

environment without any considerable changes in their bodily structure, as for example the decapod crustaceans *Hippolyte securifrons* (boreal)—*Hippolyte spinus* (arctic), *Sabinea sarsi* (boreal)—*Sabinea septemcarinata* (arctic). These forms are so alike that I cannot help thinking they must have had some phylogenetic connection in a geologically not very remote past. Other forms of the same category have no near relations in the arctic region, and cannot, therefore, be of arctic origin. That these species lived in the Norwegian Sea in late glacial times, when more boreo-arctic conditions prevailed, seems evident from their normal distribution nowadays in boreo-arctic areas, but it is impossible to decide whether they migrated into the Norwegian Sea from the American or the European side, or are derived possibly from southern species which have become morphologically so altered in their new home that the specific differences are unmistakable.

There are other species in the Norwegian Sea which, so far as is known, are strictly confined to the boreal and boreo-arctic areas, extending neither southwards nor to the coasts of North America in the west. They are, however, not very numerous. Like the forms just mentioned they could not have lived in the Norwegian Sea during the Glacial Age, and have probably originated there in post-glacial times, through development from southern immigrants that have been morphologically altered by adaptation to their environment. Several of them are closely allied to species known outside the Norwegian Sea. In some cases there would seem to have been a variation from the immigrated species, and we find inhabiting the Norwegian Sea both the primitive form and its descendant, like the crustaceans *Pagurus chiroacanthus* (a purely boreal endemic species)—*Pagurus lævis* (immigrated primitive form), *Cheraphilus* (purely boreal endemic)—*Crangon* or *Pontophilus* (immigrated primitive form), *Virbius fasciger* (purely boreal endemic)—*Virbius varians* (immigrated primitive form). We may take it for granted, in view of what we know nowadays regarding the larger invertebrate forms, that the majority of these species have not a widespread distribution either southwards or westwards, and this might give grounds for believing that they had immigrated in their present form.

I have already mentioned that the littoral and sub-littoral faunas differ greatly in different areas of the Atlantic, and we find similar differences when we compare the Atlantic and Distributional areas.