

MININA Elena⁶⁴ (Vernadsky State Geological Museum, Moscow)

History of Rudolph HERMANN's mineralogical collection

The name of chemist Rudolph HERMANN (1805 – 1879), who became famous in the 19th century for discoveries of such minerals as pyrophyllite, chiolite, and planerite, is rarely mentioned and nearly unknown nowadays. Nevertheless, this scientist, who had no scientific degrees and ranks, has written more than 200 scientific articles and has made thousands of analyses of minerals. Academician V.I. VERNADSKY named Hermann the *"tireless and remarkable worker, whose merits are far from being appreciated and till now wait for recognition"*.

The Vernadsky State Geological MUSEUM keeps the mineralogical collection of Hermann, totalling more than 3000 samples of 900 mineral species and varieties from Europe, Russia and America.

Hermann's collection includes about 200 specimens from (also former) Austrian regions as Carinthia, Salzburg, Styria, Tyrol and Upper Austria. The Salzburg region is represented by minerals from Boeckstein, Hallein, Habachtal, Schellgaden, Sulzbachtal, Thurnberg and Werfen, Upper Austria by those of Hallstatt. Specimens from Carinthia originate from Bleiberg, Grosskirchheim, Kreuth, Olsa and also former Carinthia places like Praevali/Prevalje or Raibl/Cave del Predil. Some pieces are from Styria localities like Eisenerz, Holzbruck, Krieglach and Reifenstein. The largest part of Austrian samples is related with 28 deposits of the Tyrol (total, including the meanwhile Italian part) like Hall, Falkenstein, Fassatal, Flims, Greiner, Kogel, Lisenztal, Matrei, Obernberg, Pfitsch, Pfundertal, Pillersee, Predazzo, Praegarten, Pustertal, Roterkopf, Schwaz, Seiser Alm, Sterzing, Windisch-Matrei or Zillertal.

The beginning of Hermann's collection is dated by 1829, when members of the Moscow Society of Naturalists had decided to present a collection of Russian minerals to the German poet and naturalist Goethe on occasion of his 80th anniversary. A part of the samples which were not sent to Goethe were given to the young chemist Hermann and served as the base for the future collection.

As founder of a factory for artificial mineral water in Moscow, Hermann devoted a large part of time to science. The range of his scientific interests has been huge: From chemical analysis of minerals, meteorites, natural waters to studies of blood during the cholera epidemic in 1830.

Hermann devoted a number of works to organic chemistry. Based on results of numerous quantitative analyses, the scientist offered a classification of organic compounds. Later conclusions of Hermann about the structure of radicals in organic compounds have been confirmed by the German scientists DUMAS and LIEBIG.

A great part of Hermann's work refers to mineralogy and geochemistry. In 1855 he has developed his own classification of minerals which he named heterodimensional. I.I. SHAFRANOVSKY, touching the history of crystallography in Russia, considers in detail the theory of isomorphism by Hermann, which has been highly evaluated by the young D.I. MENDELEEV in his dissertation "Isomorphism".

⁶⁴ Minina Elena (Vernadsky State Geological Museum, Moscow)

A significant part of his scientific works was devoted to chemical analysis of minerals. He was the first to analyze such new mineral species and varieties as raktovkite, koksharovite, stroganovite and leuchtenbergite. He made a lot of studies of rare element compounds like tantalum, niobium, zirconium and lanthanides. His authority as analyst was extremely high; his results of analyses were used in the works of KOKSHAROV and DANA. N. NORDENSHELD and the American mineralogist SHEPARD were interested in his results, the German professors G. ROSE, K. F. RAMMELBERG and J. F. A. BREITHAUPT studied samples of his collection. Many samples sent to Hermann for studies enlarged and replenished his collection. In 1829, the director of the Mining Department in Saxony, FIEDLER, sent minerals similar to radiant talc to him, which was the first new mineral described by Hermann and named as pyrophyllite. From PLANER, the director of Gumeshevsky Copper Smelter in the Urals, he received a sample with greenish crusts of a copper-bearing mineral, which Hermann, after having analyzed, described as one more new mineral species and named it planerite.

During the well-known travel across Russia, Alexander von HUMBOLDT made Hermann's acquaintance and seems to have been quite impressed by the young scientist, for in a letter to KANKRIN, Minister of Finances in Kazan, from May 27th, 1829, the famous natural scientist and voyager wrote: *"In Moscow, we have found an extremely talented practical chemist in the Company of Artificial Mineral Water, Mr Hermann"*.

In 1845, together with AUERBACH, Hermann made a travel across the Urals during which he found in the Ilmeny Mountains a so far unknown mineral, subsequently named chiolite (sample 499). The availability of samples like this or as ilmenorutile, discovered by KOKSHAROV and handed over to Hermann for studies, or phenakite, first found by Hermann and Auerbach and investigated by G. Rose, both from Urals and many others demonstrate the great scientific and historic value of the collection. Some samples are closely connected with the well-known professor of the Freiberg Academy, J. F. A. BREITHAUPT, two of them - chloanthite and sphalerite – are well preserved till now. The collection includes also samples presented by Sorbonne professor DES CLOISEAUX, with whom Hermann maintained correspondence of long standing.

A significant part of samples has been purchased by Hermann from the (still existing) German firm KRANTZ. As a rule, these were samples from classic deposits of Europe, like Saxony, Harz and Bohemia. Hermann's approach to all the samples he got was extremely exploratory. Therefore, not trusting often to labels of purchased pieces, he analyzed independently for himself once more. For example, the mineral sent by Krantz as "Tellururan" he determined as uranochalcite, a "gibbsite" from Pennsylvania turned out to be wavellite.

By 1873, his collection totaled 3245 samples of about 900 mineral species and varieties, including for the first time described holotypes like pyrophyllite, chiolite and planerite. Soon before death, in 1876, he sold the collection to N. VISHNYAKOV, who issued its catalogue together with the biography of the collector.

"When you will study my collection, you will expand your knowledge and deserve love of mineralogy. To love mineralogy, it is necessary to have before eyes' collections as intensive as possible" (R. HERMANN).