

VII International Congress on the Jurassic System (September 6–18, 2006, Krakow, Poland)

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The International Stratigraphic Commission of the International Union of Geological Sciences holds congresses (symposia) on Phanerozoic systems every four years. According to the resolution of the preceding International Congress on the Jurassic System (Sicily, Italy), the VII Congress took place in Krakow (Poland), September 6–18. It was organized by numerous educational and research institutions of Poland and by the International Subcommittee on the Jurassic System (ISJS). A. Wierzbowski, Professor of Krakow University, chaired the Organizing Committee. The congress program was traditionally dedicated to all problems concerning the Jurassic: geodynamics and evolution of the Earth's crust fragments, the facies analysis and reconstruction of sedimentation environments, paleoecology and paleobiogeography, interdisciplinary investigations in stratigraphy, Jurassic organisms in space and time, organic geochemistry and potential hydrocarbon resources of Jurassic deposits, preservation of paleontological heritage.

More than 200 specialists from 32 countries attended the Congress. Among participants there were top-level researchers in the Jurassic: J. Callomon and A. Hallam (England), N. Morton (France), the chairman of the International Subcommittee on the Jurassic System (ISJS), H. Jenkyns (England), J. Ogg (USA), F. Gradstein, Chairman of the International Stratigraphic Commission (Norway). Over 200 reports (oral and poster presentations) were submitted to the congress, and their abstracts are published in the journal *Volumina Jurassica*, Vol. IV, Institute of Geology, Warsaw University, Warsaw, 2006. None of the groups of marine and terrestrial organisms whose remains are known from Jurassic deposits is left without attention in reports devoted to different problems of the Jurassic System and Jurassic Period, although the attention was not always focused on paleobiological material regarded commonly as auxiliary indicator of the rocks geological age and some paleoenvironmental factors. Despite the majority of reports dedicated to materials

from Europe, topics of presentations spanned all the continents, where the Jurassic deposits are known.

As is mentioned above, diverse themes have been discussed at the congress, but only some of them attracted principal attention of participants. In this informative communication, we dwell on those problems that seem to be timely for Russian readers. One of them is problem of the Global Stratotype Section and Point (GSSP). Two sessions were devoted to projects of the International Geological Correlation Program (IGCP) no. 508 “Marine and Non-Marine Jurassic—Global Correlation and Basic Geological Events” and no. 458 “Boundary Events Around the Triassic–Jurassic Boundary”. Results of the second project were discussed at the workshop of working group on the Triassic–Jurassic Boundary, a subsidiary organ of the ISJS.

Boundaries of stages and substages were analyzed in many reports that is understandable because of the problem topicality: several working groups put forward the relevant GSSP candidates. The GSSP versions suggested for the Hettangian, Toarcian, Callovian, Oxfordian, Kimmeridgian, and Tithonian stages were considered at special sessions and discussed at workshops of working groups. At present, there are several potential GSSP candidates for the Jurassic base, and key events, which can be regarded in this case, are the appearance of Psiloceratidae or changes in their assemblages (England, Nevada, Peru) and a considerable renewal in radiolarian assemblages (Canada). Two candidates officially suggested at the congress are the Muller Canyon section in Nevada, the United States (Guex et al., 2006)¹ and the Carvendel Syncline section in Austria (von Hillebrandt et al., 2006).¹ The most probable GSSP for the Pliensbachian–Toarcian boundary is the Peniche section (Portugal) most extensively studied up to date and containing a complete succession of ammonoids (Elmi, 2006).¹ The Callovian basal level

¹References are given to abstracts published in the Journal *Volumina Jurassica*, Vol. IV, 2006.

(the *keppleri* Zone base) was established already in 1990, but there were some problematic moments in selecting the most appropriate GSSP. Sections in Germany yield diverse assemblages of well-preserved ammonites, but they are highly condensed and poorly studied by other methods. Accordingly, a group of experts in the Middle–Upper Jurassic stratigraphy suggested to select an alternative section. Considering published data on sections in the Russian Platform, the sub-commission leaders and working group recommended to Russian scientists to carry out the additional study of the Prosek section in Nizhnii Novgorod oblast, one of the most complete for this stratigraphic interval. Several GSSP candidates suggested for the Oxfordian Stage are studied to a variable extent and have some peculiarities, being represented by clay facies within the Subboreal province (Melendez et al., 2006; Page et al., 2006; Kiselev et al., 2006).¹ The key event (first appearance of *Cardioceras* coinciding with the *Alligaticeras*–*Properisphinctes* replacement and essential changes in aspidoceratid assemblages) is clearly established in all the suggested sections being of a high correlation potential. The Isle of Skye section in Scotland, which has been studied in detail by the international group of researchers (Wierzbowski et al., 2006),¹ is the likely GSSP for the Kimmeridgian Stage, which can be adopted soon. Ammonoid assemblages of this section enable a reliable correlation in the entire Northern Hemisphere, at least, and the stage base (marked by appearance of the ammonites genus *Pictonia*) coincides with the paleomagnetic reversal that is favorable for distant correlations. We suggested to establish the Volgian (Tithonian) base in the thoroughly studied Gorodishchi section of the Volgian lectostratotype. Recognition of this section as the leading GSSP candidate have been impeded so far by intricacy in interpreting some ammonoids and, consequently, by possible alternative correlations (Rogov et al., 2006; Mitta and Scherzinger, 2006).¹ We hope, however, that the working group meeting in June–July of 2007 and field excursion to principal Jurassic sections of the East European platform will bring solution of contradictions. In any case, there are no concrete GSSP candidates among classic sections of the Tithonian base, and even the relevant key event has not been established as yet (Schweigert and Scherzinger, 2006).¹

As is well known, the International Stratigraphic Commission (ISC) busy with the GSSP selection for of each Phanerozoic stage and substage basal levels by 2008 has to detail the global and regional stratigraphic scales. The main objective of its work is to elaborate not only the parallel biostratigraphic scales of higher resolution, but also the corresponding magneto-, chemo-, and sequence-stratigraphy scales. As is reported at the congress (Ogg and Przybylski, 2006),¹ the original database includes by April, 2006, about 900 events and zones (global and regional) of the Phanerozoic. Information about state-of-the-art in chronostratigraphic

schemes for the Jurassic is available at the web sites www.stratigraphy.org or www.chronos.org. There is a distinct tendency in biostratigraphy to define infrazonal units by subdividing zones into subzones and biohorizons. For instance, the Sinemurian and Pliensbachian zonation for northwestern Europe, which has been demonstrated at the congress, consists of nearly 90 biohorizons (Meister et al., 2006).¹ The tendency to divide zonal scales into biohorizons of this kind involves all the Jurassic stages.¹ As one of the non-biologic ways of stratigraphic scale detailed elaboration, some researchers put forward an idea to work out an astronomic time scale based on the analysis of sedimentation cyclothem, geochronometric data, and Milankovich cycles (Coe and Weedon, 2006).¹

The high-resolution scales and enhanced precision of intra- and interregional correlations are especially important by studying critical events in the biosphere evolution. For instance, 17 reports have been dedicated to biota reorganization across the Pliensbachian–Toarcian boundary and to the early Toarcian anoxic event. In most of these presentations, the objective was to reconstruct the environmental factor dynamics during the biota reorganization and anoxic event. Paleotemperatures have been quantitatively estimated based on oxygen isotope parameters ($\delta^{18}\text{O}$) and bioproductivity of paleobasins on carbon isotope parameters ($\delta^{13}\text{C}$) and TOC. Content of CaCO_3 , trace element concentrations and geochemical anomalies in bulk samples and organogenic carbonates, etc., have been used to evaluate seawater chemistry in the past. Experts in these methods are have been well represented among participants of the congress. As is shown in many reports, the multidisciplinary approach is most effective by the facies analysis and climatic reconstructions. For instance, it was shown based on geochemical and geophysical study of organogenic carbonate and sedimentary rocks from sections in Scotland, the European part of Russia, Siberia, and Svalbard (Nunn and Price, 2006)¹ that in general the greenhouse climate of the Jurassic and Cretaceous periods was interrupted from time to time by freezing conditions and appearance of local glaciations in circum-polar areas of the Northern Hemisphere. Judging from the congress materials,¹ biostratigraphic data were widely used in reports devoted to regional tectonics and lithostratigraphy of concrete localities, primarily of those in the Carpathians–Balkan region.

Contribution of Russian specialists, unfortunately not numerous, to proceedings of the 7th International Congress on the Jurassic System was undoubtedly successful. V.A. Zakharov, M.A. Rogov (GIN RAS), V.V. Mitta (PIN RAS), E.M. Tesakova (MGU), and V.Ya. Vuks (VSEGEI) took an active part in work of two sections: “Paleoecology and Paleobiogeography” and “Interdisciplinary Investigations in Stratigraphy.” They participated as well in the post-congress geological excursion to the Middle Jurassic (Bajocian–Callovian) and Upper Jurassic (Oxfordian) sections near Krakow and Czéstochowa and delivered 9 reports (personal

and with co-authors) at the mentioned sessions: “Results of Magnetostratigraphic Research in Jurassic–Cretaceous Boundary Beds, the Nordvik Peninsula, and the Problem of Boreal–Tethyan Correlation of Jurassic/Cretaceous Boundary,” “The Volgian Stage and Jurassic/Cretaceous Boundary in the Panboreal Superrealm,” “Molluscan Migrations and Biogeographical Ecotone in the Middle Russian Sea during the Jurassic,” “Dubki (Saratov Region, Russia), the Reference Section for the Callovian/Oxfordian Boundary,” “A Multi-Proxy Study of the Kimmeridgian/Volgian Boundary Beds in the Gorodishchi Section (Middle Volga Area, Russia), the Lectostratotype of the Volgian Stage,” “The Upper Oxfordian–Lower Kimmeridgian Ammonite Succession (*Amoeboceras*, *Suboxydiscites*) in the Nordvik Section (Northern Siberia),” “Late Jurassic Climate Variations: New Isotopic Data from the Russian Platform,” “New Data on Ammonites and Stratigraphy of the Uppermost Kimmeridgian–Lowermost Volgian in the Middle Volga Region (Russia),” “Foraminiferal Zonation and Upper Jurassic of the Caucasus.” All the reports met interest and aroused discussions in the congress lobby.

In reports and by discussions at the congress sessions and lobby interviews, we tried to show scientific advantages of Jurassic marine successions studied in Russia. Many of them, for instance, sections of the Callovian, Oxfordian, and Volgian stages are comparable in their stratigraphic completeness, detailed biostratigraphic subdivision, and correlation potential with West and Central European and North American sections. The Dubki (Saratov oblast) and Gorodishchi (Ul’yanovsk oblast) sections proposed as the GSSP candidates for driving a “golden spike” at the base of the Oxfordian and Volgian (Tithonian) will be included into the bulletin for voting by members of the Interna-

tional Working Group and ISJS. During the congress, N. Morton, the chairman, and several members of ISJS came up with a proposal to seek for a GSSP of the Callovian Stage in the European Russia, and this proposal has been accepted. We believe the “Prosek” section near Nizhnii Novgorod could be appropriate one. The section of Bathonian–Callovian boundary strata exposed along the Pizhma River (the Churkino locality) could be second candidate for that GSSP. Our working group of specialists on lithology, macro- and microfossils studied comprehensively the Prosek section in October of 2006, and collected fossils and rock samples are now under laboratory examination.

During the well-prepared geological excursion, the congress participants got acquainted with the Bathonian, Callovian, and Oxfordian successions near Krakow and Czéstochowa. It was a good opportunity for everybody to become familiar with litho- and biostratigraphic successions in two localities, to sample microfossils and representative ammonite and bivalve collections from examined rocks. Assemblages of fossils from the lower Oxfordian strata (the Bukowskii Subzone) and *Amoeboceras* Beds of the upper Oxfordian–lower Kimmeridgian are most significant in terms of biostratigraphy and paleobiogeography, being necessary for substantiating the interregional correlation and paleobiogeographic zonation.

Voting by show at the closing session, the ISJS members and participants of the congress have chosen China to be the country of the next congress. Hence, the VIII Congress on the Jurassic System is to be held in August, 2010, in China, Sichuan Province, Suining City.

Reviewer Yu. B. Gladenkov