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LATE DEVONIAN EVENTS IN POLAND

by

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(1 figure)

ABSTRACT. - The Famennian in Poland was affected by three important events. A shallowing event occurred within or near the Upper *crepida* conodont zone, and a deepening event, near the Lower *costatus* conodont zone. Above the Middle *costatus* conodont zone, local uplift and even emersion resulted in non-sequences or even erosion. (Abstracted by the editors).

RESUME. - Le Famennien en Pologne a été affecté par trois événements importants. On observe une diminution de la profondeur d'eau dans, ou près de, la zone à conodontes *crepida* supérieure et une augmentation, près de la zone à conodontes *costatus* inférieure. Au-dessus de la zone à conodontes *costatus* moyenne, une surrection locale ou même une émersion, entraîne une absence de dépôt ou même une érosion.

The Famennian in Poland occurs in three paleotectonic units :

1. the pericratonic border of the East-European Platform (Lublin-Radom region, Pomerania),
2. the South-Polish carbonate platform extending from the Czechoslovakian Moravian Karst to the southern part of the Holy Cross Mountains, and
3. the Variscan Sudetes and their foreland.

The Famennian outcrops only in the Holy Cross Mountains, the Sudetes and near Kraków. In the other areas it is only known from boreholes.

In the Lublin-Radom region, in Pomerania and on the eastern border of the Upper Silesian Basin the Middle to Upper Devonian transgression reached its acme during the Lower Famennian. This acme is represented in Pomerania and in the Lublin-Radom region by laminated limestones without benthic fossils ranging up into the Middle or Upper *crepida* conodont zone (Matyja & Zbikowska, 1985), and in the eastern part of the Upper Silesian Basin by dark shales ranging into the Upper *crepida* conodont zone (Narkiewicz, 1978).

These deposits are overlain by more shallow marine nodular limestones which near the boundary between the Lower and Middle *costatus* conodont zone are again succeeded by deeper-water sandstones and shales (Matyja, 1986; Narkiewicz, 1978).

An Upper Famennian deepening event has also been observed on the distal Kłodzko-Dzikowiec Shoal (Sudetes) where the sandy Main Limestone is succeeded by the pelagic nodular *Clymenia* Limestone below the Lower *costatus* conodont zone (Freyer, 1968).

The entire Famennian sequence in the southeastern part of the Lublin region is strongly regressive. Borehole data indicate that the shallow marine nodular limestones do not range above the *marginifera* conodont zone (Sculczewski, 1972). The overlying Famennian strata consist of two - roughly coeval - sandy and partly dolomitic formations, the Hulcze Formation and the Niedrzwica Formation.

Especially the siliciclastics and conglomerates of the presumably shallow marine to lagoonal or even continental Hulcze Formation suggest the proximity of the emerged Precambrian basement to the North or North-East (Miłaczewski, 1981).

Also the marly Niedrzwica Formation seems to have been deposited in a more shallow marine environment than the underlying nodular limestones, although some clymeniids indicate transitory communication with a pelagic environment during the *Wocklumeria* stage (Kaliś, 1969).

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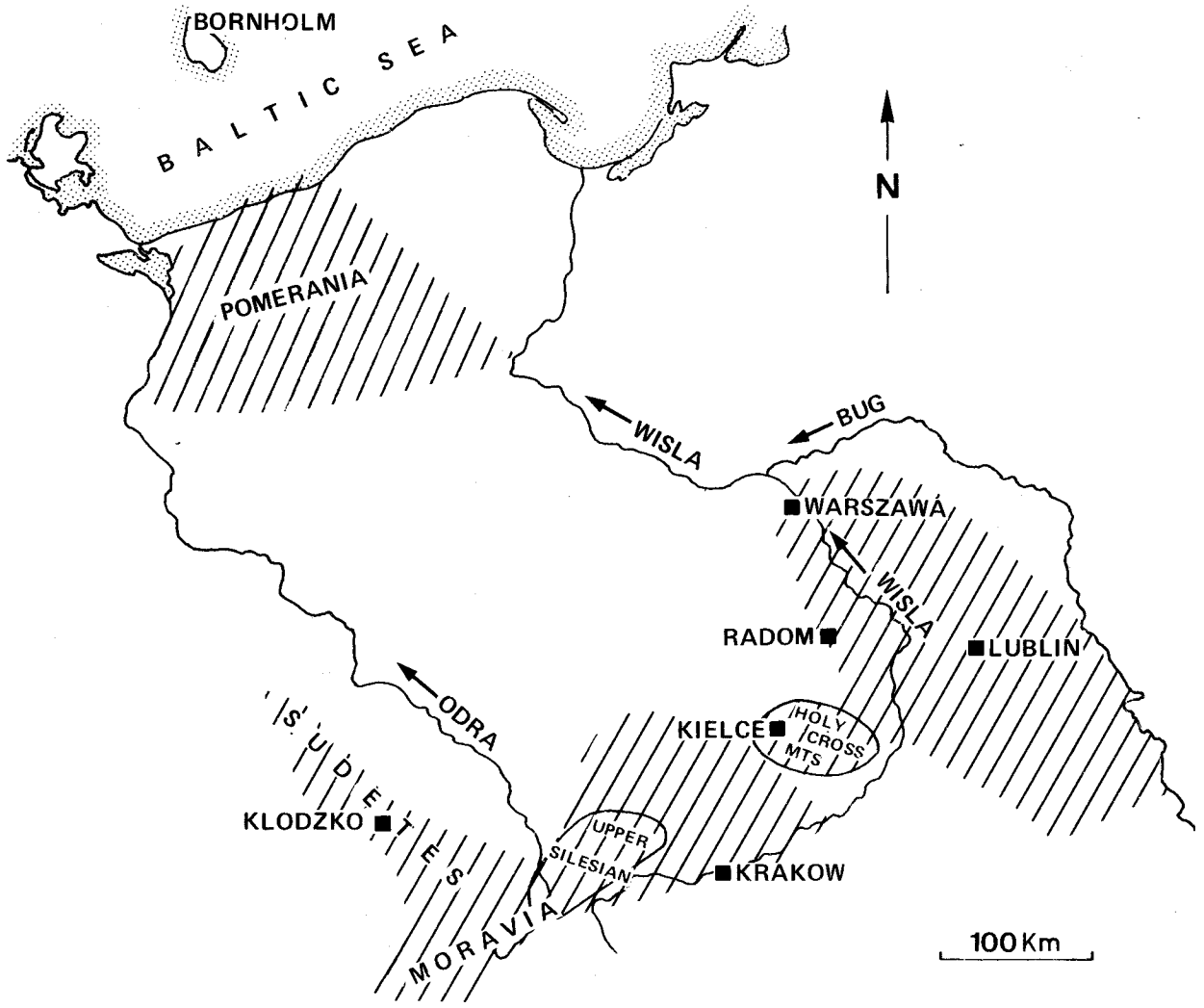

Figure 1. - Location map of upper Devonian deposits in Poland.

The top of these Hulcze and Niedrzwica deposits has not been dated biostratigraphically. They are truncated below the pre-Upper Visean uncorformity and covered by laterites and basaltic volcanites.

Conodont studies have revealed the presence of a sedimentary gap near the Devonian-Carboniferous boundary at the eastern border of the Upper Silesian Basin (Bełka, 1985), in the Holy Cross Mountains (Sculczewski, 1978) and at Dzikowiec near Kłodzko (Sudetes; Weyer, 1965; Freyer, 1968). This paraconformity occurs above the Middle *costatus* conodont zone and the gap encompasses a wide but different set of conodont zones in each case. Several sedimentary gaps are present in the condensed pelagic Famennian sequence in the southern Holy Cross Mountains. These suggest a submarine nature for these discontinuities. Only on the border of the Upper Silesian Basin the unconformity is marked by diagenetic features suggesting a subaerial exposure (Bełka, 1985).

Summarizing these data we may conclude that the Famennian in Poland was affected by three important events.

1. A shallowing event occurred within or near the Upper *crepida* conodont zone. It is recognized only in "basinal" areas where there was an apparently abrupt reduction in the rate of subsidence as suggested by the change towards more shallow marine lithofacies.
2. A deepening event occurred near the Lower *costatus* conodont zone. This event affected part of the area where the upward shallowing has been detected near the Upper *crepida* zone, and which was at some distance from land masses.
3. A tectonic event occurred above the Middle *costatus* conodont zone, but it only affected relatively elevated structures. This suggests local uplift and even emersion resulting in non-sequences or even erosion.

Possibly this tectonic event is related with the regional pre-Upper Visean unconformity in the Lublin region.

Presumably, these events are all caused by epeirogenic movements and are not necessarily related to worldwide eustatic sea level changes.

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