


**COMMENTS ON THE LOWER PALEOZOIC UNCONFORMITY IN WEST NORWAY**

**JOHAN NATERSTAD**

Institutt for Geologi, PB 1047, Blindern, Oslo 3, Norway

The existence of a stratigraphic and metamorphic break in the Lower Paleozoic sequence of West Norway has long been accepted by geologists working in the area. Although the published documentation has been very limited, those familiar with the localities in the Bergen area referred to below have accepted Kvale’s (1960) interpretation of the discontinuity.

Toward the end of the 1960’s, I made a general map of the “Moberg” conglomerate zone from Samnanger southward toward Bogahalvøya. In this area the evidence for a major break beneath the polymict conglomerate is unambiguous. The underlying rocks exhibit a more complex deformation and metamorphic history and are cut by intrusions that do not penetrate the conglomerate and overlying units. In addition, an angular discontinuity is apparent beneath the conglomerate.

The map (fig. 1) shows the “Moberg” conglomerate transgresses a contact between trondhjemite (“quartz augen gneiss” of Kvale, 1960) and greenstone. The discontinuity is folded in an isoclinal syncline, the conglomerate occurring as a linear outcrop in the hinge of the fold. Many of the pebbles in the conglomerate are derived locally, lithologies
Fig. 1. Geological sketch-map and section showing the conglomerate (Moberg) overlying Trondhjemite and greenstone and occurring in the hinge of an isoclinal synform.
directly underlying the unconformity dominating the pebble compositions. The entire sequence has been subjected to at least three fold phases and greenschist-facies metamorphism. This deformation of the conglomerate and overlying sequence was accompanied by retrogression of earlier, coarse grained metamorphic parageneses occurring in the units below the unconformity and in the pebbles in the Moberg conglomerate.

The greenstones beneath the unconformity overlie to the east a heterogeneous sequence dominated by mica schists (the "mica schists etc" of fig. 1) and containing subordinate quartz schists, greenschists, conglomerates, and marbles and intruded by trondhjemites, gabbros, and abundant serpentine. The heterogeneous mica schist sequence itself rests on a sliver of extensively mylonitized recrystallized gneiss of variable character, and, though the contact is disturbed, the relationships may have been primary, the metasediments having been deposited on the gneisses. These mylonitized gneisses are separated from the Bergsdals Nappe gneisses farther east by another zone of similar mica schists with marbles. Within the latter, very poorly preserved fossils have been found, providing hope that it will eventually be possible to establish the age of some of the units below the Moberg conglomerate and thus define more precisely the period during which the pre-Moberg deformation and metamorphism occurred.

Bergen is apparently not the only area in westernmost Norway where an unconformity within the Lower Paleozoic sequence can be demonstrated. A study of the literature, supplemented by reconnaissance observations, suggests that a discontinuity is well exposed on the island of Karmøy (120 km south of Bergen). The southwest part of Karmøy is dominated by a type of trondhjemite ("quartz-augen gneiss") very similar to that in the Bergen area mentioned above. Reusch in his description (1888, p. 45) of the eastern contact of this trondhjemite refers to sheets of foliated trondhjemite possibly intruded into a greenstone-gabbro complex (Reusch's "dioritic rock"). Reusch (1888), Goldschmidt (1921), and Broch and others (1940) have described a conglomerate of "Moberg" type resting on both the trondhjemite and the greenstone-gabbro complex, the clasts in the conglomerate being dominated by material from the underlying units. Fossiliferous sediments of Ashgillian age (Broch and others, 1940) occur in close association with the conglomerate, and this younger sequence has been subject only to low grade metamorphism. Thus, as all previous authors have pointed out, the relationships on Karmøy are very similar to those in the Bergen area. Indeed Karmøy may well prove to be the best place for establishing the extent and character of the unconformity and deserves a new investigation with this in mind.
References


