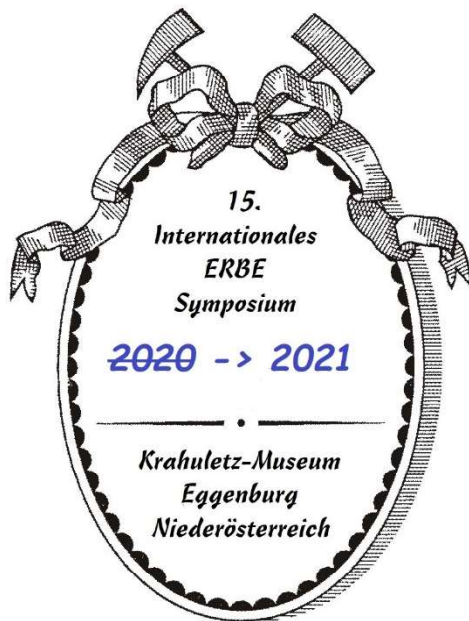


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CULTURAL HERITAGE IN GEOSCIENCES, MINING AND METALLURGY
– LIBRARIES – ARCHIVES – COLLECTIONS –
PROCEEDINGS



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PROCEEDINGS



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– Libraries – Archives – Collections –

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Collection of the Saxony Kingdom Mining Department's head
Johann Carl Freiesleben (1774-1846) in Vernadsky State
Geological Museum

Sammlung des Sächsischen Reichsbergbauamtsleiters
Johann Carl Freiesleben (1774-1846) im Vernadsky Staatlichen
Geologischen Museum

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8 figures / 8 Abbildungen

Key words: history of geology, collection, Carl Freiesleben, Fischer von Waldheim.

Schlüsselworte: Geschichte der Geologie, Sammlungen, Carl Freiesleben, Fischer von Waldheim

Abstract

The article contains the history of the receipt of Johann Carl Freiesleben collection at the Moscow University Natural History Museum. The collection was purchased at the initiative of the Museum Director Gotthelf Fischer von Waldheim. The life and work of Freiesleben are presented in the article as well. The work on inventory and study of the Freiesleben collection in the Department of Collections of the Vernadsky State Geological Museum is considered. The composition of the collection is briefly described.

Zusammenfassung

Der Artikel enthält die Geschichte des Eingangs der Sammlung von Johann Carl Freiesleben im Naturhistorischen Museum der Universität Moskau. Die Sammlung wurde auf Initiative des Museumsdirektors Gotthelf Fischer von Waldheim angekauft. Auch Leben und Werk von Freiesleben werden in dem Artikel vorgestellt. Der Artikel zeigt die Arbeit des Inventars und der Erforschung der Sammlung von Freiesleben in der Abteilung für Sammlungen des Vernadsky Staatlichen Geologischen Museums. Die Zusammensetzung der Sammlung ist kurz beschrieben.

The Freiesleben collection has been kept in Moscow for about two centuries. The Vernadsky State Geological Museum of Russian Academy of Science is the successor of the Moscow University Natural History Museum, in which the collection was first received [1]. A small part of Freiesleben collection is exposed in the permanent exhibition in the "Historical Collections" hall. We have been working on attribution of specimens of this collection for more than 10 years.

Life and work of Johann Carl Freiesleben

Johann Carl Freiesleben was born on June 14, 1774 in Freiberg (Saxony) in the family of a miner. In 1790-1792, he studied in the Freiberg Mining Academy, where Abraham Gottlob Werner (1749-1817) taught mineralogy.

At that time, Alexander von Humboldt (1769-1859), Johann Gotthelf Fischer (1771-1853), Ernst Friedrich von Schlotheim (1764-1832), Leopold von Buch (1774-1853) were listeners of Academy too. Together, they have made many excursions to open pits and mines, at which Freiesleben has started to collect his collection [2].

Fischer wrote, remembering years of study in the Freiberg Mining Academy: *“The family of Freiesleben accepted me as a member”* [3].

In 1792-1795, Freiesleben studied jurisprudence and Fischer studied medicine at the University of Leipzig. Friends hired habitation in Leipzig together. In 1850, Fischer von Waldheim¹ recalled his friend: *“Johann Carl Freiesleben was a sincere and loyal friend”* [Ibid].



Freiesleben studied Geology and Mineralogy of Saxony and Thuringia in his first big trip with Leopold Buch. He explored the Thuringian Forest with Ernst Schlotheim, and with Alexander Humboldt – the Middle Mountains of Bohemia.

The first mentions of mining activities in Saxony near Freiberg date back to 1168, Annaberg is mentioned as a place of ore mining in 1470. Polymetallic vein formations are concentrated mainly in the Ore Mountains and the Harz. In all the mines of Saxony, the main object was silver, the extraction of which continued until the end of the 19th century. Then the role of lead and zinc, cobalt and other metals began to increase. Ore mining near Freiberg continued until 1968. The study of polymetallic vein mineralization from a scientific point of view was carried out in the Ore Mountains by Johann Friedrich Wilhelm von Charpentier (1738-1805) in 1778 and Abraham Gottlob Werner in 1791. Freiesleben continued this research [4].

Fig.1: Johann Carl Freiesleben (1774-1846)
Wikipedia: https://de.wikipedia.org/wiki/Johann_Carl_Freiesleben

¹ In 1833, Fischer has been elevated in nobility as a recognition of its numerous merits. Then he was allowed to be called ‘Fischer von Waldheim’ that testified relations with his native city [6].

In the summer, Freiesleben explored the Harz. The result was the publication of his first major work *“Bergmännisch mineralische Beschreibung des Harzes”* (1795, in two volumes), which included a description of the mines and minerals of the Harz.

After graduating from the University of Leipzig in 1795 Freiesleben traveled with Alexander Humboldt across the Alps, visiting Switzerland and Savoy, which at that time was part of the Sardinian kingdom. Young researchers conducted a comparative study of the Jurassic deposits of Switzerland and Thuringia.

Subsequently Freiesleben used his observations from the time to write his *“Neuen Classification der Gebirge”* (New Mountain Classification), published in 1801. Since 1796 Freiesleben received a trainee position in the Mining Department in Marienberg.

In 1799, he became the mining master in Iohanngeorgenstadt in the south of Saxony. In a year he became the Director of Mansfeld mine and Counselor of the mining commission in Eisleben. As a result of his fruitful activity in this post, some social issues were resolved: bread and lamps for the mine became cheaper. On the Freiesleben’s initiative, additional supports were installed in adits and shafts, and a general smelter was created at the Gottesbelohnung mine, which operated for almost half a century. He organized a department for the trade of smelted metal and a warehouse for products, thanks to which the production of metal was doubled, despite the difficult situation associated with the conduct of hostilities in Europe at the beginning of the 19th century. He wrote the instruction *“Relativ in Betreff der Schlackenabzüge”* for the removal of slag in the metallurgical process, which was valid until 1865. In accordance with instruction, the production and sale of products were organized, and it was also possible to resolve many controversial questions [5].

When in 1808 Freiesleben has returned to the native city, he was elected a member of the permanent commission of the trade union of miners and made its part till the end of his life. He worked at the Mining Department of Saxony Kingdom in Freiberg. He was entrusted with the technical management of the salt works and the manufactory in Meissen, which produced the famous Meissen porcelain.

Freiesleben was the author of numerous publications on geology and mineralogy of Saxony in which he developed ideas of his teacher Werner. In 1807-1815, he published a fundamental monograph in four volumes *“Beiträge zur Kenntniss des Kupferschiefergebirgs”*, in which he presented the results of study of copper slate formation.

In a series of notes under the general title *“Beiträge zur Mineralkenntniss von Sachsen”* Freiesleben described the minerals of his collection. In 1815, he made first description of the new mineral covellite (CuS) as a blue cuprous glass. In 1817, he received his doctorate from the University of Marburg.

Freiesleben made order in Werner’s heritage: Library and mineralogical collection in Freiberg Mining Academy several years after the death of famous mineralogist. Since 1820, he published the journal on topographic mineralogy of Saxony *“Magazin für die Oryctographie von Sachsen”*. Freiesleben is considered to be the pioneer of stratigraphic research of Germany. In 1828, the Berlin Academy of Sciences elected him as its corresponding member.

The most significant Freiesleben’s work was *“Die Sächsischen Erzgänge in localer Folge nach ihren Formationen zusammengestellt”* (The Saxon ore veins arranged in local order according to their formations) (1844-1845). Freiesleben described in two volumes several mining areas: Altenberg, Annaberg, Freiberg, Iohanngeorgenstadt, Marienberg, Schneeberg. Then Freiesleben published several works on the genesis of different types of ores in Saxony. Some works were published after his death.

In 1838, he was nominated as Mining Counselor and the chief of Mining Department of Kingdom of Saxony, which he left in 1842, having retired. In 1842, he received a Knight Cross of order “Comthurkreuz des Civilverdienstordens” for merits for Fatherland.

At that time friends met for the last time in Freiberg, where Fischer von Waldheim came with his son Alexander, also a professor of Moscow University. Freiesleben and Fischer corresponded over the years and met from time to time, when Fischer visited Saxony. Their friendship has interrupted in 1846 with the death of Freiesleben. Freiesleben is buried in the Donatsfriedhof cemetery in Freiberg.

The Austrian geologist and mineralogist Wilhelm Haidinger (1795-1871) first described the mineral freieslebenite in 1845.

The house in which Freiesleben lived has survived; there is a memorial plaque on it. Monument at the mine named after Johann Carl Freiesleben is placed near the entrance to the old mine in Freiberg.

The history of the purchase of the Freiesleben collection

In 1804-1832, Fischer was director of the Moscow University Natural History Museum and professor. He revived the Museum after the great fire of Moscow in 1812 [7].



In 1822, Fischer offered to buy the Freiesleben’s systematic collection of minerals and rocks, which Freiesleben had been collected for over 30 years. The collection consisted of small samples and especially adapted for teaching purposes.

Fig. 2: Johann Gotthelf Fischer (1771-1853); From the Library of Moscow Society of Naturalists.

In February, 1822, the Trustee of the Moscow Educational District has received the application from the Director of the University Natural History Museum Fischer with the request to buy collection of Johann Carl Freiesleben which included such lines: *“Your Excellency is aware that mineralogical part of the University Museum has greatly increased; but its systematic order has gaps and lack of such minerals, which are absent in Russia, these gaps are very sensitive at public lecturing. <...> Now we have an opportunity to fill up such lacks in rather a favorable manner. Mining Counselor I. Freiesleben in Freiberg, disciple the well-known Werner, known by his publications, has a mineral collection, on*

which drawing up he worked 30 years. <...> Though this collection consists not of big pieces, but it is especially adapted for lecturing. <...> So as this collection was made not by a merchant for sale, but by an expert, each sample has its own meaning and the price of these, judging by the number of samples, is rather low (5400 Saxon thalers – 21600 rubles in banknotes, with credit for some years and with payment of 4 % annual). I have considered that it is my duty to recommend your Excellency this collection first because it is completely systematic, and second, because it is cheap” [8, Sheet 3-4].

In May of 1823, the Minister of Religious Affairs and National Education gave the consent to purchase Freiesleben collection “for the Moscow University and its Noble Board”. Purchase included “1 – orictognostic¹ collection (6112 samples) which “comprises not only new discoveries under Werner system published by Freiesleben, but contains the newest discoveries entering into the system of F. Mohs; 2 – topographical collection of slate mountains of Mansfeld, where Freiesleben was the Mining Chief for some years. This collection comprises more than one thousand samples and is unique; 3 - geognostic², comprising also fossils; these include 938 specimens” [8, Sheet 3 rev.].

On May 21, 1823, the Council of Moscow University, “considering how to put in action both acquisition of the mentioned mineral collection, its distribution, and payment of money” [8, 5 rev.] constituted the Committee which included: Director of Museum Professor Gothelf Fischer, Professor Ivan Davidov, Professor of Mineralogy Mikhail Pavlov, Professor of Physics Ivan Dvigubsky. The Committee of Moscow University professors was appointed to receive the Freiesleben collection.

The first part – 18 boxes with minerals – was sent by sea from Germany and have arrived to the University in 1825. Fischer wrote that “as it contains rather curious and as regards mineralogy much new data, I consider for my part that it is rather useful to print it” (8, Sheet 25.). Other parts of Freiesleben collection have arrived later.

On November 4, 1825, Fischer reported that the collection has been accepted by the Committee, divided into two halves, catalogues were made. The Committee led by Fischer compiled a short inventory of the mineralogical collection of Freiesleben [9].

In 1827, Fischer published the description of Freiesleben’s mineralogical collection, classified by Werner system. He made a presentation on this collection in 1829 at the session of the Society of Naturalists. Samples of this collection were marked with pink labels. In 1840, in a report on the University Mineralogical Cabinet, Grigory Shchurovsky, the head of the Cabinet at that time, pointed out that “the finest and complete collection of Freiesleben represents all his discoveries, as well as those of Mohs and many other mineralogists” [10, Sheet 46 rev.].

The collection was split in half between the University Natural History Museum and the Noble Boarding School. The collection of the Boarding School has not preserved.

In 1830, Fischer has published the description of Freiesleben geological collection of minerals and fossils, also classified by Werner system. Samples of this collection were marked with blue labels.

The Freiesleben collection also included the topographical collection of minerals of slate mountains of Mansfeld (the first regional foreign collection in the Museum – 1026 samples) which is “remarkable on excellent prints of animals and plants in cupriferous calcareous slate” [10, Sheet 47].

¹ Orictognostic = mineralogical

² Geognostic = geological

6

Collections mineralogiques
Du conseiller Des Mines Jean
Charles Frieseleben,
à Freyberg en Saxe.

1. Collection oryctognostique			
1. Substances terreuses.			
A. Crûe vilicieux.			
Diamant	1	Allochroïte	4
Zircon	6	Colophonite	4
Hyacinthe	8	Kelvine	13
Cinamite. Kancelstein. W.	2	Grenat, a. commun	32
Chrysoberyll	1	b. noble	29
Chrysolithe	4	Staurolithe	7
Olivine	5	Pyrope	1
fossiles semblables à l'oli-		Chondrodithe	1
vine (quart olivines)	4	Automalite	1
Bokkolith	2	Ceylanite	3
augite. a. granuleux	2	Spinelle	21
b. commun	6	Salam-rubis	2
c. lamelleux	2	Saphir	2
d. Conchoïde	5	Emeril	3
Carinthine	1	Topaze	29
Saklite	3	Phrysalithe	1
fossiles semblables	11	Dienite	4
Diopside	7	Folithe	1
Gehlenite	1	Corindon	2
Erlane	2	Spath adamantin	1
Fascaïte	2	Reliome	3
Vesuvienne	8	Emeraude	3
Gropular	2	Beryll, a. commun	4
Leucite	7	b. noble	13
Melanite	2	Tourmaline	20
		Schörl	31
		Schörl schisteux	4
		Lievrîte	1

Fig. 3: First page of Inventory of Frieseleben mineralogical collection.
Central State Archive of Moscow. Fund 418. Inventory 120. File 157. Sheet 1.

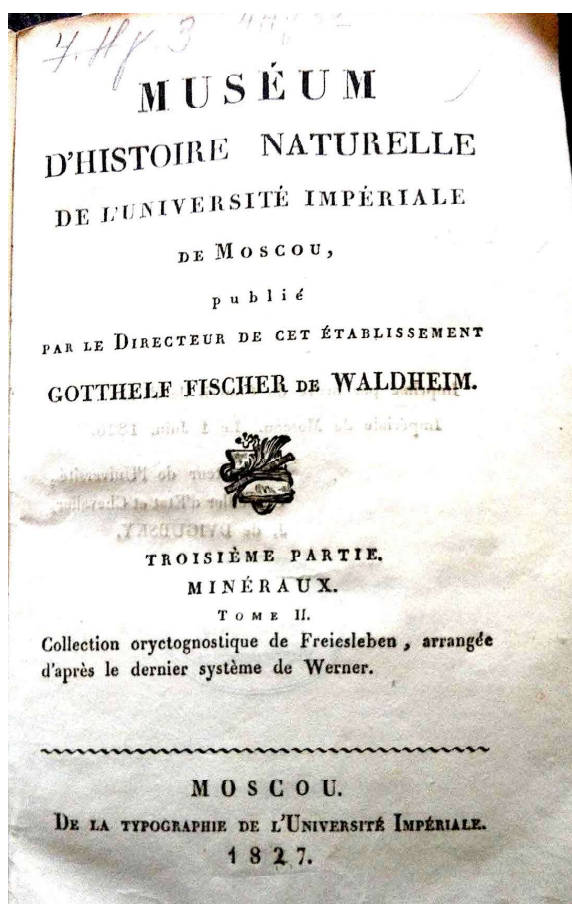


Fig. 4: The title page of the Catalogue of Freiesleben mineralogical collection. 1827. From the Library of Moscow Society of Naturalists.

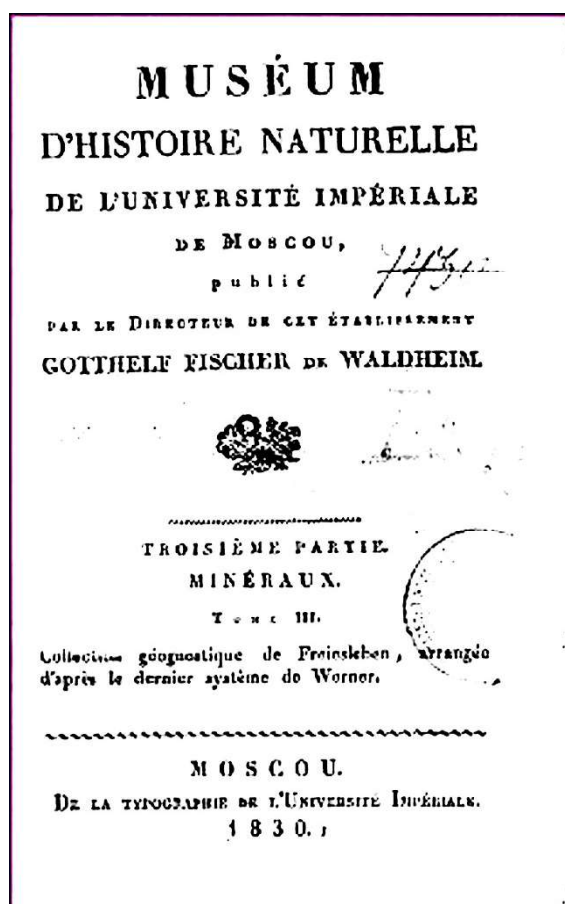


Fig. 5: The title page of the Catalogue of Freiesleben geological collection. 1830. From the Library of Moscow Society of Naturalists.

The Freiesleben collection today

The Freiesleben Collection in our museum currently contains about 500 samples from different countries. The largest part (80%) is made up of samples from Germany.

Country	Number of samples
Germany	380
Czech Republic	27
France	12
Poland	9
Italy	7

Slovakia	7
Sweden	6
Austria	5
Romania	5
Great Britain	2
Norway	4
Russia	4
Switzerland	3
Denmark	2
Spain	2
USA	2
Hungary	1
Chile	1

The deposits are represented very well, where Freiesleben worked and which he studied. Collection contains native elements: silver from Saxony, Germany, gold from Romania and Switzerland, copper from Russia, from the Urals. And minerals represented by metal compounds: pyrite from Saxony, cinnabar, antimonite and galena from Germany, hematite and hematite ore from Germany, from Ore Mountains and Thuringia, wolframite from Saxony. Serves to obtain tungsten. Sphalerite from Germany. Zinc is smelted from sphalerite. An important ore for iron production – siderite from Germany. Slates from Austria and Germany.

Fig. 6: Atacamite. Chili, Atacama Desert, Remolinos mine. SGM RAS. MN-20925. 7x5x3 cm.



Fig. 7: Pyromorphite. Germany, Saxony, Ore Mountains, Zschopau. SGM RAS. MN-38380. 8x4x3 cm. Old pink label with a number – at the bottom.



Fig. 8: Fluorite. England, Derbyshire. SGM RAS. MN-17789. 7.5x7x4 cm.



The collection includes important specimens from the place of the first find: this is zinnwaldite from the Czech Republic, from Zinnwald. And atacamite – a mineral found in the Atacama Desert in Chile at a Remolinos mine.

Collection contains rare specimens: this is tektite from the Czech Republic. It looks like a bottle glass. It arose during the melting of terrestrial rocks during the collision of a meteorite with terrestrial rocks. At the beginning of the 19th century, its cosmic origin was still unknown. It was believed to be ancient glass.

Fulgurite from Germany – frozen lightning, on this sample we can see a hole, a trace of lightning that entered the wet sand and melted it inside. Around the path of the lightning, the sand was baked, a kind of tube formed.

There is obsidian from Italy, from the Aeolian Islands, volcanic glass poured out from one of the volcanoes: it may well be Stromboli or Vulcano. An interesting specimen of opal after wood from Romania, from an area where silver and gold have been mined for a long time.

Classic calcite from Harz Germany and black calcite from Norway are in collection. There are simply beautiful samples: agate from Oberstein, Germany and ruin marble from Italy, from Florence. Fluorite from Great Britain, from the famous Blue John Mine in Derbyshire and lazulite from Poland, from Silesia. The collection also contains coal and fossil flora.

The Freiesleben collection is stored in Moscow for about two centuries. Small part of it is exposed in the “Historical Collections” hall of the Museum. Currently the Department of Collections of Vernadsky State Geological Museum continued the inventory and study of Freiesleben collection. Azurite was attributed last month from the type locality at Chessy-les-Mines, France.

References

- BESSUDNOVA Zoya A. (2006): Geological research in Moscow University Museum of Natural History. 1759-1930. Moscow: Nauka, 246 pp. (Essays on the history of geological knowledge; Issue 32).
- GÜMBEL, W. v. (1877): Freiesleben, Johann Carl. In: Allgemeine Deutsche Biographie. Bd. 7. Leipzig, Duncker & Humblot. S. 339-340.
- FISCHER von WALDHEIM (1850): An den Ausschuss des Wernerfestes in Freiberg In: Dem Ausschusse des Wernerfestes zur Feier des hundertjährigen Geburtstags Abraham Gottlob Werner's am 25sten September 1850. Moskau. S. 7.
- Mineral deposits of Europe. Vol. 3. Central Europe (1986). Ed. by F.W. Dunnig et al. London, Institution of Mining and Metallurgy.
- FREYDANK, H. (1961): Freiesleben, Johann Karl In: Neue Deutsche Biographie. Bd 5. Berlin: Duncker & Humblot. S. 395.
- BÜTTNER J.W.E. (1956) Fischer von Waldheim: Leben und Wirken des Naturforschers Johann Gotthelf Fischer v. Waldheim (1771 bis 1853). Berlin: Akad.-Verl. 83 S. (Freiberg. Forschungsh. Kultur und Techn.; D 15).
- BESSUDNOVA Z.A. (2011) The history of the collection of Johann Carl Freiesleben. In: S.I. Vavilov Institute for the History of Science and Technology RAS: Annual Scientific Conference. Moscow, Yanus-K. P. 359-362. (In Russian).
- Archive of Moscow Society of Naturalists (MSN). File 55.
- Central State Archive of Moscow. Fund 418. Inventory 120. File 157. Sheet 1.
- Department of Written Sources of the State Historical Museum. Fund 404. File 22.