Geological Quarterly, Vol. 40, No. 1, 1996, p. 129–140

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Biostratigraphic correlation between Lower Cretaceous deposits in the central region of East-European Platform and the Polish Lowlands

The Russian Platform and the Polish Lowlands were independent provinces in the Lower Cretaceous within the uniform zoogeographic Boreal-Atlantic Realm: the East-European and the Polish Province. Boreal ammonites dominated over the Russian Platform in the Berriasian, Valanginian, and Hauterivian, while in the Albian-Aptian the Tethyan ammonites of wide areal extent played essential part also in the boreal province. A mixed type of Boreal-Tethyan fauna appeared in the Polish Lowlands, with southern species dominating in the Berriasian, Late Valanginian, and Middle and Later Albian. The boreal ammonites were dominating in the Early Valanginian and Hauterivian. Common boreal species are of decisive importance for correlation of the Lower Cretaceous in both provinces including such genera as *Riasanites, Surites, Borealites, Polyptychites, Dichotomites,* and *Simbirskites.*

Fauna of the Lower Cretaceous deposits in the central regions of the Russian Platform and the Polish Lowlands is mainly represented by ammonites, belemnites, pelecypods, foraminifers, and ostracods. Also, rock complexes with brachiopods and radiolarians were distinguished in the Russian Platform area; however, only ammonites and some pelecypods are of prime importance for the purpose of biostratigraphic correlation between deposits in different regions.

The East-European Platform and the Polish Lowlands were independent provinces in the Early Cretaceous; they were the East-European (Russian) and the Polish Provinces existing within uniform Boreal-Atlantic Realm (Fig. 1). With respect to biostratigraphic correlation of the Lower Cretaceous deposits in both provinces the common boreal ammonite species and genera play a key role.

The Lower Cretaceous deposits within central and eastern part of the Russian Platform occur in three large structural units: the Moscow Syneclise, the Volga–Uralian Anteclise, and the Peri-Caspian Syneclise (Fig. 1). Biostratigraphic division of the Lower Cretaceous

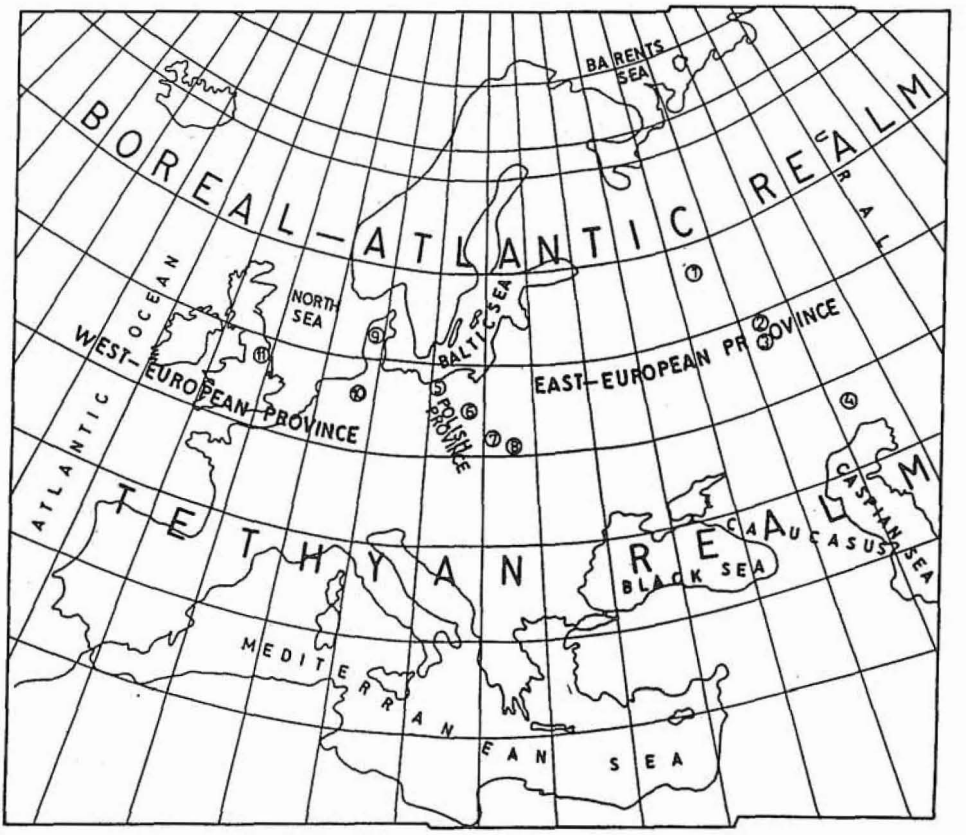

Fig. 1. Boreal zoogeographic provinces in the Early Cretaceous of Europe

1 — Moscow Syneclise, 2 — Volga–Uralian Anteclise, 3 — Ulyanovsk–Saratov Graben, 4 — Peri-Caspian Syneclise, 5 — Pomerania, 6 — Kujawy, 7 — Holy Cross Mts., 8 — Małopolska, 9 — Denmark, 10 — NW Germany, 11 — NE England

Borealne prowincje zoogeograficzne w kredzie dolnej Europy

1 — synekliza moskiewska, 2 — antekliza wołgo-uralska, 3 — rów uljanowsko-saratowski, 4 — synekliza nadkaspijska, 5 — Pomorze, 6 — Kujawy, 7 — Góry Świętokrzyskie, 8 — Małopolska, 9 — Dania, 10 — NW Niemcy, 11 — NE Anglia

was above all based on profiles of the Moscow Syneclise and the Ulyanovsk–Saratov Graben situated within the Volga–Uralian Anteclise (*Unificirovanye stratigrafitcheskye skhemy...*, 1993; N. I. Shulgina, 1985, 1989; V. A. Prozorovsky, 1989). The Lower Cretaceous deposits in both areas are developed as shallow-marine sandstones, siltstones, and dark grey claystones with abundant phosphatic nodules. Thickness of the Lower Cretaceous deposits is not great; usually in the range of scores of metres to 100 or 200 m. Maximum thickness was recorded in the south of the Russian Platform; it is the Peri-Caspian Syneclise where the discussed deposits of a labile shelf can reach the thickness of 1000 m or even more.

Six stratigraphic stages were distinguished in the Lower Cretaceous of the East-European Platform. However, subdivision into substages is not always possible (Table 1). Substages could not be defined in the Barremian due to the absence of ammonites. Belemnites ("belemnitovaya tolshtcha" — Belemnite Bed) with *Oxyteutis jasikowi* Lahusen was the basis for differentiation of that stage. A total of 19 regional ammonite zones were distinguished in the stratigraphic division of the Lower Cretaceous within the Russian Platform. In comparison with stratotypical profiles and profiles of the southern regions of the former Soviet Union, the most detailed subdivision into ammonite zones concerns the Berriasian, Valanginian, and Hauterivian deposits. Assemblage of ammonites with *Leymeriella tardefurcata* (Leymerie), which documents the Lower Albian, is insufficient for further subdivision. As compared with standard profiles, the division of Middle Albian is also insufficiently accurate; it was divided into *Hoplites dentatus* and *Anahoplites intermedius* Zones while the Upper Albian is represented by one indisputable zone only, with *Mortoniceras inflatum* (Table 1).

The Early Cretaceous basin in the Polish Lowlands was closely connected with the Permo-Mesozoic Mid-Polish Trough which developed along the southwestern edge of the Precambrian East-European Platform. It was a narrow and shallow epicontinental basin, oscillatory in its character, with alternating periods of marine and paralic-intracontinental sedimentation. With respect to variable degree of subsidence and mobility, the basin can be divided into three segments: northwestern (Pomerania), central (Kujawy), and southeastern one (the Holy Cross Mts. margin and Małopolska) — Fig.1 and Table 2.

The Tethys Ocean to the south-east and the Danish–German sea to the north-west were the two areas from where the marine transgressions invaded the Early Cretaceous basin in the Polish Lowlands (S. Marek, 1983, 1988, 1989; S. Marek, A. Raczyńska, 1979; W. Moryc, J. Waśniowska, 1965). In the Berriasian, Valanginian, and Hauterivian the marine and paralic silty-clayey sediments dominated over Pomerania and Kujawy, while silty-clayey-carbonate sediments prevailed in the margin of the Holy Cross Mts. and Małopolska. The Barremian, Aptian, and Early and Middle Albian were the periods with dominant paralic and intracontinental sandy deposits. Maximum thickness of the Lower Cretaceous deposits was recorded in the Kujawy area where they reach the thickness of 600–650 m. The lowest deposits in this area lie in the sedimentary continuity with the Purbeck formation of the Upper Volgian age; this, in turn, overlies in uninterrupted sedimentary sequence the Upper Volgian of the *Zaraiskites zarajskensis* Zone (J. Kutek, 1994). The youngest Purbeck member, the ostracode zone A (S. Marek *et al.*, 1971) most likely corresponds with the *jacobi* and *grandis* Zones of the lowest Berriasian of the Tethyan type.

The Tethyan species and genera dominated among ammonites in marine environment of the Polish Berriasian, Late Valanginian, and Middle and Late Albian whereas the boreal ammonite types prevailed in the Early Valanginian and Hauterivian.

Poor preservation of ammonites yielded by drill-cores makes it impossible to divide the Polish Berriasian, Valanginian, and Hauterivian in detail. Seven informal biostratigraphic units were distinguished in the Lower Cretaceous of the Polish Lowlands; they are designated as the "beds" with index genera of ammonites indicated (A. Raczyńska, 1979; S. Marek, 1983, 1988, 1989; S. Marek, A. Raczyńska, 1979; S. Marek *et al.*, 1989*a*, *b*; J. Kutek *et al.*, 1989). Ammonite zones were distinguished in the Middle and Upper Albian

Table 1

Biostratigraphic correlation of the Lower Cretaceous section of the Tethyan and Boreal provinces (England, Germany, Central Poland, Central Russia)

Geochronology	Chrono-strati-graphy		Boreal-Atlantic Realm				
			Tethyan Realm	West-European Province		Polish Province	East-European Province
	Stage	Substage	Ammonite zones West Europe (R. Busnardo, 1965; M. Collignon, 1965; J. Flandrin, 1965; G. Le Hégarat, 1973; J. E. van Hinte, 1976; J.-P. Thieuloy, 1971, 1973, 1977*a, b*)	Ammonite zones NE England (Ryazanian) (R. Casey *et al.*, 1977) NW Germany (Valanginian-Albian) (E. Kemper *et al.*, 1981; J. Kutek *et al.*, 1989; J. Mutterlose, 1989)	Layers with ammonites NW Germany (Valanginian-Albian) (E. Kemper *et al.*, 1981; J. Kutek *et al.*, 1989; J. Mutterlose, 1989)	Ammonite zones Beds with Ammonites Central Poland (Kujawy) (A. Błaszkiewicz, 1981; S. Marek *et al.*, 1989*a, b*; A. Raczyńska, 1979)	Ammonite zones Ammonite assemblages East-European Platform (central part) (*Unificirovanye stratigrafitcheskye skhemy...*, 1993)
1	2	3	4	5	6	7	8
95	Albian	Upper	*Stoliczkaia dispar*	*Stoliczkaia dispar*		*Stoliczkaia dispar*	
			Mortoniceras inflatum	*Mortoniceras inflatum*		*Mortoniceras inflatum*	*Mortoniceras inflatum*
			Diploceras cristatum				
		Middle	*Euhoplites lautus*	*Euhoplites lautus*			
			(Euhoplites nitidus)	*Euhoplites loricatus*			*Anahoplites intermedius*
			Hoplites dentatus *Lyelliceras lyelli*	*Hoplites (Hoplites) dentatus*		*Hoplites dentatus*	*Hoplites dentatus*
		Lower	*Douvilleiceras mammillatum*	*Douvilleiceras mammillatum*			
107			*Leymeriella tardefurcata*	*Leymeriella tardefurcata*			*Leymeriella tardefurcata*

	Aptian	Upper	*Diadochoceras nodosocostatum*				*Hypacanthoplites jacobi*
			Cheloniceras subnodosocostatum				*Parahoplites melchioris*
			Aconeceras nisus				*Epicheloniceras tschernyschewi*
114		Lower	*Deshayesites deshayesi*				*Deshayesites deshayesi*
							Deshayesites weissi
	Barremian	U	*Silesites seranonis*				*Matheronites ridzewskyi*
		Lower	*Moutoniceras*	*Hopliocrioceras fissicostatum*			"belemnitovaya tolshtcha"
			Pulchella compressissima	*Hopliocrioceras rarocinctum*			*Oxyteuthis jasikowi*
117			*Spitidiscus hugii*				
	Hauterivian	Upper	*Pseudothurmannia angulicostata*	*Simbirskites (Craspedodiscus) discofalcatus*	*Simbirskites*	*Simbirskites* Beds	*Craspedodiscus discofalcatus*
			Plesiospitidiscus ligatus				
			Subsaynella sayni	*Simbirskites (Craspedodiscus) gottschei*			*Simbirskites decheni*
				Simbirskites (Milanowskia) stafii	*Spitidiscus*		
		Lower	*Lyticoceras nodosoplicatum*	*Simbirskites (Speetoniceras) inversum*	*Aegocrioceras* Schichten	*Endemoceras* Beds	*Speetoniceras versicolor*
			Olcostephanus jeanoti	*Endemoceras regale*	*Endemoceras* Schichten		*Pavlovites polyptychoides*
			Crioceratites loryi	*Endemoceras noricum*			
120			*Acanthodiscus radiatus*	*Endemoceras amblygonium*			*Homolsomites bojarkensis*
	Valanginian	Upper	*Teschenites callidiscus*	*Discostella tuberculata*	"*Astierien*" Schichten	*Dichotomites* and *Saynoceras* Beds	
					"*Arnoldien*" Schichten		
			Himantoceras trinodosum	*Dichotomites bidichotomoides*	*Dichotomites* Schichten		*Dichotomites* *Polyptychites polyptychus*
				Dichotomites triptychoides			
				Dichotomites crassus			

Table 1 continued

1	2	3	4		5	6	7	8
	Valanginian	Upper	*Saynoceras verrucosum*		*Prodichotomites polytomus*	*Dichotomites* Schichten	*Dichotomites* and *Saynoceras* Beds	*Dichotomites* *Polyptychites polyptychus*
					Prodichotomites hollwedensis			
		Lower	*Thurmanniceras campylotoxum*		*Polyptychites sphaeroidalis*	*Polyptychites* Schichten	*Polyptychites* Beds	*Polyptychites keyserlingi* — — *Temnoptychites hoplitoides*
					Polyptychites clarkei			
					Polyptychites multicostatus			
					Polyptychites pavlovi			
			Thurmanniceras pertransiens		*Platylenticeras involutum*	*Platylenticeras* Schichten	*Platylenticeras, Neocomites* and *Karakaschiceras* Beds	*Pseudogarnieria undulato-plicatilis* *Menjaites, Neotollia*
			Thurmanniceras otopeta		*Platylenticeras heteropleurum*			
128					*Platylenticeras robustum*			
	Berriasian (Ryazanian)		*Fauriella boissieri*		*Peregrinoceras albidum*	Wealden	*Surites, Euthymiceras* and *Neocosmoceras* Beds	*Peregrinoceras albidum*
					Surites (Bojarkia) stenomphalus			*Surites tzikwinianus*
					Surites (Lynnia) icenii		*Riasanites, Himalayites* and *Picteticeras* Beds	*Euthymiceras, Riasanites, Surites*
			Tirnovella occitanica		*Heteroctenus kochi*			*Riasanites, Hectoroceras*
			Pseudosubplanites grandis *Berriasella jacobi*	*euxinus*	*Runctonia runctoni*		Ostracode Zone A: *Cypridea obliqua polonica, C. posticalis, Pachycytheridea compacta, Galliacytheridea postsinuata*	*Riasanites, Garniericeras*
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(S. Cieśliński, 1960, 1987; A. Błaszkiewicz, 1981; R. Chlebowski *et al.*, 1978; R. Marcinowski, J. Wiedmann, 1985).

The following beds were distinguished in the Berriasian (Ryazanian) deposits of the Pomeranian and Kujawy areas: the beds with *Riasanites, Himalayites*, and *Picteticeras* (the Zakrzew Member of the Rogoźno Formation) and the beds with *Surites, Euthymiceras,* and *Neocosmoceras* (the lower part of the Opoczki Member of the Rogoźno Formation; Table 2). The Tethyan genera *Neocosmoceras, Himalayites, Picteticeras, Hemaratella,* and *Euthymiceras* suggest that both subdivisions are most likely the equivalent of the *occitanica* Zone and the lower part of the *boissieri* Zone (the *paramimounum* and *picteti* Subzones) of southeastern France (R. Busnardo, 1984; G. Le Hégarat, 1973; J.-P.Thieuloy, 1973). Next, the presence of boreal ammonites *Riasanites rjasanensis* (Nikitin), *R.* cf. *swistowianus* (Nikitin), *Surites* cf. *subtzikwinianus* (Bogoslovsky) and *Borealites* sp. allows correlation of the entire Polish Berriasian with the Berriasian of central regions of the East-European Province (R. Casey, 1973; R. Casey *et al.*, 1977). Index ammonites neither for the topmost Tethyan Berriasian (the *callisto* Zone) nor for boreal one (the *Peregrinoceras albinum* Zone) were found in the Polish Berriasian.

It seems that this is not connected with a sedimentary gap but can be explained by a very scarce occurrence of fossils in drill-cores. However, other factors impeding the faunal migration cannot be ruled out, as e.g. the sea-level fall, the unfavourable change of salinity or another chemical feature.

Beds with *Platilenticeras, Neocomites,* and *Karakaschiceras* (the upper part of the Opoczki Member; Table 2) and beds with *Polyptychites* (the Bodzanów Formation) were distinguished in the Lower Valanginian of Poland. Species representing genera: *Platilenticeras* and *Polyptychites* are the representatives of boreal ammonites, whereas genera: *Neocomites* and *Karakaschiceras* belong to wide-spread ammonites of the Tethyan types (J.-P. Thieuloy, 1973, 1977*a*, *b*; J. Kutek *et al.*, 1989). The boreal species of genus *Menjaites* are of essential importance from the point of view of regional correlation of the lower beds of Lower Valanginian. This genus appears in English profiles (Table 1) together with *Platylenticeras*, and in the Russian Platform it is known from the *Pseudogarnieria undulato-plicatilis* Zone (R. Casey *et al.*, 1977). The beds with *Polyptychites* of the upper Lower Valanginian are correlated precisely with the Russian Lower Valanginian *Temnoptychites hoplitoides–Polyptychites keyserlingi* Zones. A good correlation exists also between beds with *Polyptychites* cf. *michalskii* (Bogoslovsky) which are present in both provinces (V. A. Zakharov, J. I. Bogomolov, 1989).

In the Late Valanginian the Russian *Polyptychites polyptychus* Zone with abundant *Dichotomites* sp. is equivalent to the Polish beds with *Dichotomites* and *Saynoceras*. These (the Wierzchosławice Member of the Włocławek Formation; Table 2) contain boreal genera *Dichotomites, Polyptychites, Prodichotomites*, and *Neocraspedites*, which are accompanied by abundant and diversified assemblage of Tethyan ammonites of genera: *Saynoceras, Bochianites, Valanginites, Olcostephanus, Karakaschiceras, Neohoploceras, Neocomites,* and *Sarasinella.* The northern extension of the East-European Platform within the shelf of the Barents Sea (Fig. 1) is known as the area of the occurrence of Upper Valanginian ammonites belonging to *Bochianites* ex gr. *neocomiensis* (d'Orbigny), which are also characteristic of the Upper Valanginian in Kujawy and the margin of the Holy Cross Mts. Of biostratigraphic significance are also assemblages of foraminifers with *Epistomina*

Table 2

Lithostratigraphy and ammonites of the Lower Cretaceous epicontinental basin in Poland

Chronostratigraphy		Ammonite zones and layers with ammonites	Northwestern region — Pomerania, central region — Kujawy		Southern region — Mazovia, Lublin and Małopolska		
					Magnuszew Block and north-easten margin of Holy Cross Mts.	Radom Block	Lubaczów sub-region
Albian	Upper	*Stoliczkaia dispar* *Mortoniceras inflatum*					
	M	*Hoplites dentatus*	Mogilno Formation	Kruszwica Member	Mogilno Formation		
	L			Gopło Member			
Aptian				Pagórki Member			
Barrem							
Hauterivian	Upper	*Simbirskites* Beds	Włocławek Formation	Żychlin Member	Białobrzegi Formation	Cieszanów Formation	
	Lower	*Endemoceras* Beds		Gniewków Member			
Valanginian	Upper	*Dichotomites* and *Saynoceras* Beds		Wiechosławice Member			
	Lower	*Polyptychites* Beds	Bodzanów Formation				
		Platylenticeras, *Neocomites* and *Karakaschiceras* Beds	Rogoźno Formation	Opoczki Member			
Berriasian (Ryazanian)		*Surites*, *Euthymiceras* and *Neocosmoceras* Beds					
		Riasanites, *Himalayites* and *Picteticeras* Beds		Zakrzew Member			
				Kajetanów Member			
			Kcynia Formation	Skotniki Member			

caracolla (Roemer), which are representative for the Upper Valanginian and Lower Hauterivian of the Polish Lowlands. Also foraminifer assemblage, of similar species composition, occurs in the Upper Valanginian of the Barents Sea shelf (V. A. Basov *et al.*, 1989) as well.

The Lower Hauterivian beds with *Endemoceras* in the area of Poland (the Gniewkowo Member of the Włocławek Formation; Table 2) contain representatives of boreal ammonites in association with scarce Tethyan species of genus *Leopoldia.* These beds correlate well with the German profiles (E. Kemper *et al.*, 1981). Species that are common in the Lower Hauterivian of the East-European Province are missing here; their correlation could be accomplished on the basis of their position in the stratigraphic profile only.

Boreal species *Simbirskites* — *Craspedodiscus* cf. *gottschei* (Koenen) and *S.* (*C.*) sp. — that are characteristic of the Upper Hauterivian in Germany, provide the basis for distinguishing the Upper Hauterivian beds with *Simbirskites* (the Żychlin Member of the Włocławek Formation; Table 2) — A. Raczyńska (1979). These beds can be correlated with the Russian *Craspedodiscus discofalcatus* Zone.

The Barremian, Aptian, and Albian deposits (the Pagórki, Gopło, and Kruszwica Members of the Mogilno Formation; Table 2) contain exclusively the boreal foraminifer species *Ammobaculites* and *Reophax*; therefore, they cannot be compared without any doubt with deposits of the same age in the East-European Province.

The *Hoplites dentatus* Zone with Tethyan *Hoplites* and *Domorphoplites* enables the biostratigraphic correlation of the Middle Albian since these genera are well known in both the western and East-European Provinces.

In the Upper Albian of the Polish Lowlands, with abundant Tethyan species of genera *Callihoplites* and less abundant ammonites *Stoliczkaia*, it was possible to distinguish two zones with *Mortoniceras inflatum* and *Stoliczkaia dispar* (S. Cieśliński, 1960, 1987; R. Chlebowski *et al.*, 1978; R. Marcinowski, J. Wiedmann, 1985). The *Mortoniceras inflatum* Zone was also distinguished in the Russian Platform area. Cephalopods of the Upper Albian in Poland are also represented by belemnites *Neohibolites ultimus* (d'Orbigny), *N. minimus* (Miller), *N. oxycaudatus* (Spaeth), and *Parahibolites tourtine* (Weigner). Moreover, representative for the Albian deposits in the Polish Lowlands are: *Inoceramus anglicus* (Woods) (Middle and Upper Albian), and *Aucellina gryphaeoides* (Sowerby) (Upper Albian); both are being found in the Albian profiles of the Russian Lowlands.

CONCLUSIONS

The biostratigraphic analysis of the Lower Cretaceous in both the Russian and the Polish Lowlands provides the basis for the following conclusions:

1. The Lower Cretaceous fauna of both the central regions of the Russian and the Polish Lowlands is mainly represented by ammonites, belemnites, pelecypods, foraminifers, and ostracods, with ammonites and pelecypods being of key importance for the purpose of biostratigraphic correlation.

2. Despite the fact that the Russian Platform and the Polish Lowlands belonged to the uniform Boreal-Atlantic Realm, they formed two independent provinces: the East-European (Russian) and the Polish ones.

3. The boreal ammonites dominated over the Russian Platform during the Berriasian, Valanginian, and Hauterivian, while wide-spread Tethyan ammonites prevailed during the Albian time also in the boreal province. The mixed type of boreal-Tethyan fauna occurs in the Polish Lowlands area. The Tethyan ammonites prevailed in the Berriasian, Late Valanginian, and Middle and Late Albian, whereas the boreal ammonites dominated in the Early Valanginian and Hauterivian. The boreal ammonites of genera *Riasanites*, *Surites*, *Borealites*, *Polyptychites*, *Dichotomites*, and *Simbirskites* are of fundamental value for the correlation of the Lower Cretaceous in the Russian Platform and the Polish Lowlands.

4. Migration ways of the Berriasian boreal ammonites are not satisfactorily determined. Apart from connections between the both discussed basins through the Arctic Ocean and the Danish Basin, the possibility of circuit migration ways through the Tethyan basins cannot be ruled out.

5. Based on the ammonites assemblages, a comparison can be made between deposits of the Berriasian, Lower and Upper Valanginian, and Middle and Upper Albian age in both provinces. The Lower Hauterivian beds with *Endemoceras* contain ammonites that are representative for the German basin. Only scarce foraminifera of large stratigraphic extent are contained in paralic and fresh-water sediments of the Berriasian, Aptian, and Lower Albian in the Polish Lowlands; and the Barremian in the Russian Platform is composed of deposits with belemnites ("belemnitovaya tolshtcha").

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Received: 14.11.1995

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KORELACJA BIOSTRATYGRAFICZNA DOLNOKREDOWYCH OSADÓW CENTRALNYCH REGIONÓW PLATFORMY WSCHODNIOEUROPEJSKIEJ I NIŻU POLSKIEGO

Streszczenie

Platforma rosyjska i Niż Polski tworzyły w obrębie jednolitego obszaru (strefy) borealno-atlantyckiego odrębne prowincje zoogeograficzne: wschodnioeuropejską i polską (fig. 1). Fauna dolnokredowych osadów w obu basenach reprezentowana jest głównie przez amonity, belemnity, małże, otwornice i małżoraczki. Wśród nich największe znaczenie dla korelacji osadów różnych regionów mają amonity i małże.

Dolnokredowe osady centralnych regionów Rosji reprezentowane są na ogół (oprócz albu) przez płytkowodne, morskie osady piaszczysto-ilaste, miejscami z licznymi konkrecjami fosforytów. Osady beriasu, walanżynu i hoterywu charakteryzują się głównie borealnymi rodzajami amonitów, natomiast w apcie i albie dominują szeroko rozprzestrzenione amonity tetydzkie.

Dolnokredowe osady Niżu Polskiego tworzyły się w płytkim, oscylacyjnym basenie, z następującymi po sobie stadiałami sedymentacji morskiej (berias-hoteryw, alb środkowy i górny) i paraliczno-śródlądowej (najniższy berias, barrem, apt oraz alb dolny i środkowy). W neokomie na Pomorzu i Kujawach dominowały osady litofacji piaszczysto-ilastej, natomiast w obrzeżeniu Gór Świętokrzyskich i w Małopolsce tworzyły się głównie osady ilasto-węglanowe. W barremie, apcie i niższym albie na całym Niżu Polskim osadzały się przede wszystkim piaskowce, a w albie środkowym i górnym — wapienie piaszczyste z glaukonitem i fosforytami. Na Kujawach najniższy berias reprezentuje najwyższe ogniwo purbeku (poziom małżoraczkowy A) korelowane z poziomami *jacobi* i *grandis* prowincji tetydzkiej. W polskim barremie, walanżynie górnym oraz w albie środkowym i górnym występuje borealno-tetydzki typ fauny z przewagą amonitów tetydzkich. W młodszym walanżynie dolnym oraz w hoterywie dominują amonity borealne.

Dla biostratygraficznej korelacji osadów dolnokredowych prowincji wschodnioeuropejskiej i polskiej mają znaczenie wspólne amonity borealne *Riasanites* — w tym *R. rjasanensis* (Nikitin) — *Surites, Borealites, Polyptychites* — w tym *P.* cf. *michalskii* (Bogoslovsky) — oraz *Dichotomites* i *Simbirskites.*

Na podstawie wspólnych amonitów można porównywać osady platformy rosyjskiej i Niżu Polskiego beriasu, walanżynu dolnego i górnego, hoterywu górnego oraz albu środkowego i górnego. Warstwy z *Endemoceras* dolnego hoterywu zawierają amonity charakterystyczne dla basenu niemieckiego, a nie rosyjskiego. Osady barremu, aptu i albu dolnego w basenie polskim zawierają jedynie nieliczne otwornice o dużym zasięgu stratygraficznym, a na platformie rosyjskiej barrem tworzą osady z belemnitami.