the authors believe to be Carboniferous and to yield possible indications of coal, reaching to near Assouan, where it meets the granite and basalt of that region; a few miles south the sandstone begins again and continues to Wady Halfa, broken only by granite dykes.

The granite is intrusive into and alters the sandstone, whilst the latter reposes upon the basalt, and in some cases was deposited against upstanding basaltic masses. Unmistakable lavas occur near the Nile E. of Minieh and W. of Assiout.

A description of some remarkable faults is given, and various minerals are noticed as occurring in the sedimentary rocks and the bed of an ancient river.

CORRESPONDENCE.

PERMIAN IN DEVONSHIRE.

SIR,—After a careful perusal of the article on this subject in this month's Number of the present volume (pages 247–250) by Mr. W. A. E. Ussher, I am rather at a loss to see the actual drift of it. The author shows he is acquainted with several foreign geologists; and that he has seen the German Rothliegendes; he quotes opinions of one or two foreigners (notably Herr von Reinach) which corroborate my assignment in 1888 of the breccia-series of Devon to the age of the Rothliegendes (pp. 247, 248); and a little further down (p. 248) he puts forward a "probable correlation" of the Devon series of Teignmouth and Dawlish with rocks of the Nahe district, which agrees in all essential matters with the parallelism drawn in my papers (in the Q.J.G.S. of 1888 and 1892) between the Devon breccia-series and the Rothliegends of the Thüringen country, and of the country further east in Central Germany, particularly in the Gera district,—a parallelism based on previous first-hand knowledge of the German series. I commend these regions with that around the Hartz to any one who wishes to know the German Rothliegendes.

While, then, I entirely agree with Mr. Ussher that "no correlation framed on a partial or even intimate acquaintance with the *South Devon coast-section only* can be regarded as conclusive," I must ask you to allow me to remind readers of the GEOL. MAG. of the two papers published by me in the year 1884, (1) "On the Dyas and Trias of Central Europe" (Q.J.G.S.), (2) "On the Permian-Trias Question" (GEOL. MAG.); papers, of the existence of which Mr. Ussher could not have been ignorant at the time he penned the paragraph which opens with the above-quoted remark (pp. 248, 249), and of the value of which M. Jules Marcou expressed his strongest appreciation to me at the time.

The information given on p. 248 respecting the contemporaneous igneous rocks of the Nahe country adds little or nothing to our previous knowledge of them, since we read in Credner's 'Geologie' (6th edition, 1887), "The two lower groups [of the Rothliegendes of the Saar-Rheingebiet] are grouped by E. Weiss as Carboniferous Rothliegendes, described by von Dechen as Carboniferous rocks poor

in coal-seams. During their deposition very numerous eruptions of felsite-porphyry, melaphyre, palatinite, and porphyrite occurred, and formed dykes, intrusive layers, and tabular lava-flows (plattenfärmige Effusionsschichten) between the sedimentary rocks" (p. 516). Further details of the stratigraphy are also given (*loc. cit.*).

I am glad to find my contention in the paper which appeared last February (Q.J.G.S.) supported by the establishment by Professor Bücking of the lithological identity of some of those rocks with igneous rocks of the Devon Permian; although, as an argument based on the assumption of a strict temporal order of succession among igneous rocks, it has not much weighed with me. I must remind Mr. Ussher that those, who know how the basis of our classification of the *Midland* Permian and Trias was laid for us by the labours of Prof. Hull in former years, can hardly be expected to admit his statement on p. 249, that "the Midland sections owe their importance as a basis for correlation entirely to the merits of the assumed correctness of their classification with reference to the German types." The fact that the Devon and Midland areas were at the time disconnected does not affect the question, as a careful study of my papers, and that of Prof. Hull (1892), will make clear to any candid mind; papers based on observations by no means limited to the coast-section.

Wellington College, Berks. A. Irving.
13*th June*, 1892,

CONE-IN-CONE STRUCTURE.

Sir,—Mr. Young's statement that "The apices are invariably turned to the under or lower side of the structure while their bases are as invariably directed to the upper surface," [1] is certainly not of universal application. In addition to examples instanced by Mr. Harker,[2] from the Lingula Flags and Lias shales, I may mention specimens of my own of concretions from the pencil slates in Swindale and from Carboniferous shale in Northumberland, which exhibit a similar radial arrangement of the cones. But the beds which afford the most striking refutation of Mr. Young's statement are the Coal seams, for it is in these beds that the structure is by far the most extensively developed portions of some seams several inches in thickness being made up of these cones. Examination of numerous specimens from the coal fields of Durham and South Wales show two systems of arrangement of the cones—one, where the cones have formed at right angles to certain laminae of deposition and on *both* sides of such laminae which are $\frac{1}{8}$–1 inch in thickness, so that the apices of the cones above point downwards, whilst those below point upwards, both sets of cones having evidently formed outwards from the same set of laminae. But the commonest disposition of the cones, especially in the Durham seams, is *parallel* to the bedding planes, and although the apices often run for some distance pointing in a constant direction, cases are of frequent occurrence where the bases of the cones start back, the apices being directed away from each other.

[1] Geol. Mag. for March, 1892, p. 138. [2] *Op. cit.* May, 1892, p. 240.