Hugh Miller’s Graptolites

Sirs, My comment in Edinburgh, reported by Dunning (1972, p. 182) and incompletely quoted above by Professor Skevington, was intended to record that there is a difference in lithology between the matrix of Hugh Miller’s graptolites, (R.S.M. 1859.33.255: Monograptus priodon (Bronn)) and the Macduff Group, (Upper Dalradian) as exposed at Greenskares, Gamrie—the recorded locality of the specimen. As Skevington (1971, p. 286) points out, the possibility that the specimen is incorrectly localized should be investigated in view of the Arenig to Llanvirn or Llandeilo age suggested for the Macduff Group by Downie et al. (1971) on the basis of microfossils. Similarly the isotopic age data summarized by Dunning (1972) suggest an age of at least 501 ± 17 m.y. for the Newer Gabbros which metamorphose the Macduff Group in the south of its outcrop. This evidence of course contrasts with the late Llandovery–Middle Wenlock range of M. priodon.

On the historical side it is worth noting that Hugh Miller does not record collecting the Greenskares material himself. He was told by a Dr. Emslie of Banff that organisms (graptolites) had recently been found “in a slate quarry at Gamrie Head” (Miller 1858, p. 257). Hugh Miller makes no comment about the actual specimens, nor does he record visiting the quarry, but his label on the specimen bears the locality name “Greenskares, Gamrie”, and also Dr. Emslie’s name. It is thus likely that Hugh Miller was given the specimen by Dr. Emslie. The date of Hugh Miller’s ramble in this region was probably September 1847 (Miller 1858, p. 231 and 380).

Hugh Miller states (p. 257) that he knew of Scottish graptolites only from Galloway and Peebles-shire. The first account of graptolites in Peebles-shire is that of Nicol (1843, p. 161–2) who records and describes Monograptids from Grieston Quarry, Innerleithen—Nicol lived at Innerleithen at that time. M. priodon is common in the Grieston fauna (Toghill and Strachan 1970). As it is possible that this was the only graptolite locality in Scotland yielding M. priodon in 1847, then it seems the most likely alternative locality for Hugh Miller’s specimen.

Comparisons can be drawn between the Hugh Miller specimen, the Macduff Group in the vicinity of Greenskares, and the lithologies of Grieston Quarry. Hugh Miller’s specimen is a grey-black, finely laminated, micaceous silty shale, with two coarser calcareous quartzose laminae 1–2 mm and 0–0.5 mm thick. The specimen compares well
with graptolite bearing material from Grieston Quarry, as also does the preservation of the graptolites. It does not closely resemble the more intensely deformed phyllitic slates and greywackes in the region of Greenskares. However, it must be stressed that lithologies similar to Hugh Miller’s specimen do occur in the Macduff Group particularly in the south of the outcrop where trace fossils are reasonably well preserved (Trewin in Downie et al. 1971 p. 2).

In thin section the rocks from Grieston Quarry and those of the Macduff Group share a close similarity in their overall mineralogy. Slides of the Macduff Group in the vicinity of Greenskares generally have abundant biotite of metamorphic origin and are extensively recrystallized, whilst those of Grieston Quarry contain less biotite, which is mainly of detrital origin, but some possibly metamorphic, and the original sedimentary fabric is better preserved. A thin section of Hugh Miller’s specimen compares closely with material from Grieston but similar lithologies could possibly be found within the Macduff Group.

Preservation of graptolites within the Macduff Group is clearly possible in view of the known palaeontology of these sediments, indeed, some of the micro–organisms found by Downie et al. (1971) came from the Gamrie area only about 1.5 km along the strike from Greenskares.

It must be noted that no precise locality can be pinpointed in the Greenskares area from which the specimen was claimed to originate. Thus there can always be a degree of doubt in any conclusion. Similarly it is difficult, if not impossible, to prove conclusively on the basis of a single small specimen (60 x 39 x 7 mm maximum dimensions) that it came from any particular locality in the Southern Uplands, or elsewhere. The available evidence, both historical and scientific, based on examination of the localities and specimens involved, points to the specimen being wrongly localized, and Grieston Quarry seems the most plausible alternative locality. If this is the case Dr. Emslie becomes the chief suspect, and Hugh Miller I am glad to say, can be absolved from any blame!

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REFERENCES


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