
The Subcommittee on Cambrian Stratigraphy: the status quo

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BRIEF HISTORY

Following proposals accepted at the Norden International Geological Congress (IGC) at Copenhagen in 1960, the Subcommittee on Cambrian Stratigraphy (SCS) was established in 1961 with the late Sir James Stubblefield as founding Chairman. One of the initial tasks of the Subcommittee was to define the Precambrian-Cambrian boundary. Accordingly, a Working Group on the Precambrian-Cambrian Boundary, with John Cowie as Chairman, was formed at the Canadian IGC (Montreal) in 1972. This WG, whose primary task was to select a Global Stratotype Section and Boundary Point (GSSP), held 23 field meetings between 1973-1990 in France, Siberia, Australia, China, USA, Canada, England, Sweden, Morocco, Portugal and Spain. During that period, this WG, augmented by International Geological Correlation Projects 29 and 303, generated a huge amount of biostratigraphic, magnetostratigraphic, chemostratigraphic and chronometric information, largely summarized by Cowie and Brasier (1989). A GSSP for the base of the Cambrian was finally ratified in 1992 at the base of the *Trichophycus pedum* (= *Phycodes pedum*) Zone at the Fortune Head, on the Burin Peninsula, southeastern Newfoundland (Cowie, 1992; Landing, 1992, 1998).

To tackle the upper boundary of the Cambrian System, a Working Group on the Cambrian-Ordovician Boundary (COBWG I) was established in 1974, and regrouped as COBWG II in 1993. This WG also generated a volumi-

nous quantity of multidisciplinary stratigraphic information as a result of visiting candidate GSSPs in Australia, Kazakhstan, China, Scandinavia, UK, Canada and USA. A proposed GSSP for the base of the Ordovician System, hence top of the Cambrian, is at Green Point, in the lower Broom Point Member of the Green Point Formation, at the first appearance of the conodont *Iapetognathus fluctivagus* NICOLL, MILLER, NOWLAN, REPETSKI and ETHINGTON, 1999 (Cooper and Nowlan, 1999). This proposal has been endorsed by the Subcommittee on Ordovician Stratigraphy, the Bureau of the Commission on Stratigraphy, and has been ratified by the International Union of Geological Sciences.

In the 1970s the International Subcommittee on Cambrian Stratigraphy temporarily established Working Groups on the Lower-Middle and Middle-Upper Cambrian boundaries. However, these WGs were not able to develop sufficient dynamics to overcome the enormous problems arising from regionally different stratigraphic philosophies, simple deficiencies of knowledge, and lack of interest during these times.

Other Working Groups currently operating in SCS include the Cambrian Correlations WG, and the Cambrian Stage Subdivision WG, which includes the Cambrian Global Subdivision Project (CGSP). Correlation Charts and Explanatory Notes have been already published for The Near and Middle East (IUGS Publication 15, 1983), Australia, New Zealand and Antarctica (IUGS Publication

W. AVALONIA			E. AVALONIA			MOROCCO			SPAIN			BALTICA			SIBERIA													
ORD.	TRD.	<i>Rhabdinopora flabelliforme</i>	TRD.	<i>Rhabdinopora flabelliforme</i>	ORD.	<i>Rhabdinopora flabelliforme sociale</i>	ORD.	<i>Oryctoconus</i> interval	ORD.	<i>Rhabd. f. norvegicum</i> <i>Rhabd. f. flabelliforme</i> <i>Rhabdinop. f. sociale</i>	ORD.	TREMADOCIAN	<i>Rhabdinopora flabelliforme</i>															
UPPER CAMBRIAN	MERIONETHIAN SERIES	Acerocare	MERIONETH SERIES	Acerocare	UPPER CAMBRIAN	no zones and stages established	UPPER CAMBRIAN	no zones and stages established	UPPER CAMBRIAN	Acerocare ecome	UPPER CAMBRIAN	MANSIAN	Dolgeuloma - Kaninia	Dolgeuloma														
		Peltura		Peltura scarabaeoides						Peltura costata				UPPER CAMBRIAN	KETYAN	Kujandaspis												
				Peltura minor						Peltura transiens																		
				Protopeltura praecursor						Peltura scarabaeoides																		
				Leptoplastus						Peltura minor																		
	Parabolina spinulosa	Parabolina spinulosa	Parabolina brevispina	Leptoplastus					UPPER CAMBRIAN	YURAKIAN	Amorphella - Yurakia																	
	Homagnostus obesus	Olenus and Hom. obesus	Olenus cataractes	UPPER CAMBRIAN					UPPER CAMBRIAN	UPPER CAMBRIAN	UPPER CAMBRIAN	UPPER CAMBRIAN	UPPER CAMBRIAN	UPPER CAMBRIAN	Olenus scanicus	UPPER CAMBRIAN	ENSYAN	SAKIAN/ KUTUGUNIAN	Faciura - Garbiella									
			Olenus wahlenbergi												Homagnostus obesus				UPPER CAMBRIAN	MADUAN	Maspakites - "Idaholia" - Raashellina							
			Olenus truncatus												Agnostus pisiformis													
			Olenus gibbosus												Agnostus pisiformis													
Agnostus pisiformis			Agnostus pisiformis																									
Paradoxides forchhammeri	Lejopyge laevigata	Paradoxides davidis	MIDDLE CAMBRIAN	TOUSHAMIAN STAGE	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	P. forchhammeri	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	AKSAYAN/ KHOSNELEGERIAN	Kujandaspis														
															no zone established	no zone established	MIDDLE CAMBRIAN	MAYAN	Lejopyge laevigata									
															Baillieella cf. levyi interval	no zone established				MIDDLE CAMBRIAN	AMGAN	Anomocarioides limbataeformis						
															Hydrocephalus hicksi	Hydrocephalus hicksi							MIDDLE CAMBRIAN	AMGAN	Anopolenus henrici - Corynecochus perforatus			
															Eccaparadoxides eternicus	"Paradoxides" aurora										MIDDLE CAMBRIAN	AMGAN	Ptychagnostus gibbus
MIDDLE CAMBRIAN	ACADIAN SERIES	Eccaparadoxides benetti	ST. DAVID'S SERIES	"Paradoxides" harknessi	MIDDLE CAMBRIAN	TOUSHAMIAN STAGE	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	Paradoxides paradoxissimus	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN														
		no zone established		no zone established											MIDDLE CAMBRIAN	AMGAN	Kounamkites											
		Eccaparadoxides benetti		no zone established														MIDDLE CAMBRIAN	AMGAN	Kounamkites								
		no zone established		no zone established																	MIDDLE CAMBRIAN	AMGAN	Kounamkites					
		Acadapadoxides harlani interval		no zone established																				MIDDLE CAMBRIAN	AMGAN	Kounamkites		
	Acadapadoxides harlani interval	no zone established	no zone established	no zone established						MIDDLE CAMBRIAN	AMGAN	Kounamkites																
	LOWER CAMBRIAN	BRANCHIAN SERIES	Oryctocara (Ovator.) granulata - Myoposstrenua sabulosa interval	COMLEY SERIES						"Protolenus" Zone	LOWER CAMBRIAN	ISSEND- ALENIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	Baltoparadoxides oelandicus	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN								
			Protolenus interval							Protolenid-strenuella											LOWER CAMBRIAN	BOTOMAN	Bergeroniellus micmaciformis/ Erbiella					
			Callavia broeggeri Zone							Olenellid														LOWER CAMBRIAN	ATDABANIAN	Pagetiellus anabarus		
			no faunas known							Olenellid																	LOWER CAMBRIAN	TOMMOTIAN
Watsonella crosbyi			Callavia Zone		LOWER CAMBRIAN	ATDABANIAN	Pagetiellus anabarus																					
"Ladatheca" cylindrica		Callavia Zone	no zone established	no zone established	LOWER CAMBRIAN	ATDABANIAN	"Fallotaspis" (= Repinaella)																					
PLACENTIAN SERIES		no faunas known	no faunas known	no faunas known	no faunas known	LOWER CAMBRIAN	ISSEND- ALENIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN						Schmidtliellus mickwitzi	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN								
																					no faunas known	no faunas known	LOWER CAMBRIAN	NEMAKIT-DAL'DYNIAN	no zones established			
																					Watsonella crosbyi	no faunas known				LOWER CAMBRIAN	NEMAKIT-DAL'DYNIAN	no zones established
																					"Ladatheca" cylindrica	no faunas known						
	no faunas known										no faunas known	LOWER CAMBRIAN	NEMAKIT-DAL'DYNIAN	no zones established														
Sabellidites cambriensis/ Trichophycus pedum	no faunas known	no faunas known	no faunas known	no faunas known	LOWER CAMBRIAN	ISSEND- ALENIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	Platysolenites	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN	LOWER CAMBRIAN														

KAZAKHSTAN				NORTH CHINA				SOUTH CHINA				AUSTRALIA				LAURENTIA					
ORDOV.	UNGURIAN			ORD.	XINCHANGIAN	Wanliangtingia			ORD.	Apatokephalus latilimb. - Taoyuania affinis			ORD.	WAREN DIAN			Chosondina herfurthi - Cordylodus angulatus				
	Cordylodus caseyi					Euloma limitaris - Taoyuania				Hysterolenus - Onchopyge				Cordylodus lindstromi			Cordylodus proliandstromi				
UPPER CAMBRIAN				UPPER CAMBRIAN				UPPER CAMBRIAN				UPPER CAMBRIAN				UPPER CAMBRIAN					
BATYR-BAIAN		AKSAYAN		SAKIAN		ARYUSOK-KANIAN		ZHANA-RYKIAN		TYESAIAN		"LENAN"		"LENG"		"LENG"		"LENG"		"LENG"	
Proconod. muelleri - Eoconodontis notchpeakensis		Westergaardodina - Furnishia		Pseudagnostus "curtare"		Lejopyge laevigata		Lejopyge armata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?	
Lotagnostus hedini		Trisulcagnostus trisulcus		Oncagnostus ovaliformis		Kormagnostus simplex		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Probowmania asiatica	
Harpidioides		Eolotagn. scrobicularis		Oncagnostus kazachstanicus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Redlichia chinensis - Kootenia gimmelbarbi	
Lophosaukia		Neogn. quadratiformis		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Ushbaspis limbata	
Mictosaukia		Oncagnostus ovaliformis		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Sinoeremoceras		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Ushbaspis sp.1 - Microcornus - Burithes	
Quadratricephalus		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Proconodontus posteros-costatus		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Ptychaspis-Tsinania		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Proconod. tenuiserratus		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Kaolishania pustulosa		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Shirakiella xiaoshiensis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Maladioidella splendens		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Changshania conicalvingella taizhuoensis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Chuangia subquadrangulata		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Prochuangia mansuyi		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Drepanura premesnili		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Blackwelderia paronai		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Damesella/Yabeia		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Leiopaishania		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Taitzuia/Poshania		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Amphoton		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Crepicephalina		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Baillia - Lioparia		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Poriagraulos		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Inouyops		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Metagraulos		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Sunaspis - Sunaspidella		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
P. jinnanensis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Ruichengaspis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Kochaspis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Shantungaspis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Yaojiaoyuella		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Qiaotouaspis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Redlichia nobilis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Redlichia chinensis		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Megapalaeolenus		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
no zones established		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Hupediscus - Sinodiscus		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Sinosachites - Lapworthella		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Paragloborilus - Siphonochites		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Anabarites - Circotheca		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
Protohertzina		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	
?		Oncagnostus kazachstanicus		Pseudagnostus pseudangustilobus		Lejopyge laevigata		Goniagnostus nathorsti		Ptychagnostus punctuosus		Acidusus atavus		Ptychagnostus intermedius		Peronopsis ultimus		?		Hebediscus orientalis	

CORRELATION CHART FOR MAJOR CAMBRIAN AREAS, by G. Geyer, S. Peng and J. H. Shergold for ISCS (revised version, 2001)

19, 1985), Eastern Asia (IUGS Publication 24, 1988), East European Platform (IUGS Publication 25, 1990), Siberian Platform (IUGS Publication 27, 1991), and The Foldbelts of Russia and Mongolia (IUGS Publication 32, 1995). In preparation are Charts for the Mediterranean Region and Central Europe, Avalonia, Laurentia and Central Asia.

The rationale of the Stage Subdivision WG is to visit areas where important recent work has been conducted on stages which may be pertinent to the Cambrian Global Subdivision Project, the current main task of SCS. Field meetings have been organized in Morocco (Geyer and Landing, 1995), Iberia (1996, see Special Issue of *Revista Española de Paleontología*, December 1998), Avalon (1997, see Landing and Westrop, 1998), Sweden (Ahlberg, 1998), The Great Basin, USA (Palmer, 1999), Argentina (Aceñolaza and Peralta, 2000), Hunan and Guizhou Provinces in China (Peng et al., 2001), and The Montagne Noire, France (Álvarez and Clausen, 2002).

The Cambrian Global Subdivision Project is inspired by the need to establish an internationally agreed left-hand column for global correlations. We need to decide how many Cambrian Series are most appropriate and what are the most potentially useful biohorizons for the correlation of disparate Cambrian terranes. To accelerate the progress of this mission, a comprehensive correlation table has been assembled by Geyer, Peng and Shergold and was presented at the Swedish field meeting. Additionally, Shergold and Geyer (1998) and Geyer and Shergold (2000) have reviewed potential correlation levels with explanatory remarks. Reviewed biohorizons include the lowest occurrences of *Cordylodus proavus*, *Irvingella* with *Agnostotes*, *Glyptagnostus reticulatus*, *Glyptagnostus stolidotus*, *Linguagnostus reconditus*, *Lejopyge laevigata*, *Ptychagnostus punctuosus*, *Acidusus atavus*, *Triplagnostus gibbus*, *Eliasum-Cristallinum* assemblage, *Oryctocephalus indicus*, the base of the *Protolenus-Hamatoenus-Cobboldites-Oryctocara* band, the base of the *Hebediscus attleborensis-Calodiscus-Serrodiscus-Triangulaspis* band, at the first occurrence of trilobites. While it is possible to obtain quite detailed correlation levels in the Middle and Upper Cambrian, we acknowledge the difficulties in subdividing the Lower Cambrian biostratigraphically (e.g. Palmer, 1998), especially using trilobites as indices. Other biological groups will need to be investigated in detail, and it will be necessary to calibrate the biostratigraphy using isotope profiles based on carbon, oxygen, strontium and sulphur, and magnetostratigraphy.

Besides these WG activities, there have been three international symposia on the Cambrian System. The first of these was held in conjunction with the 20th International Geological Congress in Mexico in 1956. The second was held in Golden, Colorado in 1981, and the third in Novosibirsk in 1993. A fourth is currently being discussed for China in 2004.

FUTURE TASKS AND RECENT DEVELOPMENTS

The major future task, demanded by the International Commission on Stratigraphy, is to establish GSSPs for internationally agreed Cambrian Stages. Currently, the Cambrian and Carboniferous Systems lack defined GSSPs internally. Response for polled Voting Members of the SCS, suggest that there is majority support for defining the first Cambrian GSSP at the level of *Glyptagnostus reticulatus*. It is therefore necessary to commence assessment of suitable sections. According on the Guidelines for the establishment of GSSPs (Remane et al., 1996), geological requirements to be satisfied include exposure over an adequate thickness, continuous sedimentation, sufficiently rapid sedimentation rate, absence of metamorphism and diagenesis. Biological requirements are for abundance and diversity of well preserved fossils, absence of vertical facies changes and favourable facies for long-range correlation. Other desirable requirements are suitability for radioisotope dating, magnetostratigraphy, chemostratigraphy and sequence stratigraphy, by a permanently fixed marker, avoidance of very remote locations, free access by researchers regardless of nationality, free access for research and permanent site protection. Ideally, then, undeformed carbonate sections are required, which rules out sections in Baltic for example, but favours sections in Siberia, south-central China and western Queensland, Australia.

An examination of potential GSSPs took place during the field excursions of the *China 2001* conference, when the occurrence of *Glyptagnostus reticulatus* and the rock successions were studied in Hunan, accompanied with examination of various aspects critical for the value of these sections for international correlation. The scientific session offered contribution to the *G. reticulatus* level issue. Coupled with South China 2001 were field activities of the Working Group on a *Glyptagnostus reticulatus* level GSSP.

Discussions during the *South China 2001* conference showed that only the Hunan sections and the sections in the Maly Karatau were generally regarded as suitable for a GSSP. A multi-person team performed additional studies in the Paibi section, Hunan, and submitted a formal proposal for a GSSP in this section to the *International Subcommittee on Cambrian Stratigraphy* by January 2002.

This "Proposed Global Standard Stratotype-Section and Point for the Paibian Stage and Furongian Series" recommended the base of the first calcilutite layer containing the cosmopolitan agnostoid trilobite *Glyptagnostus reticulatus* in the Huaqiao Formation in the Paibi section (Peng et al., 2001a) as the base of a newly established **Paibian Stage** and of the equally new **Furongian Series** (as a synonym of the revised Upper Cambrian). The FAD of *G. reticulatus* in the Paibi section corresponds to a position 369.06 m above the base of the Huaqiao Formation according to the measured section of Peng et al. (2001b).

This base of the Paibian Stage and Furongian Series corresponds to the base of the Waergangian Stage and Hunanian Series as used in South China (Peng and Robison, 2000; Peng and Babcock, 2001).

The Paibi GSSP was the subject of a ballot by the Subcommission held in February-March 2002, which ended with a 82,4 percent agreement and thus the approval of the proposal. The proposal was submitted to the *International Commission on Stratigraphy* and was accepted by the ICS bureau at the meeting in Urbino, Italy, mid-June 2002 and passed for the final ratification.

The clear majority support for defining the Cambrian GSSP at the level of *Ptychagnostus* (or *Acidusus*) *atavus* and the *Cordylodus proavus* level led to a ballot for an approval of formal Working Groups. Both suggested WGs were approved in June/July 2002. New data on the potential GSSP of the *Ptychagnostus* (or *Acidusus*) *atavus* level in the Drum Mountains, Utah, were presented at the meeting in Caunes, Montagne Noire, southern France, in September 2002, and submitted for publication.

Readers of this document who may wish to keep up with activities generated by the SCS are invited to access the Subcommission's internet homepage at <http://www.uniwuertzburg.de/palaeontologie/ISCS/index.html>, which is maintained by Gerd Geyer.

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