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Abstrakt

Otolitová fauna písčité facie robulových šlírů s.l. Horního Rakouska (spodní ottnang) je složena z čistě mořských druhů indikujících relativně značné hloubky původního životního prostředí. Silná koroze otolitů a úlomkovité zachování spolu s převahou juvenilních exemplářů ukazují na primárně allochtonní původ studované asociace, která však každopádně dokumentuje dobré spojení sedimentačního prostředí s otevřeným mořem. S touto představou je v souladu i přítomnost četných druhů žraloků (predátorů) i prokázaná existence relativně silných proudů a silné tidální aktivity během ukládání písčité facie robulových šlírů s.l.

Většina zjištěných druhů kostnatých ryb je ze sedimentů ottnangu uváděna poprvé.

Zusammenfassung

Die Otolithenfauna der Sandfazies des Robulus-Schliers s.l. in Oberösterreich (unteres Ottnangien) ist ausschließlich aus marinen Arten zusammengesetzt, die verhältnismäßig beträchtliche Tiefen des ursprünglichen Lebensmilieus indizieren. Eine starke Korrosion und bruchstückartige Erhaltung der Otolithen sowie ein Übergewicht juveniler Exemplare weisen auf einen primär allochthonen Ursprung der untersuchten Assoziation hin, durch die jedenfalls eine gute Verbindung des Sedimentationsraums mit der hohen See dokumentiert wird. Mit dieser Vorstellung stehen auch das Vorkommen zahlreicher Haifischarten (Raubfische) sowie die nachgewiesene Existenz verhältnismäßig starker Ströme und Gezeiten während der Ablagerung der Sandfazies des Robulus-Schliers s.l. im Einklang.

Die meisten ermittelten Arten der Knochenfische werden aus den Ablagerungen des Ottnangiens zum erstenmal angeführt.

CARBONIFEROUS CONODONTS FROM BRUSNÍK ANTICLINE (SOUTH SLOVAKIA)

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Geologic structure

The geologic structure and tectonic interpretation of the eastern part of the Slovenské rudohorie Mts. (Spišsko-gemerské rudohorie) are at present widely discussed in Czechoslovakia and abroad, especially in Hungary and Austria.

A structure test hole in the southern part of the Slovenské rudohorie Mts. on the periphery of the Rimavská kotlina basin (Vozár et al. 1986) had to solve the problem concerning the geologic structure of the Inner West Carpathians, i.e. the Silicicum as a nappe unit and its relation to the Gemericum s.s. The structure test hole was situated in the Brusník anticline consisting according to earlier ideas (Fusán 1957, Chmelík — Jablonský 1964, Snopko et al. 1970, Varga et al.1971, Mello et al. 1976, Vass et al. 1983) — of Early-Paleozoic complexes. These are lithologically correlated with the Gelnica Group, in the upper part — with Permian and Lower Triassic terrigencus complexes, and higher up with Lower-Middle Triassic limestones. The core of the anticline is ranged to the Devonian on the basis of lithological correlation with the data by Snopková — Snopko (1979). Mello (in Mello et al. 1976) regards the Early-Paleozoic complexes as the Gelnica Group, i.e. as the Gemericum, but he ranges the Late Paleozoic and the Mesozoic to the Silica nappe. According to the new interpretation by Mello — Vozárová (1984) the entire Brusník anticline is part of the Silicicum nappe unit, presumably underlain by the Meliata Group (Meliaticum). Later on (Vozárová — Vozár 1988) the presence of an Alpine granite intrusion in deeper parts of the anticline was presumed. All the opinions were, however, based on the idea of the Gelnica Group as the oldest member in the core of the Brusník anticline, and the anticline was regarded as part of the units in the eastern part of the Slovenské rudohorie Mts. and in the Slovak Karst, i.e. the Gemericum and Silicicum comprising Paleozoic complexes in their structure.

The structure test hole at Brusník (BRU-1) was situated in the core of the anticline. The lithological section of the 1 043 m deep hole offered new data enabling the new interpretation of the anticline, particularly in the relation of Paleozoic occurrences in Hungary.

Following are most significant data from the borehole BRU-1:

1. The borehole penetrated two tectonically related rock complexes as indicated by a prominent fault at the depth of about 600 m;
2. conodonts from the interval of 75—116 m of the upper rock complex were determined by Ebner and Straka and ranged to the Namurian B-C to Westphalian A;
3. the rock complex from the interval 0—598.8 m with its lithologic character and stratigraphic position is best correlatable with the Szendrö Fm. (described from the Szendrö Mts. in Hungary, Kovács — Péró 1983, Kovács 1987);
4. the lower rock complex below the fault sole has so far not been dated biostratigraphically but it may lithologically correspond to olistostromes of the Rudabánya Mts., described by Kovács (1987).

Lithological characteristics

The upper part of the borehole BRU-1 to the depth of 598.8 m consists of grey and black phyllites, metasiltstones, and intercalations of line-grained metasandstones, mostly refolded, showing a distinct cleavage. Metasediments display typical features of flysch sedimentation, including graded- and laminar bedding. Graded-bedded intraformation breccia appear amid the metasediments in the interval of about 497—541 m. Structures in the breccia correspond to the gravity current sediments. The fragments are angular ranging from 1 cm to 10 cm in size. They consist of shales, siltstones, acid volcanics, less lydites, and sporadical crystalline carbonates. Clastic detritus with quartz grains in metasandstones has the same composition. Metasandstones contain small amounts of plagioclase-, microperthite- and clastic mica grains. There are also metamorphosed volcanoclastic sandstones and rhyolite tuffs (maximum in the interval of 250—350 m). The volcanoclastic sediments consist of fragments of quartz-, microperthite-, plagioclase phenocrysts, of occasional K-feldspar and decomposed biotite. The microcrystalline volcanogenic matrix is recrystallized to quartz, sericite, ore pigment, tourmaline and rutile.

Layers of grey to black, bluish-grey carbonates are in the interval of 75—116 m. They are divided from one another by dark shale layers. The carbonates are either crystalline and contain fragments of organic detritus, or they are slightly recrystallized with a micrite or microsparite texture, formerly enriched with clay material and organic matter. In the same interval (75—116 m) conodonts were found, determined by Ebner.

The complex of metasediments from the interval 0—598.8 m underwent regional metamorphism to the initial degree of the green schist facies (the approximate temperature 370—400 °C).

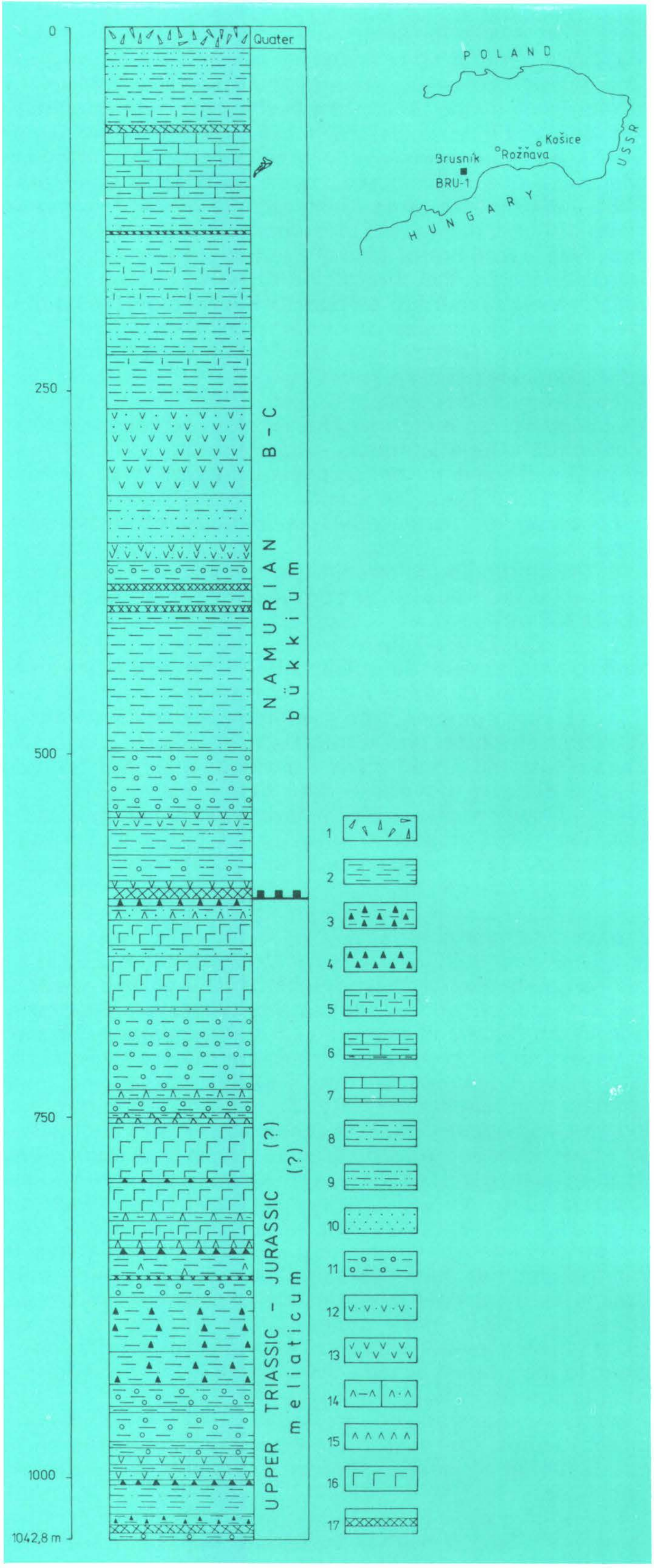
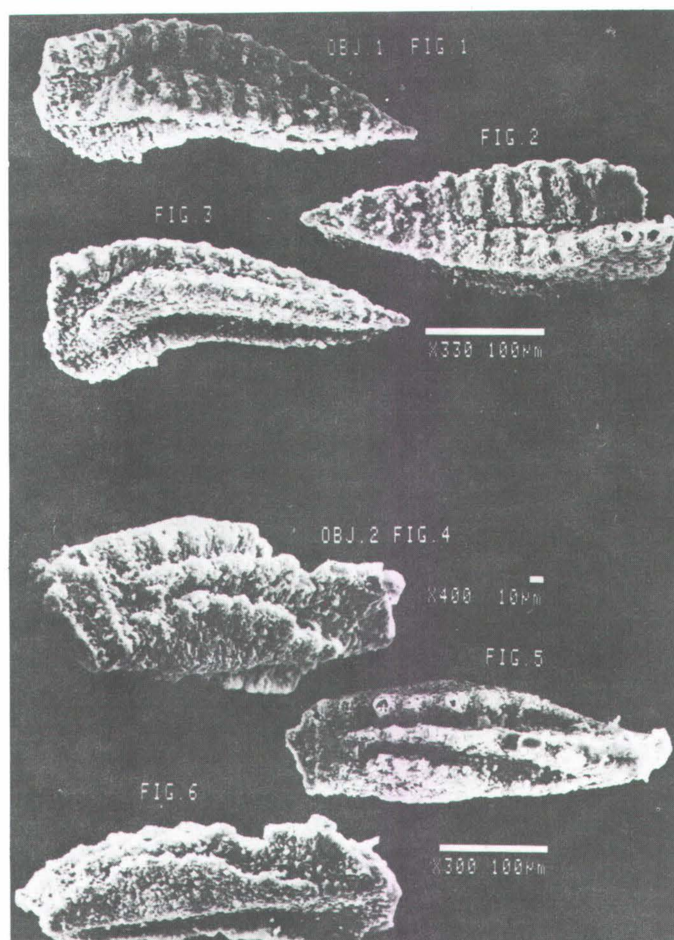


Fig. 1: Lithostratigraphical scheme of rock complexes of borehole BRU—1
1 — loamy stony debris (Quaternary); 2 — very low- and low-metamorphosed black pelites; 3 — very low-metamorphosed pelites with thin intercalations and laminae of silicites; 4 — black and grey silicites; 5 — low-metamorphosed pelites containing carbonate detritus; carbonate metapelites; 6 — low-metamorphosed clayey carbonates; 7 — grey, bluish-grey crystalline carbonates; 8 — laminated and graded-bedded metasiltstones and metapelites; 9 — metasandstones with intercalations of dark phyllites; 10 — very low- and low-metamorphosed sandstones; 11 — gravitational slides of breccia and conglomerates; 12 — volcanoclastic metawackes; 13 — metarhyolite tuffs; 14 — rhyolite volcanoclasts a) in metapelites, b) in metasandstones; 15 — detritus from basic volcanics; 16 — serpentinized picrite basalts; 17 — prominent zones of tectonic crushing.

Paragenesis of metamorphosed minerals: quartz + muscovite + albite ± semigraphite, rutile, chlorite. It was a low-pressure regional metamorphism, b_0 of muscovite = 8.994 Å, s = 0.005, n = 60 (in Mazzoli — Vozárová 1989).

A complex of low-grade metamorphosed sediments from the borehole BRU-1 (interval 0—598.8 m) cannot be compared to any occurrences in the Czechoslovak West Carpathians in its lithological character and stratigraphical range but it is comparable with the complex of Szendrö phyllites in Hungary (cf. Kovács — Péró 1983, Kovács 1986). Carbonate olistostromes containing conodonts and showing the flysch character of sedimentation like in the borehole BRU-1 (interval 0—598.8 m) were found in the Szendrö Mts. In the complex of the Szendrö phyllites rhyolite metatuffs, tuff sandstones, turbidite conglomerates with siliclastic intraformational detritus have not been described. In the regional sense the Middle-Carboniferous flysch from the Szendrö Mts. is compared to the Hochwipfel flysch from the Carnian Alps and from the Karawanken. There, also coarse-clastic turbidites and rhyolite-dacite volcanoclastic material have been described (Schönlaub 1979). It is to be emphasized that the Hochwipfel flysch was folded and an-

Plate 1
Object 1
Figures 1—3: *Idiognathoides* cf. *corrugatus* (HARRIS and HOLLINGSWORTH, 1933)
2 Upper view
3 lateral view
Object 2
Figures 4—6: *Idiognathodus* or *Streptognathodus*
5 upper view
6 lateral view



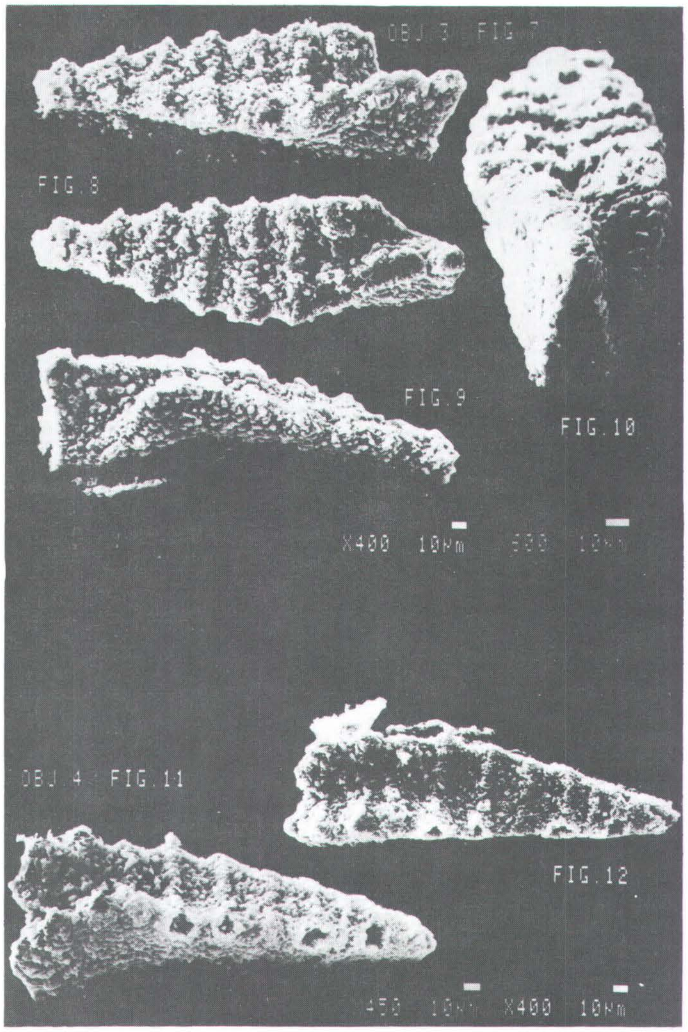


Plate 2
Object 3
Figures 7—10: *Idiognathoides* sp.
8 upper view
9 lateral view
Object 4
Figures 11—12: *Idiognathoides* sp.
11 upper view
12 lateral view

chimetamorphosed prior to the deposition of the Auerning formation ranged to the Upper Westphalian. This is in contradiction to the opinions about the Alpine age of metamorphosis of the Szendrö phyllites according to Árkai (1983), Kovács — Kozur — Mock (1983).

The lower rock complex penetrated by the borehole BRU-1 below the fault sole in the interval ranging to the depth of 1042.8 m consists of sediments and volcanics. Their characteristic features are: the presence of serpentinized picrite basalts, black silicites alternating with pelites, layers of polymict coarse-grained breccia with rhyolite volcanoclastic material. So far we have no biostratigraphical data about this rock complex.

Sediments and volcanics are very low metamorphosed — only the top part of the anchizone. The basic volcanics represent the porphyric types with ophite- or subophite texture and fine-grained varietes. Among original minerals only clinopyroxenes and plagioclases are preserved. Basalts are partly serpentinized. Thin basaltic intercalations are in the whole complex.

Coarse-grained polymict breccia are characterized by plentiful rhyolite detritus. Besides that the clastic material in breccia comprises various types of sericite shales, silicites, scarce micrite carbonates and carbonate shales and sporadical decomposed basic volcanics. There is a contact between clasts in breccia, in places without matrix. The structure of breccia is unsorted. In the borehole the coarse-clastic sediments are amid dark, formerly clayey-silicite sediments and their contact is sharp. They have the character of slumps amid fine-grained basinal sediments.

Analogous conglomerates were found in Jurassic olistostromes of the Rudabánya Mts. in Hungary (Kovács 1987). They also contain rhyolite detritus in a great amount, and limestone clasts. In the borehole BRU-1 the rhyolite detritus is mostly associated with siliclastic detritus (silicites, shales). No analogous complex has been found in Paleozoic and Mesozoic formations of the Czechoslovak West Carpathians.

Stratigraphic position

Basing on conodonts from the interval of 75—116 m we range the upper rock complex (to 598.8 m) to the Namurian B-C or up to the Westphalian A. We have no biostratigraphic data about the lower rock complex (at the level 600 m below the fault sole). So the opinion about the age of the oldest rocks in the core of the Brusník anticline must be changed. They were regarded as Devonian on the basis of lithological correlations with the upper part of the Gelnica Group (palynological dating by Snopková — Snopko 1979).

Conodonts found:
Idiognathoides cf. corrugatus (HARRIS-HOLLINGSWORTH, 1933) 1 ex. Idiognathoides sp. 2 ex.
Streptognathodus vel Idiognathodus sp. 1 Ex. div. ramiforme Elements 3 ex (Table 1)

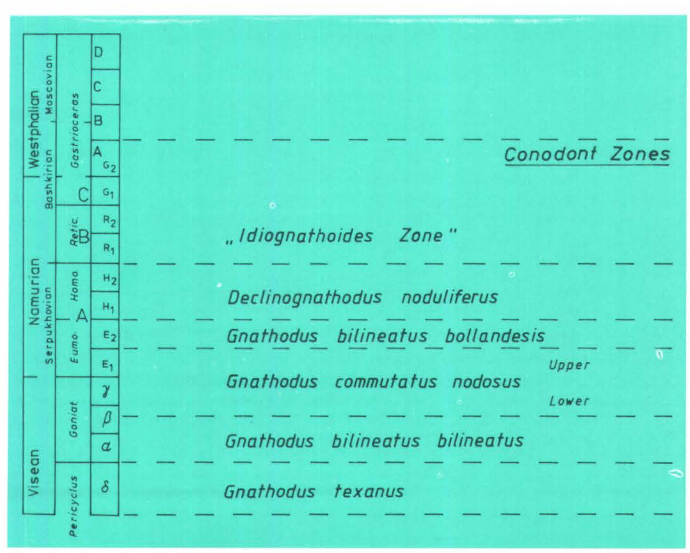
According to Ebner the determined forms may — in respect of a wider regional correlation — be ranged to Idiognathoides — „Zone" corresponding to the Namurian B — Westphalian A.

The existing data on the stratigraphy of the Gemeric Carboniferous particularly the conodonts from the Ochtiná Fm. (Kozur — Mock — Mostler 1976, Kozur — Mock 1977) and lithologic characteristics of the Ochtiná Fm. (Vozárová in Bajaník — Vozárová — Reichwalder 1981) prove that the borehole BRU-1 in the interval ranging to 598.8 m cannot be compared to any known occurrence of the Upper Carboniferous in the West Carpathians.

Conclusions

The borehole BRU-1 was realized in the core of the Brusník anticline. On the basis of lithological correlation the anticline core was regarded as an equivalent of the upper part of the Gelnica Group (Lower-Middle Devonian). The bore-

Table 1.



hole penetrated two rock complexes differing in lithology and metamorphism. The rock complexes are in tectonic contact with each other. The upper unit contained Namurian B-C to Westphalian A conodonts. The rock complex is correlated with the Szendrö phyllites Formation (the Bükkium). The lower rock complex is correlated with Jurassic olistostromal formations of the Rudabánya facies (Meliaticum). So the Brusník anticline is not part of the Gemericum s.s. It has the character of a nappe-imbrication zone comprising two higher-order tectonic units south of the Rožňava lineament.

The problem and its solution is dedicated to the 65th birthday of Profesor H. FLÜGEL from the Graz University.

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Abstrakt

Antiklinála pri Brusníku predstavuje jednu z problémových štruktúr južnej časti Slovenského rudohoria. Vrt BRU-1 (1 043 m) bol situovaný do jadra antiklinály, v ktorej sa doposiaľ predpokladalo vystupovanie gelnickej skupiny (spodný až stredný devón). Profil vrtu v skutočnosti zastihol dva odlišné súbory hornín, ktoré sú v tektonickom styku. Vrchný súbor, na základe konodontov z hĺbky 75—116 m, zaraďujeme k namuru B—C až vestfálu A. Litologicky i stratigraficky horniny v intervale do 598,8 m sú korelovateľné s formáciou Szendrö fylitov. Sporný súbor hornín (pod 598,8 m), zatiaľ bez biostratigrafických dôkazov a len na základe litológie, môže zodpovedať jurským olistostromovým sekvenciám rudabaňského vývoja. Týmto sa zásadne mení názor na doterajšie postavenie antiklinály pri Brusníku vo vzťahu k južným častiam gemerika.

Zusammenfassung

Die Brusník-Antiklinale stellt eine der problemreichen Strukturen im Südteil des Slowakischen Erzgebirges dar. Die Bohrung BRU-1 (1 043 m) wurde im Kern der Antiklinale angesetzt, in der man bisher das Auftreten der Gelnica-Gruppe (Unter- bis Mitteldevon) angenommen hatte. In Wirklichkeit wurden im Bohrprofil zwei unterschiedliche Gesteinskomplexe von tektonischer Berührung angetroffen. Der obere davon wird von uns aufgrund der Conodonten aus einer Tiefe von 75 bis 116 m dem Namur B-C bis Westfal A zugeordnet. Die Gesteine aus dem Tiefenbereich bis zu 598,8 m können lithologisch und stratigraphisch mit der Szendrö-Phyllitformation korreliert werden. Der strittige Gesteinskomplex (von 598,8 m an), bisher ohne biostratigraphische Belege, dürfte nur aufgrund der Lithologie den jurassischen Olisthostromaschichtenfolgen der Rudabánya-Entwicklung entsprechen. Durch diese Erkenntnisse wird die bisherige Ansicht über die Stellung der Brusník-Antiklinale in bezug auf die südlichen Teile des Gemerikums grundsätzlich geändert.

A. E. REUSS' IMPORTANCE FOR RESEARCH INTO NEOGENE OSTRACODA IN THE VIENNA BASIN AND THE TAXONOMIC REVISION OF HIS DETERMINATIONS

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The work of A. E. Reuss on the Ostracoda of the Neogene Austro-Hungarian Basins of the year 1850 ranks with the classic fundamental works devoted to ostracod fauna.

In his work, written in German, the author described a total of 90 ostracod species, the greatest part of which come from localities in the Vienna Basin. (In the supplements he described another 6 species from localities in Sicily, England and France.) The object of Reuss' investigations were 46 different localities, of which numbers of fossil Ostracoda were established in 28 places. They involve Baden, Möllersdorf, Vöslau, Atzgersdorf, Meidling, Döbling, artesian wells near Vienna, Heiligenberg, Brunn, Moosbrunn, Nussdorf, Gainfahren, Steinabrunn, Garschenthal, St. Nikolai, Wurzing, Grossing, Freibühl, Grinzing, Rust, Mauer near Vienna, one undefined locality in Austria, Sopron (- Oedenburg) in Hungary, Kyjov (- Gaya), Podivín (- Kostel), Rudoltice (- Rudelsdorf) in Czechoslovakia, Lapugiul de Sus (- Felsö-Lapugy) in Romania, Wieliczka in Poland. Of these localities, Nussdorf and Podivín in the facies of the Leitha limestones proved to be the richest in Ostracoda, then Brunn, Sopron, Grinzing and Rudoltice in the Teglian facies. Halite and "salt" clay of Wieliczka contained a lot of species, but as for the number of individuals, it was far behind the above-mentioned localities.

As far as the stratigraphic determination of layers of the investigated localities is concerned, they can be incorporated into the Badenian to the Pontian, the majority of them belonging to the Badenian. Reuss used the following, stratigraphically not very clear terms, rather facial terms: the Leitha limestone, which corresponds to the shallow-water facies of the Badenian, and the Teglian.

As stated by Reuss, at the time he wrote the work five genera of fossil Ostracoda were known: Cypridella de KONINCK, 1841, Cypris O. F. MÜLLER, 1776, Cytherina LAMARCK, 1818, Cypridina EDWARDS, 1840, Cyprella de KONINCK, 1841. The material investigated by Reuss only contained representatives of genera Cypridina and Cytherina. The author also mentioned that of all the species investigated by him, only 12 were more widely distributed: Cytherina subdeltoidea (MÜNSTER, 1830), C. Mülleri REUSS, 1850, Cypridina trigonella REUSS, 1850, C. punctata (MÜNSTER, 1830), C. Haueri (RÖMER, 1838), C. deformis REUSS, 1850, C. hastata REUSS, 1850, C. sulcato-punctata REUSS, 1850, C. Haidingeri REUSS, 1850, C. cornuta (RÖMER, 1838). C. plicatula REUSS, 1850, C. Edwardsi (RÖMER,