

“drift” on the Saco river, thirty miles to the north of Portsmouth, contain the entire skeletons of a fossil fish of the same species as one now living in the Northern Seas, called the capelan (*Mallotus villosus*), about the size of a sprat, and sold abundantly in the London markets, salted and dried like herrings. I obtained some of these fossils, which, like the associated shells, show that a colder climate than that now prevailing in this region was established in what is termed “the glacial period.” Mr. Hayes took me to Kittery, and other localities, where these marine organic remains abound in the superficial deposits. Some of the shells are met with in the town of Portsmouth itself, in digging the foundation of houses on the south bank of the river Piscataqua. This was the most southern spot (lat. 43° 6' N.) to which I yet had traced the fossil fauna of the boulder period, retaining here, as in Canada, its peculiar northern characters, consisting of a profusion of individuals, but a small number of species; and a great many of those now abounding in the neighboring sea being entirely absent. It is only farther to the south, and near the extreme southern limit of the drift, or boulder clay, as at Brooklyn, in Long Island, for example, that a mixture of more southern species of shells begin to appear, just as Professor E. Forbes has detected, in the drift of the south of Ireland, the meeting of a Mediterranean and Arctic fauna.

Every where around Portsmouth I observed that superficial polish in the rocks, and those long, straight grooves or furrows, which I before alluded to (p. 18), as having been imprinted by icebergs on the ancient floor of the ocean. By the inland position of these fossil shells of *recent species*, the geologist can prove that, at times comparatively modern in the earth's history, the larger part of New England and Canada lay for ages beneath the waters of the sea, Lake Champlain and the valley of the St. Lawrence being then gulfs, and the White Mountains an island.\* But it is a curious fact that we also discover along this same eastern coast signs no less unequivocal of partial subsidence of land at a period still more recent. The evidence consists of swamps, now submerged at low water, containing the roots and

\* See my “Travels in N. America, 1841-2,” vol. ii. p. 142.