

wegian Sea, and the littoral fauna naturally accords with its surroundings. This is true also of the archibenthal area (that is to say, the steep continental slopes) and the abyssal region. The temperature at 1000 metres may be as high as 6° or 8° C., and 2° or 3° C. at still greater depths. Here, again, the fauna conforms to its surroundings. In addition to the vast central abyssal plain, the boreal region of the Atlantic includes the coast plateaus off Europe and North-West Africa, and the southern slopes of the ridges extending from the Shetlands to Greenland, that is to say, practically the whole of the eastern portion of the Atlantic. Arctic currents, on the contrary, prevail in the western portion of the Atlantic, and cause hydrographical, and therefore faunal, dissimilarities at different parts of the coast. In the coastal areas south of Cape Cod (about lat. 42° N.) we find Gulf Stream water and a characteristic warm-water fauna; but north of Cape Cod we meet with an icy polar current descending from higher latitudes, so that the stretch of coast from Cape Cod to the north of Newfoundland must be looked upon as boreo-arctic. More genuinely arctic conditions prevail off the coasts of Labrador and Greenland.

#### BOREAL REGION OF THE NORWEGIAN SEA

The boreal coastal area may be divided into three vertical zones, distinguished by different physical, topographical, and biological conditions. The uppermost is the *littoral zone*, which extends from the shore down to a depth of 30 or 40 metres—that is to say, almost as far down as there are sea-weeds. The physical and topographical conditions characterising the littoral zone are: periodic changes in temperature and salinity (the temperature of the water being directly affected by that of the air), strong light, and a great variety in the materials at the bottom, such as loose stones, solid rock, sand with or without coarse or fine fragments of different kinds of shells, mud, and “mixed mud”—that is to say, sand, mud, and stones all mixed together. Here we find the whole vegetation collected, consisting of fucoids, green and red algæ, *Laminaria*, and *Zostera*, all of which, as a rule, form big interdependent communities that are very often arranged in belts.

The coastal area of the boreal region of the Norwegian Sea.

The lower limit of the *sublittoral zone* on the west coast of the Scandinavian peninsula may be put at about 150 metres. It differs from the preceding in being without vegetation, as well as in having more uniformity in the bottom-