

members, and until about thirty years ago geologists were content to treat the series comprehensively as one group of deposit. Buckland originally defined the upper limit of the Diluvium and beginning of Alluvium as coeval with the appearance of man on the earth, but the prehistoric researches conducted in the latter half of the century showed that man had been a contemporary of some of the extinct Mammals. Palæolithic implements have afforded traces of man's existence in the latter part of the Pleistocene age. The study of the Diluvial Mammals led Lartet, in 1863, to establish three periods: the *oldest* is characterised by the predominance of *Elephas antiquus*, *Rhinoceros Mercki*, and others; the *middle* period by the Mammoth, *Rhinoceros tichorhinus*, *Ursus spelæus*, *Bison priscus*; and the *third and youngest* by the occurrence of forms still living in high latitudes, such as reindeer, musk-ox, Canadian elk, and beaver.

Research on Diluvial deposits was imbued with fresh interest when the glacial theory was established by Venetz, Charpentier, and Agassiz (1829 to 1840). It was then rendered possible, not only to understand the conditions under which the various deposits had taken origin, but also to classify the deposits according to their age as preglacial, interglacial, and post-glacial. The first researches from this standpoint were carried out in Switzerland, Scotland, and Wales (cf. p. 231). In Germany, it was not until Otto Torell had broken the spell of the Drift Theory (1875) that an active impulse was given to detailed investigations of the Pleistocene deposits on the North German plains. The results are apparent in the newer geological maps, which show the great diversity in the lithological character and age of the deposits belonging to this epoch.

The discovery of glacier scratches on the Muschelkalk of Rüdersdorf first suggested to Torell the idea that an extensive ice-sheet had covered the North German plain. German geologists have since demonstrated the occurrence of similar grooves and scratches on the rock-floor at several localities in the plain, especially in Saxony. The sands and gravels and boulder-clays have also undergone a careful exploration in the light of the glacial theory. Structures identical with the ground-moraines of recent glaciers have been recognised, and the pebbles and boulders contained in them have been examined with reference to their derivation from Scandinavia, Finland, and other northern territories. The