VLADIMIR I. VERNADSKY AND MINERALOGICAL COLLECTION OF THE EMPEROR'S MOSCOW UNIVERSITY

Victoria V. Chernenko, Irina P. Andreeva, Nina N. Samsonova,
Vernadsky State Geological Museum RAS, victoria@sgm.ru

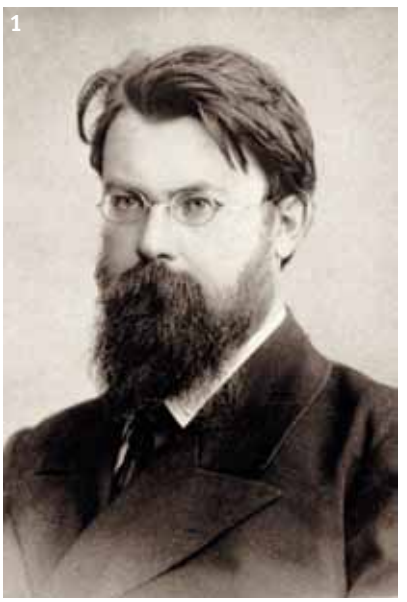


Figure 1. Vladimir I. Vernadsky.

All specimens are from Vernadsky State Geological Museum RAS (VSGM)**.**

Photo: Michael B. Leybov.

Yesterday I was in the Museum [British]. Incredible collection – I was completely overwhelmed by the richness and variety of the exhibit. Creating such a collection is a difficult task. But Russia should have one.

Vladimir I. Vernadsky

On November 22, 1890, Vladimir Ivanovich Vernadsky was confirmed in the position of Private Associate Professor of the Mineralogy and Crystallography Department of the Emperor's Moscow University. In spite of his relatively young age (27 years old), he was able to handle scientific research, teaching, and also work at the museum. From the memory of one of his first students – Sergey Platonovich Popov, who later became a Professor of Mineralogy – the task standing in front of Vladimir Ivanovich was enormous. On one hand, he had to develop mineralogy and crystallography courses satisfying the new scientific directions in those disciplines; on the other hand, he needed to order the Mineralogical Cabinet and Museum in such a way that it fully met the university research and teaching requirements.

When Vernadsky started his job at the university, the Mineralogical Cabinet was essentially degraded. Serious damage was done to the museum collection in early 1860s, when the part of the collection was transferred to the Pashkov House. It was planned to organize there a national museum of natural history, which had quite a complicated name "Moscow Public Museum and Rumyantsev Museum". The university mineralogical collection and the collection of Count N.P. Rumyantsev were unified, but this initiative was not fully realized, and after a few years, the university collection returned back to the university. Such a transfer, according to Vladimir Ivanovich, was harmful to the mineralogical collection.

Decades later, Vernadsky recalled that when he came to the Museum building, he ran into Eugenii Diodorovich Kislakovsky, the Big Cabinet keeper at that time, who was removing the labels and numbers that were fixed to the specimens, thus "ordering" the collection for the new-coming Professor. A large number of minerals were already piled on the floor without any identification. No surprise, the main priorities of Vernadsky's work at the Museum were creating catalogues and classification of the mineral specimens and expansion of the collections.

Creating Catalogues and Classification of Collections

ЕщеWhile being the keeper of the Mineralogical Cabinet of the Emperor's Saint Petersburg University (since 1886), Vernadsky did substantial amount of work on sorting the mineralogical collections, dividing all the material into three thematic groups.

He compiled a catalogue (inventory) for each of the groups, which was used to record data as the incoming specimens were processed. The scientist applied the cataloguing criteria he developed in St. Petersburg to the mineral collection in Moscow, but in addition he also introduced the card files, indexing the material by mineral species and deposits.

Vladimir Ivanovich understood that while registering the specimens in catalogues, it was important to not only identify and describe the minerals, but also restore all possible information about them. The old labels, which apparently kept the records of some older catalogues, could help in the process. Kisalkovsky, while initially claiming that there were no such catalogues, still found two of them. One in German was found in the Society of Natural Explorers; it was compiled by Professor Fisher von Wildgame in 1827 for a collection purchased from a Saxonian mineralogist, Johann Carl Freiesleben. The other was the Catalogue of Both Big and Small Mineralogical Cabinets of the Emperor's Moscow University compiled in 1858 by Professor Grigory Efimovich Shchurovsky. Both of these books became the constant resource for the work with older collections.

By the end of 1890, when the re-organization of the Mineralogical Cabinet was started, it included 14933 specimens of various minerals, rocks, and fossils. Initially, the following collections existed:

1. The main (systematic) collection of minerals;
2. Collection of minerals and rocks from Russian deposits;
3. Collection of minerals and rocks from Vesuvius
4. Educational collection;
5. Collection of specimens of mining products.

However, with time passing and mineralogy developing, Vladimir Ivanovich re-considered the principles by which collections were formed.

Vernadsky believed that the priority task for the Cabinet was organizing the systematic collection, in which minerals would be sorted according to progressive chemical classification, proposed by Professor of the Yale Univeristy, James Dwight Dana.

Vernadsky involved in this work his students, among which there were Anatolii Orestovich Shklyarevsky, A.A. Aunovsky (unfortunately, first and second names are unknown), Pavel Karlovich Aleksat, and abovementioned S.P. Popov. Significant part of the old collections was piled in boxes, labels were lost, so to recover them, they had to use any survived records and to match the numbers on the specimens with catalogues. The work on the main systematic collection was continued for seven years and was completed by 1897. By that time, it consisted of 9957 numbers. All specimens in this collection were positioned according to the Dana system and sorted by geographic location.

The scientific interests of Vladimir Ivanovich were also reflected in his work on forming the new for that time, thematic collections. Thus, by his initiative in 1894, a collection was started to illustrate the conditions of formation and alteration of minerals in the nature. That collection was named “paragenetic”.

Vernadsky considered crystallography an independent area of science, so in 1891 he began to teach a separate (from mineralogy) crystallography course, which was based on contemporary concepts about crystal structure. In 1894, some specimens of natural crystals suitable for crystallographic studies were set apart; this way a crystallographic collection, with a separate catalogue “Inventory. Collection of Crystals”, was initiated.

Vernadsky paid significant attention to the cabinet of meteorite matter. Among the newly formed collection, a special place was taken by the one containing meteorite specimens. This collection was started in 1897, when it was revealed that museum had a sufficient number of specimens of extraterrestrial origin. The catalogue “Inventory. Collection of Meteorites” compiled under Vernadsky's direction counted total of 114 specimens by 1910, with half of them added to the Mineralogical Cabinet during the period from 1890 to 1910.

It should be specially noted here that the principle of organization of minerals in the systematic collection, introduced by Vladimir Ivanovich, has been preserved to this day.

Extending the Collections

Vernadsky clearly understood the importance of a good systematic museum and put all possible effort to improve it. Based on his plan related to the general reconstruction of the University, the Mineralogical Cabinet would become comparable to the best mineralogical centers in the West. Therefore, huge work had been done to extend its collections. By 1911, when Vladimir Ivanovich left Moscow University, the size of the collection of the Mineralogical Cabinet had increased twice in comparison to the that existing at the moment of his appointment. The main sources of the new arrivals were targeted purchases from specialized firms and private collectors around the world, specimens collected during mineralogical excursions, numerous gifts from all corners of Russia and from abroad. According to annual reports and inventories, about 1500 specimens only had been supplied by Vernadsky himself during his work at the Moscow University. The majority of those came from his field trips, but there are some pieces that he bought with his own funds from firms during his international trips. Among these, we should note a unique triplet of aragonite crystals substituted by native copper, from the Coro Coro Deposit in Bolivia (*Figure* 3). The scientist's example was followed by other faculty and students of the university.

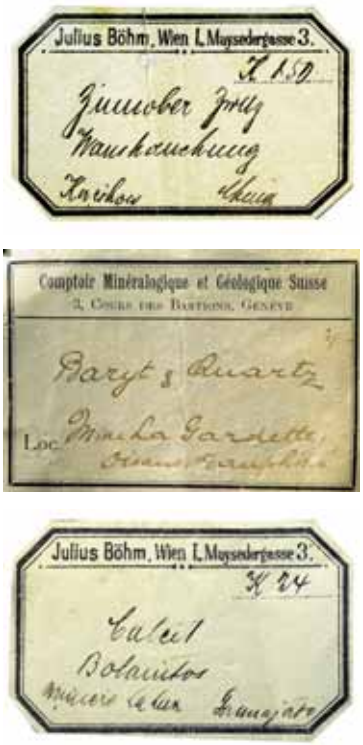


Figure 2. Labels of different years to museum specimens.

Purchases. When a representative mineralogical collection is forms, the main contribution is made by targeted purchases, since those keep up the strategy of collection development.

As was already mentioned, in Europe, America, and Russia, there were specialized firms that were dealing with collection and sales of geological material. Those organizations had channels for acquisition of high quality specimens from classic and new mineralogical localities. Most of the mineralogical vendors printed their catalogues, which were sent to the major universities and to private collectors. The Emperor's Moscow University was also on the mailing list. The administration of the Mineralogical Cabinet prepared information about new arrivals for the Annual Report on the state and activities of the University. This allowed the authors of this article to find out the priorities in the collection development over that time period.

We can see how representative the Mineralogical Systematic Collection was at the moment when Vernadsky started his job at the University just looking at the "Catalogue of Both Big and Small Mineralogical Cabinets of the Emperor's Moscow University", which was compiled in 1858 by Prof. G.E. Shchurovsky. Vladimir Ivanovich referred to this catalogue while preparing proposals for purchasing new specimens. As was found, the following categories were acquired:

Figure 3. Pseudomorph of native **copper** after **aragonite** triplet. 2 x 2 x 1.5 cm. Coro Coro, Bolivia. Gift of V.I. Vernadsky, 1901, VSGM # MN-22398.

Figure 4. **Gmelinite.** 9 x 4 x 3 cm. Flinders, Victoria, Australia. Purchased from F. Krantz (Bonn), 1894, VSGM # MN-34520.

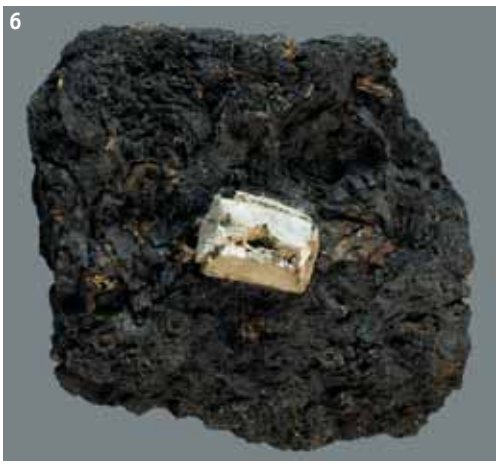


Figure 5. **Cylindrite**. 11 x 6 x 3 cm. Poopo, Bolivia. Purchased from Freiberg Mining Academy, 1899. Discovered in 1893. VSGM # MN-20725.

Figure 6. **Struvite**. 4 x 3 x 2 cm. Hamburg, Germany. Purchased from H. Minod (Geneva), 1904. VSGM # MN-22255.

Figure 7. **Natrochalcite**. 7 x 7 x 5 cm. Chuquicamata, Chilie. Purchased from A. Foote (Philadelphia), 1909. Discovered in 1908. VSGM # MN-22375.

Figure 8. **Cinnabar** crystal (1.5 x 1 x 1 см). Van-Shan-Chung, China. Purchased from J. Bohm (Vienna), 1909. VSGM # MN-20687.

- Minerals absent from collection (*Figure* 4);
- Minerals absent from collection, discovered after 1858 (*Figure* 5);
- Minerals absent from collection from the first type locality (*Figure* 6);
- Minerals absent from collection from the first type locality, discovered after 1858 (*Figure* 7);
- Minerals available in collection from new localities (*Figure* 8).

The majority of specimens from deposits and localities abroad were purchased from the old world-famous companies and vendors, such as J. Bohm (Vienna), A. Foote (Philadelphia), F. Krantz and B. Sturtz (Bonn), H. Minod (Geneva), and Freiberg Mining Academy (Freiberg, Germany). The Russian specimens were mainly bought from Ural firms.

All the purchased material was of superior quality. Most of the obtained specimens can be characterized as remarkable or exceptional, according to the information presented in the "*Atlas of the World for Mineralogist*" compiled by Alexander A. Evseev during many years of work with national mineralogical collections.

Figure 18. **Calcite**. 14 x 12 x 6 cm. Tyuya-Muyun, Alai Range, Osh Oblast, Kyrgyzstan. Collected by K.A. Nenadkevich, 1907. VSGM # MN-28688.

of 2011. The information which this publication is based upon clearly demonstrates the broad scale of the effort undertaken by Vernadsky and his students to study the mineralogical monuments of the end of the 19th and beginning of the 20th century, some of those have not been preserved or are not anymore accessible.

References

Back, M.E., Mandarino J.A. (**2008**) Fleischer's Glossary of Mineral Species 2008, The Mineralogical Record Inc. Tucson.

Evseev, A.A. (**2004**) Atlas of the World for Mineralogist, Moscow: Ekost Association. p. 285 (in Russian).

Popov, S.P. (**1963**) Mineralogical Cabinet of the Moscow University during the Period 1894–1908 // Essays on History of Geological Knowledge. Issue 11. Life and Works of Vladimir Ivanovich Vernadsky from Memories of Contemporaries (by 100th Anniversary of Vernadsky's Birthday), Moscow: Academy of Sciences of the USSR, pp. 21–29 (in Russian).

Report on the Status and Activities of the Emperor's Moscow University for 1903. Part 1. Moscow: University Typ., **1904**, pp. 141–144 (in Russian).

Shchurovsky, G.E. (**1858**) Catalogue of Both Big and Small Mineralogical Cabinets of the Emperor's Moscow University, Moscow: University Typ., 748 p. (in Russian).

Vernadsky, V.I. (**1910**) Mineralogical Cabinet of the EMU // Committee of the XII Convention of Russian Natural Scientists and Physicians, F. Krasheninnikov, Ed., Moscow: Lissner Typ., 10 p. (in Russian).

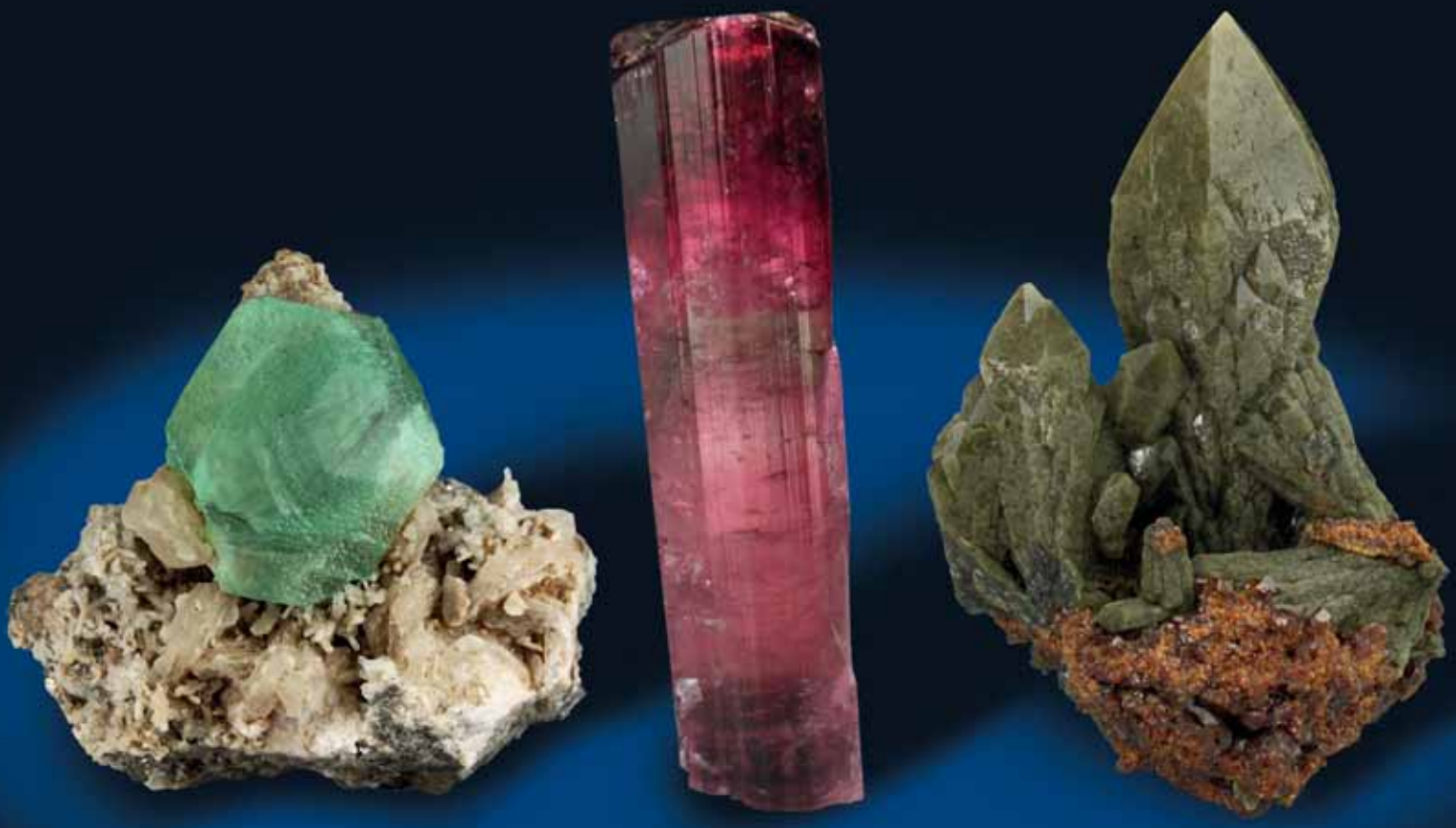
KRISTALLE
Est. 1971

Crystal CLASSICS

We have over 1000 specimens online!

Wayne and Dona Leicht
Laguna Beach, California, USA
tel: +1 949 494 5155
info@kristalle.com

Ian Bruce
Somerset, England
tel: +44 1935 862673
ian@crystalclassics.co.uk



Visit us at mineral shows:

Tucson, Az, USA • St. Marie-aux-Mines, France • Denver, Co, USA • Munich, Germany

We are cash buyers for single specimens and entire collections!

www.kristalle.com ♦ www.crystalclassics.co.uk

Fluorite with Cosalite inclusions - Nikolaevskiy Mine, Dal'negorsk, Russia. 5.5 x 5 x 4.2 cm.
Tourmaline - Malkhan, Transbaikalia, Russia. 7.8 x 2 x 1.6 cm. | Photo: Steve Rust.
Quartz var Prase with Andradite - Kavalerovo, Primorskiy Kray, Russia. 8.4 x 5 x 4 cm. | Photo: Robin Hansen.