The Early Kimmeridgian succession at Kodrąb (Radomsko elevation, central Poland) and its palaeogeographical and palaeotectonic implications – discussion

Piotr OLCHOWY¹, * and Marcin KRAJEWSKI¹

¹ AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection, Al. A. Mickiewicza 30, 30-059 Kraków, Poland


The paper published by Wierzbowski and Glowniak in Geological Quarterly, vol. 3, 2018, abbreviated below as Wierzbowski and Glowniak (2018), deals with the Early Kimmeridgian succession studied mainly at the Rogaszyn Quarry in Kodrąb. The authors presented also correlations with neighbouring areas. Furthermore, they provided the conclusions concerning the synsedimentary tectonics related to the Holy Cross Mts. lineament. The authors of the following discussion carried on their own field observations using the investigation pits to expose some parts of the succession and sampled the sediments in the Rogaszyn Quarry described by Wierzbowski and Glowniak (2018). Based on these results, we found that our succession of sediments from the Rogaszyn Quarry differs from that published by Wierzbowski and Glowniak (2018). The paper by Wierzbowski and Glowniak (2018) contains an incorrectly prepared Kimmeridgian profile and incomplete and imprecise documentation of sediments from the Rogaszyn Quarry. In our opinion, such dataset cannot be the source of regional correlations with adjacent regions and cannot provide conclusions concerning the synsedimentary tectonics. Due to limited volume for discussion we would like to indicate in this short paper some of the controversial aspects published by Wierzbowski and Glowniak (2018). Sedimentary succession from the Rogaszyn Quarry with extended discussion containing lithological profiles as well as macroscopic and microscopic characterization of sediments from the quarry will be presented in a separate article.

According to Wierzbowski and Glowniak (2018), the succession from the Rogaszyn Quarry includes 12 rock units (cf. Barwicz-Piskorz, 1992, 1995). On page 512, they state that “the oldest one is the oncolite limestone unit (unit 1)…”, which, in their opinion, is the continuation of the sedimentary succession presented by Kutek (1968) from the Sмотройwó Quary located about 2 km to the south-west of the Rogaszyn Quarry. Despite finding two ammonites, in our opinion, the basis on which the correlation of sediments from both the quarries was made is unclear. Considering the distance between them, their location at the same elevation a.s.l., and the distinct dips of strata: 22–30° at the Rogaszyn Quarry and ~40° at the Sмотройwó Quary (Karczewski, 1965), it seems rather doubtful that the same thin bed with the omission surface (see Wierzbowski and Glowniak, 2018: fig. 2) was identified in both the quarries.

Our field observations indicate that the sedimentary succession from the Rogaszyn Quary (both in the northern and southern parts of the quarry) starts with massive thick-bedded oolitic limestones. Also according to Karczewski (1965: 100 and tab. 1), the oolitic limestones from the Rogaszyn Quarry crop out at the lowermost part of the quarry. We do not agree that the oolitic limestones are “…generally poorly exposed in Rogaszyn Quarry section…”, as suggested by Wierzbowski and Glowniak (2018: 519). Their outcrops are, in fact, one of the best exposed and easily accessible ones in the northern and southern parts of the quarry. In our opinion, the position of the oolitic limestones (unit 11) in the sedimentary succession, as proposed by Wierzbowski and Glowniak (2018), is incorrect.

The paper by Wierzbowski and Glowniak (2018: fig. 2) presents a lithological profile, in which the oncolite limestone (unit 1) is overlain by the units 2–6. Units 1–5 are, in turn, shown in fig. 3A (Wierzbowski and Glowniak, 2018). However, the thicknesses of units 2–4 indicated in both fig. 2 and fig. 3A (Wierzbowski and Glowniak, 2018) do not exceed 1 m. The thickness of these units can be approximated from the enlargement of that photograph and comparison with discernible grass tufts growing close to the exposure. On the contrary, the thickness of units...
2–4 shown in fig. 2 (Wierzbowski and Głośniak, 2018) reaches about 6 m. Moreover, Wierzbowski and Głośniak (2018) state that unit 3 is about 2.2 m thick, whereas the photograph demonstrates that it is hardly visible in comparison with unit 2 (about 1.1 m thick) and unit 4 (about 2.6 m thick). Unfortunately, the lines separating the particular unit are absent in the drawing. Finally, in fig. 3A of Wierzbowski and Głośniak (2018), the differences in lithologies of units 2–4 are invisible even after enlargement of the photograph, although they are in accordance with the book by Wierzbowski (2014) for wniak micritic Piotr wniak. According to Wierzbowski and Głośniak (2018), the middle part of the succession, among others, is represented by unit 7 (strongly bioturbated nodular biotidal lime stones) and unit 8 (micritic limestones with abundant bioclasts). Unfortunately, we did not find these units above units 5 and 6 during our fieldwork, and Wierzbowski and Głośniak (2018) provide no illustrations documenting their existence in the quarry. According to Wierzbowski and Głośniak (2018), units 7 and 8 occur locally within the generally small Rogaszynek Quarry and their absence is interpreted as a stratigraphic gap (Wierzbowski and Głośniak, 2018: fig. 2, tab. 1). Furthermore, such a local appearance of units 7 and 8 may indicate synsedimentary tectonic movements (Wierzbowski and Głośniak, 2018: 519). In our opinion, such important conclusions based upon an insufficiently documented succession are much too far-reaching.

It must be emphasized that during our fieldwork we did not find four marly horizons (belonging to unit 12) in the quarry, from which three horizons attain a thickness of about 2 m, as is presented by Wierzbowski and Głośniak (2018) in figure 2. In addition, it is not clear and consequently not unit 12 (marls and limestones). According to Wierzbowski and Głośniak (2018), the other units 2–6 (9 m thick) are presented as several separate units and G³. Furthermore, such a local appearance of units 7 and 8 may indicate synsedimentary tectonic movements (Wierzbowski and Głośniak, 2018: 519). In our opinion, such important conclusions based upon an insufficiently documented succession are much too far-reaching.

In the chapter on the comparison with the adjacent areas, Wierzbowski and Głośniak (2018: 517) state that „The deposits outcropped at Kodraβ can be easily compared with coeval deposits known from the adjoining areas...”. However, taking into account the incorrect lithological profile of sediments from the Rogaszynek Quarry provided by Wierzbowski and Głośniak (2018), such comparison can be difficult. Additional difficulty may be due to differences in correlation of marl units from various regions and various papers. For example, Matyja and Matyja (2018) state that unit 3 is about 2.2 m thick, whereas the photograph demonstrates that it is hardly visible in comparison with unit 2 (about 1.1 m thick) and unit 4 (about 2.6 m thick). Unfortunately, the lines separating the particular unit are absent in the drawing. Finally, in fig. 3A of Wierzbowski and Głośniak (2018), the differences in lithologies of units 2–4 are invisible even after enlargement of the photograph, although they are in accordance with the book by Wierzbowski (2014) for wniak micritic Piotr wniak. According to Wierzbowski and Głośniak (2018), the middle part of the succession, among others, is represented by unit 7 (strongly bioturbated nodular biotidal limestones) and unit 8 (micritic limestones with abundant bioclasts). Unfortunately, we did not find these units above units 5 and 6 during our fieldwork, and Wierzbowski and Głośniak (2018) provide no illustrations documenting their existence in the quarry. According to Wierzbowski and Głośniak (2018), units 7 and 8 occur locally within the generally small Rogaszynek Quarry and their absence is interpreted as a stratigraphic gap (Wierzbowski and Głośniak, 2018: fig. 2, tab. 1). Furthermore, such a local appearance of units 7 and 8 may indicate synsedimentary tectonic movements (Wierzbowski and Głośniak, 2018: 519). In our opinion, such important conclusions based upon an insufficiently documented succession are much too far-reaching.

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REFERENCES


