The Central Asian orography studies by G.E. Grumm-Grzhimailo’s expedition, 1889–1890

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Abstract. The paper deals with the history of the Grigorii Grumm-Grzhimailo’s Central Asian expedition, 1889–1890, and its main results in orography. The tasks of the expedition included an exploration of West and Central part of Inner (Central) Asia and the gathering of the naturalistic collections. The expedition was organized by the Russian Geographical Society. Grigorii Grumm-Grzhimailo used Przhevalskii’s reconnaissance methods to explore the uncharted lands. At the same time, he conducted geographical investigations, including orographic ones. This expedition covered a vast territory and made two major geographical discoveries of the Turfan depression and the Beyshan Mountains, the latter providing an orographic link between the Eastern Tian Shan and the middle Kuen Lun.

1. Introduction
Grigorii Efimovich Grumm-Grzhimailo (1860–1936) was one of the outstanding Russian explorers of Central Asia, the followers of N.M. Przhevalskii (1839–1888) [1]. Unlike Przhevalskii and other Russian travelers, the majority of whom were army officers, G. Grumm-Grzhimailo was a civilian with a university degree in natural sciences.

The exploratory activities of G. Grumm-Grzhimailo included: 1) his field lepidopterological work in the European part of Russia in 1881–1883; 2) the four expeditions into the Pamir country in 1884 and 1887; 3) the Central Asian Expedition in 1889–1904; and 4) several trips he made between 1903 and 1914 to Mongolia, Uriankhai Krai and the Far East. He started his career as an entomologist and a traveler to the Pamir, Bokhara and Western Tian Shan. From there he brought the large lepidoptera collections, part of which he had presented to his sponsor Prince Nikolai Mikhailovich Romanov. Other parts of the lepidopterological collection he partly presented to the Zoological Museum of the St. Petersburg Academy of Sciences, and partly sold to European museums.

His most important expedition was the Central Asia expedition, 1889–1890, that was organized by the Russian Geographical Society (henceforth RGS). In this expedition Grigorii Grumm-Grzhimailo was assisted by his brother, an army officer, Mikhail (1861–1921). Therefore, it is often called the ‘Expedition of Brothers Grumm-Grzhimailo’. Grigorii Grumm-Grzhimailo regarded himself as a follower of Przhevalskii and his scientific reconnaissance methods of field work. In his report of this expedition he wrote that “we looked at our expedition through the eyes of Przhevalskii” [2, p. IX].

It should be noted that in 1889–1890 the RGS supported the three major expeditions to Central Asia: led by brothers Grumm-Grzhimailo, Grombchevskii, and Pevtsov. While the focus of Grumm-Grzhimailo was the eastern part of the Tian Shan, Pevtsov explored the northern outskirts of western Tibet, Kuenlun, and Grombchevskii investigated the Pamir.
This paper briefly presents the history and the results of the Central Asia expedition by G. Grumm-Grzhimailo, 1889–1890, the most prominent among his travels.

2. Materials and methods
The activities of Grigorii Grumm-Grzhimailo has not been properly researched thus far. The first full biography of the explorer was written in 1947 by his son, Aleksei Grumm-Grzhimailo [3]. He used a wide range of sources – primarily the materials of the Russian Geographical Society, as well as the documents he found in other archives in Leningrad.

New publications about G. Grumm-Grzhimailo have appeared only recently. One of them is a preface to the reprinted version of the report of the brothers Grumm-Grzhimailo [4], where the A. Grumm-Grzhimailo’s book was widely used. Others reflect G. Grumm-Grzhimailo’s scholarly activities as a geographer, economist, historian and entomologist [5–7].

This essay follows Aleksei Grumm-Grzhimailo’s narrative, which in its turn was based on his father’s detailed autobiography written in early 1924. We also used some new archival sources (of the Archive of the RGS), as well as the latest publications on G. Grumm-Grzhimailo.

3. Organizing the Expedition
In January 1889 Grigorii Grumm-Grzhimailo was approached by the president of the RGS, the Grand Duke Nikolai Mikhailovich Romanov (1859–1919), who offered him to continue his previous research of the Pamir and suggested that he make a journey to the southern slopes of the Pamir, into the Cis-Hindukush region, namely to Shugnan, Vakhan, Chitral and Kunzhut.

This proposal concurred with G. Grumm-Grzhimailo’s own plans, so he agreed. Grumm-Grzhimailo wanted to complete his zoogeographic exploration of the Pamir and the Cis-Pamir countries. However, the Council of the RGS recommended him to change his route “for political and other reasons” and choose the Eastern Tian Shan and the Nan Shan as an objective of the new investigations [2, p. VII].

The “other reasons” were the Society’s desire to fill in the remaining ‘blank spots’ on the map of Central Asia. The RGS also wanted to link up the routes of Przhevalskii and G.N. Potanin (1835–1920) in the Nan Shan, which had been insufficiently explored by Russian travelers (Przhevalskii traversed this region during his first and third Central Asian expeditions in 1870–1873 and in 1879–1881, and Potanin passed across its north-eastern outskirts on the way back from his Tangut-Tibetan journey of 1884–1886).

The route of his expedition was discussed together with the vice-president of the RGS Petr Petrovich Semenov (1827–1914) and the well-known cartographer from the Military-Topographic department of the Russian Main Staff, Colonel A.A. Bolshev (1828–1904). Grumm-Grzhimailo’s expedition was to pass through the Eastern Tian Shan and the Bogdo-Olo range, thence across the Dzungar Gobi up to Lopnor and, having passed over the Nan Shan in its central-western part, to reach Lake Kokonor and the Valley of Huang He. Apart from Grigorii, the expedition staff included his brother Mikhail and an escort of Cossacks.

The RGS funded the expedition, but that was not enough. The Zoological Museum of the Academy provided Grumm-Grzhimailo with the accessories that he needed to collect samples of fauna: gunpowder, small shot, spirits, instruments for preparing birds etc., plus a small sum of money [8, p. 60]. In the middle of March 1889, brothers Grumm-Grzhimailo left St. Petersburg for Vernyi (now Alma-Ata), where they began to organize and equip the expedition caravan. Here they were joined by other members of the staff – their escorts and translators. They were eleven people altogether. In April G. Grumm-Grzhimailo received the Chinese travel passports from the Ministry for Foreign Affairs. However, the documents did not guarantee the travelers a safe passage along their chosen route. According to the Russian consul in Kashgar Petrovsky, “the Chinese permitted the expedition to work in Kashgar Province rather reluctantly” (see: Archive of the RGS, F. 1–1889, Op. 1, D. 13, l. 22–22 ob.).
4. The Expedition activities
On 27 May 1899 the expedition left the frontier Kazakh town of Dzharkent and crossed into the Chinese territory. Grigorii and Mikhail Grumm-Grzhimailo spent the summer exploring the Eastern Tian Shan and Southern Dzungaria. They collected a large amount of geographical data within the Eastern Tian Shan, where they had discovered an uncharted mountain, the Dos-Megen-Ola, 6100 meters high. Then the Grumm-Grzhimailo’s expedition explored another mountain range, the Bogdo-Ola, to the east of Urumchi. They were the first Europeans to do so. The Bogdo-Ola range divided the Turfan depression from the Dzungar Valley, into which they subsequently descended to hunt for the wild horse. The animal had been originally discovered by Przhevalski, in 1881, and was given the name of Equus Przewalskii by zoologists. The brothers turned out to be the first observers of the horse in its natural habitat and their hunt was quite successful. They later delivered to the Zoological Museum four skins, three sculls and parts of the skeleton of several wild horses, both male and female, of different age, which were of much value to zoologists.

From the Dzungar Valley the expedition moved on to the oasis of Turfan. Some 250 km south-east of Urumchi brothers Grumm-Grzhimailos explored the Lukchun (Turfan) depression, having ascertained hypsometrically that it was located 130 meters below sea level. Nearly at the same time, the expedition of Pevtsov, working in the opposite (western) part of the depression, in the oasis of Toksun, attained the same result. The discovery of the Lukchun depression became one of the Grumm-Grzhimailos’ most important geographical discoveries and, quite naturally, it attracted the attention of geographers world-wide. The investigations of the depression continued in the subsequent years by V.A. Obruchev (in his expedition in 1892–1894) and V.I. Roborovskii together with Kozlov (the expedition in 1893–1895).

From Turfan the expedition made its way via the oasis of Kham directly to Nan Shan. Their route ran diagonally (from south-west to south-east), almost in parallel to the routes of the expeditions of Potanin and Przhevalskii. This stretch of their journey was also crowned with great success, this time in the field of orography. The expedition discovered the Beyshan upland, 2700–3000 m high, in a place where the maps showed the Khami desert. As G. Grumm-Grzhimailo was able to ascertain, Beyshan provided a connection between the Tian Shan and the Nan Shan. Three years later the geologist V.A. Obruchev would conduct a detailed geological investigation of the Beyshan Mountains. In the opinion of geologist K.I. Bogdanovich (1864–1947), the discoveries of the Lukchun (Turfan) depression and of the Beyhan Mountains by brothers Grumm-Grzhimailo were very important for the theoretical understanding of the geological evolution of Central Asia.

In the spring and summer of 1890 the expedition explored the southern slopes of the Nan Shan and thence descended into the valley of the Hwang He river. The expedition proceeded further along the valley of the Heihe river (the upper and middle courses of Edzin Gol) towards Suchow, and hence, again across the Nan Shan and the northern foothills of the Tian Shan following their old route, to Urumchi. On the 8th of November the travelers arrived in Kulja, and a few days later (on 13th of November) they were finally back to Russia.

The results of the Grumm-Grzhimailos’ expedition were quite outstanding. The travelers covered 7250 km, 6000 of which along the hitherto uncharted route. They made 140 hypsometric and aneroid measurements and determined the geographical coordinates of 30 points. Apart from these, the brothers conducted systematic meteorological observations. Their discovery of the Lukchun depression and of the Beyshan Mountains was especially valuable to the geographical science. The expedition also collected some ethnographic material and took many photographs of local people and of the lands they had visited. The ethnographic photographs were displayed, in 1891, at an exhibition set up by the Russian Technical Society and were awarded the bronze medal. Also, Grigorii Grumm-Grzhimailo made a collection of seeds, at the request of the Ministry of the State Property, which planned to use these for agricultural purposes in Russia.

The report of the expedition’s results was introduced at the meeting of the RGS, which took place on March 13, 1891 in the building of the State Duma in St. Petersburg. G. Grumm-Grzhimailo’s report aroused much interest among those present, numbering about 600 people. The scientific societies and
institutions also highly appreciated the work done by the expedition. P.P. Semyonov, for example, was of the opinion that “the expedition of brothers Grumm-Grzhimailo is one of the most interesting and successful expeditions to Central Asia in the past decade” [9, p. 14].

The full account of the expedition led by G. Grumm-Grzhimailo made three large volumes, including numerous illustrations, photographs, maps and other appendices, published in 1896, 1899, and 1907. This was his major work in the field of geography and his most prominent contribution to the study of Central Asia.

5. Conclusion
The peak of Grigorii Grumm-Grzhimailo’s activities as an explorer was his Central Asian expedition made together with his brother Mikhail. This journey stands out prominently as his greatest scientific achievement. Using Przewalski’s method of reconnaissance of uncharted lands, the brothers covered a vast territory and made two major geographical discoveries – of the Turfan depression and the Bayment Mountains, the latter providing an orographic link between the Eastern Tian Shan and the middle Kuen Lun. These discoveries, according to geologist K.I. Bogdanovich, had a profound theoretical importance for understanding the evolution of Asia, as mentioned above.

The geological interpretation of the territories explored by G. Grumm-Grzhimailo, especially his view of the continental – and not marine – character of the so-called Khanhai tertiary deposits, were supported by the prominent Austrian geologist Eduard Suess (1831–1914).

In addition, the expedition led by G. Grumm-Grzhimailo made an important contribution to the geographical study of the Nan Shan, determined the southern borders of Central Gobi, the Takla Makan desert, the shape of the source of Edzin Gol – the river Kheihe, as well as of the Tarim and Lobnor.

Grigorii Grumm-Grzhimailo’s explorations did not go unnoticed by Western scholarly community. The Parisian Academy of Science (Académie des sciences) on 4 December 1893 awarded him, the first among Russian scholar-travelers, the Chikhachev Prize (‘le prix Tchihatchef’) “for his research of Western China, the Pamir and the Tian Shan” [10, p. 289]. And the Royal Dutch Geographical Society (Koninklijk Nederlands Aardrijkskundig Genootschap, or KNAG), in 1895, elected him as the Society’s honorary member.

The RGS highly appreciated G. Grumm-Grzhimailo’s explorations in Central Asia by awarding him the Konstantin gold medal in 1907 for the sum total of his works on geography and particularly for the final volume of his “Account of the Journey to China”. And on April 6, 1910 the Society elected him as an honorary member, together with N.G. Potanin and P.K. Kozlov. In the opinion of the RGS Council, these three explorers completed the cycle of Przewalski’s expeditions.

The bibliography of works written by G. Grumm-Grzhimailo is extensive and thematically diverse; it includes his books and articles in geography, entomology, economy, history, and a wide range of bibliographic, political, ethnographic, and other notes. His accounts of his travels were not simply descriptions of his routes. His works were based on the analyses of the vast literature of his predecessors, which allowed him to compare his own work with that of other explorers. Grigorii Grumm-Grzhimailo was the first among Russian geographers who used the Chinese sources.

In recognition of G. Grumm-Grzhimailo’s explorations in Central Asia, his name was given to three geographical objects – the largest glacier discovered by the Grumm-Grzhimailo brothers in the upper Tanymas river in the Pamir, one of the passes in the Sikhote Alin Mountains, and one of the glaciers of the Bogdo-Ola range in Eastern Tian Shan.

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