

RESULTS OF CONODONT INVESTIGATIONS IN HUNGARY UNTIL 1981
(EXCEPT THE TRIASSIC OF THE BÜKK MTS.)

S. Kovács

Summary

In the North Hungarian Paleozoic the age-determination of the formations of the Szendrő and Uppony Mts., so far debated except the corall-bearing Middle Devonian Szendrőlás limestone, has become possible by means of conodont-biostratigraphical investigations. The Lower Devonian to Middle Carboniferous (from Upper Lochkovian to Lower Bashkirian) age of the rocks underwent on very low and low grade metamorphism could have been proven. The most important geological result is that the Hercynian orogeny did not play an important role in the Bükkium; both its structure and metamorphism are of Alpine origin (cf. KOZUR - MOCK, 1977, 1979; KOVÁCS - KOZUR - MOCK, in press; KOVÁCS - PÉRÓ, in press).

From the classical Triassic outcrops of the Balaton Highland KOZUR and MOSTLER described a number of new conodont species in the early seventies and the Tethyan Middle Triassic conodont zones are also mostly based on this region. Related to the Anisian/Ladinian boundary problems, the re-investigation of the ammonite- and conodont-rich sections is in progress (SZABÓ et al., 1980).

In the North Hungarian Triassic, where the author has done the most of his work, the stratigraphical range of the basinal formations formerly placed in the Ladinian has extended from the Bythinian, resp. from the Pelsonian to the Sevatican substages. In the Aggtelek Mts. (southern, marginal part of the Silice nappe) a Hallstatt-type sequence of outer shelf, resp. shelf-slope facies has become known, while in

the Rudabánya Mts., above a carbonate platform facies restricted to the lower part of the Anisian, a deep-water Triassic.

In southern Hungary, in the Mecsek and Villány Mts. BÓNA (1976) pointed out, that conodonts occur in a great number in the Pelsonian/Ilyrian boundary beds, otherwise they are missing.

Conodonts, as indicators of low and very low grade metamorphism, together with the microfacies investigations made parallel, have a very important role in the separation of North Hungarian Paleo-Mesozoic non-metamorphosed and metamorphosed (greenschist facies and anchizonal) series during mapping. Alternation of metamorphosed and non-metamorphosed series within one mountains allows to conclude a very complicated folded, nappe structure instead of the previously assumed slightly folded and imbricated one.

Explanation of figures

Fig. 1: Namurian paleogeographical sketch from the Szendrő Mts., with the limestone olistostrom levels.

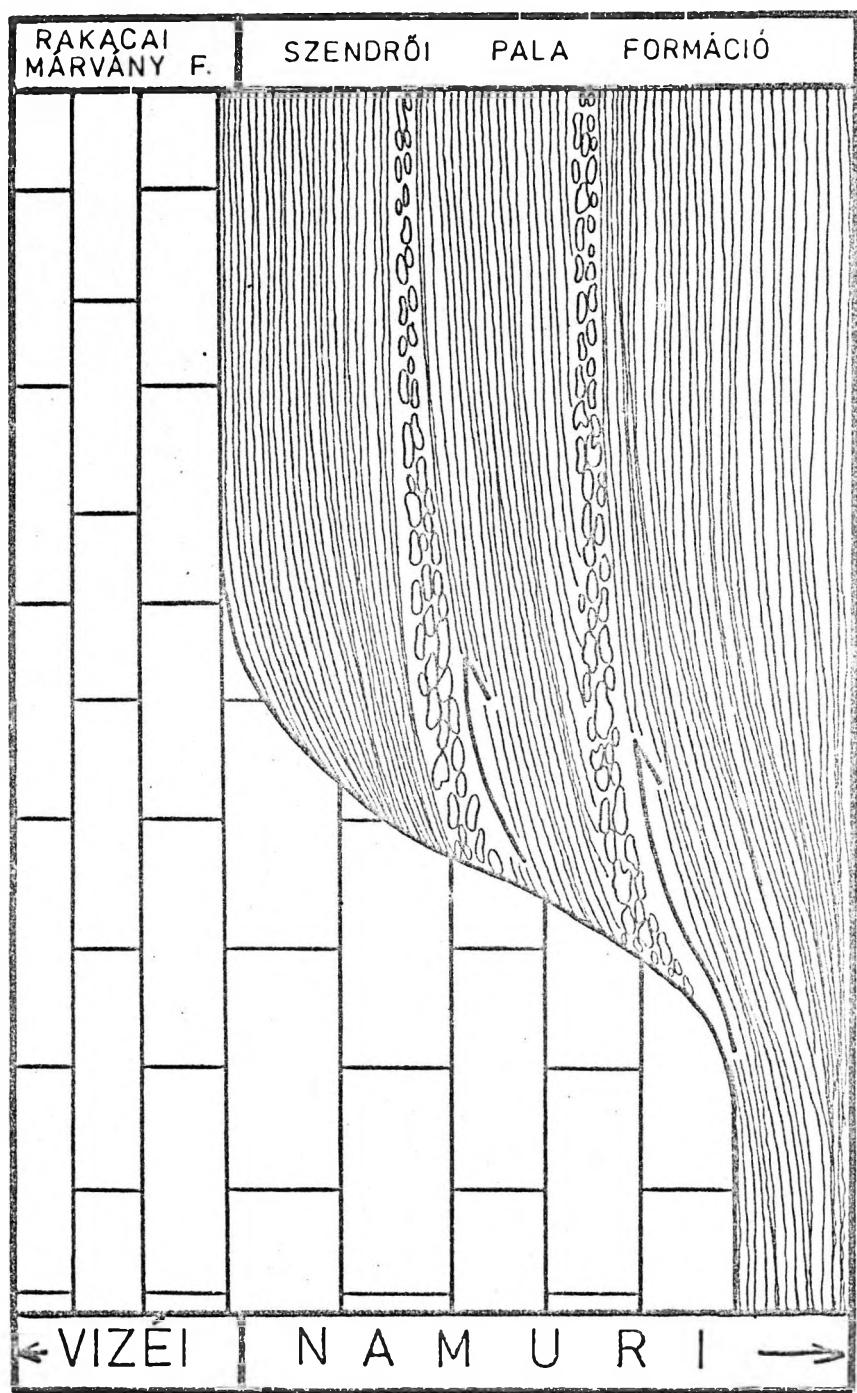
Fig. 2: The Lower Devonian conodont zones.

Fig. 3: The Middle and Upper Devonian standard conodont zones, after ZIEGLER (1971) and KLAPPER and ZIEGLER (1979).

Fig. 7: Carboniferous conodont zones. A: Tournaisian - Viséan (shelf): AUSTIN (1974); Namurian: HIGGINS (1976); Westfalian: MERRILL (1973); Stefanian: KOZUR et al., (1979). B: Tournaisian: Sandberg (1979), Viséan (basin): AUSTIN (1974). (Westfalian - Stefanian part compiled by H. KOZUR.)

Fig. 5: Ranges of Middle and Upper Triassic conodonts (only platform elements). After KOVÁCS and KOZUR (1980).

1. ábra - (Fig. 1)



	Emelet	Conodont a - zónák	Emelet	Conodont a - zónák
	NY- EURÓ PA	ÉSZAK - AMERIKA KLAPPER & JOHNSON, 1977 LANE & ORMISTON, 1979.	BAR- RAN- DIUM	SZOVJETUNIÓ MASHKOVA, 1979.
KÖZ- DEVON	EI- FELI		EIF.	
		Polygnathus patulus		Polygnathus patulus
	EMSI	Polygnathus serotinus		Polygnathus serotinus
		Polygnathus inversus		Polygnathus inversus
		Polygnathus gronbergi		Polygnathus perbonus
		Polygnathus dehiscens		Polygnathus gronbergi
ALSÓ - DEVON	SIEGENI	Polygnathus pirenae	ZLI- DALEJI	Polygnathus dehiscens
		Eognathodus sulc. kindlei		Pand. steinhornensis miae
		Eognathodus sulc.sulcatus		Pandorinellina exiqua
	GE- DINNI	Pedavis pesavis		Pandorinellina optima (Pedavis pesavis)
		Ozarkodina delta		Icriodus ecclateritescens
		Ozarkodina eurekaensis		Icriodus postwoschmidtii
		Icriodus woschmidtii		Icriodus woschmidtii
E-SZILUR			LOCHKOVI PRÁGAI CHOV	

2. ábra (Fig. 2)

C O N O D O N T A - Z Ó N Á K			Ammonites sztratigr. éma- let
		Protognathodus - fauna	dol VI
		Bispathodus costatus	F K
		Polygnathus styriacus	A F dol V K
		Scaphignathus velifer	A dol IV F K A dol III
		Palmatolepis marginifera	A F
		Palmatolepis rhomboidea	A dol β F
		Palmatolepis crepida	A dol α F K
		Palmatolepis triangularis	A dol α F K
		Palmatolepis gigas	A dol δ F K
		Ancyrognathus triangularis	dol γ F
		Polygnathus asymmetricus	dol β F K A dol α A
		Schmidtognathus hermanni - Polygnathus cristatus	A dol α? F A
KÖZÉPSŐ - DEVON	E I F E L I	Polygnathus varcus	A dol α? F K
	GIVETI	Polygnathus xylius ensenensis	A
		Tortodus kockelianus kockelianus	
		Tortodus kockelianus australis	
		Polygnathus costatus costatus	
		Polygnathus costatus patulus	F A
ALSÓ- D.	HESI		Maenio- ceras

3. ábra /Fig. 3/

K - EUROPA		ANGLIA		E. - AMERIKA		emelék		B		Conodonták - fajlistáj	
GZSELI	A	VIRGILIAI		"Streptognathodus" elegantulus							
KASZIMOV	A	MISSOURI		"Streptognathodus" tuzhenc evi							
		DESMONESI		"Streptognathodus" elegans							
		ATOKAI		"Streptognathodus" gracilis							
		N S Z I L V A		"Streptognathodus" opulus							
		YADONI		"Streptognathodus" opulus							
		MORROWI		"Streptognathodus" corcellous							
		NEOGNATHODUS		"Streptognathodus" mediterraneus							
		HEDDINGHODUS		"Neognathodus" mediterraneus							
		NEOGNATHODUS		"Neognathodus" mediterraneus							
		BOTHROPS		"Neognathodus" bothrops							
		BASSIERI		"Neognathodus" bassieri							
		S Y M M E T R I C U S		"Neognathodus" bassieri symmetricus							
		S U L C A T U S		"Idiognathoides" sulcatus							
		P A R V U S		"Idiognathoides" sulcatus parvus							
		S I N U A T U S		"Idiognathoides" sinuatus							
		P R I M U L U S		"Idiognathoides" primulus							
		C O R R U G A T U S		"Idiognathoides" corrugatus							
		S U L C A T U S		"Idiognathoides" sulcatus							
		N O D U L U R U S		"Idiognathodus" nodularius							
		L A T E R A L I S		"Streptognathodus" lateralis							
		C O R V U C U L U S		"Cavognathodus" naviculus							
		K R A T O G R A T U S		"Cavognathodus" naviculus							
		G R A T H O D U S		"Grathodus" gratus							
		C O L I N S O N I		"Grathodus" gratus collinsoni							
		P R O C O R T I C U S		"Paracoritodus" procorticatus							
		G N A T H O D U S		"Gnathodus" bilineatus							
		B I L I N E A T U S		"Gnathodus" bilineatus							
		B I L I N E O T U S		"Gnathodus" bilineotus							
		P A R A G N A T H O D U S		"Paragnathodus" commutatus							
		C R Y S T A L L I C U S		"Crystallicus"							
		T A P H R O G R A T H U S		"Taphrognathus"							
		C U . II.		"Taphrognathus" - ? Gen. nov.							
		P E R I C Y C -		"Taphrognathus" - ? Gen. nov.							
		L U S		"Taphrognathus" - ? Gen. nov.							
		S O S A G E I		"Taphrognathus" - ? Gen. nov.							
		S		"Taphrognathus" - ? Gen. nov.							
		I		"Taphrognathus" - ? Gen. nov.							
		Z		"Taphrognathus" - ? Gen. nov.							
		K I N D E R H O O K I		"Taphrognathus" - ? Gen. nov.							
		K I N D E R H O O K I		"Taphrognathus" - ? Gen. nov.							
		G A L T E N -		"Taphrognathus" - ? Gen. nov.							
		D O R F I A		"Taphrognathus" - ? Gen. nov.							
		C J . I.		"Taphrognathus" - ? Gen. nov.							
		C O C R E A		"Taphrognathus" - ? Gen. nov.							
		T O U R N A I S I		"Taphrognathus" - ? Gen. nov.							

4. ábra (Fig. 4)

Stufe	Unterstufe	Ammoniten-Zone	
		Mackearnoceras mackearni Zone	
Langobardian		Protrachyceras archelaus Zone	
		Megioceras meginiae Zone	
Ladinian		Gymnoderites ? possidon Zone	
Fassanian		"Protrachyceras" curioni Zone	
		"Protrachyceras" reitzi-Zone	
		Nevadites fauna	
		Kellnerites fauna	
		Aploceras avisiensis Zone	
Ilyrian		Paracerasites trinodosus Zone	
		P. binodosus Subzone	
Pelonian		Balatonites balatonicus Zone	
Anisian		Balatonites shoshonensis Zone	
Bithynian		Anagymnotecas lamidicus Zone	
		Nicomedites osmani Zone	
		Paracochordiceras anodolum A.-Z.	
Argean		Keyserlingites subrobustus Zone	

1 *Neospaethodus homeri*
 2 *Gondolella jubata*
 3 *Gladigondolella carinata*
 4 *Gondolella tiborunai*
 5 *Gondolella regale*
 6 *Gondolella bulgarica*
 7 *Gladigondolella malayensis budurovi*
 8 *Nicarella germanica*
 9 *Gondolella shoshonensis*
 10 *Nicarella kockeli*
 11 *Gondolella bifurcata*
 12 *Gondolella cornuta*
 13 *Gondolella excelsa*
 14 *Gladigondolella tethyda*
 15 *Gondolella constricta*
 16 *Gondolella acuta*
 17 *Gondolella monbergensis*
 18 *Gondolella basisymmetrica*
 19 *Gondolella longa*
 20 *Gondolella suhodolica*
 21 *Gondolella media*
 22 *Gondolella bakalovi lindstroemi*
 23 *Gondolella transita*
 24 *Gondolella bakalovi bakalovi*
 25 *Gondolella trameri*
 26 *Gondolella haslachensis*
 27 *Metapolygnathus truncatus*
 28 *Metapolygnathus hungaricus*
 29 *Gladigondolella malayensis malayensis*
 30 *Celsigondolella precursor*
 31 *Gondolella foliata*
 32 *Celsigondolella watznaueri*
 33 *Pseudofurnishius heddlei*
 34 *Metapolygnathus cretensis*
 35 *Metapolygnathus munyoensis*
 36 *Neocavatella tetrica*
 37 *Metapolygnathus japonicus*
 38 *Pseudofurnishius murcianus II. subsp.*
 39 *Metapolygnathus mostleri*
 40 *Gondolella auriformis*
 41 *Pseudofurnishius murcianus murcianus*
 42 *Nosherella neopassensis*
 43 *Metapolygnathus mirabilis*

5a. ábra /Fig. 5a/

Stufe	Unterstufe	Ammoniten-Zone	
Rhaetian		Choristoceras marshi A.-Z. Choristoceras haueri A.-Z.	
Sevastian		Cochloceras suessi Zone Segenites giebeli Zone Himavatites columbianus A.-Z.	
Norian		Cyrtopleurites bicarinatus Zone	
Alaunian		Juvavites magnus Zone	
Lower Norian		Maiayites paulkei Zone Mojisovicsites kerti Zone	
Klimathites macrolobatus Zone			
Tuvalian		Tropites subbulatus A.-Z. Tropites dilleri Zone	
"Sirentes Zone"			
Julian		Trachyceras austriacum Zone Trachyceras sonoides Zone Trachyceras aon Zone	
Carnian		Frankites sutherlandi A.-Z.	
			14 Gladigondolella tethydis 29 Gladigondolella malayensis malayensis 31 Gondolella foliata 35 Metapolygnathus mungoensis 36 Neocavitella tetrica 38 Pseudofurnishius murcianus n. subsp. 39 Metapolygnathus moschleri 40 Gondolella auriformis 41 Pseudofurnishius murcianus murcianus 42 Mosherella newpassensis 43 Metapolygnathus mirautae 44 Metapolygnathus diebeli 45 Metapolygnathus baloghi 46 Gondolella polygnathiformis 47 Gondolella tadpole 48 Gondolella noah 49 Gondolella praeangusta 50 Neocavitella cavitata 51 Gondolella carpathica 52 Metapolygnathus angustus 53 Gondolella reverse 54 Metapolygnathus parvus 55 Metapolygnathus nodosus 56 Metapolygnathus communista 57 Metapolygnathus echinatus 58 Gondolella navicula 59 Metapolygnathus abneptis abneptis 60 Metapolygnathus abneptis spatulatus 61 Prioniodina sweeti transita 62 Prioniodina sweeti sweeti 63 Gondolella hallstattensis 64 Metapolygnathus multidentatus 65 Metapolygnathus posterus 66 Misikella longidentata 67 Gondolella steinbergensis 68 Metapolygnathus bidentatus 69 Metapolygnathus moscherae 70 Misikella hornsteini 71 Parvigondolella andrusovi 72 Parvigondolella leta 73 Misikella posthornsteini 74 Metapolygnathus slovakensis 75 Parvigondolella rhaetica 76 Misikella koessenensis

5.b ábra (Fig. 5b)