The rocks of Kaikoura peninsula terminate Ingles Bay in the south and provide enough shelter for the southern extremity of the beach to become sandy and modified in profile. A local map names this part Gooch's Beach. A small river, Lyell Creek, opens to the sea too far north of Gooch's Beach to affect it and the beach is virtually unaffected by a streamlet (sometimes dry) that drains to the adjacent rocky beach by a culvert near the marine laboratory.

The prevalent swell of this coast is south-easterly: although this breaks heavily against the shingle beach of Kaikoura it becomes progressively diminished southwards towards Gooch's Beach. The protection afforded to Gooch's Beach influences the beach profile and substratum texture in subtler ways than are immediately apparent. Although northerly swell appears to occur seldom, the quite frequent strong, northerly surface winds quickly build up steep northerly seas that cut Gooch's Beach considerably. Heavy sea conditions are normally separated by more or less calm periods during which fine particles settle and quantities of algae, torn from the reefs, are deposited on Gooch's Beach where it forms dense mats extending down from above high tide level to a variable extent, sometimes even to low tide level. This decaying flotsam has a rich characteristic fauna and its breakdown presumably influences the substratum texture and provides food for the beach infauna. Owing to its situation, then, Gooch's Beach may have its profile changed and the substratum texture and constitution modified according to the prevalent degree of scouring/sedimentation and the history of the offshore water (i.e., clear, or bearing sediment and algal debris). It is a changeable and unstable beach.

Three transects were selected (Figure 1) in November, 1964, to demonstrate the relationship between the intertidal macrofauna and the beach profiles and textures. Later papers will describe a nearby beach of uniform texture and features of the flotsam fauna.

METHODS

Beach profiles were obtained by the ranging rod and sea horizon survey method (Morgans, 1965b) and related to tide datum through observations of low tide level on the afternoons of 23 and 24 November 1964 (adding the low spring tide correction of 1.3ft to the predicted Lyttelton levels).

Samples of surface sand, to a depth of several inches, were taken for analysis of texture at stations as seemed rewarding. Each sample comprised about 1.5–2Kgm (volume approximately one quart) and it was treated with formalin for trapped animals since little silt was present to be affected by this procedure. Later, animals and fluid were removed and the substratum sample oven-dried (usually at 60–70°C. for a day or two). Texture was determined by weight after automatic shaking for 30 minutes in a stack of eight-inch " Endecott " standard sieves.

So far as possible the recommendations of Morgans (1956) were followed but it was impossible to obtain a set of sieves exactly matching the Wentworth series. Available sieves had apertures (square mesh) as follows: 4760, 2057, 1003, 500, 250, 124, 64, 45 microns. Thus, the only significant discrepancy is that the apparent " granules " grade contained the smallest pebbles *sensu stricto* which, of course, were thus missing from the apparent " pebbles " grade.

The infauna of the beach was assayed in two ways: (i) quantitatively at each station, by digging a 19in circle to approximately 11in depth and sieving the sand over 19in diameter sieves of which the finest was 16-mesh (square apertures, 1003 microns); (ii) qualitatively, by random digging and sieving. Sieving for fauna was done by agitation of the sieve-stack in the sea and attempting to prevent water from entering the top sieve from above (which can lead to swimming animals and flotsam contaminating the sample).