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Analysis of standard lithostratigraphic nomenclature and proposal of division for Skole unit in the Polish Flysch Carpathians

The analysis of the present formal lithostratigraphic designations in the area of the Skole unit, Polish Flysch Carpathians, has been performed. A new lithostratigraphic division of this unit into 9 formations and several members has been proposed. Simultaneously, traditional nomenclature has been kept where appropriate and a number of new names and designations has been limited to a minimum. The mappability of lithostratigraphic units (except wide-spread and lithologically different layers) as a necessary condition has been postulated.

INTRODUCTION

The Skole unit (Fig. 1) is the best standardized one in the Polish Outer Carpathians. In this unit the Ropianka Formation (J. Kotlarczyk, 1978), the Variegated Shale Formation and the Hieroglyphic Formation (J. Rajchel, 1990) as well as the lower part of the Menilite Formation (J. Kotlarczyk, T. Leśniak, 1990) have been standardized. A proposal for the Rybotycze Formation (S. Gucik, J. Morgiel, 1985) has not been published yet. Moreover, in the Polish literature non-standardized terminology *de facto* was used in the case of units of the rank of formations and members: namely the Spas Formation and the Dołhe Formation; members within the Krosno Facies (J. Kotlarczyk, 1988), Krosno Formation (W. Nowak, 1979). Standardization *ex post*, based on the descriptions provided in older papers, has been proposed (J. Kotlarczyk, 1978) for the first two of the above designations, however, such an approach seems impossible in the case of the deposits described from Dołhe Podbużańskie (M. Styrnałówna, 1925; M. Styrnałówna, H. de Cizancourt, 1925). Nevertheless, informal, traditional lithostratigraphic terminology is still being used (as the proposed formal designations are controversial).

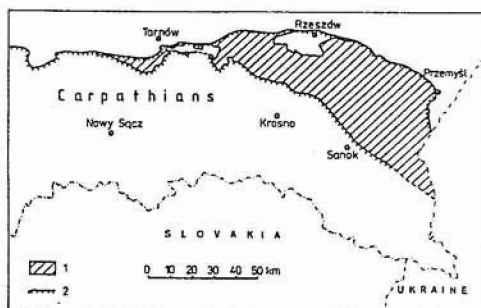


Fig. 1. Skole unit in the framework of the Polish Carpathians

1 — Skole unit; 2 — overthrust delimiting the Skole unit

Jednostka skolska na tle polskich Karpat

1 — jednostka skolska; 2 — nasunięcie ograniczające jednostkę skolską

This paper corresponds to the work *Opracowanie formalnych jednostek stratygraficznych Karpat zewnętrznych i zapadliska przedkarpacciego dla celów Szczegółowej Mapy Geologicznej Polski* (Formal stratigraphic standard for the Outer Carpathians and the Carpathian Foredeep elaborated for the Detailed Geological Map of Poland) worked out in the Carpathian Branch of the Polish Geological Institute (A. Wójcik *et al.*, 1995) and to the discussion on the proposed division that took place during the meeting of the Carpathian geologists on December 19, 1995.

ANALYSIS OF THE EXISTING FORMAL CLASSIFICATIONS

The present-day standardization may be argued in five respects. First, some of the formalized designations are not actual lithostratigraphic units. It mainly refers to majority of members in the Ropianka Formation (J. Kotlarczyk, 1978). Some of them encompass various lithological types (e.g. fucoid marls, thin-bedded flysch and thick-bedded sandstones in the Wiar Member which are cartographically distinguishable (S. Gucik, 1984; S. Gucik *et al.*, 1991). These members are the records of sedimentation cycles. The borders between other members are made up of horizons of variegated shales separating deposits being sometimes identically developed which causes the members to have a character of chronostratigraphic units. A very striking example of a chronostratigraphic unit is the Palaeocene Zohatyn Variegated Shale Member which has been separated from the lithologically identical Lower Eocene Variegated Shale (J. Rajchel, 1990).

The second group of objections refers to the members which as a rule are not mappable units. According to stratigraphic code (*Zasady polskiej klasyfikacji...*, 1975) only formations have to satisfy the condition of being mappable, yet in the Flysch Carpathians (where the number of traditionally distinguished units amounts to several hundred and where the thickness of selected formations are usually small) the mappability of the members should be highly recommended. Multiplying the names could be stopped in this way and misinterpretation of relations between principal lithotypes could be avoided. However, marking of the members whose thickness might be difficult to present cartographically yet distinct lithologically and widespread (Globigerina Marls, Menilite Cherts) could be acceptable. However, for the geological map in the scale of 1:50 000 accepted for the Carpathians it seems unreasonable to distinguish weakly individualized members of the maximum thickness 20–30 m. This objection refers to majority of the members of the Variegated Shale

Formation, Hieroglyphic Formation (J. Rajchel, 1990) and Menilite Formation (J. Kotlarczyk, T. Leśniak, 1990). These members, indeed, have never been marked on the published geological map or on the maps attached to the papers (except for thickness and lithofacies maps) in which the members have been standardized.

Many members cannot to be distinguished outside the typical area or profile and this is the third drawback of the present-day normalization of the Skole unit. That can result from the fact that the division used is too detailed. Differentiation visible in the typical areas is impossible to detect in the prevailing area of the unit (especially in the fringes of the Skole basin). In fact, this drawback refers to all standardizations cited in the introduction despite they are usually based on a series of profiles from the entire area of the Skole unit.

The fourth controversial issue refers to misleading designations and their inaccurately defined borders. The issue is even more confusing as non-standardized "...stratigraphically discontinuous and recurrent lithosome..." (J. Rajchel, 1990) are distinguished. Using lithology as a criterion it is sometimes impossible to differentiate (according to the author's standardization) between the Chwaniów Sandstones and the Bartkówka Limy Sandstone Member or the Widaczów Green Shales and the Bachórz Shale Sandstone Member, to discern the Kosztowa Sandstone from Boguszówka Sandstone Member or the Nowe Sady Marls from the Nienadowa Marl Member. In the last of the listed members (according to the author's designations) "...in the extreme cases horny aleurite, limy sandstone or marly shales predominate..." (J. Rajchel, 1990), thus it is impossible to single out the member itself, to distinguish its boundaries and extent. This also indicates that the member discussed is not a lithostratigraphic unit.

A good example of inaccurately defined boundary is that between the Variegated Shale Formation and Hieroglyphic Formation (J. Rajchel, 1990): the lowest member of the latter formation is made up of the Widaczów Green Shale sporadically interbedded with variegated shales that cause the member to be assigned, based on lithological criteria, to the Variegated Shale Formation.

Yet another objection can be raised with respect to nomenclature for designations and to the accepted and defined stratotypes. It is the case of the Ropianka Formation (J. Kotlarczyk, 1978) which is called after the site of Ropianka near Dukla from where the deposits facially resembling the formation were described for the first time (K. M. Paul, 1876). In fact the deposits occur in the Magura unit and are geographically separated from those of the Skole unit (by 3 other units) as well as they differ lithologically. Moreover, outcrops in Ropianka have recently been questioned as a stratotype for the more inner-located units (A. Ślącza, M. Miziołek, 1995). Introducing new names based on the profiles located outside the state borders and described in the 1920s (M. Styrnałówna, H. de Cizancourt, 1925; M. Styrnał-de Cizancourt, H. de Cizancourt, 1926) or elaborated using a different lithostratigraphic nomenclature (A. G. Żurkowski, 1968) is also vague. It refers to informal nomenclature proposed by J. Kotlarczyk (1978): fucoid marls from Kropiwnik, flysch from Rybnik, Hołownia siliceous marls. The last term is particularly inappropriate as the designation *svita golovinska*, used by Ukrainian geologists (e.g. N. I. Maslakova, 1984) bears much broader meaning than the traditional designation "siliceous marls".

Summarising the above, one should bear in mind that the current formal nomenclature needs to be restudied to a large extent, especially in the case of the lower order units (members, beds).

PROPOSAL OF LITHOSTRATIGRAPHIC DIVISION OF THE SKOLE UNIT

Because of the controversy presented above a new scheme of the lithostratigraphy for the Skole unit is proposed. The scheme is based on the following criteria:

- use of traditional nomenclature (as accepted in some stratigraphic standards);
- neglecting units unmappable in the scale accepted for the Carpathians (1:50 000); exception has been made for the units that despite insignificant thickness are lithologically remarkable and that used to be distinguished on geological maps, especially on the Detailed Geological Map of Poland;
- minimising number of names and designations.

Not always are particular names proposed for lithostratigraphic units in the scheme given below. The scheme is meant as a primary outline for the future, intricate formal nomenclature for the Skole unit or the whole Carpathians. The author suggests that stratotypes (and hypo- and lectostratotypes, if necessary) should be chosen by a wider board of geologists and the formations of the Skole unit occurring in other tectonic units of the Flysch Carpathians should be taken under consideration as well.

An outcome of the papers discussed in the introduction is a fairly clear division into basal units, i.e. formations (Tab. 1). This division corresponds to informal lithostratigraphic schemes (L. Koszarski, 1985). The proposed formations 2 and 6 are lithologically distinguishable regional correlation units which have been singled out despite their small thickness. Formations 1, 3, 4 and 5 are only typical of the Skole unit. The remaining formations occur beyond the extent of the Skole unit and their formal names should be common to some units. The following names and designations listed in Table 1 (stratigraphic scheme — Fig. 2) are proposed in ascending order 1 to 9.

1. Due to lithological uniqueness and long tradition the habitual name for the Skole unit should be remained and designation should be called the **Spas Formation** (after J. Kotlarczyk, 1978) or the **Spas Shale Formation**. According to the author, however, the unit has to be standardized in a classic profile in Ukraine or a hypostratotype in Poland has to be designated and described. The upper limit of the formation might be placed where green shale start to predominate over black ones in the stratigraphic column. In the published literature the designation in question was divided into two or three parts (S. Gucik, 1984; S. Gucik *et al.*, 1991). As it is impossible to provide a consistent division for larger areas due to tectonic deformations and small number of exposures the suggestion is to distinguish two local members (Fig. 2): the Belwin Mudstone Member ("a" in: S. Gucik, 1984) and Kuźmina Sandstone Member ("b" in: K. Żytko, 1989). The first member should be distinguished despite its small extent because it represents the oldest deposits of the Skole unit in Poland different from the rest of the formation. The second member, known only from boreholes, is lithologically specific. The remaining parts of the formation are suggested not to be divided and marked on the maps as one unit (a separate member could be assigned to this remaining part of the formation yet it would be associated with inventing an extra name).

2. The packet of green and variegated shales with radiolarians, occurring in the Silesian, Sub-Silesian and Skole units and known under various names, is proposed to be called the **Radiolarians Shale Formation** preceded by a local name (to be discussed) originating from a stratotype. Acceptance of the term *Dołhe Formation* *ex post*, proposed by J.

Table 1

Proposal of formal division for Skole unit of the Polish Flysch Carpathians: formations

No.	Proposed name	Lithology	Names used until present
1	Spas Formation or Spas Shale Formation	black shales interbedded with sandstones	Spas Shales (M. Vacek, 1881); Spas Formation (J. Kotlarczyk, 1978)
2	(Dołhe?) Radiolarians Shale Formation	green (Radiolarian) shales, black and green shales, variegated shales and manganese-bearing shales	Jasper Beds; Barnasiówka Beds, Dołhe Formation (J. Kotlarczyk, 1978); Makowa Formation (S. Gucik, J. Morgiel, 1985)
3	Rybotycze Formation	thin- and medium-bedded flysch with numerous intercalations of thick-bedded sandstones, marls variegated shale horizons, olistholithes and deposits of submarine slumps	Ropianka Beds (K. M. Paul, 1876); Inoceraman Beds (V. Uhlig, 1895); <i>Svita stryjska</i> (O. S. Vialov, 1951); Ropianka Formation (J. Kotlarczyk, 1978); Rybotycze Formation (S. Gucik, J. Morgiel, 1985)
4	(Żohatyn?) Variegated Shale Formation	variegated shales — red and green in colour	Variegated Shales; Variegated Shale Formation (J. Rajchel, 1990)
5	(Bachórz?) Hieroglyphic Formation	thin-bedded sandstones interbedded or overlain with green shales with local intercalations of marls	Hieroglyphic Beds, Upper Hieroglyphic Beds (K. M. Paul, E. Tietze, 1879); Hieroglyphic Formation (J. Rajchel, 1990)
6	Globigerina Marl Formation	marls	Globigerina Marls; Strwiąż Globigerina Marl Member (J. Rajchel, 1990)
7	Menilite Formation	brown shales with intercalations of cherts, marls and thick-bedded Kliwa sandstones	Menilite Beds (E. F. Glocker, 1843); Menilite Formation (J. Kotlarczyk, T. Leśniak, 1990)
8	Krosno Formation	thick-bedded Krosno sandstones	Lower Krosno Beds <i>sensu</i> L. Koszarski, K. Żyto (1961)
9	Strzyżów Formation	thin- and medium-bedded flysch and grey shales with intercalations of thick-bedded sandstones and diatomites	Upper Krosno Beds <i>sensu</i> L. Koszarski, K. Żyto (1961)

Kotlarczyk (1978), does not seem appropriate because the first description of the deposits from Dołhe (M. Styrnałówna, 1925; M. Styrnałówna, H. de Cizancourt, 1925) was very concise and the rock complex itself was not very thick. It is not excluded, however, that the name could be left after a detail examination and publishing of Dołhe profile. Owing to a small thickness and due to the nature of the correlation profile the formation is not divided into members. The upper boundary of the formation is the base of the compact packet of hard siliceous marls or a compact packet of thin-bedded flysch (J. Kotlarczyk, 1978) above the complex of green or variegated shales.

3. The habitual name — Inoceramian Beds — was questioned by J. Kotlarczyk (1978) who introduced the term Ropianka Formation. Because of the choice of the stratotype (as pointed above) this name cannot be used for the Skole unit. *Svita stryjska* (O. S. Vialov, 1951) comprises only a part of the formation profile. Thus, the term **Rybotycze Formation** (in agreement with S. Gucik and J. Morgiel's proposal, 1985) has been accepted. The name is derived from the settlement in the region being a neostratotype area in J. Kotlarczyk's standardization (1978). In each profile the upper boundary of this formation should be the base of the lowermost insert of variegated shales not overtopped with compact, thick packet of flysch typical of the discussed formation.

Referring to the presented criticism on the published formal division a new standardization of the Rybotycze Formation is proposed below:

a — Siliceous Marl Member (from Splawa?) being the base member of the formation — hard siliceous marls and soft shale marls with intercalations of thin-bedded flysch; the member is laterally replaced with the Cisowa Member being the former one's overburden;

b — Cisowa Member — shale-sandstone flysch with intercalations of thick-bedded sandstones and marls, lying between Splawa Siliceous Marl Member and Furoid Marl Member; may be distinguished only there where the Furoid Marl Member corresponds to the Rybnik Inter-marl Complex being the upper part of the Cisowa Member according to J. Kotlarczyk (1978); the name has been accepted after S. Wdowiarz *et al.* (1974) and S. Gucik *et al.* (1991); in the areas where the member is lacking the lower part of the Turnica Member (Fig. 2) is the lateral equivalent of the Cisowa Member (in new approach);

c — Furoid Marl Member (from Krasiczyn or Kropiwnik) — compact complex of furoid marls interbedded with sandstones and shales;

d — Posada Rybotycka Member — sandstone and shale with intercalations of marls of furoid type; they overlie and/or replace the Furoid Marl Member; mapped on the Rybotycze sheet (S. Gucik *et al.*, 1991);

e — Turnica Member — thin- and medium-bedded, shale-sandstone flysch making up the core of the formation; it comprises the following members: Kwaszenina Sandstone, Leszczyny Sandstone, Węgiełka Marl and Babica Clay; the Turnica Member occurs above the siliceous marls or above the Furoid Marl Member which can be replaced with the Posada Rybotycka Member; it is a broader designation than the Turnica Supra-marl Complex (J. Kotlarczyk, 1978);

f — Kwaszenina Sandstone Member — mainly thick-bedded sandstones, occurring within the lower part of the Turnica Member;

g — Leszczyny Sandstone Member — mainly thick-bedded sandstones; they often comprise olistholithes of the Węgiełka Marl Member and form a wide-spread (although discontinuous) insert within the upper part of the Turnica Member; this member corresponds only to a fragment of the Leszczyny Member distinguished by J. Kotlarczyk (1978);

h — Węgiełka Marl Member — discontinuous horizons of olistholithes, the Senonian marls mainly; occurring within the Leszczyny Sandstone Member or the Turnica Member;

i — Wola Korzeniacka Member — green and grey, noncalcareous shales with intercalations of thin-bedded, noncalcareous, brittle sandstones, often occurring in the top part of the formation;

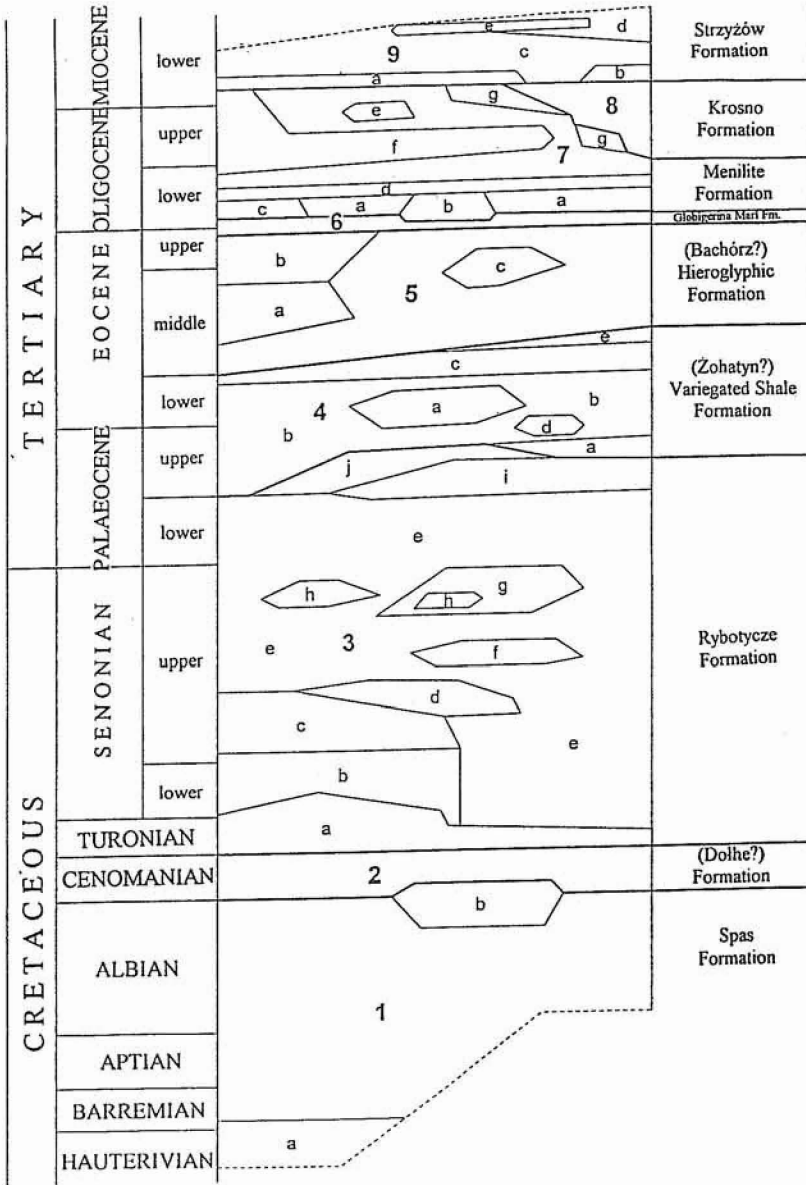


Fig. 2. Lithostratigraphy of the Skole unit
 Explanations as in Table 1 and in the text
 Litostratygrafia jednostki skolskiej
 Objasnienia w tab. 1 i w tekście

j — Babica Clay Member — deposits of submarine landslides (mudstones with exotics); developed locally in the top part of the formation; deposits of this member occur also in the overlying formation 4.

Within the Rybotycze Formation several layers of variegated shales and the Bircza Limestone Bed can be distinguished.

4. Variegated shales between the Rybotycze Formation and (Bachórz?) Hieroglyphic Formation are proposed to be named, after J. Rajchel (1990), **Variegated Shale Formation**; the formation name should be preceded by a geographic name from the area of the Skole unit (e.g. Żohatyn or other well developed profile) in order to differentiate from heterochronous variegated deposits of other units.

The variegated shales from the inner part of the Skole unit and from the Sub-Silesian zone, corresponding to the shales discussed under 4, and developed in the Węglówka facies (with marl intercalations) have been included to the Węglówka Marl Formation (A. Wójcik *et al.*, 1995). The top of the uppermost intercalation of variegated shales, below which a compact and vast packet of thin-bedded flysch of the (Bachórz?) Hieroglyphic Formation is lacking, is proposed to be the upper boundary of the formation. In most cases, in the area of the Skole unit, the above coincides with the top of the uppermost intercalation of the variegated shales. The boundary defined this way is diachronous as in some areas it will also include the Jureczkowa Variegated Shale Bed (J. Rajchel 1990) which has a thick packet of green shales at the base. "Variegated shale with marl intercalations and corrugated sandstones of Inoceramian type" in the inner part of the Skole unit (Ustrzyki Dolne region, K. Żytko 1967–1968) should also be assigned to this designation.

The currently formalized members of this formation are usually not mappable; on the other hand, they have a character of chronostratigraphic units yet are difficult to be singled out. Therefore, division into the following members is proposed:

a — Kosztowa (or Boguszówka) Sandstone Member — variegated shales alternated with sandstones, mainly with thin-bedded ones, regardless their position in the formation profile (a criterion used to distinguish the member should be proportion of sandstone exceeding 20% in the profile);

b — (Trójca?) Variegated Shale Member — variegated shales (with red ones);

c — (Widaczów?) Green Shale Member — green, greenish-grey and grey shales (without red shales);

d — Babica Clay Member — intercalations of clayey debrites among variegated shales.

The name Jureczkowa Variegated Shale Bed (e) might be left for red shales separated from their major occurrences by the green shale member. In the discussed formation there is also the Bircza Limestone Bed, being the transition from the underlying Rybotycze Formation.

5. For this formation the author proposes to keep the traditional name "hieroglyphic" preceded by a site name from the area of the Skole unit (e.g. Bachórz, as suggested by J. Rajchel, 1990 as a stratotype of the most typical member). Treating the **Hieroglyphic Formation** in the Skole unit as an independent designation results from its geographical isolation from the hieroglyphic layers in other units.

In the neighbouring Sub-Silesian zone there are green shales, being the equivalent of the formation in question, yet they cannot be differentiated from the underlying variegated shales with marls. Thus, they should be assigned either to Węglówka Marl Formation or to

Hieroglyphic Formation of the Silesian unit which they resemble lithologically and from which they are not separated tectonically in many areas of the Polish Eastern Carpathians. The upper boundary of the discussed formation should be the base of the *Globigerina* marl layer and in the profiles where the marls are lacking it should be placed where brown shales start to predominate over green shales or at the base of the "sub-chert" sandstone packet or of the Siedliska Conglomerate Member.

The division of the Hieroglyphic Formation as proposed by J. Rajchel (1990) cannot be applied in many areas of the Skole unit. Moreover, the majority of the members distinguished in J. Rajchel's division are unmappable, inaccurately defined and lithologically not outstanding. Owing to relatively small thickness the author suggests to distinguish the formation on the maps as an entity excluding the following members:

a — Nowe Sady Marl Member — packages of marls interbedded with sandstones, occurring in outer scales of Skole nappe; designated on Rybotycze sheet (S. Gucik *et al.*, 1991) as Pasiczna limestones and as Baczyn facies marls by J. Kotlarczyk (1988);

b — Popiele Member — mudstones with detached blocks and exotics (olisthostrome);

c — Chwaniów Sandstone Member — only for compact complexes of thick-bedded sandstones, independently on a position in the log.

6. For the correlation layer of marls, occurring in the majority of the Flysch Carpathians units, the habitual name **Globigerina Marl Formation** is proposed to be still used. A. Ślącza (1994) suggests to accept the exposure in Znamirówice as the lectostratotype of this formation.

7. In agreement with former proposals (J. Kotlarczyk, T. Leśniak, 1990) the term **Menilite Formation** is left. This term should be accepted for all units of the Flysch Carpathians (excluding the Magura unit) and as a traditional one it might be used without a preceding geographical reference. According to A. Ślącza (1994) the exposures along the Wisłok river in Rudawka Rymanowska should be recognized as lectostratotype. The upper boundary of the formation should be the base of the compact packet of the thick-bedded Krosno sandstones. The locally developed transitional layers would be included to the so defined formation. The upper boundary of the formation is exceptionally diachronous. The following members are proposed to be distinguished in the Menilite Formation:

a — Łodyna Member — shale-sandy sub-chert layers; the term introduced by F. Szymakowska and A. Wójcik (1984) and accepted in this paper as an earlier than the Jamna Dolna Member (J. Kotlarczyk, T. Leśniak, 1990);

b — Siedliska Conglomerate Member;

c — (Borysław) Sandstone Member — sub-chert sandstones, laterally replacing the Łodyna Member or Siedliska Conglomerate Member;

d — (Dynów or Ulanica) Marl Member — cherts and marls in lower part of Menilite Formation;

e — Łopianka Sandstone Member — packet of the Krosno sandstones among Menilite shales, distinguished locally (J. Kotlarczyk, 1988);

f — Kliwa Sandstone Member — Kliwa sandstones interbedded with shales, with brown ones mainly;

g — Liskowate Member — brown shales with intercalations of the Krosno sandstones and sometimes of the Kliwa sandstones (transitional layers from Menilite to Krosno ones);

8. The author proposes to leave the term **Krosno Formation** for the lower Krosno Beds (as understood by L. Koszarski, K. Żytko, 1961) in all the tectonic units of the Flysch Carpathians. In the discussed area the beds are developed as muscovite sandstones interbedded with dark grey shales. This lithological type used to be determined as the Lesko facies of the Krosno Beds (K. Żytko, 1967–1968) and, therefore, the term Lesko Sandstone Member is proposed to be introduced for the only lithotype of this formation occurring in the Skole unit. The upper boundary of the formation in the Skole unit is the base of the shale complex (shales of Niebylec) or the base of the Ostre glauconitic sandstones, and in the zones where these deposits are lacking the base of the sandstone-shale complex (so-called corrugated sandstones, the Góry Słonne Member).

9. The author proposes the upper Krosno Beds (following L. Koszarski, K. Żytko, 1961) to name the **Strzyżów Formation** from the Strzyżów depression which is partially filled up with these deposits. Within the formation several members might be distinguished:

a — Niebylec Shale Member — a shale-sandstone complex often occurring at the base of the Góry Słonne Member;

b — Ostre Sandstone Member — thick-bedded glauconitic sandstones (in the Skole unit — only in the Ustrzyki Dolne fold);

c — the Góry Słonne Member — sandstone-shale series (thin- and medium-bedded sandstones, often with convolutions, alternated with dark grey shales);

d — Manasterzec Shale Member — grey shales with subordinate thin-bedded sandstones;

e — Leszczawka Diatoms Member (J. Kotlarczyk, 1966).

The Jawornik Ruski Sandstone Bed may be distinguished as well.

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ANALIZA FORMALNYCH WYDZIELEŃ LITOSTRATYGRAFICZNYCH ORAZ PROPOZYCJA PODZIAŁU JEDNOSTKI SKOLSKIEJ POLSKICH KARPAT FLISZOWYCH

Streszczenie

Spośród wszystkich jednostek polskich Karpat fliszowych najwięcej wydzieleń litostratygraficznych sformalizowano dotychczas w jednostce skolskiej. Ze względu na kontrowersje dotyczące zaproponowanych jednostek formalnych w użyciu jest również tradycyjne, nieformalne nazewnictwo litostratygraficzne. Dotychczasowym pracom na ten temat można postawić pięć zarzutów:

— część wydzieleń nie jest jednostkami litostratygraficznymi, lecz jednostkami chronostratygraficznymi lub zapisem cykli sedymentacyjnych;

— wydzielane ogniwa są niemożliwe do skartowania; kodeksy stratygraficzne sugerują wprawdzie jedynie kartowalność formacji, ale w Karpatach fliszowych (gdzie liczba tradycyjnych wydzieleń sięga kilkuset, a wydzielane formacje mają często niewielkie miąższości) należy wprowadzić postulat, by również większość ogniw była kartowalna — zapobiegnie to dalszemu mnożeniu ilości nazw oraz zaciemnieniu relacji między podstawowymi litotypami;

— część ogniw nie da się wydzielić poza obszarem lub profilem typowym;

— część wydzieleń jest niejasno opisana i ma nieprecyzyjnie określone granice;

— występują kontrowersje dotyczące nazewnictwa wydzieleń i przyjęcia określonych stratotypów (np. formacja ropianiecka).

W związku z powyższymi kontrowersjami przedstawiono nowy schemat podziału litostratygraficznego jednostki skolskiej na dziewięć formacji: spaską, łupków radiolariowych (z Dołhego?), rybotycką, łupków pstrych (z Żohatyna?), hieroglifową (z Bachórza?), margli globigerinowych, menilitową, krośnieńską i ze Strzyżowa (tab. 1, fig. 2). Kierowano się przy tym następującymi kryteriami:

— zachowanie nazw tradycyjnych (co dopuszczają niektóre kodeksy stratygraficzne);

— ograniczenie do minimum liczby nazw i wydzieleń;

— niewydzielanie jednostek niemożliwych do skartowania w skali mapy przyjętej dla Karpat (1:50 000), z wyjątkiem wyróżniających się litologicznie i szeroko rozprzestrzenionych (np. margle globigerinowe).