

Introduction

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2014 marks the 45th anniversary of the beginning of work of the Joint Soviet—Mongolian (from 1991, Joint Russian—Mongolian) Paleontological Expedition (SRMPE) and 50 years since the establishment of the Paleontological Center of the Academy of Sciences of Mongolia. These events are closely connected and also entangled with the history of the Borissiak Paleontological Institute of the Russian Academy of Sciences. In contrast to previous large paleontological expeditions, the work of the SRMPE was concerned not only with the study of vertebrate fossils, but also diverse invertebrates especially important for Paleozoic stratigraphy and biogeography. In the Mesozoic and Cenozoic, the entire territory of Mongolia was confined to one continent and all post-Paleozoic deposits of Mongolia are continental with abundant remains of vertebrates, insects, and lacustrine invertebrates, mainly ostracods and mollusks. In the Paleozoic, the territory of modern Mongolia was divided between many microcontinents and all Paleozoic deposits are marine. Microcontinents or terrains located between large landmasses moved, joined each other, and separated influenced by convections of the mantle beneath them. The terrains recognized in the territory of modern Mongolia in the Paleozoic were between Siberia and Gondwana, at different times nearer to each of the landmasses, which is reflected in the similarity and disparity of their corresponding faunas. This paleogeographic interpretation has become possible primarily as a result of the study of fossil invertebrates (brachiopods, mollusks, bryozoans, trilobites, corals, archaeocyaths, echinoderms, graptolites, foraminifers, conodonts, and others). The Mesozoic and Cenozoic paleogeographic and landscape reconstructions are mainly based on data from vertebrates, fishes, reptiles, birds, and mammals, flowering plants, charophytes, and some invertebrates (insects, ostracods, and mollusks). If all biogeographic regions are inter-

preted as centers of origin, centers of diversification, bridges, refuges, or “museums” accumulating diversity, then the territory of modern Mongolia in the Paleozoic was always a kind of bridge between various faunas of various continents or biogeographic provinces and, in the Meso-Cenozoic, it apparently combined all these features. The invertebrate research of the expedition was mostly focused on Paleozoic brachiopods. These animals were studied by the greatest number of researchers. Each year one or two field teams collected brachiopods of various geological ages and developed on their basis a stratigraphy of Paleozoic deposits. The study of Cambrian phosphorites from a deposit near Khubsugul Lake has shown that they were biological (bacterial) in origin and marked the beginning of bacterial paleontology, a new field of research. The good preservation of the vertebrate fossil material in Mongolia allows reliable reconstruction of the animals and, on this basis, the study of the evolution of large taxa. The studies also included functional morphological analysis. For all these reasons, many specimens of Mongolian dinosaurs and mammals are the most attractive in museum displays and exhibitions. The study of dinosaurs and mammals is a high-point of Mongolian paleontology. The discovery of Cretaceous and especially Early Cretaceous mammals showed their high diversity. Their coexistence with dinosaurs opened an interesting page in the study of the origin and evolution of high-rank taxa from an ecological viewpoint. As a result of the research conducted by the SRMPE, paleontological research in Mongolia acquired a respectable place in global paleontological science and became a necessary element for solving many problems of paleontology and stratigraphy.

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