periodic bottom currents. The dissolution of aragonite skeletons proves that the water was under saturated with respect to aragonite. It can be the result of relatively high depth of deposition or the specific water circulation.

M.G. is supported by the Foundation for Polish Science (prof. J. Kaymierczak grant for Researchers).

BIOSTRATIGRAPHY OF THE UPPER BOREAL BATHONIAN AND CALLOVIAN OF EUROPEAN RUSSIA

Gulyaev[1] D.B., Kiselev[2] D.N. and Rogov[3]M.A.

[1]Moscow State University
[2]Yaroslavl State Pedagogical University
[3]Geological Institute of the Russian Academy of Science (Moscow)

Much new information on the ammonite biostratigraphy of the Upper Boreal Bathonian and Callovian of the European Russia is reviewed (Gulyaev, Kiselev, 1999; Gulyaev, 1999, 2001; Kiselev, 1999; 2001). The 34 biohorizons, 14 subzones and 9 zones can now be recognized (see Figure). Close correlation with British Sub-Boreal Standart scale is possible from the *Koenigi* Zone to the end of Callovian. The lowermost Callovian *(Elatmae* and *Subpatruus* Zones) correlation is still only partially possible because of the poorly overlapping bioprovincialism of the ammonites/ The base of the *Elatmae* Zone and therefore - of the Russian Callovian is defined by the first appearance of *Macrocephaliles jaquoti,* which indicate the beginning of steady connection of the East-European (Russian) sea with the Tethyan basins. This species is well known from the base of the *Herveyi* Zone *(Keppleri* Biohorizon) of Western Europe. In central Russia it also associated with *Kepplerites* ex gr. *keppleri.* Direct correlation between the Upper Bathonian Infimum Zone and the Western-European standard pre-Callovian zonations is impossible because of the absence overlapping bioprovincialism of the ammonites. This Zone correlated with the *Calyx* Zone of east Greenland.

Notes on Figure:

1) Less coarsely ribbed, than nominal subspecies
2) To be published, - *Cadoceras bodylevskyi* Frebold, 1964 sensu Puolton (1987).
3) The *Jaquoti* Biohorizon is allocated in Volga basin, the *Poultoni* and *Primaevum* Biohorizons - in Pechora basin.
4) To be published, = *Chamoussetia saratoviensis* Callomon et Wright, 1989 sensu Mitta (1999).
5) -*Chamoussetia saratoviensis* Callomon et Wright, p.812.
6) *Kepplerites curtilobus* (Buckman, 1922) sensu Callomon and Page (Callomon et al., 1988) correspond to *K. indigestus* (Buckman, 1922).
7) *Kepplerites trichoforus* (Buckman, 1922) correspond to *K, galilaeii* (Oppel, 1862).
8) The *Pagei* Biohorizon is precisely now allocated only in the Saratov area.
9) Probably, the layers 9, 10 of the *Medea* Subzone stratotype (Kidlington), which are not characterized by ammonites.
10) To be published, group *ofAmm. fimiferus* Phillips, *Amm. patruus* Eichwald, etc.

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North-West Europe				European Russia			East Greenland (Callomon, 1993)	
SUBSTAGE	ZONE	Subzone	*Biohorizon*	*Biohorizon*	Subzone	ZONE	*Biohorizon*, ZONE, SUBSTAGE	
UPPER CALLOVIAN	LAMBERTI	Lamberti	*Paucicostatum*	*Mojarowskii*	Lamberti	LAMBERTI		UPPER CALLOVIAN
			Lamberti					
			Praelamberti					
		Henrici	*Henrici*	Henrici				
			Messiaeni					
	ATHLETA	Spinosum		*Kuklikum*	Spinosum	ATHLETA		
				Funiferus				
				Patruus				
		Proniae			Proniae		*L. keyserlingi*	
				Allae subsp.				
		Phaeinum		*Allae allae*	Phaeinum			
MIDDLE CALLOVIAN	CORONATUM	Grossouvrei	*Grossouvrei*		Grossouvrei	CORONATUM		MIDDLE CALLOVIAN
			Posterior					
		Obductum		*Crassum*	Obductum			
				Obductum				
	JASON	Jason	*Jason β*	Jason		JASON	*K. cf. /aff. jason*	
			Jason α					
		Medea	*Medea magnum*		Medea			
			Medea medea					
LOWER CALLOVIAN	CALLOVIENSE	Enodatum	lacuna [1]	*Enodatum aeeta*	Enodatum	CALLOVIENSE		CALLOVIENSE
			Enodatum enodatum					
				Enodatum crispatum				
			Difficilis					
			Pagei	*Fracidus*				
		Calloviense	*Micans*		Calloviense		*Calloviense*	
			Calloviense					
	KOENIGI	Galilaei	*Galilaeii*		Galilaei	KOENIGI	*Galilaeii*	KOENIGI
		Curtolobus	*Trichophorus*					
			Tolype	*Curtilobus*	Curtolobus			
			"Curtilobus"	*Indigestus*			*C. "phillipsi"*	
		Gowerianus	*Gowerianus*	*Gowerianus gowerianus*	Gowerianus		*K. cf. gowerianus*	
			Metorchus					
	HERVEYI	Kamptus	lacuna	*Crobyloides*	Subpatruus	ELATMAE	*C. septentrionale*	NORDEN-SKOELDI
			Kamptus γ	*Uzhovkensis*				
			Kamptus β	*Subpatruus*			*C. nordenskjoeldi α, β*	
			Herveyi	*Surensis*			*C. cf./aff. breve*	"APERTUM"
		Terebratus	*Terebratus β*					
			Terebratus α	*Tschernischevi*			[*K. tenuifasciculatus*]	
		Keppleri	*Verus*	*Elatmae elatmae*	Elatmae		*C. "apertum α, β, γ"*	
				Elatmae anabarense				
			Keppleri (Jacquoti)	*Primaevum* (*Jacquoti*)				
				Poultoni				
UPPER BATHONIAN				*Infimum subsp. nov.*	INFIMUM		*K. vardekloeftensis*	CALYX
				Infimum infimum			*K. peramplus*	

Tabl.1. The biostratigraphic subdivision of the Upper Boreal Bathonian and Callovian of European Russia, it correlation with the standard scale of North-West Europe and East Greenland.