

VIKTOR IVANOVICH STEPANOV – UNIQUE MINERALOGIST AND INEXHAUSTIBLE TOILER

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Viktor Ivanovich Stepanov (1924 – 1988) was unique expert mineralogist, encyclopedic mineralogist. He worked on deposits of various genetic types. He collected the largest mineralogical collection and donated it to Fersman Mineralogical Museum. His interest turned to speleology and mineral formation in caves during last years of his life.

1 table, 1 figure, 4 references.

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It is hard to write about Viktor Ivanovich Stepanov after brilliant memoir sketches written by Arkadiy Grigoryevich Zhabin (Zhabin, 1992; Zhabin, 1993). I remember my first year at the university in 1949 – 1950 and my first acquaintance with Viktor. It happened after he switched job from Moscow Geological Prospecting Institute (MGRI) to Lomonosov Moscow State University (MSU) and started going to field trips in Moscow region searching for interesting specimens. He went with us, the freshman students every weekend and taught us mineralogy and also good communication. We usually sang geological songs on a train back. I remember well Podolsk open pit and wonderful druses of quartz, almost amethyst. After graduation from the University he received a job at the Institute of Geology of Mineral Deposits, Petrography, Mineralogy and Geochemistry (IGEM), where he began to study mineralogy of very complex Upper Kayrakty tungsten deposit. Then he went to work with Institute of Mineralogy, Geochemistry and Crystallography of Rare Elements (IMGRE) in 1963. Viktor had a cast-iron nature and told the truth flat out, so he could not assimilate at IGEM and started to work at IMGRE. Kuzma Alekseyevich Vlasov was the director of the institute then and had a dream to create a museum of rare elements' minerals. He knew Stepanov as an excellent mineralogist and asked him to start gathering the museum. It began with small cabinets, where specimens collected by K.A. Vlasov and his colleagues in field trips and expeditions were stored. Those specimens originated from the famous vein No 3 of Koktokay pegmatite deposit in Xinjiang Region (China), specimens of vanadinite from Mibladen deposit (Morocco), uraninite from Czech deposits and other.

We need to deviate from the topic and introduce some facts from of Viktor's Ivanovich biography. He was born in town of Semenov on

Volga River (former Gorky, now Nizhii Novgorod Oblast). His family was not connected with geology at all. His parents: father Ivan Alekseyevich Stepanov and mother Capitolina Trophimovna originated from craftsmen's families. It is not clear how he became interested in mineralogy, but he was fall in it since his school years. Viktor participated in activities of regional natural history club and took participant at All-Union Agricultural exhibition in Moscow in 1939. He was admitted to Sverdlovsk Mining Institute in 1941. After the Great Patriotic War (1941 – 1945) began he was evacuated to Middle Asia. He had not finished the first year of study and worked as a worker (collector) in geological expedition. Viktor Ivanovich was called up for military service in autumn of 1942 and was sent to infantry school. After graduation he fought on 3rd Ukrainian forefront, suffered contusion, was wounded at the force a crossing of Dnestr River. When recovered from injuries he worked as a translator from German and then served as a translator from Bulgarian in Bulgaria. Upon his separation from the military, he was admitted to Moscow Geological Prospecting Institute (MGRI) and worked in expeditions in the same time. He transferred to Geological Department of the Moscow State University from MGRI and graduated from the University in 1952.

Stepanov became a junior and later senior research scientist at the Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements (IMGRE). There he created Museum of Rare Elements, which in quality and quantity could compete with the largest mineralogical museums of the world. He created it with his own hands in did it in hard environment. Working in sporadically flooded basement he created systematically ordered mineral collections that contained unique specimens. Product of his creative work was a collection that had national significance. It accounted some 30000 speci-



Fig. 1. Viktor Ivanovich Stepanov in 1960-s. Photo from IMGRE archives.

mens, representing 1300 mineral species. He was extraordinary particular to the quality of specimens and elaborated his own scale of specimen quality (Table 1)*.

Deep interest to minerals was a true vocation of Viktor Ivanovich. He helped colleague at the institute to identify minerals a lot and often such consulting turned into discussions. It was hard for him to work in the dark, dump and frequently flooded basement. Nevertheless, he have never worked during only "official hours" (nine-to-five) as it felt like he lived there. I remember that he was to Equatorial Africa and washed samples in rivers and swamps as he told that "if you wash yourself, the samples also need washing". He caught some terrible infection and only thanks to the fact that the trip was held on behalf of the United Nations effective medicines were found and he recovered.

It is interesting to quote Viktor Ivanovich's report about his activities as follows:

The report of V.I. Stepanov for the period of 1979–1983.

For the reporting period intensive work on ordering and replenishing of the IMGRE collection was carried out, which took 60 % of the time.

This work included the following:

1. *Unpacking and sorting samples from the boxes brought from the closed storages (90 boxes).*
2. *Specimen preparation. Significantly improved quality of the collection – the main time consuming subject.*
3. *Writing labels on the specimens and ordering specimens of the collection.*

4. *Identification of minerals in the standard collection – the following mineral groups were sorted: bismuth tellurides, garnets, pyroxenes, amphiboles, micas, chlorites, minerals of sodalite group, zeolites, barite-celestine, Mn-hydroxides, and range of single specimens of various minerals. 110 complete microprobe analyses and 20 chemical analyses were done totaling of 600 identifications with various methods. Glaring identification mistakes were found, which according to the reference literature and collections of other museums were typical. Apparently IMGRE has the most accurate standard collection of minerals.*

5. *110 new minerals were purchased, so the total number of mineral species reached 1300 (the third place in the USSR). The collection replenished with 1100 specimens.*

6. *13 papers were published, 3 of which in foreign periodicals. Three new minerals were described and 4 first discoveries in the USSR were made.*

7. *Presentation an oral report on European conference on speleology in Sofia (Bulgaria) in 1980 and submitted written report on XIII session of International Mineralogical Association in Varna (Bulgaria) in 1982.*

Participation in giving speeches on visiting sessions of Moscow division of All-Union Mineralogical Society in Chernogolovka in 1980 and 1983. Participation in analysis of material and report writing, the chapter Mineralogical peculiarities of mercury deposit Chauvai (Kyrgyzstan) in 1980.

8. *Went to works in the field in 1980 (Chauvai deposit, Middle Asia), in 1981 (Katugin deposit, Chita region) and in 1982 (Malyshevo deposit, the Urals) for the collection of IMGRE.*

Significant part of time was spent in struggle with flooding of the working area and the museum. The archive of K.A. Vlasov, one third of my books and many valuable specimens perished in the accidental flood. The hazard of future floods has not been eliminated.

June 1, 1983. V.I. Stepanov.

Viktor Ivanovich was interested in all kinds of investigations in mineralogy. He was very educated person. As A.G. Zhabin wrote, Stepanov had "encyclopedic, wide and accurate knowledge in mineralogy" (Zhabin, 1992). His scientific activity in the last years at IMGRE and then in Fersman Mineralogical Museum was

* – This quality scale of specimens was placed as it was on the author's sketch note and we cannot completely explain his logic. His most important idea was to formalize the principles of evaluating mineralogical specimen by three most important various categories. It was not so important number of grades in each category. The most significant was the criteria, features and the system to use for qualifying a specimen to lower or higher grade in each category. It is worth noting that naturally shaped druses are more valuable than ones that were shaped by a specimen, while massive specimens were in the contrary more valuable when shaped to a standards. This rationalization of quality assessment is very functional in comparing similar specimens when it is difficult to make a choice for purchasing, exchange or sorting collection for quality of specimens and other occasions (noted by Editor).

Table 1. The Scale of Specimen quality elaborated by V.I. Stepanov in 1970-s

Grade	Aesthetic appearance	Rarity of the mineral: 1) morphological 2) by genesis 3) regional	Level of study, value to be studied (also through connection to activity of a famous scientist)
10	Spectacular immaculate druses (extrashow)	Absolute unique (a single specimen of species, unique size, morphology, coloration)	Specimen of original discovery
9	Spectacular immaculate druses with some faults	Unique in the USSR (only few specimens of a specie)	Author's material of original description; specimen belonging to historical collection
8	Druses, cabinet size specimens but not perfect shape or coloration (not picturesque)	Unique for the time of evaluation (with likelihood of another find)	Unusual chemical composition
7	Trimmed picturesque druses	Very rare (single deposit in the world)	Original specimen of the first discovery in the USSR
6	Same as 7 with minor flaws	Rare	The first discovery in the region (original specimen), or specimens of other collection from the type locality in the USSR
5	Trimmed druzes 1) Picturesque spherulitic druzes	Relatively rare	Type locality
4	Trimmed scenic polished sections: 1) Large singular (crystals); 2) Trimmed massive very attractive specimens	Infrequently occurred	Original of a specific work with the data or having published data on the similar specimens
3	Trimmed to standard size massive picturesque specimens: 1) Small separate groups of crystals; 2) Picturesque not trimmed specimens	Relatively common	Rare specimen with confirmed identification
2	Trimmed to standard size massive specimens	Common	Ordinary specimens with confirmed identification or ones with rare species without confirmed identification
1	Not trimmed or shaped regular specimens; massive regular fragments, chips, sand, thin section; trimmed unattractive specimens	Very common	Ordinary not studied specimens

connected to the new and very interesting area of the searching for criteria and means to interpret history of ore mineral aggregates' formation in open cavities. In connection with that he was absorbed in speleology and took part in International Speleological congress. V.I. Stepanov joined A.E. Fersman Mineralogical Museum in 1986 and donated his personal collection to the Museum (Nikiforov, Shkursky, 1998).

Main milestones of Viktor Ivanovich Stepanov's life were as follows:

1941 – 1942 – student of Sverdlovsk Mining Institute;

1942 – worker (collector) of Gurjivas Geological Expedition (Dushanbe);

09.1942 – cadet in Gomel infantry school;

01.1944 – 11.1944 – officer in command of infantry platoon;

11.1944 – 10.1945 – translator from German;

08.1945 – 10.1945 – student of Defense Language Institute of Red Army;

10.1945 – 03.1946 – translator from Bulgarian language;

03.1946 – 06.1946 – court secretary of the Military Tribunal;

09.1946 – 10.1950 – student of the Moscow Geological Prospecting Institute (MGRI);

05.1949 – 05.1950 – foreman geologist in Karavshin Geological Expedition MGRI;

05.1950 – 05.1952 – junior scientific researcher in Kazakhstan expedition of the Institute of Geosciences of the RAS of the USSR;

10.1950 – 06.1952 – student of geological department of Lomonosov Moscow State University;

07.1952 – 08.1955 – mineralogist in Upper Kayraky Geological Expedition;

08.1955 – 02.1956 – junior researcher in expedition No 1 at IGEM (Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry of the USSR Academy of Sciences);

02.1956–04.1963 – junior researcher of mineralogical department of IGEM;

05.1963–06.1973 – junior researcher at IMGRE (Institute Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements);

06.1973–04.1986 – senior researcher at IMGRE;

04.1986 – start to work at the Fersman Mineralogical Museum.

In spite of his highest mineralogical qualification V.I. Stepanov did not have many published works. List of his publications is below. He did not have titles and it was not important for him or people around him. Such experts dedicated to their work are rare and it is important that people would know them. Researchers of the Fersman Mineralogical Museum named a new mineral vistepite $[\text{Mn}_4^{2+}\text{SnB}_2(\text{SiO}_4)_4(\text{OH})_2]$ after Viktor Ivanovich (Pautov *et al.*, 1992).

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