CORRESPONDENCE.

SCANDINAVIAN ICE AND NORFOLK DRIFT.

SIR,—In the article which appeared in the October number of the GEOLOGICAL MAGAZINE, I called the attention of Sir Henry Howorth to the evidence for the former presence of an ice-sheet blocking the North Sea during the period of maximum glaciation, based on the deflection of the ice-striæ along the eastern coast of Scotland. Owing to that article having been written during my holiday in Norfolk, and in the absence of the numbers of the Magazine previous to that of August, I had overlooked the fact that Sir H. Howorth had dealt with this problem in the April number of the Magazine, and had deliberately rejected the hypothesis. I now ask for permission to express my regret for this oversight.

While on this subject, may I be allowed very briefly to state the conclusions regarding the mode of formation of the Drift of North Norfolk, at which I have arrived from an examination of the sections along the coast and inwards about Cromer and Sherringham. I now altogether abandon the view which I had held before this visit—that the Drift deposits owe their origin to an ice-sheet stretching from Scandinavia across the North Sea; and to this extent I find myself in agreement with Sir Henry Howorth and Mr. F. W. Harmer, who reject the ice-sheet theory as applied to this part of England.[1] As regards the Boulder-clay laid open for miles along the coast, we have a formation fairly uniform in character, distinctly laminated, and not excessively laden with erratic stones and boulders. This is not the kind of deposit we should expect from an ice-sheet, nor does it bear a resemblance to the Till (or Lower Boulder-clay) of the north-west of England and Scotland. It appears to me to be a distinctly aqueous deposit, resembling (except in colour) the Upper Boulder-clay of that region. What I believe I did see in these cliff-sections was a deposit precipitated over the floor of the sea in muddy waters, fed by glacier rivers, crowded with ice-floes and bergs, from which the erratic blocks fell down and became imbedded in the soft mud. Larger bergs of ice were also present, piloting along those huge masses of chalk such as are seen on the coast-section east of Cromer. Such conditions as the above would explain the occurrence of blocks and stones derived from various sources. The overlying "Interglacial sands and gravels" are also clearly marine deposits, but laid down in shallower waters than those of the Lower Boulder-clay, waters generally clear and free from muddy sediment. The manner in which the gravels rest on an eroded surface of the Boulder-clay shows that the sea-bed had become very shallow, and that changes in the physical conditions of sea and land had taken place; the change in the character of the deposits being

[1] "On the Pliocene Deposits of Holland": Q.J.G.S., November, 1896, p. 775. Mr. Harmer says: "It is difficult to see how the Baltic Glacier could have reached East Anglia, though ice-floes with Scandinavian boulders might easily have done so."

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sharp and decisive. These beds of stratified sand and gravel reach a level of 320 feet at the "Roman camp" above Upper Sherringham, giving the minimum amount of the submergence at this epoch and in this part of East Anglia. EDWARD HULL.

OBITUARY.

REV. PROFESSOR HAUGHTON, D.C.L., F.R.S., F.G.S.

BORN 1823. DIED OCTOBER, 1897.

AT the close of the month of October last there passed away, in his 75th year, one of Ireland's most eminent sons, whose name stands at the head of this notice, and who must have been well known to many readers of the GEOLOGICAL MAGAZINE. The late Dr. Haughton came of a Carlow family, and at an early age entered Dublin University, of which he afterwards became so distinguished an ornament. Graduating in 1844, he took the senior mathematical moderatorship and gold medal, and in the same year obtained his Fellowship at the first trial; a performance almost unique in the history of the University. Those only who know what a tremendous test of mathematical and classical knowledge the examination for a Fellowship in Trinity College really is, can fully realize the greatness of this mental achievement.

The writer well remembers the first time he saw Haughton. The examinations for "littlego" were about to commence, and we were all seated at our desks waiting for the distribution of the papers, when a side door opened, and Jellett (afterwards Provost) and Haughton entered together. Both were in the prime of youth and vigour, both had reached the goal of Fellowship; and the writer was struck by the extreme beauty of countenance exhibited by the former, and the quick glance and decisive step of the latter, indicative of the restless activity of the mind within.

Most men in attaining a similar position elect to devote their time and talents to the cultivation of one branch of "natural knowledge" or research. It was otherwise with Haughton. His avidity for investigation in many directions was insatiable, and there were few subjects which he did not study in turn. His mind had essentially a mathematical bent, but he had also a strong leaning in the direction of physical and biological subjects. Hence he studied chemistry, geology, physical geology, and biology, with never-tiring devotion, and thus qualified himself for the great work he had kept in view—the development of the range of subjects to be taught in the University curriculum. Two years after obtaining the Fellowship he entered Holy Orders, and in 1847 was appointed Assistant Divinity Lecturer. But Divinity was not Haughton's strong point. The University School of Medicine was the object upon which he had determined to concentrate his energies, in order to its development and greater usefulness. With this object in view he studied medicine and surgery, taking the degrees of M.B. and M.D. in 1862. Thus fully equipped by this course of study, he proceeded to

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