§ 2. Local Development

Britain.[20]—Though the generalized succession of phenomena above given is usually observable, some variety is traceable in the evidence in different parts of the British area. In Scotland, where the ground is generally more elevated, and where snow and ice were most abundant, the phenomena of glaciation reached their maximum development. In the high grounds of England, Wales and Ireland there was likewise extensive accumulation of ice. The ice-worn rocks of the low grounds are usually covered with bowlder-clay, which in Scotland is interstratified with beds of sand, fine clay, and peat, but has never yielded any marine organisms except near the coast, where they are sometimes common, and in one locality in Lanarkshire. In England, marine shells, usually fragmentary, occur in the bowlder-clays both in the eastern and western counties. The ice-sheet no doubt passed over some parts of the sea-bottom, and ground up the shell-banks that happened to lie in its way, as has happened, for example, in Caithness, Holderness, and East Anglia, where the shells in the bowlder-clay are fragmentary, and sometimes ice-striated. The "Bridlington Crag" of Yorkshire, according to Messrs. Sorby, Lamplugh and Reid, is a large fragment torn from a submarine shell-clay, and imbedded in the bowlder-clay.[21] With the exception of such marine inclosures, the organic contents as well as the physical characters of the Scottish Till point to terrestrial conditions of deposit under the ice-sheet.

The depth, extent and movements of the great ice-sheet which covered Britain have already been referred to. The proofs of the former presence of the ice are scattered abun-

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[20] Besides the general works and papers already cited, the following special papers in the Quarterly Journal of the Geological Society may be consulted: Wales, Mackintosh, 1882, p. 184; I. W. E. David, 1883, p. 39. N.W. England, Mackintosh, 1879, p. 425, 1880, p. 178; T. M. Reade, 1874, p. 27, 1883, p. 83; A. Strahan, 1886, p. 369. S.E. England, Searles V. Wood jun., 1880, p. 457, 1882, p. 667; A. J. Jukes-Browne, 1879, p. 397, 1883, p. 596; Rowe, 1887, p. 351. Scotland (Long Island), J. Geikie, xxix. 1873; xxxiv. 1878; (Shetlands) Peach and Horne, 1879, p. 778; (Orkneys) 1880, p. 648; (Aberdeenshire) T. F. Jamieson, 1882, pp. 145, 160. The student will find a useful digest of the literature for England up to 1887 in Mr. H. B. Woodward's "Geology of England and Wales." The Memoirs of the Geological Survey will be found to contain much local detail on this subject.

[21] Lamplugh, Quart. Journ. Geol. Soc. xl. 1884, p. 312. C. Reid, "Geology of Holderness" in Mem. Geol. Survey.