

THE BERRIASIAN (=RYAZANIAN) STAGE OF THE RUSSIAN PLATFORM: THE FIRST CRETACEOUS INVASION OF TETHYAN AMMONITES

Vasily MITTA

The first Cretaceous invasion of Tethyan ammonites on the Russian platform is usually explained by paleogeographic reorganizations which have opened seaways from the Northern Caucasus through Mangyshlak to Central Russia. The genus *Riasanites* Spath supposedly played an important role in this invasion as the majority of researchers regards the Central Russian *Riasanites* as migrants from the Northern Caucasus (Sazonova, 1971; Sey & Kalacheva, 1997; and others). However, the ancestors of *Riasanites* have not been found in the Northern Caucasus, and the North Caucasian origin of this genus cannot be supported. In contrast, Jeletzky (1984) suggested that the basin of the Oka River was the center of origin of *Riasanites* (from "Pavlovia-like Boreal perisphinctids"), where from they spread to the Northern Caucasus and the Crimea through the Peri-Caspian and Mangyshlak, and in a westward direction through the Polish strait to Poland. A weak point of this theory is the absence of ancestors of *Riasanites* among the Boreal ammonites.

The morphology of the shell and the sculpture of *Riasanites* show their undoubtedly "Tethyan" origin. Probably, they were direct descendant of Tithonian taxa. It is possible that the very close resemblance of *Riasanites* and *Corongoceras* Spath (Himalayitidae) resulted from closely related heterochronous homoeomorphy – similar morphological characters are observed in the same

phylogenetic line through several generations of taxa. The first representatives of *Riasanites* (*R. swistowianus* (Nikitin)) appeared in Central Russia, and there are no positive records of this species in other regions. The specimens close to the *R. swistowianus* have been found, infrequently, only in Mangyshlak. The revision of *Riasanites* (Mitta, in press), has shown that the North Caucasian members of this genus belong to *R. maikopensis* (Grigorieva), and the Crimean ones – to *R. crassicostatus* (Kvantaliani et Lyssenko). However, the "early" *Riasanites* from the Northern Caucasus are closer not to the early *Riasanites* from Russian platform, but, on the contrary, to the late morphs of *R. rjasanensis* (Nikitin). Therefore it seem most likely that the ancestors of *Riasanites* migrated from the Western Tethys through the Polish (Brest) passage into the Central Russian sea, where the genus evolved. Later *Riasanites* spread up to the basin of the Vyatka River in the north, and through Mangyshlak to the Northern Caucasus to the Crimea, in the south.

Transcaspiites Luppov is another genus from the family Himalayitidae with a similar distribution – the Northern Caucasus, Mangyshlak and Central Russia. The genus also included *T. hundesianus* (Uhlig) from the Himalayas. *Transcaspiites* probably originated in the Central Tethys, and later migrated to the north – to the Caucasus and then through Mangyshlak to Central Russia. This genus has

not been recorded from the Crimea or Western Europe.

Another genus of Tethyan origin is *Subalpinites* Mazonot (Neocomitidae). This genus has been described from the Berriasian of France and has been recorded from Mangyshlak. Some species of *Subalpinites*, (some as yet unpublished) are widespread in the Ryazanian Stage of the Russian platform. The genus *Subalpinites* is practically unknown in the Crimea and the Caucasus, except two small specimens from the basin of the Belaya River (Northern Caucasus), probably belonging to this genus. Thus the migration of sub-Mediterranean *Subalpinites* through the Polish passage into the Central Russian Sea and further on to the South-East – to Mangyshlak seems very probable.

The time of the opening of the Polish Strait is determined differently by different researchers, from the Tzikwinianus chron of the Ryazanian up to Early Valanginian. Our data allow earlier dating of this event – to the Rjasanensis chron. The sea-regression maximum in Central Russia at the J/K boundary coincided with the first half of the Nodiger time (latest Volgian), and a new marine transgression had begun by its second half (the Milkovenskiy moment). The

opening of the narrow Polish Strait in the West and a wide strait in the South-East, probably coincided with the maximum of this transgression at the beginning of the *Rjasanensis* time (earliest Ryazanian). These straits were short-lived, as in the second half of the *Rjasanensis* time the migration of ammonites from the Western Tethys stopped, and the same happened to the exchange of faunas with the Peri-Caspian Sea. The records of Marek (1967; and others) of ammonites similar to *Riasanites* in Poland (Kuyav), appear to be in agreement with the above theory.

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Vasily MITTA

Paleontological Institute of Russian Academy of Sciences

Profsoyuznaya 123

Moscow 117997

Russia

e-mail: mitta@paleo.ru

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Autor(en)/Author(s): Mitta Vasily

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