while a purely boreal area (the deeper parts of the plateaus) extends to lat. 71° N. How little latitude affects faunal marine areas is evident when we compare the conditions on either side of the northern Atlantic, for on the American side the southern limit of the arctic shallow-water area lies about lat. 42° N., whereas on the European side it lies about lat. 67° N.

It has already been mentioned that intervening areas of a different hydrographical character can always prevent connection between two marine areas. The northernmost parts of the Pacific and Atlantic are arctic, and so also is the sea between them lying to the north of America. As a result the arctic faunas of the two areas have an uninterrupted connection and resemble each other. It is otherwise with the temperate parts of these oceans, for their boreal forms are isolated by the arctic tracts which intervene, though they share a few boreal species like *Crangon vulgaris*, as well as some others that are too closely allied for any one to doubt that they have formerly been identical. This probably arises from hydrographical changes in what are now arctic areas, which caused an isolation of specimens belonging to the same species in both areas, for there are indications that higher temperatures prevailed during post-glacial times in the coast-waters of some of these arctic tracts, and we may assume that the boreal species now occurring normally in boreo-arctic areas could exist then in what have since become purely arctic waters, and that by way of the shores of Canada and Alaska they had uninterrupted connection from ocean to ocean. When subsequently arctic conditions set in, the individuals of these boreal boreo-arctic species were compelled to retire southwards either to the Atlantic or to the Pacific, and all connection between them ceased. There is, of course, the possibility that these species lived as long ago as the tertiary age—in which case their present distribution can be easily explained—for tertiary fossils make it perfectly certain that a warm climate existed at that time in these latitudes.

Warm climate in post-glacial period.

The theory of a warmer post-glacial period is based upon the sub-fossil boreal molluscs found in certain arctic areas, like those from the south-west coast of Greenland described by Adolf Jensen, comprising shells of present-day boreal species no longer found there (*Anomia ephippium*, *Cyprina islandica*, *Zirphæa crispata*). In the Gulf of St. Lawrence, too, where conditions are nowadays arctic or boreo-arctic, we get quantities of empty mussel-shells belonging to undoubtedly southern forms. In the purely arctic waters of Spitsbergen there are sub-fossil