

GEORGIY P. BARSANOV – THE DIRECTOR OF THE FERSMAN MINERALOGICAL MUSEUM (1956–1976)

Marianna B. Chistyakova

Fersman Mineralogical Museum, RAS, Moscow, mineral@fmm.ru

Georgiy Pavlovich Barsanov joined the museum staff as a junior scientist in 1931, graduated recently from the Leningrad State University. At that time the director of the museum was A.E. Fersman, who had gathered many talented young scientists to work with him. Those young people would go on to make lots of developments in the field of mineralogy. The museum was a part of LIGEM (Lomonosov Institute of geochemistry, mineralogy and crystallography) and along with museum curation duties they did intensive research.

The mineralogical collection, that accounted several tens of thousands of exhibits, was moved from Leningrad to Moscow in 1934. It was a gigantic task: wrapping and boxing, taking inventory, controlling the loading and unloading of the material, which occupied 45 railway carriages. The collection was placed in the riding hall of former count A.G. Orlov. Preparation of an exhibition to XVII session of the International Geological Congress of 1937 went on almost simultaneously with this. The exhibition was placed in the halls of the museum, halls of Moscow conservatory and outdoor in the park adjacent to the museum. Georgiy Pavlovich took a very active part in those and other later labour-consuming works, which demanded knowledge and skills in various fields. These exhibitions taught him the museum business in all its details.

Because the museum was a part of a research institute, its scientists carried out intensive research work. The activity of the museum was appreciated by the Academy of Science not on the basis of achievements in the museum business but mainly by the quality of the scientific research. It was like that in those times, as well as in later years. Written books, articles, the creation and defense of theses was considered more important than museum work.

This period was a time of rapid development in the Earth sciences and reclamation of the national natural resources. Georgiy Pavlovich participated in many science field

trips to the Caucasus, Middle Asia, Urals, Kola Peninsula, starting from in 1926, even before beginning to work at the museum. He donated more than 2100 specimens to the collections of the mineralogical museum in those and later years.

Georgiy Pavlovich Barsanov began to study the unique rare-metal mineralization of the Ilmen Mountains starting from the late 1930s. He made a significant contribution to the studies of the region by detailing the mineralogy of rare-metal deposits of South Urals, characterizing the chemical and physical features of metamict rare metal minerals, discovering and describing new mineral species.

Georgiy Pavlovich was mobilized in 1941. He was the head of the staff, and then a commander of a combat engineer battalion, during which time he was severely contused. He was evacuated to the Ilmen natural reserve in the Urals, where part of the museum collection and its staff were moved for the duration of the war. In spite of serious health issues, he continued to study the mineralogy of the Ilmen Mountains. Besides detailed studies of the material and summarizing all the obtained data, he worked out a theory of metamict decay and methods of investigating metamict minerals.

Georgiy P. Barsanov defended two theses: one for the Candidate Degree in geological and mineralogical sciences with the title "Mineralogy of Ilmen Mountains" in 1943, and the doctoral thesis "Methods of study and systematic of rare earth niobates and tantalites" in 1947. The doctoral thesis was awarded a prize from the Department of geological and geographical sciences of the Academy of Science of the USSR.

Georgiy Pavlovich executed work as the scientific secretary of the mineralogical museum starting from 1944. He held the position of senior scientist in the period from 1947 to 1952, leading the scientific and organizational work in the museum, supervising postgraduate students, and acting as the director of the museum on many occasions.

His teaching experience started at the Moscow Institute of Base Metals and Gold in 1937, far before the war, and continued till 1953 in the Moscow State University. G.P. Barsanov created his original course on genetic mineralogy to present the ideas of V.I. Vernadsky and A.E. Fersman in a modern way. He started to reconsider new data on the chemical composition and structure of minerals and later created a mineral classification system based on the contemporary structural-chemical basis in 1959.

It is clear that by 1950s G.P. Barsanov was already a mature mineralogy scientist and very professional in museum work. Therefore, it is natural that he was assigned as a director of the museum in 1952 when academician D.S. Belyankin left the position, after being the director since 1947. At almost the same time, in 1953 G.P. Barsanov became the chair of the mineralogical department at the geological faculty of Moscow State University. Later he would be the dean of this faculty from 1957 to 1961.

The assignment of Barsanov as an executive director coincided with repair and restoration works on the museum buildings. Thanks to his persistence the museum was funded to repair the roof damaged during the war, and restore the unique painted ceiling that had been severely harmed due to the leaking roof.

Excellent knowledge of the details of museum business allowed Georgiy Pavlovich to make some novel changes when reopening the museum after renovation that simplified the work in the museum. He made big changes to the scientific essence of the exhibits, allocation of funds, and inventory and recordkeeping, which were made in a short period of time thanks to well organized work. All the staff members of the museum took part in that gigantic work.

The museum had a huge amount of material in a vast repository, which had been ordered according to Dana's classification system. It was not easy to locate material, therefore to make it easier an alphabetical index was created for the first time under the supervision of G.P. Barsanov. Mineral names in the index were ordered by N.A. Kruglova, followed by the numbers of the storage shelves, drawers and showcases where they were placed. Such an index had only existed before for collections from mineral deposits. S.V. Vlasova ordered material of the systematic collection within every mineral name by mineral deposits and every drawer had the same

ordering principle. Every drawer was supplied with inventory descriptions. These changes simplified the use of funds and allocating existing and newly obtained samples.

The collection of lapidary and precious stones was catalogued in the Book of Movements made by M.B. Chistyakova, where all moves of the specimens were described.

Because museum material was used as etalons in comparative studies by many institutions, new card indexes were created by M.A. Smirnova to show a) minerals given for investigation; b) results of analyses of the museum material.

Rapid development of mineralogy in 1960–1970s and the discovery of many new minerals triggered the appearance of new indexes of minerals discovered in USSR, written by G.A. Annenkova, later M.D. Dorfman and S.V. Vlasova.

Replenishing of the museum's collections originated from different sources. Many exhibits came from the expeditions of museum staff, with other interesting material coming from other academic and non-academic organizations. New minerals found in the USSR were officially registered only after their etalon specimens were delivered to the main geological museums of the USSR. Sometimes unique samples came to the museum with its own specific scientific research. It was this way when U.L. Orlov, the museum's scientist, worked on the morphology of diamonds. He also studied collections of the Gokhran of the USSR, besides the museum's own collection. After the study the unique material was completed it was passed on to the museum repository.

A big role in drawing new funds in, was through the commercial department of the museum named the Mineral Bureau. It was established in the times of A.E. Fersman and worked on forming mineral collections for high schools and higher educational institutes. Minerals were collected from many regions of the country, with the best samples placed in the museum collection and lesser quality samples being sold by the Mineral Bureau. The museum used the funds raised by this work to purchase further specimens.

The size of the collection, the significant number of new accessions, the presence of precious stones and metals required special handling and storing, which increased the necessity for additional staff. At the recommendation of the commission of the Gokhran

of the USSR, Georgiy Pavlovich insisted on funding two staff positions of senior custodians for the main repository and temporary repository. There were no such positions in the museum system of the Academy of Science before.

Georgiy Pavlovich Barsanov had wide scientific interests. He studied theoretical and applied mineralogy. He developed his own mineral classification based on new scientific achievements, studied the mineral composition of deposits in the South Osetia and Ilmen Mountains, the process of metamict decay, luminescence properties of minerals and the origin of their coloration. Additionally he was interested in composition and genetic peculiarities of jaspers and cryptocrystalline silica, typomorphic properties of tourmaline. Georgiy Pavlovich paid a lot of attention to the history of Russian mineralogy. His vast circle of interests is shown in the number of published papers (more than 150 titles). Many of his interests were realized in the museum's exhibitions, prepared by the museum's staff under his supervision.

The museum's staff, under the lead of Georgiy Pavlovich, performed a colossal work on restoration and renewal of the exhibition for the reopening of the museum after its restoration in 1953 and a few years after that.

The previous exposition "Systematic of mineral species" was made according to Dana's system and was restored in the first place. The composition of minerals was not given in oxide form but in the new contemporary structural formula. The system of mineral classification based on structural-chemical properties was published in 1959. M.A. Smirnova. The museum's staff, remodeled the exposition to fit the new Barsanov's system in the following few years. Every mineral species was presented with its each variety ordered according to the temperatures of their genesis in different mineral assemblages.

The exhibition "Geochemistry of elements in mineral forming processes" created in time of A.E. Fersman and V.I. Krizhanovsky was totally renewed and remodeled. It showed minerals containing an element that were formed at different stages and conditions of the mineral-forming processes, in various compositions and genesis. The exposition was also furnished with plenty of illustrations. The exhibition was very detailed and informative, but was reduced later because of lack of the space for it and it has not been updated or sup-

plemented with new material except for some sections.

A completely new exhibition "**Mineral forming processes**" was created in the same years under the lead of G.P. Barsanov. It is currently named "Types of mineral associations in the Earth's crust". It replaced a small exposition, some sections of which represented mineral assemblages of certain deposits or regions, which was formed to the International Geological Congress in 1937. The new exhibition contained sections with generalized material characterizing different deposits of certain types from magmatic to supergene. Almost all the museum's staff participated in creating this large exhibition. Some sections represented research of the museum's staff, for example, pegmatite types by A.I. Ginsburg. The exhibition reflected the state-of-the-art in the science and had approval from the national and international science community. It dated with time and is constantly being upgraded.

An exhibition entitled "**Mineral crystals**" by A.N. Labuntsov and V.A. Sheveleva, showed all crystals ordered according to their symmetry by various systems, with indexes of faces marked, and was supplied with large text and graphic material.

Ontogeny, a separate branch of mineralogy started to develop during the 1950–1960s. N.I. Ginsburg created a show on this division in 1950s. It was dedicated to the substitution of one mineral with another and was called "Pseudomorphs". An exhibition "Forms of mineral occurrence" was created by V.V. Yakybova to continue the topic later in 1966 for the 250th anniversary of the museum. Now all three exhibitions ("Crystals", "Pseudomorphs" and "Forms...") are combined into one display, showing all types of occurrence of minerals in nature. There is no such exposition in other museums and the idea of it was formulated in the time of G.P. Barsanov.

The exhibition "**Colors of minerals**" was reorganized in the time of Georgiy Pavlovich. Causes of mineral coloration started to be investigated in 1950s, and there were some light absorption spectra presented for several minerals originating from the first works on the topic by the Institute of Crystallography of Academy of Science. That first exhibition was created by M.S. Amirzyants, later – Barsanova. It was significantly remodeled by M.E. Yakovleva and furnished with graphic material on the

base of newly obtained data in 1968. This exhibition "Causes of coloration in minerals" created in the time of Georgiy Pavlovich exists still and has not dated.

Rapid development of experimental mineralogy started in those years. There were many synthetic minerals grown and this part of mineralogy was shown in the collections and expositions of the museum. The exhibition "Synthetic analogues of natural minerals" was combined by G.A. Annenkova and M.A. Smirnova. It was transformed into an exposition with synthetic and natural stones and imitations used in jewellery.

Georgiy Pavlovich was interested in the history of mineralogy and this interest was reflected in the exposition "The history of mineralogy and Mineralogical Museum in Russia and USSR" starting from Peter's the Great Berg-college and Cunstcamera to the present day. He started organizing the exhibition in the early 1950s. Specimens of minerals discovered in Russia and minerals named after Russian scientists are part of the show that was made by V.A. Sheveleva.

Mineralogy, as other geosciences, was booming in 1950 — 1960. A large number of scientific expeditions and laboratory investigations of minerals led to discoveries of new mineral species. To reflect those achievements the exhibition "Minerals discovered in Russia and USSR" was formed by G.A. Annenkova and M.D. Dorfman. There has been so much material to show in the recent years along with the lack of show space that only minerals discovered in Russia in the last 10 years are shown in it.

The exhibition "Minerals of Moscow region" showed past interest in regional mineralogy. It was first created in the time of Georgiy Pavlovich by A.N. Labuntsov and V.A. Sheveleva.

The exposition "New acquisitions" came to existence in the time of Georgiy Pavlovich. It was created by G.A. Annenkova in 1966 for the 250th anniversary of the museum and became permanent and is regularly renewed since then.

The collection of lapidary and precious stones had been in the museum since 1920s and Georgiy Pavlovich paid a great attention to it. Artist V.I. Levanidov was hired to modernize its look for the first time in the museum's history. He created showcases, in which samples were not considered as a set of particular specimens but looked like a unique piece of art. M.A. Smirnova played a big role in

forming this big exposition by revising and selecting show specimens.

Besides permanent exhibitions there were many temporary shows dedicated to some events and memorable dates. Some of them became permanent like the afore-mentioned "New acquisitions" created for the 250th anniversary of the museum.

Renewal of the big geological map was done for the same event. White spots represented areas which had previously not been geologically mapped in the territory of the Soviet Union. So the white spots on the map had to be eliminated. The new map was projected onto the blank areas whilst an artist standing on a ladder painted the lacking parts. The work was done under the supervision of V.A. Kornetova.

The bronze memorable medal was cast for the 250th anniversary of the museum.

A temporary exhibition was made to the Centennial anniversary of V.I. Lenin. The topic was hard to choose. Lenin's decree for creating the Ilmen natural reserve was chosen to make the subject of the exposition "Ilmen Mountains — the first mineralogical reserve in the world". It showed specimens from Ilmen mountains with texts and pictures. An exhibition was also made for the 90th anniversary of A.E. Fersman.

The museum exposition was located in the former riding hall, which was about 900 square meters in size (about 9000 square feet) with a high ceiling, was light with several old chandeliers dating to the 1930s. In the twilight and even in cloudy dusky days it was almost impossible to see what was shown in the showcases. Attempts to change the lighting in the museum were taken only in time of Georgiy Pavlovich and were undertaken by A.V. Ionov. Electricity was conducted to the vertical showcases standing along the walls and light incandescent bulbs appeared on the inner sides of the showcase walls. From the contemporary point of view it was something terrible: the light was directed to the viewer, samples on the sides made long shadows and the center of the exposition did not have enough light. Nevertheless, the staff were very excited about the lighting — it was far from perfect, but one could see what was in the showcases. Luminescent light bulbs became available and they started studying how to improve their spectrum to make it closer to natural day light to have specimens look natural. However, the change of the old incandescent lights to the modern ones happened only after Georgiy

Pavlovich left the museum, during a long period of renovation.

It's necessary to stress that the modern scientific essence of the museum's expositions was formed in the time of Georgiy Pavlovich. They were reduced, widened or modernized but the general direction has not changed till now.

Georgiy Pavlovich was appointed as a director in 1948, when the museum was a separate scientific organization with its own research program, which was carried out with participation of majority of its staff members.

Pegmatites were one of the main research subjects in 1950 – 1970. The works were carried out by A.I. Ginsburg, V.A. Kornetova, M.E. Yakovleva, M.B. Chistyakova, post-graduate students T.I. Timchenko, G.N. Taranovsky, L.N. Rossovsky and others in different regions: in the Urals, Middle Asia, in Transbaikalia, in Tuva and Kazakhstan. A.N. Labuntsov and later M.D. Dorfman and G.A. Annenkova studied alkaline pegmatites on the Kola Peninsular. Studies of minerals of rare metals and rare earth elements were a part of the pegmatite research.

Many articles and monographs were published, doctoral and candidate theses defended on the results of the investigations. Studies of A.I. Ginsburg had particular value in those works. He discovered a pollucite deposit on Kalbinsky range in Eastern Kazakhstan and was awarded a Stalin prize for it.

Although the pegmatite topic was the main research of the museum, there were other topics. N.G. Sumin studied iron skarn deposits, Yu.L. Orlov did a research on morphology of diamond crystals, O.L. Sve-shnikova studied mineralogy of silver and silver-base metal deposits. The results of the works were published in articles and monographs.

Part of the studies was carried out on the museum's collection material. Sometimes it was used just as a comparative material for the studies mentioned above. Some works were focused particularly on the museum's samples. For example, G.P. Barsanov and M.E. Yakovleva made a work on chalcodites, jasper, tourmalines, obsidian, V.V. Yakubova worked on inclusions in quartz, Yu.L. Orlov studied diamonds.

In this manner, the small staff successfully carried out research on different problems of mineralogy.

Laboratory facilities were needed for the research made in the museum. An X-ray laboratory, spectral emission laboratory and polishing shop were found in the time of Georgiy Pavlovich, as well as an existing small chemical laboratory. Having those facilities made the research independent from IGEM laboratory, which was loaded with work on their own projects. The IGEM (The institute of geology of ore deposits, petrography, mineralogy and geochemistry of the Academy of Science) shared the communist party unit, trade-union management and the same scientific council with the mineralogical museum.

Results of research were published in the museum's journal called "New data on minerals from USSR". Later it was renamed into "New data on minerals" because in the time of Georgiy Pavlovich the geography of the studied projects widened. Georgiy Pavlovich was the editor of the journal from 1949, sharing this work with academician D.S. Belyankin until 1953.

It needs to be mentioned, that Georgiy Pavlovich paid a significant attention to the scientific interests of his staff. In times of strictly planned economy it was hard to change research direction or deviate to a foreign topic once it was planned and approved. People who came to work in the museum had their own established scientific interests that sometimes did not match the direction of the museum research. Georgiy Pavlovich did not contradict them if they could give him a good reason to justify their denial to work in the common direction. Such people continued their studies like Yu.L. Orlov, who got interested in diamond studies before starting work in the museum. Attempts to make him do research on pegmatites did not inspire him but only depressed him. So, Georgiy Pavlovich gave him blessing to work on his favorite diamonds. As a result a solid monograph was written on diamond morphology and a doctoral thesis was defended a few years later.

Georgiy Pavlovich was not inclined to manage the people or the group of researchers as a guide or a nanny. He knew perfectly the business abilities and personal qualities of the people he managed and allowed them to apply their initiatives and skillfully used their help.

Georgiy Pavlovich paid a lot of attention to the museum activity in popularizing science. Besides regular excursions for the

school pupils, students and other visitors there was a mineralogical interest club for high school pupils. It was organized in time when B.I. Krizhanovsky was the head of the museum from 1932 to 1947. He played a big role in the museum development and replenishing of its collections. Future museum staff and some famous scientists attended the club in their school years: V.A. Kornetova, A.I. Ginsburg, A.A. Beus and others. Georgiy Pavlovich tried to attract to the club teaching not only the museum's staff but also enthusiastic people from the outside. E.Ya. Gurieva, the future postgraduate student of G.P. Barsanov, was such an enthusiastic person, who gained a taste for teaching early in her student years. Later being a senior lecturer at Moscow institute of fine chemical technology she brought her students to the museum on the regular basis to improve their knowledge in mineralogy.

The scientific mineralogical club was organized for specialists in the time of V.I. Vernadsky and A.E. Fersman. Its meetings were regularly held when Georgiy Pavlovich was the head of the museum. It was easy to find a lecturer for the meetings because there were so many research reports and theses that needed to be discussed with colleagues. Reports were made by the young as well as by the very experienced scientists like academician N.V. Belov. Georgiy Pavlovich always attended the meetings, took an active part in the discussion and made conclusions to it. Sometimes a lecturer would be unclear and the subject would only become understandable after Georgiy Pavlovich made his summary. The club was lead by A.I. Ginsburg before 1957 and later by M.D. Dorfman.

Simultaneously with scientific and pedagogical activity Georgiy Pavlovich did research managing and public work. He was an editor of various periodical titles, collected books and reference books, a main scientific editor-consultant of the second and the third edition of Big Soviet Encyclopedia, a member of editorial board of scientific journals. G.P. Barsanov entered a commission on natural reserves in 1954 and participated in developing a project of the Commission on nature protection. Georgiy Pavlovich was a vice-president of International Mineralogical Association between 1960 and 1964 and a member of a range of commissions of the organization. He was a member of the

All-Union Mineralogical Society and was many times among the council of the society. He also was an emeritus member of the Bulgarian Geological Society. He was granted a title of the honored Worker of Science of the RSFSR. His merits were honored by the order of the Red Banner of Labor, by three orders of the Badge of Honor and several medals of the USSR: The medal for the Conspicuous Gallantry is among them.

We need to stress the fact that G.P. Barsanov was a dean of the geological faculty of Moscow State University and worked as a head of the museum voluntarily from 1957 because he was not allowed to hold two executive positions at once.

A new mineral barsanovite, found by the museum's staff member M.D. Dorfman, was named after G.P. Barsanov.

The authority of Georgiy Pavlovich was beyond exception. Nevertheless, he never lowered the staff member's dignity, did not demonstrate their shortcomings. On the contrary he always found good people's qualities, which could merit the business. When his eyebrow rose on his usually calm face it meant that the person he was talking to went too far and it was time for him to reconsider his position. He successfully pacified quarrels that were so common in a mainly female work collective. And it seemed that everything went smoothly, without any worries and faults. Now the time when Georgiy Pavlovich Barsanov was the director is memorable as a calm period without commotion, what actually was not exactly true. His visible calmness was a result of his gigantic moderation and intelligence but not a peace and clear skies.

Georgiy Pavlovich had various interests and hobbies, which were connected not only with the science. He loved music, photography, he hunted for mushrooms, grew indoor flowers and went ice-fishing. Georgiy Pavlovich was a cheerful person with good sense of humor. He gladly spoke to the staff members, made jokes with them when walking along the museum's hall where all the museum's staff had their work desks. It made all his colleagues feel comfortable and secure. People who worked with Georgiy Pavlovich remember him with love and gratefulness.

The author wants to acknowledge Malva A. Smirnova for the information, advice and help she provided with the work on this article.