

of migration from one region to another, which nature is continually employing. To determine the position of the local centres from which, by these processes long continued, our earliest British fauna and flora were derived, is a problem which every naturalist will acknowledge to be difficult, but which we ought not to abandon as impracticable, until we find unavailing in this case the methods of research which have been so eminently successful in tracing the geographical distribution of the animals and plants now in existence.

Species of Elephant, Rhinoceros, and Hippopotamus ; of Lion, Hyæna, Bear, and Wolf ; of Ox, Deer, and Horse, very similar to existing races, yet for the most part really distinct, were among the earliest tenants of the Yorkshire hills and plains ; and not of these only, for the same conclusion has been drawn from observations in many parts of England.

One proof of this is in the fact, that in the gravel and clay which spread round these hills in considerable quantities, and contain masses of stone drifted from the hills, lie bones of the animals named. Another proof is the occurrence in fissures and caverns of the remains of many of these animals, together with others, under circumstances which leave no doubt of their having lived in the immediate vicinity, or actually, as in the case of Kirkdale is well ascertained, in the cavern itself.

GLACIAL PERIOD.—But again subsidence occurred, so as to plunge considerable portions of the dry and inhabited surface beneath the sea-level, and allow of their being covered by great quantities of bluish clay (boulder clay) full of fragments derived from the old lands of Cumbria, the Penine chain, the northern moorlands and the chalk hills,—fragments procured by the waste and breaking up of the surface of these districts, consequent on the littoral action of water, aided perhaps by the operation of glaciers on the land and icebergs in the sea ; for this was a *glacial sea*, a cold ocean, as the shells which it has left among the drifted masses which it deposited testify. Above the boulder clay are usually extensive deposits of various gravels and sands,