PAPERS AND PROCEEDINGS OF THE ROYAL SOCIETY OF TASMANIA, VOLUME 99.

OBSERVATIONS ON THE GEOMORPHOLOGY OF A COASTAL CAVE NEAR WYNYARD, TASMANIA

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ABSTRACT

A seaward facing cave is noted on the coast immediately to the east of the Sisters' Creek beach; and the presence of a cemented water rolled conglomerate adhering to parts of the ceiling suggests an old sea level, at a height of the order of 100 feet above the present sea level.

DESCRIPTION

During an archaeological survey carried out under the auspices of the Australian Institute of Aboriginal Studies, and the Department of Anthropology at the University of Sydney in the summer of 1963-64, an investigation was made into the caves to be found in the precambrian quartzites (Cave quartzite of Spry, 1957) of the Sisters' Hills on the coast about six miles northwest of Wynyard.

One of these caves is situated in the side of a high seaward facing cliff, about half an hour's walking distance across bush and rocky foreshore in an easterly direction from the end of the vehicle track at the eastern end of the Sisters' Creek beach. The entrance to this cave is about 30 feet high and 65 feet wide, and it faces out to sea in a northeasterly direction, the surface of the floor deposit being about 60 or 70 feet above sea level. When one stands on the talus at the mouth, and looks at the cave, one can see that it consists of two slits, the westerly one being 40 feet high and 16 feet broad, slopes down to the left at an angle of about 60 degrees; and the easterly one is 25 feet high and 20 feet broad at the widest part, and slopes down to the right. These are separated by a section of the folded bed-rock, 15 to 20 feet in thickness.

The roof of the easterly slit cave is smooth and fairly level, and adhering to it can be seen patches of a cemented conglomerate. This conglomerate is probably that named the Sisters Conglomerate by Spry (1957) and consists of tightly packed, water rolled stones in a sand matrix, some of these pebbles being completely rounded, and up to about a foot in diameter. Inspection shows that this conglomerate is cemented onto the ceiling of the cave, the junction being quite distinct, and it is very probable that these are the remains of a much more extensive deposit, the floor beneath being littered with chunks of cemented pebbles that have fallen off. The conglomerate had been laid down after the formation of the cave, and as there is no possibility of deposition by streams, I would suggest a marine origin. Such a theory is strengthened when one examines the back end of the cave, about 60 feet in from the entrance. Here the protruberances of the bedrock are rounded and smoothed by water action, with extensive remains of the cemented conglomerate having been injected into and against the hollows and corners.

The height of the outer edge of the upper lip of this cave is 101 plus or minus 4 feet above mean sea level, and the conglomerate attached to the ceiling extends from a height of 95 feet to 90 feet. The height of the corner where the ceiling meets the back wall of the cave is 90 feet and the conglomerate extends a few feet below this. I would suggest that both caves were formed by marine action, and that the remains of an old cemented raised beach can been seen in the easterly one. These phenomena might be associated with a sea level 90 to 100 feet above the present level, though the dangers in deducing the height of an ancient shore line from pebble deposits must always be borne in mind. (Zeuner, 1959, p. 282).

Johnston (1888) records "Helicidae Sandstone", which Jennings (1959), calls aeolianite, at a height of about 100 feet above sea level, on Mt Chappel Island in the Furneaux Group. Lewis (1935) correlated these deposits with his "Pre-Malannan" gravels in the Derwent Valley, but his scheme must be rejected following the criticisms of Jennings and Banks (1958). Edwards (1941) makes the suggestion of possible river terrace remains in the Mersey and Forth rivers, indicating a strand line at about 100 feet above sea level. The best documented evidence is that of Jennings (1959) where he records boulder beds of water rolled pebbles in the open cut of the Grassy Creek scheelite mine. These beds have been noticed at various heights between 90 feet and 150 feet above sea level, and Jennings postulates their association with a high sea stand at 120 feet to 150 feet, although correlation with a succession of strand lines at other heights of that general order is also considered. Elsewhere in Tasmania, Hills (1914) reports a deposit of rounded boulders and shingle indicating a raised beach at a height of almost 100 feet above sea level, on the south side of the base of Point Hibbs. An eustatic sea level rise of the order of 100 feet has been recorded in many places all over the world, and this is correlated by Zeuner (1959) to his "Tyrrhenian" phase, which is generally assigned to the Mindel/Riss Interglacial period. Further it is possible that the Sisters' Creek caves and the Rocky Cape caves were formed during the same episode. They are similar in general shape, the bedrock in both cases is the Cave Quartzite, and they are situated within six miles of each other. Gill and Banks (1956),

and Gill (1959) assign a correlation to a 70 foot sea level, but doubt has been expressed by Jennings (1959).

In front of the Sisters' Creek cave is a large talus of hillwash which comes in from the outside slope above, and to the immediate west. This deposit has been cemented together, and consists of angular fragments of rock and soil. The front part of this talus is eroding away, and this leaves a face against the bedrock at the eastern end, which is about 15 feet deep. An examination of the top surface and the eroded face of this hillwash did not reveal any cultural material embedded in it. The floor of the western cave is behind this hillwash, about six feet below it, and it is very damp, being subject to flooding. The deposit is sandy and ravages of fossickers have upturned some shells and bones, attesting to at least some occupation by the aborigines in recent times.

ACKNOWLEDGEMENTS

I wish to thank my colleagues who accompanied me on the survey: Messrs. F. J. Allen, I. C. Glover, and R. A. Wild, from Sydney University; C. Mc Knight, from Melbourne University; and R. Reece, formerly from the Australian National University.

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