

Mr. Blanford inquired whether the ancient traps are not distinct in their origin from true lavas. In India large districts are formed of volcanic rocks much more recent than those of Wales, and probably of different composition. These Indian flows are of great horizontal extent, but of small thickness.

Mr. Forbes stated that the Indian rocks in question, which he had examined, were not distinct from our basalts in composition and structure, which showed that they were not poured out under water.

Mr. Ward replied as follows:—To Mr. Rutley; that the *flow* described as occurring in some of the altered ash-rocks was *not* a decided crystalline flow, but one merely of the finer ashy material around the larger fragments, and frequently along the bedding planes. To Mr. Forbes and Mr. Koch; that the analyses brought forward had been made from specimens carefully collected in the field, and might be considered as representing the average chemical composition; the author used the word *ash* as denoting all material shot out from a volcano; in this case the ashes were mostly subaerial. To Mr. Bonney; that although the analyses of the Cumberland lavas were very similar to those of porphyrites, the microscopic structure of the latter, as described by Zirkel, did not at all correspond with that of the Lake-district rocks. To Mr. Blanford; that the Cumberland contemporaneous traps were as much entitled to the name of lavas as any modern Vesuvian flow.

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## CORRESPONDENCE.

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### GLACIATION IN WEST SOMERSET.

SIR,—A few days ago, while waiting for a train at Taunton station, I took the opportunity of examining some of the specimens of glaciated sandstone, described by Mr. Lucy, in the *GEOLOGICAL MAGAZINE* for June, page 256, and which he has deposited in the Museum of the Somersetshire Archæological Society. The appearances presented by them are certainly unlike any form of striation save that attributed to glacial action. My reason, however, for writing this is merely to note what Mr. Lucy has omitted to explain, and that is, that the rock striated is not the New Red Sandstone, which does occur near Porlock, but the so-called Devonian sandstone, and which is, as the late Mr. Jukes considered, identical with true Old Red Sandstone.

HORACE B. WOODWARD.

NEWTON ABBOT, 2nd Oct., 1874.

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### EXISTENCE OF CARBONIFEROUS ROCKS IN THE HIGHLANDS OF SCOTLAND.

SIR,—It will probably interest many of the readers of the *GEOLOGICAL MAGAZINE*, to be informed that rocks of Carboniferous age exist in the *northern* side of the great Grampian axis of the Highlands. While engaged in prosecuting my studies among the Secondary Rocks of Scotland, during the past summer, I found, in the district of Morven, a very interesting patch of strata of sandstone, shale, and coal, yielding the remains of a number of common Carboniferous plants. The true character of these plant-remains was confirmed by an examination of some of the specimens, which Sir Charles Bunbury was so kind as to make.

Although this patch of rocks, occurring in so unexpected a locality, is of very small extent, yet it is of very great interest to geologists, for the following reasons.

*First.*—It supplies evidence of the former existence of Carbon-