Shafranovsky, I.I. 1964. Nikolay Ivanovich Koksharov. Nauka, Moscow-Leningrad, 216 pp. (In Russian). [Шафрановский И.И. 1964. Николай Иванович Кокшаров. М.Л.: Наука. 1964. 216 с.]

**PARTICIPANT OF EXPEDITIONS BY R. MURCHISON**

As already mentioned, N.V. Chevkin was right in his own way, persistently advising the pupil, who fell in love with him, to seriously engage in the science of palaeontology, which had just emerged at that time. Indeed, this young discipline brought a lot of clarity and precision to the old geology. That is why young Koksharov watched with great interest the "almost bloody battle" between his two teachers in the Mountain Corps — Professor of Geology G. P. Helmersen and Professor of Palaeontology E. I. Eichwald. [1]

Grigory Petrovich Helmersen (1803-1885), who later became the first director of the Geological Committee, was famous as the greatest expert on the geology of Russia. In 1842 he was awarded an academic prize for compiling a geological map of European Russia. Eduard Ivanovich Eichwald (1795-1876), a physician by training and a zoologist by profession, was one of the first to engage in paleontological research in our country. He also owns the first major report on the paleontology of Russia. Unlike Helmersen, who was cautious in his conclusions, Eichwald was often carried away and made mistakes, but at the same time he possessed great self-confidence and fervour in his judgements. Even in the "Encyclopedic Dictionary" of Brockhaus and Efron, in an article dedicated to him, it is noted that his work "is not devoid of serious flaws, depending partly on

1. Memoirs of N.I.Koksharov. Russian antiquity, vol. 66, No. 4, 1890, pp. 10-11.

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the nature of the compiler. ... , inclined to enthusiasm, who did not like to admit his mistakes." [2]

The dispute between these two scientists flared up due to the fact that Helmersen, adhering to the old method, determined geological formations by mineralogical and physical characteristics, without taking into account paleontological data. On the basis of observations, he attributed a series of strata occurring near Novgorod to the "new red sandstone". Eichwald, looking at the fossils from these layers, immediately stated that Helmersen was wrong and that the layers belong to the Devonian system. Helmersen, who considered himself the first geologist, took the assertion of the addicted Eichwald as a personal insult. To resolve the dispute, the rivals turned to the greatest authority of that time, the famous German geologist Leopold von Buch (1774-1853), who announced the correctness of Eichwald. “Since then,” adds Koksharov, “Helmersen and Eichwald remained until death irreconcilable enemies." [3]

This dispute, which received wide publicity in the scientific world, was extremely interesting to the outstanding English geologist R.I. Murchison. Wanting to compare the sedimentary deposits of England studied by him with the formations described by Helmersen and Eichwald, Murchison turned to the Russian government with a proposal to organize a special expedition to study the geological structure of European Russia. Having received consent, Murchison included the French palaeontologist E. Verneuil and the novice naturalist in his expedition, later a famous zoologist, geologist and traveller - A. Keyserling. In the spring of 1840, the three scientists arrived in St. Petersburg. It was at this time that Koksharov, who had just passed his final exams in the Mining Corps, was summoned to N.V. Chevkin. The caring chief announced to the newly minted engineer that he would accompany Murchison on his trip to Russia.

2. Cit. Quoted from: R.F. Gecker. A Tale of Paleontologists of the Last Century. In the book: Essays on the history of geological knowledge, no. 5. Ed. Academy of Sciences of the USSR, Moscow, 1956, p. 105. It also contains a very vividly written description of EI Eichwald. See also: V.E. Raikov. Russian evolutionary biologists before Darwin, vol. P. Ed. USSR Academy of Sciences, Moscow - Leningrad, 1951, pp. 321-389.

3. Memoirs of N.I.Koksharov. Russian antiquity, vol. 66, no. 4, 1890, p. 11.

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At the same time, Chevkin once again emphasized the importance of scientific direction when he tried to direct the young mineralogist. Koksharov in his "Memoirs" quotes the words of Chevkin himself. “Here's a good opportunity for you, my friend, to get to know more closely how geological research is carried out by famous scientists. Be careful and do not miss out on everything that may be useful for improving you in geology and palaeontology. Pay special attention to fossils, which now play an important role in geology. Then act to the honour of the Russian name and endeavour to be pleasant to the eminent foreigners." [4]

It is easy to imagine the feelings with which Koksharov listened to these instructions. The journey ahead attracted and captivated him. I could not help but be interested in the future cooperation with outstanding scientists. The thought involuntarily suggested to me that it might be unreasonable to persist in my addiction to mineralogy. Geology and palaeontology opened up very brilliant prospects for him. Further we will see that Nikolai Ivanovich still did not betray his attraction and remained a “purebred mineralogist.” However, Murchison's expedition played a big role in his fate. It broadened the horizons of the novice scientist and brought him closer to outstanding representatives of foreign science.

We will meet the name of the English geologist R. I. Murchison more than once in the further text of this book. Therefore, before describing the famous expedition and participation of N.I. Koksharov in it, it is necessary to say a few words about this scientist. Roderick Impey Murchison (1792-1871) received a military education and served in the army for a number of years. At the age of 30, he became interested in the natural sciences, especially geology. This was facilitated by his acquaintance with the famous English geologists C. Lyell and A. Sedgwick, with whom he made a number of excursions. Soon Murchison attracted attention by research on the stratigraphy of Palaeozoic deposits. His monographs on the Silurian system and the geological structure of Russia were highly

4. Ibid, p. 12,

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appreciated in the history of geology. At home, Murchison served as chief of the Geological Survey and director of the Geological Museum in London.

In 1845, after his trip to Russia, the St. Petersburg Academy of Sciences elected an English geologist as its full member. It should be especially noted Murchison's unchanging sympathy for our country, which he dearly fell in love with during his two Russian expeditions. During the Crimean War, Murchison actively opposed England's participation in the military campaign of 1854-1855. Here is an excerpt from the speech of N. I. Koksharov at a meeting of the St. Petersburg Mineralogical Society three days after the death of the English scientist: “In London, died on October 11 this 1871, in the eightieth year from birth, one of the most famous geologists of our time, Sir Roderick Murchison. The Imperial Mineralogical Society received this news of great sorrow. And who, of course, could feel more deeply and more worthily appreciate the loss suffered by science through a new grave, if not our society, in which geology is an abundant element.

“It would be superfluous to recount before you in detail the geological achievements of Murchison; many of them have become classical, such as the national example ‚‚the Silurian system”, and in general all of them are well known to you. Therefore, I will allow myself to remind you of the beneficial influence that Murchison made on our geologists with his two-time travel across Russia, and of the unforgettable service that he rendered to us by accurately determining the relative antiquity of the geological formations of European Russia and marking their boundaries on the map of our vast fatherland. One cannot help but wonder how he could have achieved such tremendous results in such a short time! Only deep knowledge, experience, energy and love for the science of Murchison, the help of his scientists companions —Messrs. de Verneuil and Count Keyserling... could lead the planned enterprise to such a brilliant end. The extensive essay "Russia and the Ural Mountains" and "Geological Map of European Russia and the Ural Range" constitute a precious legacy left by Murchison to our fatherland."

“Of course, Murchison’s services to Russia in the academic respect are very great, but in the political respect he also managed to render her considerable services. Murchison remained a

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loyal friend of Russia until the last minute of his life. He constantly retained feelings of sincere affection and gratitude for the country in which he found full cordiality and hospitality. Murchison proved that feelings were so dear to the Russian heart, especially in the era of the Sevastopol campaign, when he had to endure a lot of troubles for being too openly sympathetic to our country.

“Both in words and in the press, despite all the cries of the irritated nation that was in the struggle with Russia, Murchison did not cease to defend Russia from the unfair accusations raised by the British press. Those of the Russians who happened to visit England and get to know Murchison will testify with what kindness he treated our fellow countrymen and in what terms he spoke of the reception given to him by the Russians in Russia. As a companion of Murchison on his journey through Russia and as a person who remained with him in the most friendly relations until his death, his feelings for our country are known, perhaps better than others. Warm gratitude to those who rendered him hospitality or any kind of service was never erased from his noble heart and served as a hallmark of his honest character.” [5]

It is impossible not to give an interesting description of Murchison's appearance, which Koksharov gave in his "Memoirs": "R. Murchison, one of the richest English scholars, was a type of Englishman of high society; he was considerate, courteous and extremely delicate in handling, which is what “few of his fellow travelers are distinguished by. He was tall, not fat or lean, with an open, benevolent face, which reflected a certain amount of pride, or rather, a sense of self-worth. Always dressed with particular neatness during travel (although he often had to use a hammer to break stones), he invariably wore a lorgnette around his neck with a magnifying glass and a silver pencil attached to it, with which he wrote down everything he saw and heard in his notebook."

5. Quote: M.I.Radovsky. From R. Murchison's correspondence with St. Petersburg academicians. Questions of the history of natural science and technology, vol. 1, 1956, p. 259.

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As we will see from what follows, Murchison was friendly to young Koksharov, highly appreciating his abilities and love for science. He also liked the open, cheerful character of the young mining engineer. In conversations and letters, he often called him "my dear Cock."

N.I. Koksharov also made friends with Murchison's companion — the famous French palaeontologist E. Verneuil. This name will be found more than once on the pages of the biography of the Russian mineralogist. Therefore, one cannot but cite here the characteristics of Verneuil from the same "Memoirs", especially since it gives a masterful comparison of both famous companions of Koksharov in a lively and witty form: "If Murchison was somewhat important and had the manners of a courtier, then Edward Verneuil represented this is the exact opposite and was extremely easy to handle. ... ... He was an honest, good-natured person, so natural in his mental manifestations that the name "child of nature", given to him by one of my friends, was quite suitable for Verneuil. He was completely devoted to science and at the same time passionately loved music, poetry and in general everything that related to aesthetics. How often during our geological excursions, sitting on a transfer cart, we sang "with him arias and duets from Norma, Semiramis", "William Tell", "Robert" and others. E. Verneuil was of average height, had a pleasant expressive face, but was so short-sighted that he could not take a step without a lorgnette. [7]

What duties did young Koksharov have to perform while participating in Murchison's expedition? The answer to this question can be found in the document below — the order sent by the Headquarters of the Corps of Mining Engineers dated May 25, 1840 to the “Corps of Mining Engineers to Lieutenant Koksharov” about sending him “to accompany the geologists Murchison and Verneuil on their geological trip across Russia”: “G. The chief commander of the corps of mining

6. Memoirs of N.I.Koksharov. Russian antiquity, vol. 66, no. 4, 1890, p. 13. This characteristic dates back to the time of the first visit of an English geologist to Russia.

7. Ibid., P. 15.

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engineers deigned to order: together with the geologists Murchison and Verneuil, who has to go around with the actual state councillor Baron Meyendorff, with respect to geognostic, some of the Great Russian provinces, send your honour as to compile the proper geological and paleontological collections about those countries , which we are still very incomplete, and in order to take advantage of this opportunity for practical acquaintance with you, under the guidance of the most famous geologists, with geognostic surveys, especially with the coal formations, so well studied by Murchison; for the benefit, when drawing up the aforementioned collections, send with you one of the lower ranks of the mountain.

“Letting your honor know about such an order from the Chief Commander of the Corps, I suggest you:

"1. Upon receipt of this order, report to Mr. Baron Meyendorff, the actual state councilor, and, after asking His Excellency about the time of his departure from Messrs. Murchison and Verneuil, go to you together with Baron Meyendorff to accompany the aforementioned scientists on their geognostic trip to the Great Russian provinces; at the end of this trip, you will return here together with Messrs. Murchison and Verneuil to present a proper account of your occupations and then to receive further service assignments.

“2. In the continuation of such a trip of yours, in addition to studying the country in geognostic terms and possible assistance on your part for the most convenient journey years. Murchison and Verneuil, it decides for you the most important duty to collect for the Mining Institute with the utmost care samples of rock rocks and especially fossils of those countries which you will inspect, so that, as you collect ores and fossils, send them at the first convenient, but true case, at reports, to the corps headquarters in a reliable cork and with proper registers, in which the ore deposit should be indicated in detail.

"3. For a guide in compiling mineral collections, you can take with you the candidate Denisov, who is expected here the other day from the Kolyvano-Voskresensky factories,

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"4. During your entire stay on this business trip, inform the corps headquarters about the success of your studies, if possible every two weeks, and in necessary cases immediately. At the same time, I notify Your Honor that before your departure you will receive from the corps headquarters a sum of four hundred and fifty rubles in silver. ”[8]

Despite the dry, bureaucratic language of that time, we nevertheless catch in this prescription the main idea of ~~​​~~Chevkin - again and again he reminds Koksharov of the importance of the study of palaeontology. Chevkin does not forget to take care of his favourite museum at the Mining Institute and seeks to use Koksharov's trip to replenish his palaeontological and mineralogical collections.

Based on this document, it can be concluded that Koksharov accompanied Murchison as a collector.

The journey lasted about two and a half months and turned out to be very successful, which was facilitated by the good weather that was at that time. “During this period,” wrote Koksharov, “we surveyed the environs of St. Petersburg, the banks of the Volkhov River, the Valdai Mountains, the vicinity of Lake Ilmen, the Vologda and Arkhangelsk provinces, up to Pinega. On the way back we visited Yaroslavl, Kostroma, Nizhny Novgorod, Murom, Yelatma, Kasimov, Ryazan and Kolomna. "For the aspiring scientist, by his own admission, this trip turned out to be very useful. He followed with lively curiosity the methods and methods of observation of famous geologists. Later, he also highly regarded the results of the expedition: “Before that,” he noted, “we knew very little about Russia in the geognostic sense, and even less about its European part.” [10]

Returning to St. Petersburg, the young member of the expedition immediately received Chevkin's strict order to submit a detailed report on his journey. Having learned that Koksharov

8. Ibid., Pp. 268-270 (Appendix 1). Under the text of the document cited there are two signatures — the chief of staff, Major General Chevkin, and Lieutenant Colonel Samarsky-Bykhovets.

9. Ibid., P. 13.

10. Ibid., P. 15.

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tried to master the techniques as much as possible. and the methods of research by foreign geologists, and besides, he closely followed their compilation of a geological map, Chevkin ordered that all this be reflected in the report, adding to it the geological map itself.

The report written by Koksharov, together with the schematized geological map of the northern half of European Russia drawn by him, was published in the same 1840 in the "Gorny Zhurnal" under the title "Geognostic notes on some provinces of European Russia." This purely geological article was his first published work.

In his article, Koksharov strictly followed Murchison's definitions. However, when describing the Old Red Sandstone, the debutant expressed doubts about the conclusions of the famous geologist. Here is a quote from the above-mentioned article, testifying to the independence and known courage of the beginning author: “The system of ancient red sandstone, forming sediments of enormous thickness, is in great development in the provinces of Olonets, Arkhangelsk, Novgorod, Pskov and Livland, and perhaps along the Vologda, Kostroma, Yaroslavl, Nizhny Novgorod and Vladimir. I say “maybe” because the question of the soil prevalent in these last provinces, it seems to us Russians, should not yet be considered completely resolved. Whether this is a system of ancient red sandstone, which Murchison almost had no doubt about, or another newer formation (resting on mountain limestone) —— it is impossible to say with certainty until some outcrop indicates the contact of mountain limestone with this system or until organic remains are found in it, which have not yet been searched for.” [11]

Having handed over the required report to Chevkin, Koksharov, in his words, "again fell into a common rut" and was assigned to Yekaterinburg (now Sverdlovsk), where he became a mining engineer at the mint. In Yekaterinburg, he worked and lived with his family and his father.

In the winter of the same 1840, a letter from London from Murchison himself came to Koksharov's name in Yekaterinburg. With pleasure and pride he read the following lines in it:

11. N. I. Koksharov. Geognostic remarks about some of the European Russia. Mining Journal, 1840, part IV, p. 148.

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“My dear Koksharov! After reviewing and discussing my travel notes, I found that you were right that a huge thickness of clay and detritus lies really not under Mountain Limestone, but above it and therefore belongs to a formation later than Mountain Limestone. ” [12] For a novice researcher, this is the recognition of the most experienced geologist was, of course, extremely pleasant and valuable.

Koksharov immediately sent a response letter, and since then the friendly correspondence between them did not stop until the death of Murchison.

And yet, despite the obvious success of his very first geological work, Nikolai Ivanovich did not betray his vocation. In Yekaterinburg, his old passion for mineralogy was revived with increased strength. Having settled in his father's house, he first of all took care of the convenient placement of his mineralogical collection. Parents, knowing their son's tastes well, pleased him with gifts: his father presented him with several beautiful crystals of Ural minerals, and his mother found somewhere a basket with very good mineralogical samples packed in it. “I was not particularly burdened by the service and could do mineralogy and replenish my collection at large, ”the scientist later recalled. —— Our old horse Serko was still alive, and since it was placed at my disposal, I drove around almost every morning, looking for minerals of various Yekaterinburg merchants. Despite the winter time, I went to the village of Murzinka, about 80 miles from Yekaterinburg, but apart from one crystal of beryl, bought from the local priest, I could not get anything else.” [13]

The life of a mineralogist was calm and measured in the Yekaterinburg calm. In the morning he went to work, then dined, and then dealt with minerals, “between which there were a lot of rare and luxurious specimens.” 14 However, the monotony of such an existence soon began to weigh on the young

12. Memories of N.I. Koksharov. Russkaya Starina, v. 66, No. 4, 1890, p. 17. Later works proved that the mentioned deposits belong to the Permian system, and thus confirmed the point of view of N.I. Koksharov.

13. Ibid, р. 18.

14. Ibid.

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man. The snowy Ural winter of 1840/41 set in. The brilliant St. Petersburg theatres, favourite operas and ballets, famous actors and actresses began to be remembered with melancholy. Even in old age, talking about the experiences of that time, Koksharov fills whole pages in "Memoirs" with a list of the names of popular stage figures with their lengthy assessments and characteristics. Fortunately, the dreary pastime [did not last long: already in February 1841 he learned about the upcoming summer business trip. The purpose of the new trip was the same as that of the previous one —— “to accompany foreign scientists Murchison and Verneuil on their second journey across Russia.” [15] “We examined geologically,” writes Koksharov about the new expedition, Perm; from here we went to Yekaterinburg and throughout the Urals — from the Bogoslovsky plant to the southernmost parts of the ridge.” [16]

A trip to the Urals helped to pay special attention to the mineralogical resources of this region. Recalling the famous journey of A. Humboldt and G. Rose, as a result of which the first Ural diamonds were discovered in 1829, Koksharov tried to find precious crystals of this rare mineral himself. However, the attempt was unsuccessful, which gave him reason to doubt the authenticity of the Ural diamonds. On the pages of Memoirs, Nikolai Ivanovich frankly admits his doubts. Quite typical in this respect is his following phrase, written down by Professor RA Prendl: “I don’t believe that those small diamonds that are passed off as Ural diamonds would really be from the Urals. The power of Russian nature is not such: we have every Jewel - a giant. ”[17] Only the remarkable results of the searches of Soviet geologists could dissuade the mineralogist from his erroneous conclusion.

Finishing his inspection of the Northern Urals, Murchison decided to visit the titanium-magnetite deposit on Mount Kachkanar, which had not yet been developed at that time.

15. Ibid.

16. Ibid.

17. R. Prendel. In memory of N.I.Koksharov. Odessa, 1893, p. 71.

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Was the path to this mountain not easy? I had to wade through the dense thickets. But the wonderful view from the top of the mountain, and the acquaintance with the wonderful deposit, fully rewarded the travellers for the difficult journey they had done. The South Ural was studied by the expedition in the same detail as the North.

For the sake of completeness, we present Nikolai Ivanovich's trail story about one incident, written in the spirit of old adventure novels: “Everywhere foreign travellers were greeted with the most cordial welcome and assistance from both mining engineers and local

residents. Everything went well, and only at night, on the way back from the Iletsk defence to Orenburg, a small adventure happened to us, which, however, had no further consequences. We rode in a large, semi-closed carriage-like carriage; I was sitting in front, and opposite me were Murchison and Verneuil, when suddenly our yamshik and the postilion (Bashkirs) began to shout and drove as many horses as they could, so that they covered me with sand. The reason for this was soon explained: we saw that two people were chasing us in a one-wheel drive; they were shouting something to our driver in a language we could not understand. At the same time, a comic scene took place: Murchison, not having any weapons with him, grabbed a bottle of champagne we had emptied and exposed the neck of the tarrantass in the form of a pistol, believing to frighten the robbers who were chasing us. But this turned out to be superfluous, because they themselves began to lag behind us little by little and, finally, completely disappeared from sight.

“Upon arrival in Orenburg, I asked the driver about our road trip. “Nothing, the tank, they are playing pranks,” he replied. ”[18]

Not without interest is also Koksharov's story about the luxury with which the Orenburg governor-general VA Perovsky, who spent the summer in the vicinity of Orenburg, arranged the reception of travellers. Strasbourg pies, canned food and expensive wines adorned the dining table. During the meal, the Bashkir orchestra played on special wind instruments. As

18. Memoirs of N.I.Koksharov. Russian antiquity, vol. 66, no. 4, 1890, p. 23.

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entertainment, a bird hunt was arranged, during which Perovsky, by mistake, shot off his finger and almost killed Koksharov.

Having visited the Urals, the expedition went to Yekaterinoslavl and other regions of southern Russia. Koksharov, at the request of Murchison himself, returned to the outskirts of Orenburg in order to check some geological details that had raised doubts among the English geologist. The absence of the young scientist, undertaken without permission from above, terribly angered Chevkin. The formidable chief even ordered to cancel the order on awarding Koksharov with the order for a two-year participation in the famous expedition, but Murchison highly appreciated the cooperation of the young mineralogist. Having published a geological map of Russia in 1845, he considered it necessary to put the name of the Russian scientist in the signature to it: "Lieutenant Koksharov took part in the observation site." It should be noted that the publication of this map was a major event in the history of Russian geology. Despite its schematic nature, it allowed for the first time to connect the geology of our country with the geological structure of Europe. And we should not forget that N.I.Koksharov took an active part in the fulfilment of this historic task.

Before leaving for England, Murchison petitioned the Russian government to send a young mineralogist abroad to inspect geological and mineralogical museums and attend lectures by leading European scientists. Changing his anger to mercy, Chevkin supported this petition, and N.I. Koksharov was sent on his first overseas business trip.