

NOTES – NOTISER

A Comment. Origin of Limestone Nodules in the Lower Palaeozoic of the Oslo Region

JAN ŠRÁMEK

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J. Šrámek, *Department of Petrology, Charles University, Prague, 128 43 Prague 2, Albertov 6, Czechoslovakia.*

In a recent paper, K. Bjørlykke (1973) discussed the origin of limestone nodules in the Lower Palaeozoic rocks of the Oslo region, which he considered to be the remains of continuous carbonate layers that were dissolved due to prolonged exposure to sea water.

This concept does not appear valid in the light of the proofs presented by the author; his data clearly support the interpretation of the nodules as early diagenetic concretions known commonly in series of nodular limestones. Spherical shape of the nodules, their morphology, lamination passing through, occasional septarian structures as well as chemical analyses (Bjørlykke: fig. 4) strongly disprove the possibility of partial dissolution of the continuous limestone beds (Strakhov *et al.* 1954: 609–686, Strakhov 1960: 523–549, Raiswell 1971). Many of the more or less discontinuous beds appear to be concretionary lenses and layers developed by coalescence of neighbouring bodies (Shnyukov *et al.* 1969) rather than relics of limestone layers as interpreted by Bjørlykke on p. 424. Isolated limestone nodules truncated by a layer of calcarenite (Bjørlykke: fig. 7) could be explained as concretions washed out from the parent rocks. In some cases concretions can be eroded, transported or inhabited by benthic organisms as reported by Crimes (1966), Voigt (1968) and Hallam (1969). Thin manganese and ferruginous rims round the nodules also can be regarded as the coats and films developed during weathering on the surface of carbonates. Higher concentration of MnO in the nodular limestones bears evidence of concretionary origin as well (Raiswell 1971: 159, Zaritskii 1963). Slow rate of sedimentation, which Bjørlykke uses as the support of his concept of 'subsolution', is also an important factor in the formation of recent concretions as follows from Makedonov's (1966: 177) study.

It is difficult to believe that periodical undersaturation of sea water with respect to carbonate (especially in the Ordovician times near the equatorial region) would have lasted from Upper Cambrian to Upper Silurian times.

I am, however, aware that my criticism is based only on K. Bjørlykke's paper and not on factual material and so may suffer from these limitations.

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