THE GLACIAL BEDS OF LITTLE PEPPERMINT BAY, TASMANIA.

A Paper read before the Royal Society of Tasmania by Professor E. G. Hogg, M.A.

Little Peppermint Bay is a small arm of the sea on the western side of D'Entrecasteaux Channel, about 27 miles south of Hobart. The nearest point at which the Channel steamers call is Woodbridge, or Peppermint Bay, about half a mile south of the beds described in this paper.

The prevailing beds in the locality belong to the Permo-Carboniferous series, and have, over a large area, a fairly uniform dip to the S.E., at about an angle of 30°. They are intruded into by two distinct types of igneous rocks, viz., the Oyster Cove porphyries and the diabase greenstone, and, near the contacts, are disturbed to a considerable extent.

The glacial beds are exposed on the beach at the western part of Little Peppermint Bay, along the new and old roads from Woodbridge to Kingston, where they cross the Little Peppermint Bay Creek, and may be traced along the course of the creek for over half a mile. The greatest height at which they are found above the sea-level is about 200 feet. This occurs at the most westerly point at which they can be traced The rock in the neighbourhood at this spot is the felspar porphyry, but no contact could here be found to determine the relations of the glacial and the igneous rocks.

The glacial beds are composed of an extremely tenacious fine-grained matrix, in which are embedded boulders, generally of small size, for the most part rounded, and frequently striated. Photographs of some of the striated stones are appended to this paper. No boulders to which the term massive could be applied were found; in fact, no

boulder was seen which was more than one foot in its longest dimension. The colour of the rock varied in places, but, except on the sea-beach, the prevailing tint was grey, with patches of purple-coloured clay in places. The clay, except for its greater tenacity, has many points in common with the glacial beds of Coimaidai, near Bacchus Marsh.

Among the included boulders are black, grey, and white quartzite, chert, coarse-grained granite, sandstone, slate (unfossiliferous), white and rose quartz, mica-schist, micaceous sandstone, quartz-porphyry, quartz-felspar-porphyry, and quartz-felspar-hornblende-porphyry. A large number of microscope slides were prepared from the igneous rocks for the purpose of comparison with the Port Cygnet and Oyster Cove igneous rocks—a very necessary point to determine if, as it would appear, certain of the Port Cygnet rocks are contemporaneous with the marine beds of Port Cygnet. However, a comparison of the slides of rocks taken from the glacial beds, and of over 100 slides taken from the Port Cygnet and Oyster Cove igneous rocks, appears to lead to the conclusion that the igneous rocks found as boulders in the glacial beds do not belong to the Port Cygnet and Oyster Cove series, and that we must look elsewhere for the origin of these rocks. From the granite specimens no conclusion can be drawn. It is worth mentioning that, so far as the author is aware, the nearest granite *in situ* is at the Hippolyte Rocks, south of Maria Island, on the east coast of Tasmania.

Among the included blocks was a piece of hard, dark-blue limestone, containing a fossil, which Mr. R. M. Johnston, F.L.S., has kindly identified for me as a form of Tellinomaya, probably of Upper Silurian age. The fossil is not in a state to admit of specific determination.

Where exposed on the beach in Little Peppermint Bay the glacial beds are pierced by three well-marked parallel dykes and an irregular dyke, all bearing S. 30° E. The dyke material is much weathered, but on the whole it appears probable that the dyke belongs to the Oyster Cove porphyry series.

The occurrence of glacial beds at the horizon of the Permo-Carboniferous series exposed at Little Peppermint Bay is of the greatest interest. The glacial conglomerates exposed at the north end of Maria Island lie nearly, if not

quite, at the base of the Permo-Carboniferous series. The Little Peppermint Bay beds lie almost certainly on a much higher horizon. Further examination may tend to show that in S.E. Tasmania the glacial beds are related to each other in a manner somewhat similar to that of the glacial beds at Lockinvar and Branxton, New South Wales, as described by Professor David, F.R.S. (Proc. Roy. Soc. N.S. Wales, 1899, p. 154).