

the foraminiferal ooze of the existing sea-bed. There is, however, no evidence that the depth of the water at all approached that of the abysses in which the present Atlantic globigerina-ooze is being laid down. Indeed, the character of the foraminifera, and the variety and association of the other organic remains, are not like those which have been found to exist now on the deep floor of the Atlantic, but present rather the characters of a shallow-water fauna.<sup>145</sup> Moreover, the researches of M. Hébert have shown that the Chalk is not simply one continuous and homogeneous deposit, but contains evidence of considerable oscillations, and even perhaps of occasional emersion and denudation of the sea-floor on which it was laid down. The same observer believed that enormous gaps occur in the Upper Cretaceous series of the Anglo-Parisian basin, some of which are to be supplied from the centre and south of France (postea, p. 1564).

Following the modern classification, we find that the old subdivision of "Chalk without flints" agrees on the whole with the Turonian section of the system. This division, as above remarked, appears in some places to lie unconformably upon the members below it, from which it is further separated by a marked zoological break. Nearly all the Cenomanian species now disappear, save two or three cosmopolitan forms. The echinoderms and brachiopods are entirely replaced by new species.<sup>146</sup> Not only is the base of the Turonian group defined by a stratigraphical hiatus, but its summit is marked by the "Nodular Chalk" of Dover and the hard Chalk-rock, which appear to indicate another stratigraphical break in what was formerly believed to be an uninterrupted deposit of chalk. The three Turonian palæontological zones, so well established in France, are also traceable in England. As exposed in the splendid Kent cliffs, the base of the English beds is formed by a well-marked band (32 feet) of hard gritty chalk, made up of fragments of *Inocerami* and other organisms.<sup>147</sup> Fossils are here

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<sup>145</sup> Dr. J. Gwyn Jeffreys shows that the mollusca of the Chalk indicate comparatively shallow-water conditions; *Brit. Assoc. Rep.* 1877, Secs. p. 79. See also *Nature*, 3d July, 1884, p. 215; L. Cayeux, *Ann. Soc. Geol. Nord*, xix. 1891, pp. 95, 252. For a general account of the origin of the Chalk, with special reference to its minuter organisms, see T. R. Jones, *Trans. Hertford. Nat. Hist. Soc.* iii. part 5, 1885, p. 143.

<sup>146</sup> Jukes-Browne, *Geol. Mag.* 1880, p. 250.

<sup>147</sup> For an account of the Middle Chalk of Dover see W. Hill, *Quart. Journ. Geol. Soc.* 1886, p. 232.