

18 metres of water, and the same is the case with *Ophiocten sericcum*; *Nymphon robustum*, which even at depths of 2000 metres is the most characteristic pycnogonid of the Norwegian Sea deep basin, can actually thrive at a depth of 6 metres in the arctic littoral zone; *Gorgonocephalus eucnemis* occurs in the Norwegian Sea deep basin and yet finds itself at home in the arctic littoral zone. Many similar examples could be adduced, but special works on the different groups, indicating the depths at which the various forms have been found, furnish the clearest evidence. The character of the water in different arctic areas must also be taken into consideration. Species which almost invariably live in water at a temperature below 0° C. will not be met with in shallow depths except where truly polar water predominates; thus on the west coast of Spitsbergen there are echinoderms found only in deep water, which on the east side occur very much nearer the surface, owing to the fact that on the west side the Gulf Stream makes its influence felt to a considerable depth, while on the east coast the water is everywhere polar. I shall return to the influence of warm currents upon animal life in arctic tracts.

It must not be supposed, however, that the vertical distribution in arctic tracts is entirely devoid of system. No doubt there are a great many forms with a far more extensive distribution than would be possible in the boreal region, still the arctic plateaus shelter numerous forms that do not descend into the Norwegian Sea deep basin, and apparently therefore are unable to thrive in such deep water. In their case it is evidently not temperature but other factors that regulate distribution, and besides it is actually possible to point to a purely littoral arctic fauna, although its representatives are far from numerous.

Hard bottom as well as soft are to be found in the deeper parts of the arctic plateaus; where the bottom is of mud it differs from the brownish *Globigerina* (or *Biloculina*) ooze of the Norwegian Sea deep basin, being of a grayish colour like what we find in the Norwegian fjords and on the boreal coast banks; in the Barents Sea, however, we get greenish-gray mud. The arctic mud, like the boreal, contains many foraminifera, though the species differ to a certain extent.¹

We may divide the species composing the arctic fauna into

¹ The species named by Kiker (*Norwegian North Atlantic Expedition*, Thalamophora, p. 12) as characteristic of the gray mud in northern arctic areas are: *Astrorhiza crassatina*, *Lagena apiculata*, *Pulvinulina karsteni*, *Globigerina pachyderma*, *Biloculina levis*, *Globigerina bulloides* and *G. pachyderma*, *Haplophragmium latidorsatum*, *Truncatulina wüllerstorfi*, *Rotalina orbicularis*, and *Lagena apiculata* are common in the *Globigerina* (or *Biloculina*) ooze of the Norwegian Sea deep basin; some of them belong also to boreal areas.