learn that it has lately been found at one of the Caldbeck Fell mines, in Cumberland, associated with Pyromorphite, Anglesite, and various other ores of Lead. As Molybdenite is rather common in some of the adjoining mines, the occurrence of Molybdate of Lead might, perhaps, have been expected, as a result of the decomposition of Molybdenite and Galena.

Another mineral new to the British list has just been detected in the Hæmatite mines of the Cleator district. This is Hausmannite, which occurs, well crystallized, in small pockets and veins associated with Pyrolusite, mostly between the hæmatite and the limestone in which it is found.

Further notices of these minerals will appear in the Memoirs of the Geological Survey. J. G. GOODCHILD.

PENRITH, 9*th October*, 1875.

PRISMATIC STRUCTURE OF BASALT.

SIR,—Assuming the description of the three basaltic prisms in the collection of the Geological Society as given by Mr. Scrope to be exact (see GEOL MAG. 1875, Decade II. Vol. II. p. 412), the facts do not in any way conflict with the explanation that I have given of the mode of production of the lenticular cross-joints in basaltic prisms. The prisms referred to must have come from that part of the original mass in which occurred the dividing surface between that part cooled from the top and that cooled from the bottom of the mass, as is proved with respect to one of the prisms by the existence in it of a joint having surfaces concave in both directions, such plane in fact passing horizontally through this articulation; other adjacent prisms may have their joints, within certain limits above or below this plane, either convex upwards or downwards, for the slightest differences in the conductivity or conditions and rates of cooling will suffice either to depress or elevate, by a greater or less distance, the plane already spoken of. It is also not difficult to see that several alternations in the directions of the concave or convex surfaces may occur in the neighbourhood of the meeting plane of cooling in opposite directions, where, as in the case of other divergent or opposite heat waves, more or less confusion in normal structure must occur.

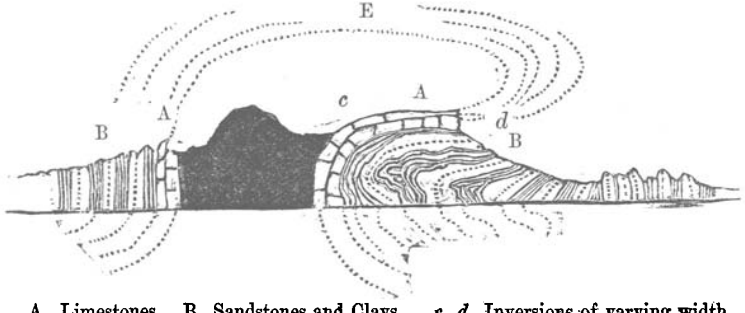
18*th October*, 1875. ROBT. MALLET.

THE INVERTED STRATA OF THE MENDIPS.

SIR,—Referring to Mr. A. M'Murtrie's interesting paper "upon certain isolated areas of Mountain Limestone at Luckington and Vobster" (read in Section C. of the late Meeting of the British Association at Bristol), wherein he showed these isolated patches to have been passed beneath and found separated from any underlying portion of the same limestone, it occurred to me at the time that the structural peculiarities of certain places I had examined would tend to explain those described in the paper, the whole of which I had not the good fortune to hear read, and therefore refrained from offering the following remarks in the Section.

It appeared that along the Luckington and Vobster side of the Mendip Hills, the abnormal inverted or apparently discordant junction of the disturbed Coal-measures at their foot, with the limestones of the range, is traceable for about five miles, two of the three outlying, and, as I could gather, inverted patches of limestone being situated at distances from the junction of somewhat more than a mile and a little less than three-quarters of a mile respectively. The hypothesis that these outliers were portions of underlying limestones brought to the surface by faulting, having been set aside by the fact of the outliers' non-continuance in depth, the author favoured the idea of inversion instead.

That such an amount of inversion as Mr. M'Murtrie suggested is by no means an impossibility I can well conceive, having seen, in the case of a narrow and much compressed anticlinal ridge, on the confines of Afghánistán, a strong band of hard limestone with a great thickness of overlying sandstones and clays, so completely inverted that this limestone band could be traced curving upwards and outwards from its place on the flank of the anticlinal, until found to rest for nearly half a mile with completely inverted horizontality upon the likewise inverted sandstones and clays, the whole of the rocks being well exposed, and the inverted limestone capping spurs from the anticlinal range, thus:—



A. Limestones. B. Sandstones and Clays. *c. d.* Inversions of varying width up to above ¼ mile or nearer half a mile English.

In the country where this occurs nearly all the boundaries of numerous parallel anticlinal ridges are lines of abnormal vertical or inverted junction of the two groups represented above, these ridges having lengths sometimes exceeding fifty miles, and the only places where the rocks are found in their, so to speak, natural or normal order being where the beds fold over the terminations of the anticlinal axes.

Such lines of abnormal junction or inversion are also known to exist for greatly longer continuous distances on the flanks of the Himalayas and the Alps.[1]

But admitting inversion in the case of the Luckington and Vobster

[1] See paper on the Alps and Himalayas, by H. B. Medlicott, Esq., Quart. Journ. Geol. Soc. 1868, vol. xxiv. p. 34, and a paper On Some Points in the Stratigraphical Structure of the Panjáb, *op. cit.* 1874, vol. xxx. p. 61.

outliers, the steps by which the isolation and removal of these patches to a distance was accomplished remain to be traced; and here, perhaps, without undue exercise of imagination where evidence is wanting, it may be suggested that after inversion the adjacent face of the Mendips might have assumed the form of a high escarpment made up of the softer Coal-measures capped by the overthrown limestones, when land slippage, during the wasting backwards of the escarpment, might have taken place, allowing large masses of the harder rocks above to subside; or a succession of landslips might each be accompanied by an outward as well as a downward movement.

In support of this suggestion, I may mention an escarpment some 1500 to 2000 feet in height, with which I am acquainted, composed of various soft and more consistent beds below, capped by unusually hard and massive ones above. Along this scarp land-slippage has taken place to such a degree that great detached masses of the upper sections have settled down on the sloping outcrop of the softer beds, until they have, in several instances, arrived by combined processes of slipping and weathering back at distances from their main outcrop quite comparable with those of the outliers in question from the suggested escarpment of inverted beds. Some of these detached masses exceed the dimensions of the Upper Vobster outlier; and, so far as can be judged without having seen the locality, there appears to be no insuperable difficulty in accounting for the position of these outliers in this way.

It should be noticed in connexion with the subject of such great inversions, that disruption or faulting may have accompanied the distortion of the anticlinal arches, permitting the inverted strata to fall away, or else the whole set of beds, including both the limestones and those above them, must be supposed to have turned back upon themselves again, as shown in the figure at E. No instance, upon a large scale, in which this is proved to have occurred, has fallen within my experience, though some sections have suggested it, and in the absence of such recurvature, displacement amounting to faulting may, after all, have been a necessity in some part of the process by which these features were produced.

E. B. W.

ON THE NOMENCLATURE OF ROCKS.

Please correct the following in the GEOLOGICAL MAGAZINE for September:—

Page 426, *line* 22, in two places, trachy*l*yte for trachalite.

G. H. KINAHAN.

BOULDER-CLAY IN IRELAND.

SIR,—I can assure Mr. Birds that it is perfectly incorrect to suppose that an Upper Boulder-clay in Ireland *resting on "middle sands and gravels" has been proved in any place.* Normal Boulder-clay has been found in many places resting on sands and gravels, but the latter cases are of an age prior to the accumulation of the Glacial Drift