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I.—*Note upon a portion of Basalt from Mid-Atlantic.*

BY MARSHALL HALL, F.G.S.

IN the year 1874 the steamship *Faraday* whilst engaged in grappling for the broken telegraph cable, caught the strong claws of the grapple in a rock, which resisted with the strain of about 27·5 tons, to which any but a rope of marvellously perfect manufacture would have yielded. As it was, the rock gave way, and a lump of black basalt came up weighing 21 lbs. This mass shewed signs of having been torn off. The fragment, and the section made from it for the microscope which accompanies this memorandum, were submitted to Mr. J. Clifton Ward, who has kindly examined the specimen, and drawn up the report enclosed herewith.

I cannot find in any charts indications of the habitual voyage of icebergs so far eastwards in the same latitude as the spot in question, and I have consulted Dr. John Rae as to the question of the rock being from an ice-borne mass. He says in reply, that he is not aware of icebergs having been seen about that spot, but that such an occurrence is not impossible. He thinks it more likely that, as I had suggested, the fragment was wrenched off some submarine peak or summit or ridge.

My motive in bringing this to the notice of the members of the Mineralogical Society, is a hope that petrologists may at some

future time be able to apply these notes, and the specimen itself, to a comparison with other northerly basalts. I should be glad if an analysis were made.

Should this foundation of an attempt at providing materials for determining the locality of rocks by microscopical and physical evidence meet with acceptance, I have a few sections of rocks, basalt, porphyry, &c., from the drift by the sea shore a little south of Scarborough, to which the society is welcome, if some member will undertake the description, and give any opinion he may be able to form as to the origin of the fragments.

Additional note by J. Clifton Ward, F.G.S.

The specimen referred to above is a small fragment of black basalt, a portion of a mass weighing 21 lbs., which was dredged from the bottom of the Atlantic from the steamer *Faraday*, in latitude $50^{\circ} 30' N.$, longitude $24^{\circ} 46' W.$, depth 2242 fathoms.

The microscopic examination is necessarily very imperfect, owing to the fact that only one slice can be examined, cut from a very small portion of the rock. Figures 1, 2, 3 and 4 illustrate, I believe, every element in the microscopic rock-structure of the specimen.

The general base is very minutely crystalline, the small needles of plagioclase felspar being, however, less numerous than the grains of augite and olivine, amongst which lie some crystals of magnetite, and a good deal of a very dark brown or black patchy substance, probably an iron product of decomposition.

Scattered sparsely through this base are a few larger crystals, mostly of plagioclase, sometimes occurring in groups, an example of which is given in fig. 4.

Lastly, there are several irregularly shaped and apparently vesicular portions in great part filled with the dark product before mentioned, through which shoot slender plagioclase crystals much longer than those occurring in the surrounding base. A zeolitic mineral apparently fills portions of these vesicles, appearing dark under crossed prisms, but very little of this is seen owing to the thin slice having given way in several cases at the vesicles.

In fig. 1 several of the irregular dark portions are seen, and near the centre of the disc is a fragment of one of the larger plagioclase crystals.

In fig. 2 the base and part of a vesicle are shown more highly magnified, under polarised light. The small, brightly-coloured

portions are grains of augite and olivine; and the white needles, plagioclase felspar, showing longitudinal banding when more highly magnified.

In fig. 3 a portion of the base is shown under a still high power, a kind of granular mosaic with a few scattered acicular prisms and magnetite grains.

Fig. 4 represents the largest group of the porphyritically embedded crystals.

As it is possible that the mass of basalt from which the specimen was chipped had been floated southwards on ice, the microscopic examination of some of the northern basaltic tracts might indicate the parent rock.



Fig. 1. $\times 9$.



Fig. 2. $\times 23$.



Fig. 5. Nat. Size.



Fig. 3. $\times 80$.

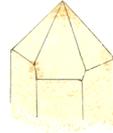


Fig. 10. Nat. Size.



Fig. 6. $\times 20$.

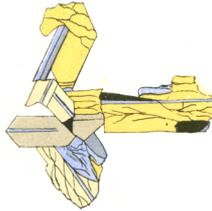


Fig. 4. $\times 16$.



Fig. 11. $\times 20$.



Fig. 7. $\times 100$.



Fig. 12. Nat. Size.



Fig. 8. $\times 50$.



Fig. 13. $\times 150$.

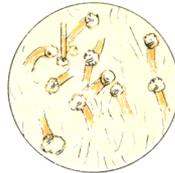


Fig. 9. $\times 200$.