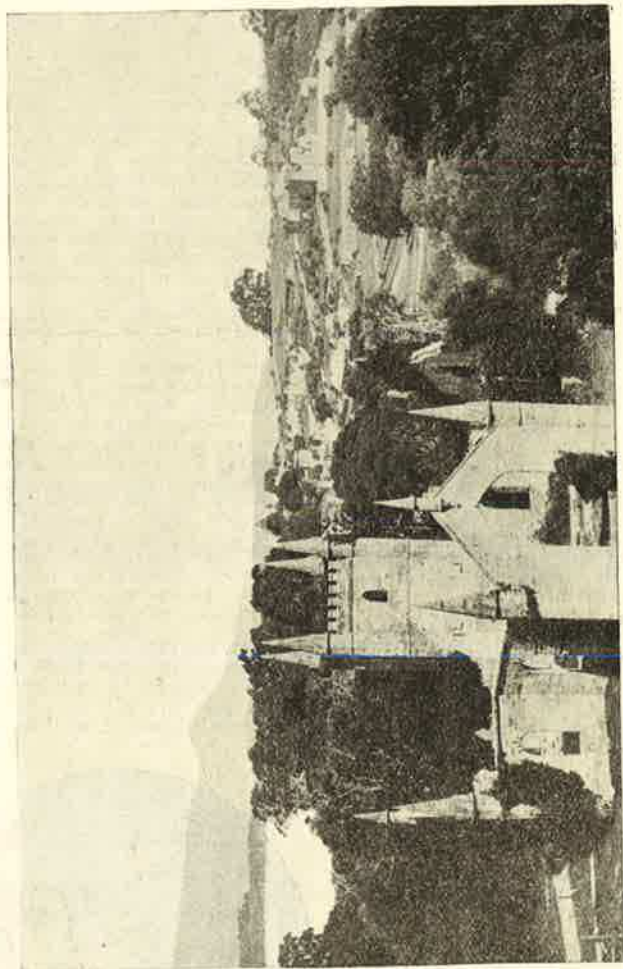
The evenings in camp were usually spent round a large camp fire, and the musical members of the party, of whom there were many, would provide excellent programmes. The "choir" was assisted by two gramophones, kindly lent by Mr. Cane and Mr. Guilbert.

One incident during the excursion is well worth mention here—the sight of several hundred dolphins in Maingon Bay. The animals were close in shore among the breakers, and their evolutions in the surf formed an interesting spectacle for many hours on Easter Monday. Groups of these animals would swim in with the incoming breakers, and just as the wave was on the point of breaking, they would execute a sharp turn, spring high into the air, and proceed seawards once again to meet another breaker, and gambol in the sea just beyond the fringe of the surf. It is necessary to see such a sight to appreciate fully the immense swimming power possessed by these aquatic mammals. In spite of the immense force of the breaking waves and the various undercurrents incidental to such surf, they seemed quite at home, and were able to proceed with lightning-like speed

in any direction. The photographers of the party had many attempts to secure photographs of this interesting scene, and, in spite of the difficulties in the way of securing a good picture, several negatives have been obtained which give a good idea of the subject.

With the advent of Tuesday morning it became necessary to strike camp, and prepare for home. There was a general note of regret as we struck the tents, which had been our homes for the seemingly too few days of the Easter holidays, and once more collected the camp impedimenta on the beach. After an early lunch, most of the party set out to walk to Nubeena, in order to enjoy another picnic, and also to escape any chance of mal-de-mer whilst proceeding round Cape Raoul. The Reemere arrived soon after midday, but by the time all the camp gear was aboard, a strong southerly sea had arisen, and, after making an attempt to put to sea, Captain Calvert decided it would be better to wait till morning. The boat proceeded to Carnarvon jetty, and the party from Nubeena were recalled there. Those members who had to be in town by Wednesday morning motored back to the city immediately, but the remainder were accommodated at Carnarvon overnight, and proceeded to Nubeena on the following day, where the Reemere called for them, and finally arrived home at 3 p.m. on Wednesday. Although the extension of the trip was unavoidable, and necessitated a certain amount of "roughing it," it all added to the experience of camping. The incidents relating to the event were many, and, in some cases, decidedly humorous, so that when the sixteenth Easter camp of the Field Naturalists' Club is discussed in the future the extended portion of the holiday will carry its full share of reminiscences.





Old Church, Port Arthur.

BOTANICAL NOTES

By L. Rodway, C.M.G., Government Botanist

The principal tree at Port Arthur, just as in any other part of Australia, is the ubiquitous Gum-tree. But the name Gum-tree covers a multitude of forms, some common, some rare, and about our camp at Safety Cove, or rather at a comparatively short distance from it, were two forms of unusual interest. One of these grew on Brown Mountain. There it assumed the dimensions of a shrub, while at Uxbridge it is a tall forest tree. The popular name I have heard applied to it is Heart-leaved Gum. At Uxbridge this and a robust form of Cider-Gum are called Yellow Gum. Unfortunately, our popular names are not well fixed, and, therefore, somewhat confusing. This Brown Mountain shrub crops up in many parts of Southern Tasmania, but except at Uxbridge I have never known it grow into timber dimensions. Most eucalypts respond very readily to local conditions; some in matter of size, others in variability of structure. This tree is very constant in form, but, as already stated, varies from a small shrub to a huge tree.

Now, the other tree that I wish to refer to grows at the entrance to the port, and is peculiar for the variations of its forms and the change in shape of leaf due to local conditions. I have never met with this exact form from anywhere else, though there are closely related ones on Bruny and Muddy Plains. Seed obtained from a tree on Bruny, near the isthmus, produced two strains of young, neither of which was like the parent. Saplings from seed borne by the Port Arthur

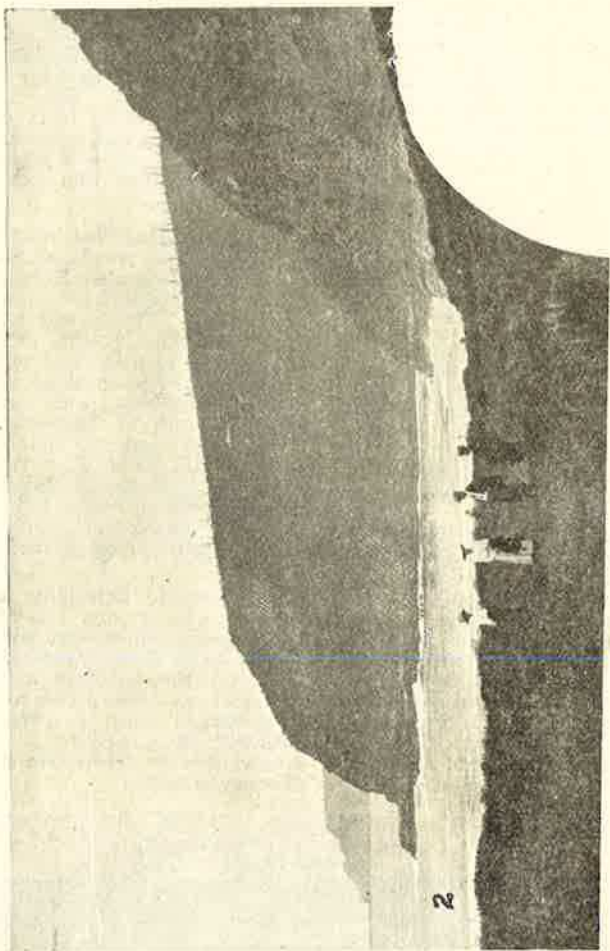
form also were of two kinds. They have not yet reached mature foliage, but some approach a common form of Risdon Gum, while others appear distinct from any recorded form. This is doubtless a form of Risdon Gum commonly also known as Blue Peppermint and Cabbage Gum. The variability of Risdon Gum, both from obscure eugenic variability and response to edaphic conditions will supply a prolonged study for some student who can slowly accumulate data.

Two interesting Heaths grow near the Blowhole at the Heads, neither of which occurs anywhere near Hobart. They are *Epacris myrtifolia*, and *Epacris heteronema*. The former is so like the dwarf Tea Tree growing in the vicinity that a close scrutiny had to be made to distinguish between them when not in flower. This heath only occurs in the extreme south of Tasmania. The latter is more common, and extends also to Australia. The Port Arthur plant is typical, with closely imbricate, erect, pungent pointed leaves, but on the west it varies considerably, and is destined in the future to be divided into many species.

One orchid, *Eriochilus autumnalis*, was flowering freely, but amongst the lower groups there was not much collecting to be done. One moss, growing right on the boulders at the shore, appears new. Also a *Polysaccum*, which is a fungus allied to Puffball, was gathered in quantity. A few underground species were collected, but only of common forms.



Scene near the Camp.



Near the Remarkable Cave.

GEOLOGICAL NOTES

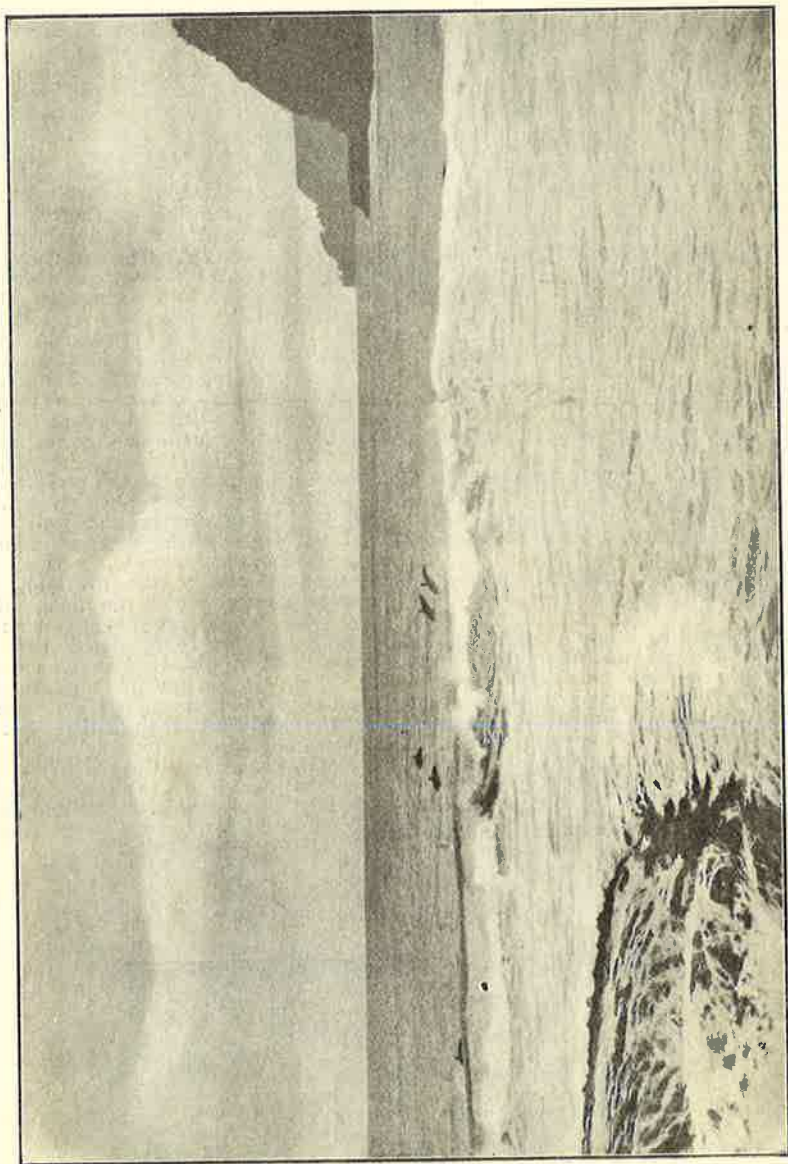
By A. N. Lewis

The Safety Cove locality is not one of those wonderful geological museums which occur in many places through Tasmania; in fact, it is almost barren of features of interest. Furthermore, it has been reported on many times during the last century, and all its features fully described. Readers are referred to brief reports contained in the accounts of the Field Naturalist Camps of 1913 and 1918.

With the exception of the Point Puer Peninsula, some sandstone beds behind Carnarvon, and a few other outcrops running along the hills on the west of Port Arthur, and showing in places along the south seaboard, the rocks of the district are the ubiquitous diabase, uniform and uninteresting, and rendered only worthy of more than passing mention by the picturesque columnar structure of the southern extremity of the beds. The Point Puer Peninsula is composed of permo-carboniferous mudstones, and gritty sandstones, strata of the upper limits of the system faulted out of its natural relations with the surrounding later beds of sandstone, and appearing now at the same level as the mesozoic strata on its immediate west. The well-known cliffs stretching along the coast north and south from Eaglehawk Neck are of the same system, but the connection has been either entirely destroyed by the later intrusion of the masses of diabase that now form the hills from Cash's Lookout to Arthur's Peak, or more probably has been lifted by that diabase and all the overlying strata has since been washed away. These beds form bold cliffs on the seaward side, but are uninteresting geologically. A few strata contain characteristic specimens of marine fossils of the period, but the majority are entirely barren.

A lay visitor to the southern end of Tasmania's Peninsula cannot avoid asking the reason for the fluted structure of Cape Raoul and Cape Pillar and the cliffs between. The formation is the same as the well-known Organ Pipes on Mt. Wellington, but entirely different from the columnar structure to be observed at Burnie Breakwater, Table Cape, and the Giant's Causeway in Ireland, which is basalt, with hexagonal columns. During the permo-carboniferous system

great beds of mudstone and limestone were laid down. On top of these, during the lower mesozoic system (vide Twelvetrees' classification of Tasmanian geological succession), the beds of sandstone were deposited. During the upper mesozoic system came one of those periods in the earth's history during which the forces of the fiery interior overcame the resistance of the hard, cold belt of rocks of the surface, or the compression of the outer belt of solid rocks became too severe for the mere plastic interior, and huge quantities of igneous matter forced its way into the formed beds of limestone and sandstone, and, with unimaginable heat melting the older rock with which they came into contact, forcing their way through cracks and weak places, and working in sills through whole beds of rock, they formed in some places rounded bosses, in others flat dykes, of that hard rock we know as diabase. In the course of ages the softer sandstones have in many places been worn away, until the hard diabase stands out as hills. From somewhere, probably under Mt. Arthur, a quantity of this rock welled up. One huge mass forced its way southward, following the level of the strata, thus obtaining the flat top noticeable on Cape Raoul, until, by the supply failing, or by its driving force failing on account of the mass cooling until it could no longer melt its way and move further, it formed at its southern end a wall of diabase several hundred feet thick in the sandstone. Probably a similar mass welled up from somewhere under Arthur's Peak. As time went on the action of the weather has worn away the overlying sandstone, and the sea has eaten into the land through the comparatively soft sandstone until it has reached the harder diabase, which now stands out for us to see in very much the same shape as it stopped when molten and cooled in the surrounding strata. The columns formed where the edge of the molten matter stopped and cooled right against the sandstone. This diabase never came out to the surface as a volcano or lava flow. Probably where Port Arthur now exists there was no diabase, and the water, having no hard rock to contend with,



Dolphins in Surf.

From Proc. Roy. Soc. Tas., 1920.

ZOOLOGICAL NOTES

By Clive E. Lord and H. H. Scott



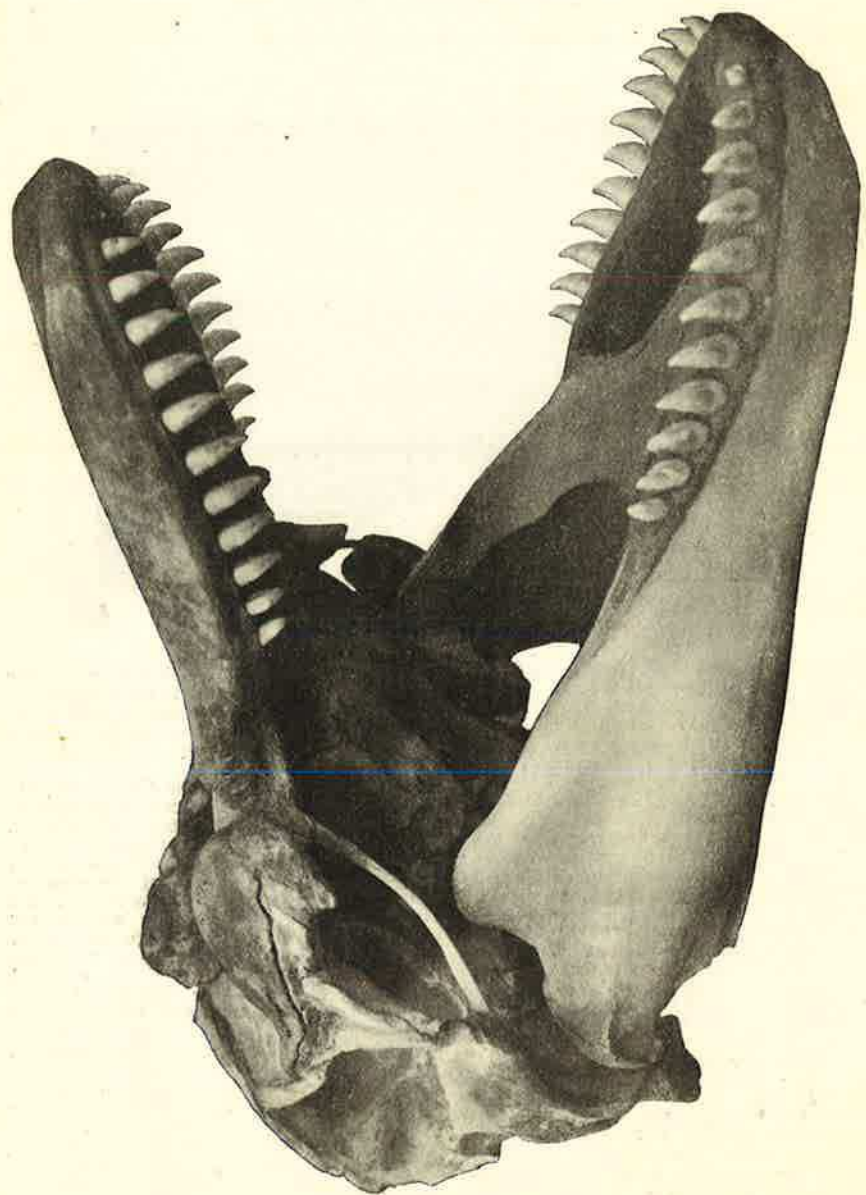
Dolphins at Play.

Owing to lack of funds and the general increase in cost of all the essentials for such camps as are organised by the club, we have found it impossible in recent years to charter a vessel in order to carry out dredging operations. This is to be regretted, as we have had to forego our studies of many of the interesting forms of animal life, particularly that relating to the lower orders. This year we were fortunate in observing a unique display by a large number of dolphins in Maingon Bay, and this fact has suggested the idea of giving a short general description of the Tasmanian whales and dolphins as the basis for the zoological notes of this year's camp report. In previous years it has been the custom to deal with the minute forms of aquatic life, so the alteration may prove a welcome deviation.

Students may note that whales are divided into two sub-orders—the whalebone whales (Mystacoceti) and the toothed whales (Odontoceti), the latter including the dolphin family. Before proceeding to discuss these two divisions, however, it might be as well to recall a few elementary facts in relation to these interesting aquatic mammals. For it must be remembered that all Cetaceans are mammals, and not fish. They are warm blooded and breathe air by means of their

lungs, and have no such organ as the gills of a fish. The tail is not vertical (as with fish) but horizontal, and this allows the animal to plunge either upward or downward in a very short space of time.

By muscular contraction the whole bulk of the body can be reduced, thus causing less displacement during the act of diving, while the sudden act of unrolling, at great depths, helps to shoot the animal to the surface. The chief muscles so employed are similar to those that roll a hedgehog into a ball. The nostrils are placed high on the head to permit of easy breathing, and the water that appears to be thrown up when a whale "spouts" is not water discharged from the lungs as one naturally supposes, but is the hot air condensing, on reaching a cooler atmosphere, into a visible vapour. An added effect is also given on occasions owing to the whale expelling the used air from its lungs a short time before the nostrils are clear of the water. The whales store oxygenated blood, and not pure air to keep them alive when below the water line, a marvellous series of storage cells being provided in the vascular system for this object. The sloths also store blood to enable them to sustain the muscular effort of hanging to a limb for days at a time.



Skull of "Killer" Whale.

From Proc. Roy. Soc. Tas., 1919.

The osteological features of whales offer many interesting studies. As with all mammals (with the exception of the sloths, etc., they have seven vertebrae forming the neck, but these are compressed into a shorter space horizontally than in any of the other mammals. Like the sloths also they have solid ribs, and the cartilaginous attachments are ossified to resist the pressure encountered at great depths. The ear bones are extremely strong and hard, and are only loosely attached to the skull. This explains why ear bones of whales are sometimes obtained during deep sea dredging operations.

The examination and classification of the ear bones of the Cetacea would form an interesting branch of study for any student attracted to this branch of science.

The origin of the whalebone obtained from whales is often misunderstood. This is not "bone" in the ordinary sense of the word, but is evolved from the structure of the hard palate. Owing to this wonderful structure the teeth have atrophied, and in these whales have become rudimentary, and only appear in early life. As these early teeth degenerate, so they give way to the large triangular blades of whalebone, set at an angle and frayed on the inner side of the jaw. This arrangement allows the whale to progress through the water and sieve out the small animalculæ, commonly called whale food or "Brit," upon which these huge creatures feed. The animal does not swallow the excess of water, but having secured a mouthful of food it elevates the tongue and this drains off the liquid through the plates of whalebone, the fringes of the inner edges retaining the essential portions of the whale's diet, after which the mouth is closed and the food duly swallowed.

The whalebone whales (Mystacoceti) are naturally the more valued group commercially. Owing to the cosmopolitan nature of the Cetacean order as a whole it is difficult to say with any degree of certainty exactly which species occur in Tasmanian waters, but there are at least four, the most valuable being the Southern Right Whale (*Balena australis*).

The toothed whales (Odontoceti) are by far the larger group, and the division contains many interesting forms varying from the huge sperm whale to the smaller dolphins. An interesting osteological fact concerning this group is that the skull is nearly always asymmetrical to a marked degree. The sperm whale or Cachalot, the giant of this division, has this asymmetry carried to such an extent as to close one nostril, thus causing the animal to blow a single jet of heated air and water instead of two such jets, as in all other whales. From this whale the morbid secretion known com-

mercially as ambergris is obtained, and from which chemists evolve a perfume. Whereas the sperm whale may grow up to sixty feet in length, there is a dwarf species, the short headed sperm whale (*Kogia*) which only attains a length of ten feet. It might be mentioned here that the greatest length of any species of whale yet authentically recorded is under one hundred feet measured between perpendiculars. The ancients had very large ideas regarding whales, and their writings refer to "fish taking up more than acres of ground." Or in another instance nine hundred and sixty feet in length! Needless to say, such exaggerations will not stand investigation.

The beaked whales (Ziphiidæ) form an interesting group of the toothed whales. Such forms as *Hyperodon*, *Mesoplodon*, and *Ziphius* occur in Tasmanian waters, but they are seldom obtained, and not a great deal is known about them. The scientific world will benefit to a great extent owing to the work now being carried out in Great Britain by the British Museum. Owing to an arrangement made with the lighthouse and coast-guard stations, all stranded whales are immediately reported. In this manner many interesting specimens are being obtained and information gathered concerning species hitherto considered of very rare occurrence.

The family Delphinidæ includes the fierce "killers" and the smaller common dolphins. The latter are usually called "porpoises" by Tasmanian fishermen, but as a matter of fact, we have no true porpoises in Tasmanian waters, all being, strictly speaking, short-nosed dolphins, or true dolphins. The dolphins can be distinguished by the deep grooves on the palatal surface of the maxillaries and by the larger number of teeth.

The common dolphin has been described under many species, but as far as Tasmania is concerned it would appear that the characters of *Delphinus delphis* would suffice for most of the specimens obtained, but that owing to the fact that the Cetacean order as a whole is a rapidly evolving one the question of subspecies must be considered.

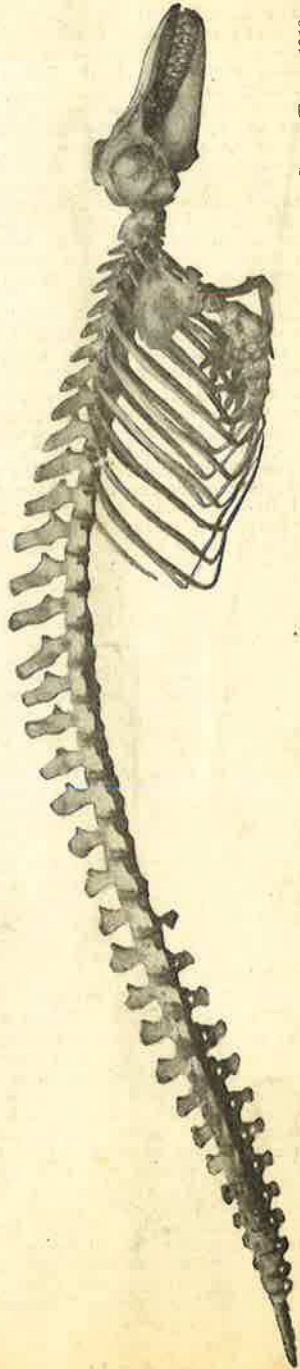
The sight we were privileged to see on Easter Monday has already been referred to in the general report as well as in a paper contributed to the Royal Society of Tasmania. The photographs illustrating this serve to give some idea of the event, however, although it was impossible to obtain a view showing the immense number of dolphins in the bay, and we have to thank the council of the Royal Society for permission to use their illustrations, and to Mr. F. B. Cane for the time he spent in securing such excellent photographs of a very difficult sub-

ject, made more difficult by the very bad light that there was on that day.

The larger dolphin (*Tursiops*) also occurs in Tasmanian seas, but it appears to be more plentiful in the North. It can be distinguished by its larger size, and the small number of its teeth, also by the colour of the body being black above, and dirty white below, thus missing all the marbled tints found in the true dolphin, and the ornate curves of colour that adorn its sides.

The pilot whale or "Blackfish" is common around the Tasmanian coast, and on occasions large numbers are stranded.

The rapacious killer whale (*Orca gladiator*) is occasionally seen. The members of this species have been rightly described as the wolves of the ocean. An examination of the skull shows the enormous power possessed by the large and recurved teeth. This species, which hunts in small packs, will attack the smaller dolphins, seals, and even larger whales, with great ferocity. It attains a length of from twenty to thirty feet. Another interesting form, the false killer (*Pseudorca*) attains to about two-thirds of this size, but is by no means as well fitted for aggressive warfare as is *Orca*.



From Proc. Roy. Soc. Tas., 1919.

Skeleton of False Killer (*P. crassidens*).