

'the only course by which they can be properly tested; that is to say, by tracing for themselves the isobathic contours on the Admiralty Charts by means of the soundings.

Before concluding I wish to call attention to a remarkable corroboration of these views which has recently appeared from another quarter. In his elaborate work on the Glacial Geology of the Christiania Region of Norway, in which the variations of level at successive epochs are elaborated, Professor Brøgger¹ says: "the occurrence at great depths of the Norwegian Sea of the high-arctic fossil shallow-water Mollusca of the 'Yoldia fauna' is explained by the hypothesis, that the sea-bottom during the time of the greatest ice-sheet of Europe must have been uplifted at least 2,600 mètres higher than it is at the present." It is remarkable that this amount of uprise corresponds very closely with that determined by myself; namely, 1,200 fathoms (7,200 feet) as the elevation of Western Europe during the intensest cold of the Glacial period. The maximum elevation was coincident with the stage of maximum cold of that long period; they were, in fact, cause and effect. We require no other explanation for the cause of the intense cold, and the subsequent changes of climate, than the oscillations of level of land.

EDWARD HULL.

THE UPPERMOST CHALK OF THE BALTIC.

SIR,—In his valuable communication "On some Crustacea . . . from the Upper Cretaceous of Faxe" (GEOL. MAG., Nov. 1901, p. 487) Dr. Henry Woodward has copied from Dr. K. O. Segerberg's paper "De Anomura och Brachyura Dekapoderna inom Skandnaviens Yngre Krita" (Geol. Fören. Stockholm Förhandl., xxii) certain statements concerning the geology of the Baltic Uppermost Chalk (Yngre Kritan). Since these might mislead English readers, I ask leave to correct them.

Since 'Faxekalk' is identical with 'Corallkalk,' it is incorrect to say that "The lower layer of the Faxe Chalk is . . . largely composed of corals, hence called coral-chalk." Even if the term 'Faxekalk' be applied to the whole of the Uppermost Chalk, the expression is misleading, since the bottom bed of the Uppermost Chalk does not consist of the Corallian Limestone (Faxekalk *sens. str.*), but this latter itself rests on a bed of coccolith-limestone (Saltholmskalk).

The hardness of the coccolith-limestone depends on a secondary cementing through calcite-crystals or flinty matter, a process in no way restricted to any definite horizon; looser varieties of this limestone are found just as much in its lower levels as "in the upper layer."

The coccolith-limestone forms the main facies; here and there on the coccolith-ooze there sprang up coral banks or groves of bryozoa; but the shower of coccoliths proceeded unchecked, so that

¹ "Om de Senglaciale og Postglaciale Nivaforandringer i Kristianiafeltet," pp. 682-3.

on and around the coral or bryozoan masses was deposited a coccolith-ooze of the same constitution as that lying under them. The formation of corallian or bryozoan limestone was not connected with any particular period, so that these rocks may occur at any horizon in the coccolith-limestone, the corals in island-like reefs but the bryozoa in extended sheets.

The Uppermost Chalk of the Baltic contains neither *Belemnitella mucronata*, as stated by Prestwich (Geology, 1888, ii, pp. 7 and 302), nor any other belemnite. It was formed in the period between the Upper Maestrichtian and the Eocene, and has no marine equivalents in Western Europe.¹

ANDERS HENNIG.

LUND, May 8, 1902.

OBITUARY.

JOSEPH NOLAN.

BORN 1841.

DIED APRIL 20, 1902.

THE late Mr. Joseph Nolan, who died at Clontarf, Dublin, on the 20th April, was born in Queen's County, Ireland, in 1841. In early life he attained a sound knowledge of geology from attendance at Jukes's lectures in the Museum of Irish Industry (now Royal College of Science), Dublin.

In 1867 he was nominated by Professor Jukes (then Director of the Irish Geological Survey) for appointment as one of the Assistant Geologists, and in this capacity surveyed with great keenness many important districts in Ireland. Prominent amongst these were the complicated areas of South Mayo and the volcanic region of Carlingford and Slieve Gullion, of which latter the late Sir Andrew Ramsay wrote (in his preface to Mr. Nolan's memoir on Sheet 70 of the one-inch geological map of Ireland): "There is as much interesting matter for discovery and description crowded into a small area as there is to be found in any part of the British Isles." The geological features of the wild mountainous tract which extends through North Tyrone into the Dungiven region in Co. Derry, of the country surrounding Derry City, and portions of Donegal, were ably dealt with by Mr. Nolan; his work in the field being explained in numerous descriptive memoirs which he wrote to accompany the maps.

Mr. Nolan, who was for some thirty years a member of the Royal Irish Academy, took deep interest in the literature, lore, and antiquities of his native country, and his work on the "History and Antiquities of Glendalough" is well-known in antiquarian circles.

Upon the reorganization of the Irish Geological Survey in 1890, Mr. Nolan was appointed "Senior Geologist" to take charge of the office, a post from which he retired only within the past year. His kind and gentle presence will long be greatly missed by his colleagues on the Survey, and by all others who enjoyed the pleasure of his friendship.

R. C.

¹ See Hennig, "Studier öfver den Baltiska Yngre Kritans bildningshistoria": Geol. Fören. Stockholm Förhandl., 1899, xxi, pp. 19 and 133.