

Silurian rock exposed. The north side of Murton Pike forms the south side of the Gill here, and is almost entirely Silurian rock; indeed, the west side of this Pike is wholly Silurian up to its summit. Next, further up the Gill, is the Old Red Sandstone. Then still higher up occur the escarpments of the alternating limestones, sandstones, and shales of the Carboniferous series, including the Melmerby Scar Limestone, which is the thickest bed of limestone on this part of the chain. Above this series, at the head of the Gill, we come to the Whin Sill, where a considerable quantity of its débris lies at its foot. More Carboniferous rocks take on above the Whin Sill, and slope backward each way to form the summit of the ridge on the north and south sides of the Nick. As to the thickness of the strata from the base of the Carboniferous rocks, in this section, to the bottom of the Whin Sill, I cannot do more than give a probable estimate, and will venture to put it down at about 1000 feet. Should this thickness be near the truth, as I expect it may, and if the same thickness, or nearly so, occurs from the base of the Carboniferous rocks to the bottom of the Whin Sill, at the old Pencil Mill, then, I think it may be fairly concluded that, the Silurian-like shale, at this place, is not real Silurian, but indurated Carboniferous shale, and, therefore, the base of the Carboniferous rocks must be considerably below the bottom of the valley of the Tees at either Falcon Clints or the old Pencil Mill. The section at High Force, about two miles further down the Tees from this place, affords additional evidence, corroborative of the soundness of the conclusion, that the base of the Carboniferous rocks cannot be seen in Teesdale. I may here refer Mr. Dakyns, or any of your readers, to that brief abstract of a paper on this section, by C. T. Clough, Esq., B.A., F.G.S., in the GEOLOGICAL MAGAZINE for October, 1876, page 474.

Before leaving the subject, I may, however, state that there is a possibility of some peculiar positions of the strata, such as a great upward bend, or the upcast of a considerable dislocation, bringing the base of the rocks in question to view. The Burtree Ford dyke has a course nearly north and south; it ranges up the east Allen to the west of Allenheads, thence through Weardale, at Burtree Ford; and Mr. Forster, in his section of the strata, states that it crosses the Tees at Cronkley Scars. In Weardale this dyke brings rocks up to view, which would not have been seen, had the dyke not existed.

There is some probability that it might produce a similar effect where it crosses through Teesdale; but whether it does so or not, will be known by those who are better acquainted with the rocks in that part of Teesdale than I am.

JOHN CURBY.

BOLTSBURN, EASTGATE, DARLINGTON,
February 5th, 1877.

IS THERE A BASE TO THE CARBONIFEROUS ROCKS IN TEESDALE?

SIR,—My friend Mr. Dakyns, in the last Number of your MAGAZINE, asks the question, "Is there a base to the Carboniferous rocks in Teesdale?" Permit me, on behalf of my colleague Mr. Clough and for myself, to answer the question in the affirmative. We cannot

now give the reasons for our opinion, all details being reserved for a paper in preparation.

W. GUNN.

GEOLOGICAL SOCIETY OF ENGLAND AND WALES.
BARNARD CASTLE, *February 18th, 1877.*

BASE OF THE CARBONIFEROUS ROCKS IN TEESDALE.

SIR,—I have just opened Phillips' *Geology of Yorkshire*, Part 2, by chance at page 81: and the first words that caught my eye were "Widdybank" and "anomalous breccia."

This is the breccia which, on my visit to Teesdale, last October and November, I suggested to my companions, Messrs. Gunn and Clough, was the *base of the Carboniferous rocks*, for the reasons quoted by me in the *GEOL. MAG.* for February. From the use of the term "anomalous," it is clear that Phillips had noticed the peculiar character of the bed. It is somewhat strange that none of the geologists, as far as I know, who have written about the rocks in Teesdale, should have been struck with the possibility of the breccia being the base of the Carboniferous. They seem to have been too much taken up with the Whin Sill to think about that. Perhaps they did not see the Silurian-like dykes and pencil-beds below Cronkley; but if they did, they must have equally missed their suggestive character.

It is some satisfaction to us youngsters that the older geologists have left us something to discover.

J. R. DAKYNS.

KENDAL, *February 20th, 1877.*

"KAMES" AND DENUDATION.

SIR,—Mr. Mackintosh is quite right. I have not seen either the English or Welsh 'Eskers' he mentions, so that perhaps, as another critic of my paper has said, I am "not entitled to generalize." But at the same time I cannot help expressing my astonishment at being told that there are vast numbers of Kames, or similar gravelly mounds, whose shapes have nothing to do with denudation. Since many of these mounds were first exposed to atmospheric influences, not only have rivers cut their channels to great depths through the most compact rocks, but the hard metamorphic mountains of the Highlands have been so wasted that their flanks are usually draped with débris, which, spreading over the floors of the valleys, bury them deep under masses of angular rock fragments, which are frequently shaped into very good imitations of Kames by the action of streams running along the valleys, aided by torrents from the mountain-sides. I do not suppose that any one would maintain that the shapes of these mountains have nothing to do with denuding agencies. How is it then that the loose gravels of the Kames "sometimes on the summits of hills," as Mr. Mackintosh says, have withstood influences before which the solid hills literally "flow from form to form"?

That the Newport Kames do not enjoy such immunity from the action of the rain-fall, has been demonstrated during the recent excessively wet weather. All the mounds not protected by grass have water-courses cut in their sides, some of them of considerable