

*On an Eclogite from Loch Duich.*

By J. J. H. TEALL, M.A., F.R.S., F.G.S.

(By permission of the Director General of the Geological Survey.)

[Read January 27th, 1891.]

THE existence in the British Isles of a rock essentially composed of garnet and omphacite, and answering therefore to Haüy's<sup>1</sup> definition of eclogite, does not appear to have been hitherto recorded.<sup>2</sup>

The following description of such a rock from Totig Ferry, Loch Duich, is therefore of some interest. The specimen was collected by the Director General, who informs me that he believes it to be a part of the Archæan gneiss which in the region of Loch Alsh and Loch Carron has been thrust bodily from the east over the Torridon sandstone.<sup>3</sup>

The rock is of a dull green colour, and contains numerous reddish-brown garnets. Under the microscope the principal constituents are seen to be garnet and omphacite—a pale green pyroxene without any definite crystalline form. Green hornblende, plagioclase, rutile, iron-ores, quartz, and epidote occur as accessories.

*Garnet.*—This mineral is of the common almandine-type. It occurs as idiomorphic crystals, and as aggregates of more or less rounded grains. Rutile and iron-ores are present in it as inclusions. A narrow zone of hornblende-substance frequently surrounds the garnets, and this is especially the case when omphacite and garnet are not separated by any other mineral. The hornblende-substance also penetrates the garnets along cracks. Irregular patches of epidote are sometimes seen in the interior of the garnets, as if replacing portions of their substance.

*Omphacite.*—This is a pale-green mineral having the cleavage and optical characters of pyroxene, but without definite crystalline form. It

<sup>1</sup> *Traité de Minéralogie*. 2nd. ed. Paris, 1882. T. II. p. 456, and T. IV. p. 548.

<sup>2</sup> Prof. Bonney has described a rock essentially composed of garnet and hornblende under the name of hornblende-eclogite. *Quart. Journ. Geol. Soc.* Vol. XXXVI. (1880) p. 106.

<sup>3</sup> The description is based on a specimen (No. 1805) in the collection of the Geological Survey.

is very faintly pleochroic in greenish and yellowish tints. Hornblende and felspar are sometimes intimately intergrown with omphacite. Thus hornblende, as already pointed out, forms a narrow zone separating garnet and omphacite. It also replaces omphacite more or less in certain parts of the rock. The intergrowths of omphacite and felspar are of a micro-pegmatitic character, and in some parts of the slide they play the rôle of groundmass. That the ferro-magnesian constituent of these micro-pegmatitic aggregates is omphacite and not hornblende is proved by the fact that where the aggregates are in contact with omphacite it extinguishes simultaneously with that mineral, and resembles it in all other respects.<sup>1</sup>

*Hornblende.*—The mode of occurrence of this constituent has been sufficiently described above. The pleochroism is as follows :

- $\alpha$  pale yellowish brown.
- $\beta$  deep rich green.
- $\gamma$  bluish green.

*Felspar.*—Colourless water-clear felspar, showing one and sometimes two sets of twin lamellæ, is present in the rock in small quantity. Its mode of occurrence is remarkable. In thin section it appears in small irregular and isolated patches between the larger constituents. Under crossed nicols these isolated or apparently isolated patches give uniform extinction over considerable areas. It appears, therefore, that felspar by itself or intergrown with omphacite plays the rôle of groundmass in portions of the rock.

*Rutile.*—This mineral is present in the form of deep yellowish brown grains and slender yellow prisms. The grains are often associated with iron ores, which, however, occur very sparingly in the rock. *Quartz* is rare, and probably a secondary product. *Epidote* is also rare. Its mode of occurrence has already been described in speaking of garnet.

---

<sup>1</sup> Becke describes similar intergrowths of hornblende and felspar in an eclogite from Altenburg. *Tscherm. Min. Mitth.*, Neue Folge, B. IV. p. 318.