The collection of Meteorites in the Vernadsky State Geological Museum of the Russian Academy of Science (19th-20th centuries - the history of its origin and study)

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The history of the meteorite collection of the Vernadsky State Geological Museum of the Russian Academy of Science from 1759 to the present day is discussed.

Contents

Introduction

The Vernadsky State Geological Museum is the successor of the Moscow University Natural History Museum (MUNHM), the first natural history museum of Moscow, founded in 1759. At the beginning of the 19th century it was considered to be one of the best museums of its type in Europe. The collection of meteorites is among the oldest in the museum. The first meteorite, of native iron from Siberia, was donated to the MUNHM as part of a large collection bestowed by the well-known patron of the arts and lover of natural sciences, Pavel G. Demidov. This specimen was first described in the systematic catalogue of the minerals (Fischer, 1806) by Johann Gotthelf Fischer von Waldheim (1771-1853; Fig. 1), a disciple of Abraham Werner and director of the Museum from 1804. In his textbook *Orictognosie* (1818-1820), Fischer cited the results of five different analyses of the meteorite's composition, made by various European chemists. This alone demonstrates the considerable interest awarded to extraterrestrial substances at the beginning of the 19th century.

Early Russian publications on meteorites

In the first catalogue made after the museum's restoration following the Moscow fire of 1812, Fischer (1824) described an iron meteorite from Krasnoyarsk. According to a later catalogue collated by the curator of the museum Grigory E. Shchurovsky

Fig. 1. Johann Gotthelf Fischer von Waldheim (1771-1853).

Fig. 2. Grigory E. Shchurovsky (1804-1883).

(1803-1884; Fig. 2), in 1858 the Museum had four meteorites in its collection of minerals.

After 1861, the collection of meteorites was regularly replenished by Michael A. Tolstopyatov (1836-1890). In 1863 he published a paper entitled *Aerolites*, in which he depicted the evolution of scientific views on the nature of meteorites, and described their appearance, properties and composition. Among the aims of Tolstopyatov's work was to calculate the number and mass of meteorites falling annually on the Earth.

Alexey P. Pavlov (1854-1929) was also very interested in meteorites, and published a popular book (Pavlov, 1889). In 1890, the Keeper of the Museum, Evgeny D. Kislakovsky, made the first detailed analysis of the "Bishtyube" meteorite at Moscow University (Fig. 3).

The meteorite collection

By the beginning of the 20th century, the Museum possessed 68 meteorites (Table 1). Vladimir I. Vernadsky (1863-1945) and his disciples made especially big contributions to the collection in the period from 1891 to 1911. In 1906, meteorites were separated as a special collection.

In 1912, this collection counted 117 meteorites, not only from Russia and Europe, but also from North and South America, Australia, Africa, and Asia (Japan). Meteorites were purchased from European and American mineralogical firms, acquired by exchange with other museums, or received as donations.

The Museum houses meteorites from the private collections of Rudolf Hermann

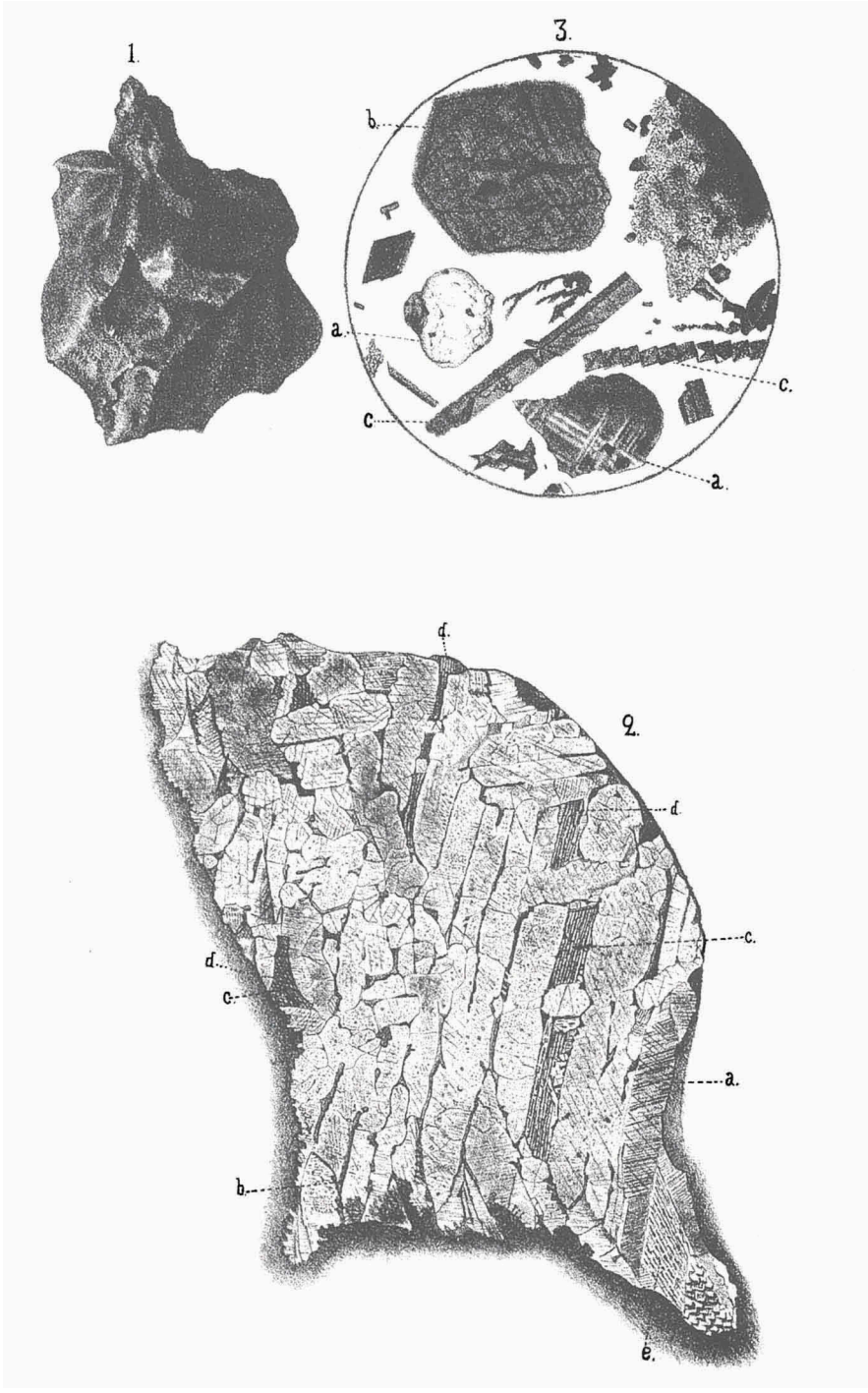

Fig. 3. The plate with the image of the meteorite "Bishtyube", along with section and polished surface with figures of etching (Kislakowsky, 1890, pl. 7).

Table 1. Collection of meteorites of the Moscow University Natural History Museum; dynamics of its formation in 19th and early 20th century.

Years	Number of meteorites	Gifts	Purchase	Purchase of aerolit models	The amount of meteorite falls	Pseudo-meteorites
1806	1					
1824	1					
1858	4			1		2
1868		2				
1870		1				
1871				9		
1887			7			
1888	16	1				
1889		1				
1892		3				
1893		1				
1895			2 (exchange)			
1898	51	7	1			
1899	65	14	1		48	
1901	68				49	4
1906	82	2			55	
1907	89	5			61	
1908	90	1			62	
1909	94	1			63	
1910	114	7			64	
1912	117					
1915	115					

(1805-1879), the Princes Gagarin, Count Alexander Keller (1886-1946), and from the collection of the Rumyantsev Museum, which came to the MUNHM in 1900.

Many private collections were donated to the museum in 1930, after the reform of education in the Soviet Union. Some meteorites have appeared in the collection as a result of exchange with other museums. The catalogue of meteorites (126 samples) made by E.S. Sinegub in 1952 became a part of the general information on meteorites stored in museums of our country. During the last 50 years, the collection of meteorites has hardly increased at all.

At present, the collection contains meteorites from Chile, Brazil, Mexico, the USA, Canada, Japan, Australia and Africa, but the majority of the meteorites are from European countries. Beginning from 1923, generous rewards were offered in exchange for newly-found meteorites. Of all the meteorites, 70% are foreign, 20% are Russian, 7% have an unknown origin and 3% are pseudometeorites. Stone meteorites (76 specimens) constitute the greater part of the collection. Apart from these, there are 40 iron meteorites and 10 iron-stony specimens.

Part of the meteorite collection is now included in the permanent exhibition. The pride of the collection are samples of the 1749 "Pallas' iron" meteorite, the first meteorite ever found in Russia. In Siberia in 1980, a monument was erected on the site of this historic find. Another valued exhibit in the collection is a small piece of the 1492 "Ensisheim" meteorite, the first falling meteorite ever recorded. Two large specimens on display in the permanent exhibition (the "Sikhote Alin" (Fig. 4) and "Tsar's"

Fig. 4. Iron meteorite "Sikhote Alin"; weight 98 kg, height 30 cm. Part of a 'meteoric rain' of February 12, 1947; gross weight about 80 tons.

meteorites) come from the Meteorite Committee of the Russian Academy of Science. This committee was created at the initiative of Vladimir Vernadsky.

Nowadays, the museum has no funds available for the purchase of meteorites, and so in recent years the collection has not been expanded. Occasionally, private individuals bring meteorites to the Museum for examination. During the last 10 years, the collection has increased by only one specimen – a meteorite donated in 1997 by the director of the Magadan Geological Museum (at Chukokta), Yury Kolyasnikov.

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