NOTES ON THE OCCURRENCE OF A FOSSIL TREE EMBEDDED IN DRIFT ON THE NORTH-WEST COAST OF TASMANIA.

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Some forty years ago I brought under the notice of this society the Tertiary marine formation near the mouth of the River Inglis, and the underlying stretch of moraine matter, with large erratics, which extends eastward for a distance of about five miles. As a result of a recent visit to this part of the coast I have to report the occurrence, off Woody Hill, near low-water mark, of a relic of the ancient forests of Tasmania preserved under somewhat peculiar conditions.

The eastern boundary of the above-mentioned glacial drift, so far as is yet ascertainable, is nearly opposite the residence of Mr. C. J. Mackenzie. Here the ancient slates and schists come prominently into view at low tide, and about half a mile eastward they rise in a low bluff and pass under the basalt of Woody Hill to the south. To the east of this bluff in the hollows between the ridges of the ancient rocks, which are highly inclined and have a northerly strike, are masses of consolidated drift of a totally different character, the rolled pebbles in which are only such as might be derived from the indurated sandstones, slates, and schists that are the bed-rocks of the whole coast, and therefore they are probably of local origin. This drift has been extensively denuded by the force of the seas breaking upon the shore during the gradual elevation of the coast line in comparatively recent times, but probably extends southward under the low sand dunes and alluvium which lie to the east of Woody Hill. Whether it is more recent than or anterior to the basalt of Woody Hill, which is of late Tertiary age, is at present uncertain.

Partly embedded in this drift, which at one time must have deeply covered them, are the fragmentary remains of a large fossil tree with an estimated length of not less than sixty feet, the bulk of which has been removed by denudation. The external appearance somewhat resembles that of the fossil wood often found in the upper members of our Permo-Carboniferous series, but in this case the woody structure has not been silicified, and the attempts which I have had made to polish sections for closer examination have not been successful. There is much variety in the outer portions of exposed fragments of the tree. Iron sulphides replacing the organic tissues and becoming subsequently oxidised seem to have been the petrifying agents, and there are traces here and there of white iron pyrites (marcasite), or arsenical pyrites (mispickel) still unaltered. The latter is very abundant in the coal measures of the Mersey district. Some portions have all the appearance of siderite. The interior of the tree seems to have been little affected by the infiltration of iron in any form, and much of it is practically identical with ordinary lignite. Judging from the arrangement of the stumps of branches, the form of the tree must have resembled that of a pine, and faint indications of markings like the "pits" which are the distinguishing feature of coniferous wood may be seen here and there, but no definite conclusion can be come to under this head until after careful microscopical examination. All that can be said now is that the tree is probably a pine belonging to the Tertiary period, and that it came down some ancient river from the country now drained by the River Cam to its present position, where it ultimately with the gradual subsidence of the land became deeply embedded in the drift.

Apart from the question of the history of this fossil tree, I take the opportunity to mention that, not far away, there is a group of large boulders resting on the upturned edges of the ancient rocks which have all the appearance of ice-borne erratics. They are more than half-a-mile distant from what I have described as the eastern boundary of the glacial drift, and their presence here calls for future investigation. Forty years ago there were numbers of massive boulders of granite, and of altered sandstones and limestones with fossils of

silurian type, partly embedded in the till between Woody Hill and Table Cape. At the present time I can find only two of them remaining, the rest, as I am informed, having been broken up for use as road metal!

As a postscript to this paper I have to report the receipt from Mr. Twelvetrees, Government Geologist, to whom I had sent specimens of the fossil tree, of a letter in which he says that "the wood seems to be Tertiary. It is filled with marcasite, which has decomposed largely to iron oxide, and it is now highly ferruginous." Mr. Twelvetrees also encloses a note from Mr. H. H. Scott, of the Victoria Museum, Launceston, who says of one of the specimens that "it proved, upon microscopical examination, to be a fairly fine-grained pine. Much of the structure was obscured, but the presence of pyrites here and there gilded some of the tissues and left the details visible." Mr. Scott also suggests that from the arrangement of the "bordered pits" the tree appears to have belonged to the larger division of the pines, and not the more ancient Araucarian section."