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The Russian Schools of Paleobryozooology

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1. Introduction

Investigations of bryozoans in Russia and the former Soviet Union represent a rich history of the study of Bryozoa that parallels studies conducted throughout the world during the past two centuries.¹ Names such as Eichwald, Keyserling, Fischer de Waldheim, Licharew, Stuckenbergs, Nehkoroshev, Nikiforova, Shulga-Nesterenko, Trizna, Astrova, Morozova, Viskova, Gorjunova, Lavrentjeva, and Nehkorosheva – are familiar names to anyone that studies fossil bryozoans, especially in the areas of morphology, taxonomy, and biostratigraphy. Although much of this research was conducted at the Paleontological Institute of the Academy of Sciences in Moscow, important bryozoan research was also carried out in St. Petersburg (VSEGEI); Kiev (Ukrainian Geological Institute); and various research locations in Siberia and the Far East.

2. Chronological History of Workers

2.1 Early studies in St Petersburg

In the mid to late 19th century a number of naturalists working in St Petersburg published a number of important monographs and other papers on bryozoans. Karl Eduard Ivanovich von Eichwald (1795–1876) was born in Latvia, and became an assistant professor successively in Dorpat, and Kazan, before moving as Professor of Zoology at Vilna, and finally in St Petersburg between 1835 and 1855.² He was a noted traveller and

collector and the author of the three volume *Lethaea Rossica, ou Paléontologie de la Russie* which was published in Stuttgart between 1853 and 1868. In this immensely important monograph he devoted nearly ninety pages to bryozoans which were illustrated in eight plates. This provided one of the first accounts of fossil bryozoans from Russia.

Alexander Andreevich Keyserling (1815–1891)³ trained as a naturalist in Berlin where he came under the influence of Alexander von Humboldt. On his return to St Petersburg he was employed by the Russian Mining Department and as such collected a great deal of geological material in various mountainous regions in Europe, including the Alps and the Pyrenees. He accompanied Roderick Impey Murchison on his expedition to the Urals in 1841. Some of his material ended up in museums in St Petersburg, London and in Dorpat, Estonia.⁴

In the early years of the twentieth century a number of important papers were published in St Petersburg, either by bryozoologists based in that city or by scientists working elsewhere. One of the latter was Aleksandr Antonovich Stuckenbergs (1844–1905), a Professor of Natural History at Kazan University and noted traveler, he authored two major monographs on the corals and bryozoans of the Urals and Timan, and of Samara.⁵

2.2 The Leningrad School of Paleobryozoology

In the mid-nineteenth century the bryozoan workers responsible for establishing the modern-day Leningrad School of Paleobryozoology were Vasili Petrovich Nekhoroshev (Figure 1) and Aleksandra Ivanovna Nikiforova.⁶ They were a married couple who worked in St. Petersburg for VSEGEI, although Nikiforova spent the final five years of her career with VNIGRI. The “Leningrad School” of bryozoologists were primarily interested in using bryozoans for biostratigraphic purposes. Nekhoroshev in particular was emphatic about using and maintaining the old taxonomy of Ulrich, Bassler, and Simpson in classifying bryozoans. Nekhoroshev was born October 14, 1893 in Orenburg in the southern Urals. He entered school at the Mining Institute in St. Petersburg in 1912. In 1919, he worked on the Carboniferous in the Altai where he collected his first bryozoans and began his lifelong study of these organisms. He is considered to be the first to use a microscope to study bryozoans in Soviet time. Nekhoroshev published more than 50 papers on the taxonomy, biostratigraphy, and paleogeography of bryozoans including six monographs. He died in 1977.

Nikiforova was born May 12, 1894, also in the Orenburg area of the southern Ural Mountains. Although her early career involved coaching sports in grammar school and teaching in a primary school, she entered the high woman’s courses at Tomsk and later transferred to the Timirjazev Academy in Moscow where she studied to be a soil scientist. However, in 1920, she met Nekhoroshev and in 1921, they were married. Nikiforova published 16 papers including her monograph on “Types of Carboniferous Bryozoans of the European Part of the USSR.” Her career ended prematurely when she died in 1939 at the age of 45.



Figure 1. From left: V.P. Nekhoroshev, I.P. Morozova, and N.N. Dunaeva.

One of Nekhoroshev's students was his own daughter, Ludmila Vasiljevna Nekhorosheva, born in 1930. She graduated from the geological faculty of Leningrad University and worked for the Arctic Geological Institute of Leningrad. She published her monograph on the Devonian Bryozoa of the Soviet Arctic Region.

Valentina Borisovna Trizna, born in Minsk in 1892, worked on Permian bryozoans in the Ural Mountains for VNIGRI, and died in 1979. She published papers on the Carboniferous faunas of the Kuznetsky Basin, and three monographs on the Lower Permian of the Ural Mountains and was a prominent member of the Leningrad School of Bryozoologists.

2.3 Early studies in Moscow

Gotthelf Friedrich Fischer de Waldheim (1771–1853) was born in Minsk and following a short career as a librarian turned to geology and was influenced by Alexander von Humboldt and studied under Georges Cuvier in Paris. In 1804 he was appointed Director of the Moscow Imperial Museum, and Professor of Natural History at the university in that city. He was a prolific author with over 200 fossil and living genera of all classes to his name. Hermann Adolfowitsch Trautschold (1817–1902) was also a professor in Moscow, at the Petrological Academy. He is the author of the cryptostome genus *Ascopora*, whose type species was recently confirmed as being a species described by Fischer de Waldheim.

2.4 The Moscow School of Paleobryozoology

The modern-day school of paleobryozoology was established in Moscow by Mariya Ivanovna Shulga-Nesterenko (Figure 2)⁷ who began her career studying early Permian bryozoans from the northern Ural Mountains. She was one of the first workers to use a microscope to study the morphology of skeletal structures to understand their biological purposes and functional morphology. It was at this time she defined the “capillary system” in *Cryptostomida* and the importance of the “capillaries” in their classification and phylogeny. Shulga-Nesterenko published a major paper in 1949 entitled “Functional morphology, phylogenetics, and stratigraphic importance of skeletal microstructure in skeletal tissue of bryozoans”. She also produced a series of important monographs on Carboniferous bryozoans published in 1951 and 1955, and on Permian bryozoans published in 1952. Shulga-Nesterenko is considered to be the founder of what we informally term herein the Moscow School of Bryozoology which essentially comprises the bryozoologists of the Paleontological Institute in Moscow and former students of the institute. The “Moscow School of Bryozoology” established new taxonomies which were usually tied to interpretations of various morphological features. Most of these bryozoologists were concerned with evolution and phylogenetic developments as well as paleobiogeographic interpretations. During the heyday of both the “Leningrad School” and “Moscow School”, workers still remember some of the lively exchanges that took place at scientific meetings and dissertation defenses between the major proponents of the two schools.

Nina Alexandrovna Shishova was very important to the work of Shulga-Nesterenko and many of the workers who followed Shulga-Nesterenko. Shishova developed the techniques of producing thin, clear, oriented thin-sections, and produced most of the specimens studied in the bryozoan laboratory of the Paleontological Institute during her tenure. Shishova was born January 16, 1899, and graduated from the biological department of the Moscow State Pedagogical Institute in 1930. She joined the Paleontological Institute of the USSR Academy of Sciences in 1937. She authored more than ten articles on bryozoans and co-authored the bryozoan volume of “*Osnovy Paleontologii*” published in 1960. She left the Institute in 1965, and died July 29, 1978.

In 1952, a post-graduate student of Shulga-Nesterenko, Iraida Pavlovna Morozova⁸ (Figures 1 and 3), finished her dissertation “Carboniferous Bryozoa of the Don” and became a scientific worker of the Paleontological Institute. Morozova’s influence on the study of Paleozoic and Mesozoic bryozoans has touched every part of the Earth. From Yang in China; Yarinpil in Mongolia; Sakagami in Japan; Wass in Australia; Gilmour, McKinney, Cuffey, and Snyder in the United States; Nakrem in Norway; Wyse Jackson in Ireland; Ernst in Germany – all of these workers and many more have studied with or been influenced by Morozova. Morozova was born September 1, 1919 at Livnee near the Russian-Ukraine border, one of a family of four sisters and two brothers. She entered Moscow State University in 1940 but interrupted her studies to work on a farm in Siberia between 1942 and 1943. She then worked as a teaching assistant before returning to



Figure 2. *Mariya Ivanovna Shulga-Nesterenko*.

university. She published her monograph on Late Permian Bryozoa in 1970 which contained a comprehensive summary of all Late Permian bryozoans known throughout the world. At about the same time, she published the first account of the Triassic bryozoans that had survived the Permian extinction event. In 1981, she published another monograph on the late Paleozoic bryozoans of northeastern part of Russia. In recent years, Morozova produced major revisions in the taxonomy of fenestrate bryozoans. She died in 2007.

Morozova's husband was Pavel Georgievich Danil'chenko (1903–1993) who worked in the Paleontological Institute between 1944 and 1980. He was a distinguished palaeoichthyologist who specialised in the study of Cenozoic bony fishes. Morozova's daughter is Nataliya Pavlovna Schastlivtseva who has authored several papers on nautiloids and on bryozoans and who is now Head of the Scientific-Exposition Department at the Paleontological Institute.

When Shulga-Nesterenko became ill and was unable to continue her research on bryozoans, Galina Grigorjevna Astrova was invited to join the staff at the Paleontological Institute in Moscow in 1955. Shulga-Nesterenko and Astrova had been corresponding and working together for quite some time and it was easy for Astrova to assume the leadership of the bryozoan laboratory in Moscow. Astrova was born May 21, 1906, in Bezhitsa in the Bryansk Region of Russia. She graduated from the biological department of the Pedagogical Institute of the Second Moscow State University (now the Moscow Pedagogical Academy) in 1927, and for a number of years between 1929 and 1932 was employed at the Fertilizer Research Institute as a geologist prospecting for phosphorites. In 1932 she began teaching and conducting research at the Pedagogical Institute when she was invited to join the Paleontological Institute. Her earliest papers on bryozoans



Figure 3. Paleobryozoologists at the Paleontological Institute, Moscow.
From left: V.D. Lavrentjeva, I.P. Morozova, L.A. Viskova, and R.V. Gorjunova.

appeared before she joined the Paleontological Institute and concerned Ordovician and Silurian faunas. She later studied and published on the morphogenesis, systematics, and phylogeny of trepostome bryozoans — the monograph for which she is chiefly remembered was published posthumously in 1978. She also coordinated and wrote part of the bryozoan volume in the series *Fundamentals of Paleontology* (1960) whose executive editor was Tatyana Georgievna Sarycheva (1901–1978), the leader of the Brachiopod group at the Institute. The book was later awarded a Lenin Prize.⁹ A skilled artist, Astrova had trained for a time at the Surikov Art School and prepared detailed pen and ink drawings of trepostome structure for her own publications. She was a proponent of the zooidal nature of acanthostyles in trepostomes. She also established the order Cystoporida in 1964. She was a fine administrator; was head of the bryozoan laboratory at PIN (1966–1973); was chairman of the Bryozoan Commission on the Problemsovet (1969–1973);¹⁰ and was largely responsible for the first two All-Union colloquia on Recent and Fossil bryozoans.¹¹ She died July 22, 1973.

Several workers joined the Bryozoological Laboratory of the Paleontological Institute of the USSR Academy of Sciences in the late 1960s and early 1970s. They included Lena Alexseevna Viskova, Raisa Vasiljevna Gorjunova, Galina Vasiljevna Kopaevich (Figure 3), and Valentina Danilovna Lavrentjeva.

Viskova joined the Institute as a post-graduate student and completed her dissertation on late Cyclostomatous bryozoans of the middle Volga and the Crimea. Viskova was born

May 25, 1931, in Kiev, Ukraine, and graduated from the Geological Faculty at Moscow State University in 1958. In 1967, Lena became a candidate of biological science and received her Doctor of Biology in 1989. From 1958 to 1961, she was a laboratory assistant at the Institute of Geology of the USSR Academy of Sciences. In 1961, she became a post-graduate at the Paleontological Institute and rose through the ranks from junior scientific worker to senior scientific worker to senior research worker, and finally, was placed in charge of the Bryozoan Section. She was one of the researchers who provided the first information on the evolution of cyclostomes, ctenostomes, and cheilostomes at the boundary of the Mesozoic and Cenozoic Eras. Viskova also spent three years working in Cuba.

Gorjunova was born July 2, 1933 in the village of Monastyrskoye in the Penza Region of Russia. She graduated June 29, 1962, from Moscow State University and became a candidate of biological science in 1971. Raisa received her Doctor of Biology in 1990. In 1962, Gorjunova joined the Paleontological Institute as a senior laboratory assistant; then became a research worker; and finally a senior research worker. She has published many important papers including her dissertation on "Phylogeny of Paleozoic Bryozoans," and a monograph on "Morphology, systematics, and phylogeny of Bryozoa."

Kopaevich was born in Moscow on July 12, 1931; graduated from the geographical faculty of the Pedagogical Institute of Moscow and joined the Paleontological Institute in Moscow in 1961. She published her dissertation on the Ordovician and Silurian bryozoans of Estonia in 1976. Galina also published a major monograph on Ordovician, Silurian and Devonian bryozoans of Mongolia. She retired in 1986 and died July 18, 1998.

Lavrentjeva was born March 26, 1932, in Bolsheva, Moscow Region, Russia. She graduated from Moscow State University in 1966 from the geographical faculty. In 1983, she became a candidate of biological science. Valentina joined the Paleontological Institute in 1955. Lavrentjeva published on the Upper Devonian and Early Carboniferous bryozoans of the Russian Platform. She also published a monograph on Bryozoa of the suborder Phylloporinina. During the last decade, Lavrentjeva has studied the Devonian and Early Carboniferous bryozoa of the Transcaucasus.

Three workers, Kiseleva, Romantchuk, and Lisitsyn, did their dissertations under the direction of Morozova. Alexandra Vasiljevna Kiseleva was born in Voronezh in 1923 and graduated from the geology faculty of Voronezh University. She worked for the Geological Organization of Vladivostok and did most of her work in the Vladivostok region. Her major papers include "The Permian bryozoans of the Primore region" and the "Permian bryozoans of the Far East." She died in 2001.

Tatyana Vladimirovna Romantchuk was born in Ukraine in 1925 and graduated from the geology faculty of Odessa State University. She worked in the Khabarovsk region for the Geological Organization of Khabarovsk and published papers on the Permian bryozoans of the Khabarovsk area.

Dmitrii Vitalievich Lisitsyn was born May 17, 1960 in Kazan and graduated from the biological faculty at Kazan State University. He became an aspirant at the Paleontological Institute in Moscow in 1985. He has published papers on the Permian bryozoans of the

northern Ural Mountains and co-authored papers with Morozova providing revisions of various fenestrate bryozoans. Lisitsyn is in charge of creating a computer catalog of bryozoans for Russia.

3. Acknowledgments

In such a short summary, many Russian workers have been either omitted from mention, or their importance relegated to simple references.

Special thanks go to Dima Lisitsyn who supplied us with much of the information. The late Iraida Morozova also supplied historical information, and several people at the Paleontological Institute in Moscow reviewed the manuscript for inaccuracies. However, all factual errors and misinterpretations are the sole responsibility of the authors. Venera Gilmour assisted us in the translations of some of the Russian literature.

Notes

1. A useful review and listing of papers on Palaeozoic bryozoans published in the former USSR between the 1920s and early 1970s is that by Dunaeva, N.N. ‘A review of the Paleozoic bryozoan works of the USSR’, *In Pouyet, S. (ed.). Bryozoa 1974. Documents des Laboratoires de Géologie de la Faculté des Sciences de Lyon*, hors serie 3 (2) (1975), 647-665.
2. *Dictionary of Scientific Biography* 6 (1971), 307-309. See also M. Collie and J. Diemer, *Murchison's wanderings in Russia* (British Geological Survey, Nottingham, 2004), p. 435.
3. *Dictionary of Scientific Biography* 7 (1973), 319-320. See also M. Collie and J. Diemer, *Murchison's wanderings in Russia* (British Geological Survey, Nottingham, 2004), p. 436-437.
4. R.J. Cleevely, *World Palaeontological Collections* (British Museum (Natural History) and Mansell Publishing Limited, London, 1983), p. 170.
5. A recent biography is that by B.S. Sokolov, *Aleksandr Antonovich Stuckenbergs, 1844–1905* (Kazan, Kazan State University, 2003).
6. See also the paper by their daughter Ludmila Nekhorosheva in this volume.
7. G.G. Astrova, ‘Mariya Ivanovna Shul’ga-Nesterenko (1891–1964)’, *Paleontologicheskii Zhurnal* 1965(2), 157-158. Figure 1 is reproduced from I.P. Morozova and L.A. Viskova, ‘Mariya Ivanovna Shulga-Nesterenko (1891–1964) (on the 100th anniversary of her birth)’, *Paleontologicheskii Zhurnal* 1991(3), 125-126.
8. An account of the life and work of Iraida Pavlova Morozova is given in a long illustrated magazine article by John Soennichsen, ‘Reading the Rocks of Time’, *The World & I* [The Washington Times Corporation] (February 1998), 172–179.
9. G.A. Afanasjeva, R.E. Alekseeva, T.A. Grunt, I.N. Manankov and O.A. Erlanger, ‘100th anniversary of the birth of Tatyana Georgievna Sarycheva (1901–1978)’, *Paleontological Journal* 35(6) (2001), 665-666.
10. S.V. Lobacheva, ‘On the history of Russian Paleontology’, *Paleontological Journal* 41(2) (2007), 223-224.
11. V.A. Varsonof’yeva and eleven others, ‘Galena Grigor’yevna Astrova (1906–1973)’, *Paleontologicheskii Zhurnal* 1974(2), 155-156. [English translation: *Paleontological Journal* 1974, 262-264.]