

NOTES – NOTISER

A Comment. A Late Precambrian Tilloid from Varangerhalvøya – Evidence of both Glaciation and Subaqueous Mass Movement

KNUT BJØRLYKKE

Bjørlykke, K.: A comment. A late Precambrian tilloid from Varangerhalvøya – evidence of both glaciation and subaqueous mass movement. *Norsk Geologisk Tidsskrift*, Vol. 53, pp. 79–80. Oslo 1973.

K. Bjørlykke, Institutt for geologi, Universitetet i Oslo, Blindern, Oslo 3, Norway

In a recent paper Siedlecka & Roberts (1972) described an unsorted conglomerate (Løkevik tilloid) from the Late Precambrian succession at Varangerhalvøya. The authors concluded that the conglomerate was probably deposited by subaqueous mass movements and consider that it is an allochthonous tillite formed by reworking and redeposition of till material. This implies that glacial conditions also existed in the Barents Sea Group stratigraphically 10,000 m below the Lower tillite horizon (Smalfjord Tillite).

In the opinion of the present writer the description of the Løkevik tilloid offers an alternative interpretation to the one advanced by Siedlecka & Roberts. While agreeing with them that there seems to be little evidence that this local unsorted conglomerate, which can be followed in the field for only 70 m, should have been deposited by a glacial process, it is on the other hand very difficult to find any evidence in their description to prove that the conglomerate is a reworked till. On the contrary the composition of the conglomerate points to an environment rather untypical of areas affected by glaciations. Quoting the authors' description (p. 138), 'The majority of stones in this group consist of vein quartz, the remainder comprising quartzites, quartzitic sandstones, schists, (?) chert and granitic and dioritic rock types'.

Concentrations of vein quartz pebbles are found in areas where long periods of weathering has concentrated quartz from veins in the rocks undergoing weathering. Vein quartz conglomerates are today forming in tropical terrains with moderate relief as a result of prolonged weathering from Tertiary or Mesozoic times. It should be noted that most of the other pebbles reported from the conglomerate are dominantly quartzites and other rock types resistant to weathering. The matrix consists mainly of quartz, chlorite and sericite with only subordinate feldspar. A higher feldspar content is normally found in glacial sediments. Fragments of the underlying mudstones indicate local erosion. This shows that the composition of the conglomerate differs in one important respect from Quarternary glacial conglomerates (Schwartzbach 1963, p. 55) and from tillites from earlier geological periods

as the Mortensnes Tillite and Smalfjord Tillite in Finnmark or the Moelv Tillite in south Norway where one finds few signs of enrichment of pebbles by selective weathering.

The concentration of vein quartz and quartz in the conglomerate suggests that the material has been supplied from a deeply weathered continental crust and has been brought into the depositional basin by a mudflow.

Until more evidence is available I find it difficult to accept the Løkevik tilloid as an indication of another glacial period in the Late Precambrian of Norway.

REFERENCES

- A. Siedlecka & D. Roberts, 1972: A late Precambrian tilloid from Varangerhalvøya – evidence of both glaciation and subaqueous mass movement. *Norsk geol. tidsskr.* 52, pp. 135–141.
- Schwartzbach, M. 1963: *Climates of the Past. An Introduction to Paleoclimatology.* D. van Nostrand Company Ltd., London. 328 pp.