This thrust line was identified with the Donovaly Line in its western continuation in the Starohorské vrchy Mts. (Jaroš 1971) and according to other interpretation it was redefined as the Čertovice Fault localized in the Hron valley (in Maheľ edit. 1964). In seismic transect 2T the contact of the northern Veporicum and Tatricum is well-defined on the southern slopes of the Ďumbier Tatras being perpendicular or steeply dipping toward south. Faults with almost perpendicular projection in the Hron valley, which we interpret as intra-north-Veporic, are parallel to this tectonic phenomenon. This structural phenomenon affects crystalline rocks, their envelop, Mesozoic rocks of the upper nappe units and Late Cretaceous – Tertiary fill. According to some indications it also affects the Quaternary deposits. Several faults identified on the surface probably have only local and shallow establishment and they were not identified in seismic profile (e.g., Osrblie Line sensu Zoubek in Maheľ edit. 1964).

Structural position of the upper unit, i.e., the Northern Veporicum is documented in the profile 2T/85 by bundles of reflectors dipping slightly toward the south. Zones of metamorphic rocks prevail which have expressive reflectors. Zones of lower reflectivity, characteristic of granitoid massifs, are less abubdant in the transect. In some parts of the northern Veporicum profile it is possible to observe discontinuous reflectors dipping toward the north which are interpreted by Bezák et al. (1995) as relics of the Hercynian structures on crystalline basement. Root zone of the Krížna Nappe (Andrusov 1968; Biely 1961; Biely and Fusán 1967; Jaroš 1971; Maheľ edit. 1964; Maheľ 1964, 1986; Vozár 1965) or the Fatricum (sensu Andrusov et al. 1973) may be localized in the in the northern Veporicum based on geologic, mainly structural and facial evidence. In the northern Veporicum substantial shortening of the space is assumed which is related to displacement of crystalline and Mesozoic nappes but in the seismic transect 2T localization of the rear part of the Krížna Nappe is ambiguous.

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Cenomanian / Turonian Boundary in the Pieniny Klippen Belt-Sedimentological Studies.

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Geology

The Pieniny Klippen Belt (PKB) composed nearly 600 km in length and a few kilometres in width, arch-structure which separates two structural units: the Inner and the Outer Carpathians (Fig. 1).

In late Mesosoic time, the Pieniny Basin belonged to the Eastern branch of the Tethys and consisted of several sub-basins representing different realms, from the outer shelf (the Czorsztyn Succession), to bathyal zones (the Pieniny and Niedzica successions; Birkenmajer 1986; Birkenmajer and Gasiński 1992).

Samples

The studied material is dominated by marls, shales, limestones and flysch-like sediments, dated as Cenomanian-Turonian (Bąk 1998; Birkenmajer and Jednorowska 1987; Gasiński 1998).

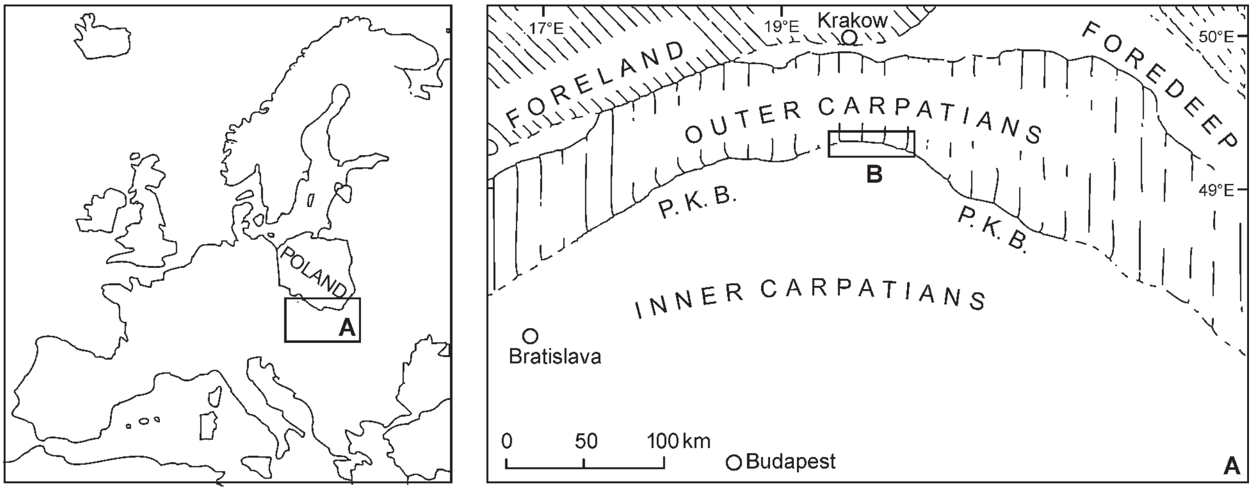


Fig. 1. Key map to show the mentioned area (triangular A); B: location of investigated sections (after Bąk 1998).

The samples were collected from the sections belonging to the Sneznica and Magierowa members (the Jaworki Formation): i.e. Biała Woda (BW), Skalski Stream (PSk) belonging to Niedzica Succession and Magierowa Mts. (MS; Pieniny Succession; after Birkenmajer 1986). The samples are lithologically smilar and biostratigraphically correlated with the "black shales" facies probably represented "anoxic events", known from Southern Alps (Breggia section) and Umbria -Marche Apennines (Gubio and Moria sections; cf. Gasinski 1988, 1997).

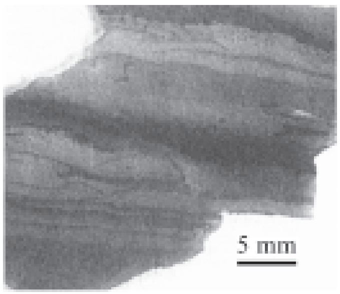
The Magierowa Member from the type locality (Magierowa Mts.) consist of the laminated brownish-black and green shales.

The samples collected from the Biała Woda and the Skalski Stream sections are the laminated dark-grey marly shales.

These samples are composed of amorphous organic matter, clay minerals (muscovite, chlorite) and calcite (mainly calcareous microfauna), contrary to silica-rich MS-samples that are devoid of calcite. Pyrite and heavy minerals have been also recognized as trace compounds.

Foraminiferal assemblages (studied in thin sections only), roughly confirm palaeobathymetric subdivision: associations B, C and C_1, extended from the shelf to the depth close to the foraminiferal lisocline (*sensu* Birkenmajer and Gasiński 1992). Absence of microfauna is indicative of deposition below CCD level.

The lamination, fractionation and burrowing of *Zoophycos* tape are common in all samples (Fig. 2). These sedimentologi-



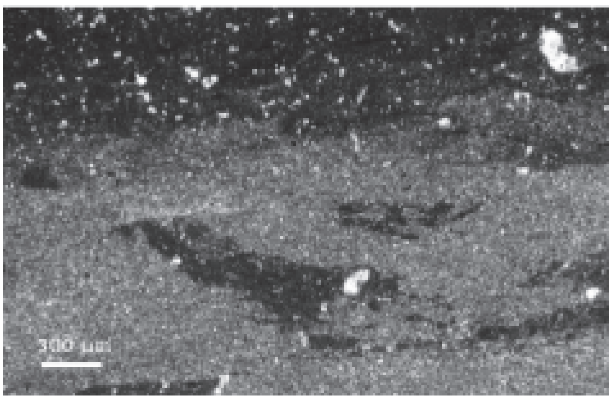


Fig. 2. Parallel lamination and burrowing marked by different colours of sediments.

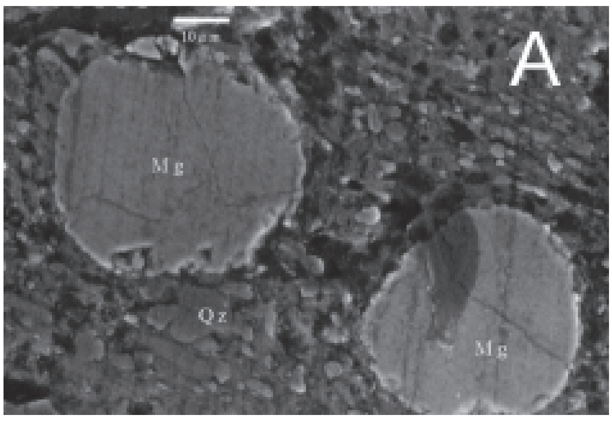


Fig. 3a. Rounded grains of magnetite (Mg) and solution surfaces of quartz (Qz), sample: MS 18-99.

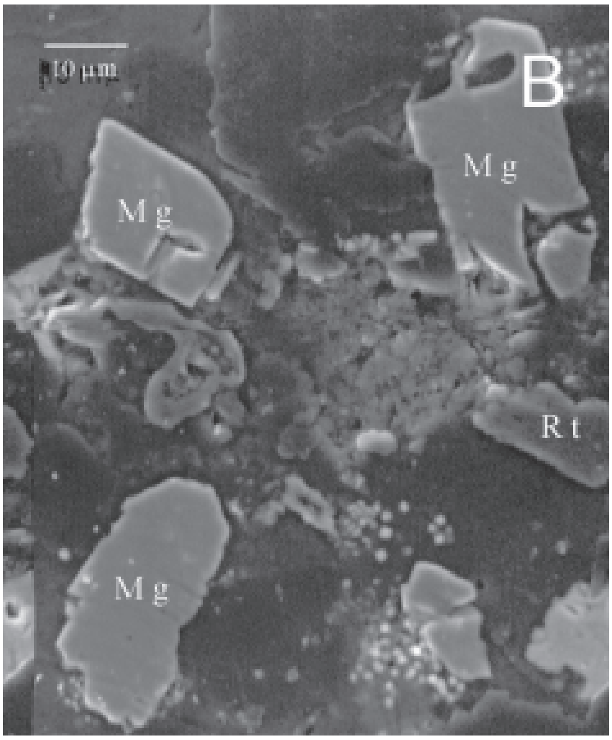


Fig. 3b. Hipidiomorphic crystal of magnetite (Mg) and rutile (Rt), sample: PSk 1-99; EDS-images.

cal structures suggest slow deposition of material in the hemipelagic and pelagic environments (Passega 1957; Stanley and Swift 1976).

The material of the MS-samples is more sorted and the grains are more rounded (Fig. 3A) than in other (PSk, BW) samples (Fig. 3B). These are indicative of distant transport.

The irregular surfaces of grains (Fig. 3; mainly quartz) are the result of diagenetic solution (Stanley and Swift 1976).

Conclusions

Homogenous, clay fraction, lamination, burrowings, rounding of grains and lack of microfauna has been investigated in the shales of the Magierowa Member (MS). Therefore, they are deposited under pelagic condition, below CCD level.

Different fractions, idiomorphical heavy minerals, abundant foraminiferids (associations B, C and C_1) have been recognized in the samples collected from the Biała Woda (BW) and the Skalski Stream (PSk) sections.

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Geoelectrical Investigations in Slovakian Tatra Mountains

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The geophysical investigations were carried out in alpine zone of the high Tatra Mountains in Piargova Valley (Slovakia). The Piargova Valley is a part of Ciemnosmreczynska Valley. The Piargova Valley is situated parallel to the main ridge of the Tatra Mountains (Paryska and Paryski 1995). It is a pothole. Luknis (1973) distinguished three ledges within the Valley:

· the highest ledge, i.e., the "Snow pothole" situated between altitude 2080–1850 m a.s.l.,
· the intermediate ledge – the basin of Wyzni Ciemnosmreczynski Lake,
· the lowest ledge – the basin of Nizny Ciemnosmreczynski Lake.

The greater part of the Piargova Valley is covered by slope debris.

The resistivity soundings were carried out at six measurement points. The first point was situated in the shore of Ciemnosmreczynski Nizni Lake and the other five points were situated in the vicinity of Ciemnosmreczynski Wyzni Lake (Fig. 1). The measurements were executed in 1997 and repeated in 1998 at the same measurement points. Number of soundings was limited by the mountainous relief of the investigated area. The soundings were carried out with symmetric Schlumberger array using ABEM Terrameter SAS 300C equipment. Electrode spacing was fixed for