

their divisions must differ in the maritime and inland regions, and that hard and fast lines should not be drawn at the confines of systems, nor widely different formations of the same age reduced to an arbitrary uniformity of classification not sanctioned by nature. It was also inferred that the evidence pointed to a permanent continuance of the Atlantic basin, though with great changes of its boundaries, and to a remarkable parallelism of the formations deposited on its eastern and western sides.

4. "On a Hornblende-biotite Rock from Dusky Sound, New Zealand." By Captain F. W. Hutton, F.G.S.

The rock is of eruptive origin, and is associated with Archæan schists and gneisses. It is compact, crystalline, of a dark-green colour, and sp. gr. 3·00—3·07. It is composed of two minerals in nearly equal proportions, one of which, a black mica, has the two optic axes nearly coinciding. The other mineral is of a pale bluish-green colour, and moderately dichroic; it shows an aggregate polarization of rather coarse grains, with here and there distinct crystals of considerable size. Often one side of a crystal shows a single twin, while the other side is polysynthetic. The optical characters are those of the monoclinic system, and further investigation proves these crystals to be hornblende. The mineral which shows aggregate polarization is either crushed hornblende or some altered form of it.

CORRESPONDENCE.

THE CORRELATION OF MIDLAND GLACIAL DEPOSITS WITH THOSE OF LINCOLNSHIRE.

SIR,—It is certainly very desirable that the Glacial Deposits should be correlated with one another, but I do not think any reliable results will be obtained by comparing the descriptions and conclusions which have been published by Mr. Deeley and myself. We have necessarily looked at the beds from different points of view, and I had hoped that Mr. Deeley would have made himself personally acquainted with the tract which lies between the areas we have respectively studied before suggesting anything in the way of correlation.

He thinks that his classification into Older, Middle and Newer Pleistocene might be adopted for Lincolnshire, though the only "Older Pleistocene" deposit known to him in that county is the quartzose sand of Gelston. He suggests, however, that some of the clays classed by me as Newer Glacial may really be older than the Chalky Boulder Clay, and he apparently finds great difficulty in accepting the occurrence of such Newer Glacial Beds at elevations approaching 400 feet. I will only reply that there are many places where he may walk from the eastern plain to the top of the Wold over a continuous sheet of the same kind of Boulder Clay; but when Mr. Deeley can record any facts which seem to support his idea, I shall be quite ready to discuss them.

As regards the Gelston Sand, I must point out that this is an outlying patch, and there is no local evidence to show whether it is older

or newer than the Boulder-clay east of Grantham. Mr. Deeley regards it as older because the material is similar to that of his older Pleistocene sands; he may be right, but neither I nor my colleagues have found any deposits elsewhere in Lincolnshire which could be regarded as distinct from, and older than, the great chalky Boulder-clay.

The only locality where any great mass of Glacial gravel exists is around Benniworth, near Donnington, and this will be described in the forthcoming memoir on Sheet 83 of the Geological Survey Map. There, if anywhere, will Mr. Deeley find the analogue of his Older Pleistocene; but I very much doubt whether clays containing Pennine detritus ever extended so far to the east. If any Older Pleistocene deposits existed in East Lincolnshire, I should expect them to be rather of the Cromer than of the Pennine type.

With regard to the marine origin of the Newer Glacial clays, I would call attention to the remarkable deposits near Kirmington in North Lincolnshire, where laminated loams and sands containing perfect shells are associated with Boulder-clay of the Hessele type in such a way as to lead to the conclusion that they all belong to one group. These beds were carefully studied by Mr. C. Reid, and it is to be hoped that a description of them may soon be published.

The most surprising statement in Mr. Deeley's article is that many geologists regard the glaciated surfaces beneath the Drift of Lancashire as caused by large icebergs grating along the bottom of a sea about 1200 feet deep! He must have strangely misunderstood the views of those who believe the striæ to have been caused by sea-ice, and surely a little consideration will enable him to see that every single striated surface might have been glaciated in shallow water during the progress of a gradual submergence. I certainly never heard of any one who supposed that no such action occurred till the water was 1200 feet deep.

Mr. Deeley has done good work in the Midlands; let me recommend him to take his note-book into Lincolnshire, and when he publishes his observations, to keep his facts rigidly apart from his theories.

SHIRLEY, SOUTHAMPTON.

A. J. JUKES-BROWNE.

DISCOVERY OF LOWER CARBONIFEROUS BEDS IN UPPER EGYPT.

SIR,—The discovery of Lower Carboniferous beds in the wild region between the Nile and the Gulf of Suez adds a new feature of interest to the Geology of Egypt. The announcement is contained in a memoir by Dr. Schweinfurth, of Cairo, of which he has been kind enough to forward me a copy containing the result of an exploration by himself and M. Walther, of Jena, into the valley of the Arabah, and communicated to the Egyptian Institute.¹ At first I was somewhat startled by the title and the early pages of the memoir, as the members of the Expedition of the Palestine Exploration Society (1883—4) had failed to notice any Carboniferous beds in the Wâdi Arabah, at the head of the Gulf of Akabah, until we lighted upon

¹ "Sur une récente Exploration Géologique de l'Ouadi Arabah," Le Caire, 1888.