not thrown up from deep water. Yet the northern character of the Norwich Crag is not fully shown by simply saying that it contains twelve northern species. It is the predominance of certain genera and species, such as *Tellina calcarea*, *Astarte borealis*, *Scalaria Groenlandica*, and *Fusus carinatus*, which satisfies the mind of a conchologist as to the arctic character of the Norwich Crag. In like manner, it is the presence of such genera as *Pyrula*, *Columbella*, *Terebra*, *Cassidaria*, *Pholadomya*, *Lingula*, *Discina*, and others which give a southern aspect to the Coralline Crag shells.

The cold, which had gone on increasing from the time of the Coralline to that of the Norwich Crag, continued, though not perhaps without some oscillations of temperature, to become more and more severe after the accumulation of the Norwich Crag, until it reached its maximum in what has been called the glacial epoch. The marine fauna of this last period contains, both in Ireland and Scotland, recent species of mollusca now living in Greenland and other seas far north of the areas where we find their remains in a fossil state.

The refrigeration of climate from the time of the older to that of the newer Pliocene strata is not now announced for the first time, as it was inferred from a study of the Crag shells in 1846 by the late Edward Forbes.\*

The most southern point to which the marine beds of the Norwich Crag have yet been traced is at Chillesford, near Woodbridge, in Suffolk, about eighty miles north-east of London, where, as Messrs. Prestwich and Searles Wood have pointed out, † they exhibit decided marks of having been deposited in a sea of a much lower temperature than that now

<sup>\*</sup> Memoirs of Geological Survey, † Quarterly Geological Journal, London, 1846, p. 391. 1849, vol. v. p. 345.