

THE ISLANDS IN BASS' STRAITS

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[Read 10th October, 1871. The paper was illustrated by a variety of choice and remarkable specimens.]

Visits to the islands in Bass' Straits are so rare that I feel certain the members of this Society will accept a contribution to the natural history of the group without objecting to its brevity, and to its somewhat desultory character, induced by limited opportunities of observation.

Indeed the position and grouping of the islands render them especially interesting, whether our attention is directed to them as affecting their geological aspect—presenting as they do the connecting link between this island and Australia, and containing integral though distant parts of formations common to both countries—or to their mineralogical importance from their presenting a variety of mineral species not hitherto found elsewhere within the colony, or if so only rarely, many of them beautiful, some comparable in point of crystalline perfection with their congeners in any part of the world, and others possessing a substantial value of such importance as to justify a hope that at some future day their discovery in greater abundance may initiate novel and important mining adventures. Again, the researches of the field naturalist are eminently favoured in this locality by the harbour which its seclusion offers to various cetacea, and the numerous species of waterfowl now so rarely met with, or even almost extinct upon the shores of our own island, while the natural shelter of the outlying reefs and larger islands encourages the production of various mollusca less abundant or unknown on our own exposed coasts.

My visits, made during the past summer, were principally to the western side of Flinders and to Cape Barren, taking incidentally the smaller islands lying off them; but I had no opportunity of visiting the eastern coast of Flinders, which is an enterprise of some hazard from the heaviness of the seas and absence of boat harbours, while my leisure did not permit a visit to Clarke's Island, which is the southernmost of the group.

The small coloured plan which I lay on the table of the Society will convey a fair general impression of the structure of the islands in so far as the oldest rocks are concerned. To express, with any accuracy, the distribution of the tertiary deposits which overlie them, would require a much more minute examination than I was able to afford; their sinuous

extension between the ranges, and somewhat capricious occurrence upon their flanks, corresponding with the similar peculiarity observed in the occurrence of the tertiary deposit upon the N.E. Coast, with which they perfectly correspond.

The physical features of these islands are expressed somewhat more minutely in the general map of the colony by Mr. Sprent than is usually the case, but still it conveys no adequate idea of the strange appearance presented by the great granite ranges standing out abruptly like headlands or craggy islands from the plains of tertiary land, level as a sheet of water for miles, stretching for miles in length and width around their base, and winding in bay like valleys between them.

These plains are mostly sand or coarse quartz gravel derived from the adjacent granite rocks. This has been generally denuded away where the ranges butt against the coast line; but occasionally sections remain, showing friable sandstones with an amount of false bedding, which almost suggests unconformability, or impure limestone, the source of springs crusting the cliffs with tufaceous deposit.

The ranges in Flinders are with one exception (that of the Patriarchs), confined to the western coast line, and the highest point determined by Mr. Sprent was the summit of Strzelecki Peak, which has an elevation of 2,550 feet. They are nearly entirely composed of granite, and although, in some instances covered by forest and scrub, are for the most part bare and rocky masses, affording a great variety of really grand and very beautiful scenery. The slopes of these ranges, and the tertiary plains surrounding them, form a vast open grass tree country with only occasional belts of tea tree, and similar scrub. The true grassy portions of Flinders are restricted and patchy, the most important being situated on the extreme north end of the island, opposite to the Sisters, and in the vicinity of the settlement. Cape Barren is generally mountainous, and unfitted for occupation, the lower portion and plains bordering the ranges forming grass tree open country as in the case of Flinders. The smaller islands seem to be those best adapted for pastoral purposes, and most of them produce a rough coarse grass on which sheep manage pretty well. These are chiefly granite also, but being of low elevation have the advantage of exposing the most recent tertiary beds, containing a large amount of lime in the form of unaltered shells, closely allied to existing species. Many of them have also been at one time, or are still, highly manured by the existence on them of mutton bird rookeries. The plan exhibits outlying patches of Silurian rocks; these are of unimportant extent, relatively to the general area of the island,

and for the most part occupy inconspicuous and low positions. The only exception occurs about five miles eastward from the settlement, where two parallel strips of clay-slates occur, perched on the granite base, and culminating in hills about 1,000 feet in height. An area of about five miles in length, and four in breadth, is chiefly occupied thus by clay slates and sandstone; these are traversed by thin quartz strings, and occasionally by veins of quartz of tolerable dimensions.

Other outliers of slaty rocks occur on Badger Island, occupying about one half of it; upon the shores of Franklin Inlet adjoining Adelaide Bay, upon the north side of Cape Barren near Deep Bay, and at Cape St. John.

These have hitherto proved barren in metals with the exception of pyrites veins. And their chief interest is derived from the proof which they offer of the continuation northward and eastward of the great system of anticlinal and synclinal folds, which I have at various times shown before this Society to pervade and completely control the disposition of all the oldest formations in the colony. Thus we may readily conceive the outliers at Brougham's Sugar Loaf, and at Badger Island, and Cape St. John, to be on the respective slopes, if the expression is intelligible, of the anticlinal axis whose continuation traverses the main land south of Waterhouse Point, in the direction indicated on the chart, while the outlier fronting on the Franklin Inlet may show a continuation of the line of flexure on the extreme east of the colony, passing through Mt. William and the Scamander tier.

Trap rocks are exceptional altogether among the islands, but occur to a limited extent, and most unexpectedly in a few widely separated spots, either in the form of narrow dykes traversing the granite or of overflows of basalt—such as those marked at Killierankie Bay, and in the neighbourhood of Mount Eliza and Sanfra Island; these are chiefly compact hard basalts, but on the surface vesicular and zeolitic.

The following is a list of minerals met with by myself, or reported to me, as occurring among the islands, to which I have appended the localities and the formation in which they occur:—

1. *Gold* was obtained by me in traces on Cape Barren Island. None whatever was found on any part of Flinders, and the stories current as to the discovery of gold there have not been substantiated. It is almost needless, however, for me to add that it is always possible that some may be discovered in the Silurian outliers near Brougham's Sugar Loaf, but the general aspect of those rocks is certainly unfavourable.

2. *Copper Ores*.—Stains of copper ore are said to occur on Pruin,

Seal, or Hummock Island of the Chart, and on Kent's Group, neither of which was I able to visit.

3. *Arfvedsonite*.—"A highly ferruginous variety of amphibole or black hornblende," containing one per cent. of copper. "The copper which it contains exists in part or all as oxychloride coating the crystals of Arfvedsonite" (G. Foord), locality Swan Island.

4. *Tin*.—The oxide of tin occurs in various parts of Cape Barren Island, and of Flinders Island as stream tin, in rolled fragments. This is the most valuable form in which the ore is obtained; it contains about 75 per cent. of tin, and the value varies from £80 to £100 per ton, according to recent fluctuations of the market.

5. *Bournonite*.—An ore of antimony and lead, occurring in patches near the junction of the slates and granite on the south-east shores of King's Island.

6. *Iron Pyrites*.—Marcasite, often mistaken for gold by the islanders, is a variety of iron pyrites, and occurs in veins in the slate formation.

7. *Topaz*.—This mineral occurs in crystals and washed pebbles in great variety of form, colour, and size, and in many localities associated with oxide of tin, zircons, tourmaline, etc., etc. It is derived from the granite, and crystals may, though rarely, be obtained *in situ* from rugs in the granite, together with rock crystal and with crystallized feldspar. I have the pleasure of introducing one very beautiful example of this to the notice of the Society. They are abundant on the north-east side of Killisnoe Bay in a creek descending from the ranges, and upon the beach, and are equally so in a gulchway about two miles south of the first-mentioned spot, and across the bay from it. I also found them inland in the creek descending westward from the Quoin, and in the Sanfra River on the south side of Flinders. I am also informed of their discovery in other creeks on the south end of Flinders, diverging from the peaks, and in a variety of spots upon Cape Barren Island; such as in Deep Bay and vicinity of Dover River upon the north, and Battery Bay and Kent's Bay upon the south side of Cape Barren. They are also occasionally found upon the outlying islands.

In regard to their occurrence, I may note that a remarkable feature in the granite is usually the index of their presence.

This rock which is in general throughout the islands an ordinary ternary granite moderately close-grained, or occasionally somewhat porphyritic, appears to have been subjected to some abnormal condition of cooling, which has resulted in certain localities in the aggregation of its constituent minerals into masses of exceptional size. Thus it is not unusual to see vein-like streaks traversing the granite, varying from one to several feet in width, and composed of a material which can only be illustratively described as granite highly magnified. The materials are identical with those of the surrounding granite, but the size of the individual minerals is enormously increased, so that blocks of feldspar quartz and even mica occur, up to several feet in dimensions. These appear to be the scene of the most abundant sources of the topazes which have crystallised out into natural cavities, from whence they have been delivered by erosion.

The colour of the topazes varies from pure limpid white to various shades of blue, faint pink, yellow, &c. Crystals are found up to several inches in diameter. They are readily obtained by washing, as their specific gravity, which varies from 3·4 to 3·7, is considerably in excess of the quartz (2·5—2·8) and other constituents of granite.

8. *Beryls* are occasionally obtained in the form of hexagonal prisms, colourless or bluish green, free or *in situ*.

9. *Zircons*, are tolerably common, but rarely found in well defined crystals.

They are usually met with in washing, in broken rolled fragments; localities, Killisrankie Bay, and in crystals in quartz from granite, Long Islands.

10. *Tourmaline*, black variety, very abundant and in exceedingly fine crystals on the northern side of Long Island; also occurs on various parts of Flinders and Clarke's Island.

11. *Garnets*, often found in washing in various streams, but especially abundant on the south side of Cape Barren, near Half Moon Bay, where they occur almost as a constituent of the granite rock, and in confused crystallization.

12. *Chrysolite*.—I found only one example on Flinders, from the granite formation.

13. *Red Hematite*, both in the hepatic form and in well defined crystals, occurs on the south end of Flinders, on the beach in basalt, S.W. of Mount Eliza.

14. Exceptionally beautiful crystals of feldspar occur in the neighbourhood of Killisrankie, north boat harbour, in the rugs in granite, often four or five inches in diameter, and very perfect. The species appear to be orthoclase.

15. *Rock crystal* is not uncommon; beautiful examples are obtained from Kent's Bay, on the south side of Cape Barren Island; and very large crystals of smoky quartz are said to be obtained from hollows in the granite on Flinders, opposite Woody Island.

16. *Mica*.—Large masses in spots indicated above.

17. *Kaolin* of fine quality is frequent about Killisrankie Bay, and generally through the island.

18. *Mineral Pitch*, a species of, occurs on the north end of Pruin Seal. I had no opportunity of visiting the locality.

[Read 14th November, 1871.]

In continuation of my remarks upon the islands in Bass' Straits, I have now to advert to the Mammalia and, more especially to pen the deplorable memento of the gradual decrease, and now rapidly approaching extinction of some of those species adapted by form and structure to inhabit the wildest and least accessible spots, and whose abundant presence formerly on the detached reefs and rocky coasts throughout the group must have imparted a gratifying air of animation to what are now dumb and barren solitudes.

It is well, I think, for naturalists to begin to assemble the pages of the history of a species without waiting until the tombstone has been finally erected above it, and I have therefore gathered from the journals of the earlier voyagers such

incidental remarks as illustrate the aspect of the island in point of the abundance of the amphibious carnivora, prior to the hostile invasion of man.

It seems hardly credible that wanton apathy should have permitted a wholesale extermination at all seasons of so valuable an article of commerce ; but true it is that no steps appear ever to have been taken to afford protection to the various species of seal during the fence season, and the inevitable result of so persistently ungenerous a persecution, has been their almost total disappearance from localities once abounding in them by thousands.

A correct foreboding was expressed by a writer in the *Hobart Town Gazette*, March 25th, 1826, in the following terms :—"It is evident that the Legislative Government must enact a law for the fishery of seals at improper seasons, else this most valuable source of colonial export will soon be lost. There are two species of seal in these seas. The early kind brings forth its young from the 25th November to the latter end of December, and the reefs and banks should be left undisturbed until May following, when the increase will be grown up and the skins well furred. The black seal, which is the most valuable, is a month later.

"The unthinking sealers harass these useful animals at all seasons, and the consequence is that many reefs are deserted, and inferior skins have been procured from animals too young, and imposed upon the merchants."

I cannot find that action was taken upon this remonstrance. The seals appear then to have been still abundant, and a prompt interference might not have been too late. The skins alone were valued at 5s. each, and a case is quoted in which 300 cubs had perished on one bank alone through the untimely destruction of the dams.

It is to be regretted that we have no reliable description of all the different species of seal once inhabiting the coasts of this island, and of those in Bass' Straits. That the number was more considerable than is generally imagined may be inferred from an expression occurring in Lieut. Colonel Collins's *History of New South Wales*, conveying observations made by Mr. Bass in the course of one of his earliest explorations, to the effect that : "The seals appeared to branch off into various species. He did not recollect to have seen them precisely alike upon any two islands in the Strait. Most of them were of that kind called by the sealers hair seals, but they differed in the shape of the body, or of the head, the situation of the fore fins, the colour, and very commonly in the voice, as if each island spoke a peculiar language." These are clearly specific differences, and not such as might be

attributed to local variations. Mr. John Gould, in his large illustrated work upon the "*Mammals of Australia*," has figured two species, and speaks of the seals as being even in his day of rare occurrence or almost extinct. My own enquiries have led me to the belief that three very distinct species still remain extant, and possibly a stray wanderer from the south belonging to the tribe of the great sea elephant may occasionally pay a hurried visit to the ancient domain of his ancestors. We have no authentic record, however, of such having been the case within late years, but it must be remembered that the once favourite spots of these gigantic sea monsters are upon a remote island, and in that portion of it now rarely visited, while it would be only during a limited period of the year that these animals might be looked for.

It is remarkable that neither Bass nor Flinders give any special account of the sea elephant, although the latter visited King's Island in the year 1802, in the month of April, near the time when sea elephants should have been arriving in their migration from the southward. However, Mr. Flinders' stay was short, and only paid to one portion of the coast, and it is possible that as this island had already been known to sealers for three seasons, having been discovered by a Mr. Reid prior to 1799, that the wholesale slaughter of these helpless and inoffensive monsters had already gone far towards their expatriation. Mr. Flinders obtained one example of which he says: "A seal of a species different to any yet seen by us was also procured; its flippers behind were double when compared to the common kinds of seal, and those forward were smaller and placed nearer to the head; the hair was much shorter, and of a bluish grey colour, the nose flat and broad, and the fat upon the animal was at least treble the usual quantity. I never saw the sea elephant, and possibly this might have been a young female, but there was no appearance of any trunk." It may be noted that both Bass and Flinders appear to have been very familiar with both the hair and fur seal, with neither of which does this description tally. The most full and accurate description, however, has been left us by that very excellent naturalist, M. Peron, in his, "*Voyage de decouvertes aux Terres Australes*," who arrived at King's Island, in Bass' Straits, on December 10th, 1802, and after landing at Sea Elephant Bay was detained there for 15 days by the vessel having to run off shore before a gale of wind through the cable having been chafed asunder by sharp pointed rocks, which are specially referred to as involving such a danger by M. Peron, whose opinion has been fatally confirmed within our own time by the disaster attending the telegraphic cable, which must have been laid down upon the very rocks described

by him. Although the bay was habited by a party of eleven sealers, who had been for a long period employed in the slaughter, he described the portion where he landed as being covered with sea elephants, whose brown colour rendered them conspicuous on the beaches, and caused them to appear from a distance like great black rocks. On his approach some fled, while others remained motionless on the sand and regarded him with indifference. Elsewhere he says, "all the coasts of this island are covered with a prodigious number of amphibia, some of which attain twenty-five or thirty feet in length, which have become a source of valuable commerce to the English." He speaks of an abundance of emu, and notes the absence of aboriginal inhabitants. The sea elephant was killed for its skin, for the oil which was obtained in large amounts, and for the tongue which was considered a great delicacy. A small portion remained all the year round but the great masses migrated to and from the south, arriving about June, and leaving some months later. It differed from other seals in preferring sandy beaches to rocks, and evinced a partiality to bathing in fresh water; it was mild and inoffensive and easily killed. It was almost entirely confined to the Hunter Islands, King's Island, and New Year's Island, a very few were found on the Sisters Islands, north of Flinders; a few were occasionally forced by tempests on the New Holland and Tasmanian shores, the natives on such occasions destroying the exhausted animal by thrusting flaming brands down its throat! The sea elephant appears to have browsed on kelp, and M. Peron specially states that no remains of fish or any other bony animal were ever discovered within their stomachs. Those who feel further interested in the natural history of this grand and valuable animal will find the amplest details in M. Peron's volumes.

The species next in importance in point of size, though not in value, is the sea leopard (*Stenorynchus leptonyx*)—"Gould's Mammals of Australia"—which still occurs sparsely throughout the islands, and occasionally on the coast. This attains more than ten feet in length, and is distinguished from the others by its spotted skin. M. Peron speaks of Waterhouse Island as frequented in his time by great numbers of seals of enormous size, and which were probably individuals of this species. I do not think, however, that it was nearly so abundant generally as the next two to which I shall refer. In regard to these great confusion prevails.

The species *Arctocephalus lobatus* is also figured in the "Mammals of Australia," and Dr. Gray is quoted. He states "that this species and the *A. Hookeri* are called hair seals by the sealers, because they are destitute of any under fur;

but this appears to be the case only with the older specimens, for the young of *A. lobatus* is said to be covered with soft fur, which falls off when the next coat of hair is developed." Flinders describes hair seals of enormous size and extraordinary power, as frequenting Armstrong's Channel, one killed by him equalling an ox in weight. I cannot identify this with the *A. lobatus*, as he describes it as having a bulldog nose, and thinly-set sandy hair, characters not possessed by the *A. lobatus*.

Mr. Bass, in Collins' Hist. N. S. Wales, p. 158, in speaking of Cape Barren Island, says, "The rocks were covered with fur seals of great beauty of a species approaching nearest that named by naturalists as the Falkland Island seal. And Flinders gives a more particular description of them. In speaking of Cone Point, on the extreme S.E. of Cape Barren Island, his words are:—"The number of seals exceeded everything we had any of us before witnessed, and they were smaller and of a different species from those which frequented Armstrong's Channel. Instead of the bull-dog nose and thinly-set sandy hair, these had sharp-pointed noses, and the general colour of the hair approached to black, but the tips were of a silver grey, and underneath was a fine, whitish, thick fur. The commotion excited by our presence, in this assemblage of several thousand timid animals, was very interesting to me who knew little of their manners. The young cubs huddled together in the holes of the rocks and moaned piteously; those more advanced scampered and rolled down to the water with their mothers; whilst some of the old males stood up in defence of their families, until the terror of the sailors' bludgeons became too strong to be resisted. Those who have seen a farm yard, well stocked with pigs, calves, sheep, oxen, and with two or three litters of puppies, with their mothers in it, and have heard them all in tumult together, may form a good idea of the confused noise of the seals at Cone Point."

Mr. Bass speaks of landing on the Patriarch. "He found the outermost island well inhabited. The various tribes had divided it into districts, one part was white with gannets, breeding in nests of earth and dried grass, petrels and penguins had their underground habitations in those parts of the island which had most grass. The rocks of the shore, and blocks of granite, were occupied by the pied offensive shag, and common gull; geese, red bills, and quails, lived in common, and the rest was appropriated to the seals, who seemed to be the lords of the domain." "The males, who possessed a rock to themselves where they sat surrounded by their numerous wives and progeny, on his drawing near them,

hobbled up with a menacing roar, and fairly commenced the attack, &c." He unfortunately does not indicate the character of the species—the fur seal observed by Flinders at Cone Point, its sharp pointed nose &c., distinguishing it from the *Otaria Falklandica*, or ordinary fur seal of commerce, which is described as having a broad head and rather flat. A yellowish seal is described by M. Peron as occurring at the I. des Phoques in enormous quantities. He says "the largest, which were of a yellowish colour, occupied the upper portions of the rock, while the smaller, which appear black, filled the cavities in the rocks below." Probably the larger species here referred to was identical with the sandy-haired large seal described by Flinders in Armstrong's Channel, and the smaller black ones with the fur seal at Cone Point. Many other incidental observations on the habits and abundance of seals are made by these old and intelligent observers, for example M. Labillardiere especially draws attention to the fact of a seal killed in D'Entrecasteaux Channel (which he calls *Phoca menachus*) having been found to have been feeding on shell fish. But of these it will be unnecessary to quote more, sufficient having been cited to prove that in the earlier times four, if not five species of seals were abundant in the Straits, viz., *Macrorhynchus proboscideus* (Cuv.) or the sea elephant. The sea leopard (*Stenorynchus leptonyx*), a fur seal, and one, or perhaps two hair seals. At the present day from my inquiries I learn that there remain the sea leopard and at least one hair seal, and one fur seal. The haunts of these are on the double rocks off Moriarty Bank south east of Clarke's Island, the Stacks, or Craggy Island of the charts, between Flinders Island and Kent's Group, Barren Joe's Island, Hogan's Group near Wilson's Promontory, and some of the other rocky islands off the Victorian coast line; more occasionally they are found on the westernmost of Kent's Group and the Sisters Rock. Only the hair and fur seal are pursued, and rather for the oil which they afford than for the skins. One or two small sealing parties still annually leave the islands in the Straits for the purpose of their capture. The seals in Hogan's Group are described as gathering into a vast cavern, only communicating with the sea by a narrow outlet, impassable for a boat, but with a narrow open crevice in the roof above which permits of the most adventurous in the party being lowered by a rope down into the midst of them; they are killed by shooting and clubbing. The number annually obtained, however, from the whole group is but small; what the numbers originally obtained amounted to may be inferred from the following extracts of a few takes recorded by old Sydney *Gazettes*, and quoted by Mr. James Bonwick, from whom I borrow them:—"The

schooner Endeavour, from March 9th, 1803, to May 28th, 1804, got 9,514 skins; the schooner Surprise, from March 11th, 1803, to September 15th, 1803, got 15,480 skins. In September, 1803, a vessel brought in to Sydney 11,000 skins."

Sufficient has been stated to show what the value of this fishery might have been if ordinary forbearance had been exercised, and it now only remains, as the past is irrevocable, for those who are interested in the Natural History of these islands to endeavour to procure examples of the different species still existing, in order to clear up as far as possible the doubts as to the nomenclature, before their final extinction.