

The siltstone outcrops in Armer's Beach force one to recognise a main, or western beach and a minor, or eastern, beach for purposes of investigating beach fauna, the two regions being connected by a broad band of sand above about M.S.L. and by a narrow band of beach that is exposed below the rocky outcrops at mean low spring tides (Fig. 1). The gradient of the lowest part of the beach is so flat that a broad band of beach may be exposed below the outcrops during extremely low spring tides. The north-western part of the main beach is influenced by the stream and has been ignored. The minor, eastern beach is called "Old Tree Beach" by the author because of the bleached trunk of a great old tree lying there.

Two transects of the western beach and one of Old Tree Beach were made in May, 1955, to determine beach profile, substratum texture and the macrofauna present by the general methods used for Gooch's Beach (Morgans, 1967).

The levels of the three transects (Fig. 1) were related to a common benchmark, i.e., the top of the circular concrete pipe carrying the Wai-o-puka Stream from beneath the road. All levels in this paper are related to a "special" datum arbitrarily defined as 9.6ft below the Wai-o-puka culvert bench-mark: this special datum appears to be within an inch or so of tidal datum (see section below).

Transect I was established near to the stream but clear of significant influence by it: its bearing was  $057^{\circ}$  T. Transect II was roughly parallel to I and Station II/14 was 24ft from Station I/14, at virtually the same level. Transect II ran close to siltstone outcrops in the lower littoral where the sand appeared in many places to be only a shallow layer upon rock. Thus the lower half of Transect II could be expected to differ from Transect I at that level. Transect III was oblique to the beach axis because of adjacent rocks and its bearing was  $015^{\circ}$  T. The stations of this transect were listed alphabetically. Station III/C was 44.0ft from the lowest fence post of a line of sturdy old fence posts running down westward of Old Tree Beach. Station III/M was next to an old tree stump embedded in the Marram grass bank and about a chain east of where a culvert under the road opens on to the beach: the bed of the culvert was merely damp and carried no flowing water, though it would undoubtedly do so after rains.

#### BEACH PROFILE AND TEXTURE

Figures 2, 3 and 4 show beach profiles; note that Transect III is exaggeratedly flattened due to Old Tree Beach running oblique to the shoreline.

The profiles show an inflexion a little below apparent M.S.L. that separates a flatter lower intertidal from a steeper upper littoral beach. The inflexion is at 3ft in Transect I, 2.4ft in Transect II and 2ft in Transect III relative to special datum. A prominent crest above observed H.W.S.T. (at about the 7.6ft level) must reflect the normal limit of wave upwash and beyond this crest a slight dip characterises the profile of the main part of Armer's Beach. The lower limit of the Marram grass is at the 8.6ft level. The progressive shortening of the supralittoral beach from Transect I to Transect III presumably reflects decrease in high tide wave force, a presumption explicable in view of the reef formation.

That Transect II is steeper than Transect I might be regarded as conflicting with the assumption that wave action is rather heavier on Transect I. It is certain, however, that run-off from waves breaking over the reef outcrops in Armer's Beach would scour Transect II more than Transect I and thus produce the steeper profile.