

## ON THE MID-CRETACEOUS MACROFAUNA IN THE SILESIAN UNIT (WESTERN EXTERNAL CARPATHIANS, CZECHOSLOVAKIA)

Zdenek VASICEK

### INTRODUCTION

Silesian nappe termed also as the Silesian Unit of the External Carpathians is known especially for its fauna reach in Cephalopoda coming from Lower Cretaceous which was classically elaborated by Uhlig (1883, 1902) and recently revised and completed with a new field investigation (Vasicek, 1972, 1973, 1975).

In the last years we have also managed to store - by the help of field investigation - a relatively not very extensive collection of Cephalopoda and Inoceramus Bivalvia coming from the deposits of the Mid-Cretaceous. This collection represents at the same time the main subject of the present study. The macrofauna from these deposits is - from the regional point of view - very important and completes substantially the hitherto data given by Liebus and Uhlig (1902).

### REVIEW OF STRATIGRAPHY

From the lithological point of view the deposits of the Mid-Cretaceous Silesian Unit represent a complex of pelrites, sandstones, and - may be also - conglomerates representing the transition from non-flysch or flyschoid sedimentation of the Lower Cretaceous to the typical flysch sedimentation of the Upper cretaceous.

Generally, the Silesian Unit is divided into two principal facies, i.e.:

- a) Baska facies with the predominance of psammitic and - may be also - conglomerate deposits (marginal development),
- b) Godula facies with the predominance of pelrites (basin development).

The division of these deposits into bedding members is shown in Table I. The right part of the Table illustrates the classical division according to Uhlig (1902) with more detailed data concerning the age of deposits given in the Liebus and Uhlig (1902) paper. The left part illustrates the present state of knowledge, which is based on the basic schema after Hanzlíková and Roth in Mahel et al. (1968). The stratigraphical grouping of beds is completed with microfossil results of Hanzlíková (1966, 1973) as well as with the macrofaunal data obtained by the author. The beginning of the lithological types (beds) was not synchronous in the sedimentary basin - as results especially from the microfossil investigations - so that the time boundaries are not generally horizontal.

### MACROFAUNAL CHARACTERISTICS OF MEMBERS OF GODULA FACIES

The Lower Aptian corresponds lithologically to the uppermost part of the pellicite series of the Tesin - Hradiste Formation. Its age is relatively well confirmed by a number of Ammonites which are characteristic for the given period:

- Parshchiceras baborense* (Coquand),  
*Castilleus microcostatus* (Sim., Bac. et Sor.),  
*Aceroceras* (*Aspinoceras*) *karsteni* (Hohenegger in Uhlig),  
*Procheloniceras albrechtianstriae* (Hohenegger in Uhlig),  
*Procheloniceras pachystephanum* (Uhlig),  
*Chelonoceras aff. seminodosum* (Sinzow),  
*Chelonoceras* sp. ind.,  
*Deshayesites beskidensis* (Uhlig),

*Deshayesites? borovcae* (Uhlig) and apparently *Sowerbyoceras* (*Holcophylloceras*) *guttardi victorianum* (Kilian).

From the Upper Barremian to the Lower Aptian also the following species of Ammonites transfer:

- Parshchiceras infundibulum bontshevi* (Manolov),  
*Elytoceras phestum* (Matheron),  
*Costidiscus oleostephanoides* Uhlig,  
*Macroscaphites yvoni* (Puzos),  
*Ancyloceras* (*Audouliceras?*) *fallauxi* (Uhlig),  
*Ptychoceras puzosianum* d'Orbigny,  
*Ptychoceras ditleri* Vasicek,  
*Pseudohaloceras lipovtzeense* (Zeuschner).

A rich occurrence of the *Procheloniceras albrechtianstriae* species made it possible to divide in Lower Aptian the same zone, (Vasicek, 1971), however, for delimitation of the upper boundary of this zone macrofaunal findings are not available. In the higher Lower Aptian the changes of the sedimentary conditions take place. Black noncalcareous Verovice Member (redefined by Roth and Matejka, 1953), which have not given any determinable macrofaunal findings yet, are settled here. Sometimes this member is substituted by that of Lhoty.

In the transitive deposits situated between the Verovice and Lhoty Members we succeeded to evidence the higher Upper Aptian (Clansay) by the following Ammonites:

- Tetragonites duvalianus* (d'Orbigny), *Acanthohoplites nolani exiquicostatus* Egoian and *Nodosohoplites* sp. n., *Acanthohoplites* cf. *bigoureti* (Seunes) described by Liebus in Liebus et Uhlig (1902) originate practically from the same stratigraphical level, however, from the typical Lhoty Member.

Albian (Lhoty Member) is evidenced imperfectly by the findings given by Liebus (Liebus et Uhlig, 1902):

- Neohibolites* cf. *minimus*, *Inoceramus concentricus* and *Inoceramus laebei*. From the given species only the last one has been figured, the original of which is probably lost. According to my control the Liebus's *Inoceramus laebei* is probably the synonym of *Inoceramus anglicus* Woods (see Vasicek, in print).

Only two macrofaunal findings originate from the overlying member. The rostrum of *Neohibolites subtilis* Krimholz (the total distribution: the Upper Albian to the Lower Cenomanian) has been found in the Ostravice sandstone and imperfectly preserved cast of a big Ammonite determinable only as *Mantelliceras* sp. (Lower Cenomanian) comes from the Variegated Godula Member.

### BASKA FACIES

At the beginning of the Aptian the uniform sedimentation of the series of Tesin - Hradiste Formation probably last in the Baska and Godula facies. On the basis of Ammonites these deposits are evidenced at present from the Hauterivian to the Upper Barremian. The upper part of this formation has the sandstone up to conglomerate development which is after Hohenegger (1861) designated as the Chabovice development. From the conglomerate positions the findings of *Belonites* rostra are then originating determinable as *Neohibolites* ex gr. *minimus* (Miller), which are indicating the higher Middle to Upper Albian. On another locality *Parahibolites tour-*

*tiae* (Weigner), the leading species for the Lower Cenomanian as well as the juvenile rostra of *Neohibolites*, occurs abundantly on the basis material of conglomerates.

Other localities corresponding lithologically to the basis of Baska Member provided both the findings of *Inoceramus concentricus* Parkinson and *Inoceramus anglicus* Woods. Together with *Inoceramus anglicus* we succeeded to find the Belemnite rostrum determinable as *Neohibolites* ex gr. *minimus* (Miller) as well, which is again evident from the higher Middle or Upper Albian.

#### CONCLUSION

With the exception of the Lower Aptian of Godula Facies the macrofaunal findings may be considered as sporadically occurring. However, they give new important data for the identification of the geographical distribution of some stratigraphically important species in the European scale as well as the key positions for elaborating the regional biostratigraphy in details.

The findings of some leading species, such as *Prochelonicerus albrechtiaustriacae*, *Acanthohoplites nolani exiuecostatus*, *Acanthohoplites cf. bigoureti*, *Inoceramus anglicus*, *Neohibolites* ex gr. *minimus*, *Neohibolites subtilis*, *Parahibolites tourtiaei* etc. are of great importance. The findings of *Inoceramus Bivalvia* allow to correlate the Lhoty and Baska Members on one hand, and moreover, they represent - to some extent - a connecting member between the West-European and East-European localities (England, France, Soviet part of the Carpathians, and other regions in the U.S.S.R.) on the other hand. The findings of Belemnites from conglomerate deposits of Baska Facies (from the Upper Albian to the Lower Cenomanian) together with the bodies of the Ostravice sandstone situated in the Variegated Godula Member being approximately of the same age. The conglomerate character of the deposits situated in the Baska Facies and the turbidity character of the deposits situated in the basin (Godula) Facies may be to the response for the Austrian phase of the Alpine folding in the Central Carpathians.

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TABLE 1

REVIEW OF STRATIGRAPHIC DISTRIBUTION OF THE MID-CRETACEOUS  
MEMBERS IN THE SILESIA UNIT

STAGES	BASKA FACIES	GODULA FACIES	UHLIG, 1902
TURONIAN		GODULA FORMATION	
CENOMANIAN	BAŠKA MEMBER	VARIEGATED GODULA MEMBER <i>Qstřavice Sandstone</i>	
ALBIAN	CHLEBOVICE FACIES	LHOTY MEMBER	GODULA SANDSTONE
APTIAN		VEROVICE MEMBER	ELLGOTHER BEDS (LHOTY BEDS)
BARREMIAN	TĚŠÍN-HRADIŠTĚ FORMATION	TĚŠÍN-HRADIŠTĚ FORMATION (UPPER PART)	WERNSDORFER BEDS (VEROVICE BEDS)

*Lower* | *Upper*