

consist of granite which presents signs of an E. and W. dip. A probability was shown that this granite is part of the mass overlying Sark.

Finally, the age of these rocks was shown to be Archæan, and attention was called to the evidence they give that some at least of the Archæan rocks did not originate out of igneous masses by crush, but were formed by some process which, if not aqueous sedimentation, at all events was some kind of successive deposition.

3. "Quartzite Boulders and Grooves in the Roger Mine at Dukinfield." By James Radcliffe, Esq., F.G.S.

Quartzite boulders have from time to time been found imbedded in the roof of the Roger Mine coal-seam. Similar boulders had previously been described from coal-seams both in Leicestershire and the Forest of Dean. The composition of the Roger-Mine boulders was shown by notes furnished by Prof. Bonney to be quartzose grit and quartzite, containing some grains of felspar, epidote, and tourmaline and flakes of mica. This composition resembled that of some of the pebbles in the Bunter conglomerate of the Midland counties, and also that of some of the Loch Maree quartzites. The boulders varied in weight from 166 pounds to 4 pounds, and appeared to have been dropped into the coal, one boulder having been found standing edgeways. They were half imbedded in the seam, half inclosed in the overlying grey shale.

In the upper surface of the coal in the same mine, grooves were found running about S. 50° E., the mean direction of faults, slips, etc., being S. 26° W. The sides of these grooves were raised, as if by pressure, and each depression commenced as a small groove, then increased in depth and breadth, and finally died out.

CORRESPONDENCE.

INTERGLACIAL LAND AND MAN.

SIR,—As an item of evidence in favour of the existence of an interglacial land surface, so ably maintained by Mr. Jukes-Browne in this MAGAZINE for March, and of the presence of Man in this country at the time, I send an extract out of a letter (Sept. 30, 1861) from the late Dr. Bowerbank to the late Dr. Bree, of Colchester, which has not, I think, been published. The occasion of its being written was that Dr. Bree had shown him the cut deer's horn from Clacton, described by me in the "Geologist," Aug. 1861, and figured in plate ix. "I have in my possession remains of a human skull, that was found mixed with bones of extinct animals at the bottom of a deep dyke on an axis of elevation, covered by the detritus of the Magnesian Limestone to about one-third of the height of the great crack, and the remainder then covered by the Red Drift of Yorkshire; so that it is fair to infer that it was deposited in the crack, or dyke, before the submergence of that country beneath the sea, and again elevated after being covered by the great northern Drift. This would appear to give an immense period to the existence of Man. The finding of these bones are (*sic*) so well authenticated, that there can be no reasonable doubt of their being in every

respect genuine. I have often thought of publishing these facts, and I think I shall do so ere long."

What became of Dr. Bowerbank's collections?

I am quite aware that, as a rule, a geologist will not trust any one to observe correctly except himself. But on questions of this kind, where the evidence is destroyed in the process of being obtained, autopsy is impossible. We are therefore obliged to rely upon cumulative evidence, the weight of which depends upon the circumstance, that it is highly improbable that *every* observation should be erroneous, while at the same time a *single* correct one is sufficient to prove the point at issue.

O. FISHER.

HARLTON, CAMBRIDGE, 4th April.

FELSPAR IN THE LIZARD SERPENTINE.

SIR,—May I be permitted to state, as briefly as possible, the reasons why the characters described by my friend Mr. Teall in his letter on "The Lizard Serpentine," fail to convince me that the mineral in question, which occurs in the Rill rock, is really felspar? As he rightly says, the identification of a mineral under the microscope is often more or less a matter of inference. Hence it is occasionally quite possible for two observers, both of some experience, to take different views. I do not then attribute a mistake to him in the ordinary sense of the word, nor wish in any degree to detract from the value of his work. The point is one of considerable interest, where there is ample room for two opinions.

To prevent any misunderstanding, let me say that I do not in the least deny that felspar may occur as an accidental constituent in a peridotite, and, if it occurred anywhere in the Lizard Serpentine, I should expect it, as will be seen from my remarks on that of Gue Graze, in the serpentine of the Kynance-Mullion district.¹ The difficulty of determining this particular mineral is not a new one to me, as I had to consider it nine years ago when preparing the above-named paper.

The following are my reasons, so far as they can be expressed on paper:—

1. The texture and aspect of the mineral in question, seen under the microscope, do not appear to me exactly identical with those of a felspar, but remind me rather of a pyroxenic mineral.

2. The brown earthy decomposition of the mineral seems to differ slightly from that of a felspar, and I find a similar decomposition in some grains of decomposing hornblende (mineral identified by cleavage and extinction) in the serpentine of Lower Pradanac, also in that of Mullion and Helston Road. I have also seen a similar decomposition in bastite or enstatite.

3. As to the tints seen between crossed Nicols. Low neutral tints are not rare in enstatites. I have noted them in augites, when somewhat decomposed, and in certain hornblendes. In my slides from Lower Pradanac the hornblende generally shows chromatic polarization, but some grains exhibit these low neutral tints. I believe it indicates incipient decomposition. As we have lately heard much

¹ Quart. Journ. Geol. Soc. vol. xxxiii. p. 918.