

tilting of large sections of the plateaux in different directions, and also by the existence of actual faults. Besides the normal faults, which are not infrequent among the Western isles, there occur among the Faroe Islands instances of reversed faults, which probably indicate disturbance of a more serious character.

(11) The concluding section of the paper deals with the effects of denudation on the plateaux. With possibly some minor intervals of partial depression, the present Tertiary volcanic tracts of the British and Faroe Isles have remained as land ever since the volcanic period. Their valleys were probably begun before the close of the eruptions, and these hollows have been continuously widened and deepened ever since. The result is a stupendous memorial of the potency of the agents of geological waste. While the Inner Hebrides abound in most impressive illustrations of this denudation, they are inferior in that respect to the Faroes. The long level lines of basalt-sheets furnish, as it were, datum-lines from which the extent of erosion can be estimated and even measured. There is certainly no other area in Europe where the study of the combined influence of atmospheric and marine denudation can be so admirably prosecuted, and where the imagination, kindled to enthusiasm by the contemplation of such scenery, can be so constantly and imperiously controlled by the accurate observation of ascertainable fact.

2. "The British Silurian Species of *Acidaspis*." By Philip Lake, Esq., M.A., F.G.S.

In this paper descriptions are given of those species of *Acidaspis* in the Silurian of Britain which have hitherto been incompletely described. The British forms are compared with those from the same system in Sweden and Bohemia. Five, out of nine, are represented by the same or very closely allied species in Sweden; two in Bohemia. All the Swedish forms except one are represented in Britain, and one in Bohemia as well as in Britain.

CORRESPONDENCE.

THE FORMATON OF CHALK BOULDERS.

STR.—I venture to think that the difficulties of the diminishing group of geologists who still reject the land-ice origin of the chief part of our British drift-deposits will not be greatly lessened by the two very interesting papers in your last Number—that by Prof. G. A. J. Cole on "The Destruction of the Chalk," and by the Rev. E. Hill on "East Anglian Boulder-clay." There is this common objection to both papers, as indeed to most of the arguments put forward to support the marine origin of the drifts, that while it is quite possible to ascribe certain observed phenomena to the action of floating ice, it is quite impossible to explain thus the whole group of facts presented by any district which is carefully and thoroughly examined. The 'extreme glacialist,' on the other hand, claims that the presence of an extensive ice-sheet, with its necessary

accompaniment in this latitude of heavy streams and flood-waters, does afford a sufficient explanation of all the known facts.

The landslips of Chalk on the Antrim coast, described by Professor Cole, seem to me insufficient even to account for the masses of Chalk in the Drift at Cromer. It is quite certain that the explanation will not apply to the masses of Upper and Lower Lias shale which occupy similar positions amid the Basement Boulder-clay in Filey Bay and at Bridlington in Yorkshire, nor to the patch of Speeton clay which has surmounted the Chalk of Flamborough Head, nor to the isolated shreds of sea-bottom and fresh-water deposits contained in the Boulder-clay in numerous localities on the same coast.

The position and character of these masses render the landslip theory quite inapplicable to them; yet their position is so closely analogous to that of the Chalk boulders of Cromer that we are compelled to suppose a common method of transportation.

There is a slight inaccuracy of fact in the Rev. E. Hill's paper, which, though not of much importance as it stands, may as well be corrected at once lest it reappear unexpectedly as a corner-stone in the argument of another writer on the subject. After mentioning that chalk-drift is found in Leicestershire up to 800 feet, the author adds, "which is far higher than any Northern Chalk." But the Chalk Wolds in Yorkshire rise to slightly over 800 feet in Garrowby Hill (808 feet), and continue for several miles in that vicinity to reach elevations of between 750 and 800 feet.

DOUGLAS, ISLE OF MAN.
December 8th, 1895.

G. W. LAMPLUGH.

ZONES OF THE CARBONIFEROUS.

SIR,—British palæontologists, as well as stratigraphical geologists, will welcome the news of Messrs. E. J. Garwood and J. E. Marr (*GEOL. MAG.*, Dec. IV, Vol. II, pp. 550-552, December, 1895), that there is some hope of dividing the British Carboniferous Limestone into zones. But, when they direct the attention of local observers to note the accurate horizons and localities of fossils, why should they pass by the numerous Crinoidea of our own Mountain Limestone as unworthy of special attention? From a study of these animals in North America, many divisions and correlations have been made in the beds there called "sub-Carboniferous," and the biological results obtained have been most valuable. But in Britain, as I pointed out some years ago, a true palæontology of our numerous Carboniferous Crinoidea remains impossible so long as all specimens are labelled, like the vast majority of those in our rich national collection, "Carboniferous Limestone, Yorkshire?" I am certain that attention to the Crinoidea would render results quite as important as those to be derived from "the Corals, Trilobites, Brachiopods, and Cephalopods"; and if the committee referred to will only accept my services, I shall be pleased to have the chance of examining any specimens which have attached to them labels of scientific value.

F. A. BATHER.

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