

deposits, higher and more constant salinities, and less pronounced differences in temperature. The bottom consists either of solid rock or sandy clay, or else of a rather coarse mixture of shells and sand, which is often found on the slopes of rocky portions in particular, together with large stones and pebbles. On the other hand, we do not get the fine mixture of shells and sand which is so characteristic of the littoral zone out among the skerries. The lower limit of this zone practically coincides with the lower limit of the coastal water, the salinity of which is lower than that of the Atlantic water lying beneath it.¹ The temperature does not vary more than a few degrees in the different seasons, being lowest during the summer in the deeper portions, but it is, for part of the year at any rate, higher than that of the Atlantic water.

Below the sublittoral zone we come to another zone, distinguished by more uniform and more constant topographical and physical conditions, which we may call the *continental deep-sea zone* (ranging from 150 to 1000 metres or more). The bottom consists mainly of rock or a fine mud, which may perhaps be mixed with a little sand in the uppermost portions. In its upper parts, near the borders of the sublittoral zone, temperatures and salinities vary to a slight extent, but in the deeper parts both are constant, the salinity being 35 per thousand or a little over, and the temperature between 6° and 7° C. all the year round.

We propose to discuss the coastal area of the boreal region under three headings: (1) the islands of the Norwegian west coast, where the littoral zone alone is represented; (2) the fjords, where all the zones are represented; and (3) other northern boreal areas.

Littoral zone
of Norwegian
islands.

(1) *Islands of the Norwegian West Coast* ("Skjærgaard").— We may divide the littoral zone among the islands of the Norwegian west coast into different areas. There is first a low-tide area, subject to changes of tide, and accordingly dry for certain portions of the twenty-four hours. Here we can distinguish three "facies" with different bottom-conditions, namely (1) rocky, either bare rock or very scantily overgrown; (2) a furoid belt; and (3) sand. Each of these has, as a rule, several forms peculiar to it, though unquestionably a good many species of the littoral fauna are common to all. The dissimilarity in the com-

¹ It must, however, be stated that the limits between the coastal water and Atlantic water vary with the seasons.