

SUMMARY

The Wilków 1 and Daromin IG 1 boreholes are located on two opposite sides of the northern flank of the Łysogóry Anticline in the Łysogóry region, which is a structural-facies unit of the Holy Cross Mountains, limited to the south by the Holy Cross Fault. On the base of recent structural and palaeomagnetic studies, the Łysogóry region is a fragment of the mobile Caledonian edge of the East European Craton (Dadle et al., 1994; Kowalczewski, 2000; Malinowski et al., 2005; Nawrocki et al., 2007), although there are also opinions on its peri-Gondwanan origin (Belka et al., 2000). The relationship between this area of the Holy Cross Mountains and the marginal zone of Baltica, already since early Paleozoic times, is confirmed by results of palaeontological (Cocks, 2002; Żylińska, 2002) and petrologic-geochemical studies of Silurian greywackes (Kozłowski et al., 2004, 2014).

The Wilków 1 borehole was drilled in 1962 for the exploration of iron ore in the Holy Cross Mountains, and reached a depth of 957.8 m. The borehole is located in the western part of the Łysogóry region, at the Wilków village, south of the Św. Katarzyna–Ciekoty–Kielce road (Figs 1, 2). Under a thin cover of Quaternary sediments there are Silurian (Ludlow, Wenlock and Upper Llandovery), Ordovician (Hirnantian, Katian and Sandbian) and Cambrian (Furongian) rocks (Fig. 3).

The Daromin IG 1 borehole was drilled in 1963 in the eastern part of the Łysogóry region, southwest of the Daromin village located west of the Opatów–Sandomierz road (Figs 1, 2). Cenozoic sediments are underlain here by Silurian (Ludlow and Wenlock) and Ordovician (Katian, Sandbian and the uppermost Darrivilian) rocks, as well as Cambrian strata (Furongian) drilled to a depth of 421 m (Fig. 4). Geological data from both these boreholes provided valuable information on the Palaeozoic stratigraphy of the Łysogóry region and on the structural-facies evolution of the Holy Cross Mountains. Previous studies in the Wilków 1 and Daromin IG 1 boreholes focused mainly on stratigraphic issues (Tomczykowa, 1968; Deczkowski, Tomczyk, 1969; Bednarczyk, 1971; Tomczykowa, Tomczyk, 2000; Żylińska, 2001, 2002; Trela, 2006), and to a lesser degree on sedimentological (Trela, 2007) and tectonic (Znosko, 1996) aspects.

The Cambrian section in the Daromin IG 1 and Wilków 1 boreholes is represented by mudstones and sandstones of

the Małchocice Beds and claystones of the Brzezinki Formation, both Furongian in age. Late Cambrian age of the deposits is constrained by trilobites of *Peltura scarabaeoides* and *Acerocare sensu lato* found in the Brzezinki Formation (Tomczykowa, 1968; Deczkowski, Tomczyk, 1969; Żylińska, 2001, 2000). Additionally, the stratigraphic position of these deposits is confirmed by numerous and taxonomically diverse acritarch assemblages represented by typical palynological associations known from many areas of coeval rocks occurrences. The palynomorph assemblages are dominated by acritarchs of diacriodal symmetry, i.e. showing an elongated shape of the central body with appendages on the poles: *Actinotodissus*, *Acanthodiadirodium*, *Dasydiadirodium*, *Ladogella*, etc., and by the forms with a large central opening of the central body – “galeate” types, genera: *Cymatiogalea*, *Stelliferidium*, etc., accompanied by numerous forms of rotational symmetry, including the genera of *Polygonium* and *Solisphaeridium*. These assemblages may be correlated with coeval ones from the East European Craton, Newfoundland, Western European Palaeozoic massifs, and others. Generally, a dichotomy of the assemblages is observed in both of the boreholes. The older, less numerous and less taxonomically diverse assemblage is characterised by dominance of forms showing the diacriodal symmetry with a significant number of specimens representing the genus *Actinotodissus*, and with large *Polygonium* and *Solisphaeridium* specimens. The younger assemblage, from the Cambrian/Ordovician transition interval, is much more numerous and represented mainly by “diacriodians” with an asymmetric arrangement of appendages on the pole, very numerous “galeate”, and several other guide forms typical for the Cambrian/Ordovician transition. The colours of acritarch specimens in both borehole sections are dark: brown and black, indicating temperatures corresponding to the stages of condensate and gas generation.

Sedimentological characteristics of the Małchocice Beds are indicative for accumulation from alternating silt suspension and storm-generated traction currents (coarser siliciclastic material). Their accumulation took place in the transition zone from tidal coastal sands or tidal shelf sands to shelf muds (Jaworowski, Sikorska, 2006). Sandstone beds represent storm sand layers and/or fillings of tidal channels. A different interpretation of this facies was pre-