



1. **Calcite.** 13 x 20 cm. Khaidarkan, Kyrgyzstan. *'Mineralogy of Caves'* collection of V.I. Stepanov. FMM #ST8572.

THE COLLECTION OF VICTOR I. STEPANOV AND ITS SIGNIFICANCE

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2. Victor Ivanovich Stepanov. 1945.

**All specimens are from
Fersman Mineralogical Museum
RAS (FMM), systematic
Collection A of V.I. Stepanov,
unless indicated otherwise.**

Photo: M.B. Leybov.

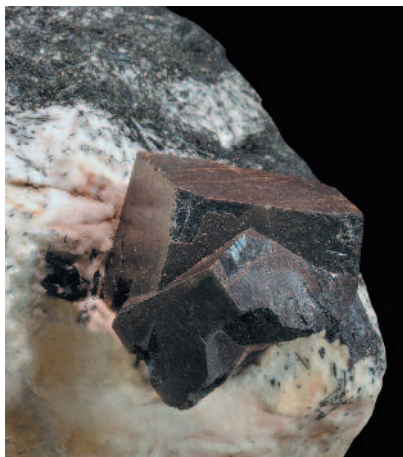
The collection of Victor Ivanovich Stepanov (1924–1988), who donated it to the Fersman Mineralogical Museum of the Russian Academy of Sciences in Moscow, is the largest private mineral collection assembled in the USSR. The total number of specimens is close to 20,000 even excluding the duplicates and not fully labeled material. However, its content rather than the number of specimens defines its uniqueness and significance. Stepanov died more than 25 years ago, but the influence of his powerful and extraordinary personality on mineralogists and collectors of minerals from Russia and other countries of the former USSR can be felt even today. The significance of his collection today is no less than it was when he was alive.

In this paper we will try to describe the most important, part of the Stepanov collection, the systematics, aiming to explain to the reader its uniqueness, as well as its museum, scientific and cultural significance. Obviously, such a collection cannot be understood separately from the personality of its collector. Hence we will discuss this aspect as well.

Once, Dmitriy Belakovskiy the curator of the Fersman Mineralogical Museum, asked Stepanov: *‘What aspect of your collection activity is the most important?’* The answer was definite: *‘Social.’*

We will start from the social aspect or, otherwise, cultural significance of the Stepanov mineral collection and his collecting activities. To completely understand the role of this man and the collection he assembled, we need a small introduction and a historical excursion.

What can we understand about the cultural significance of some objects, phenomena and kinds of activity? First of all, it is their contribution to the cultural heritage and to teaching members of the society the respectful and thoughtful attitude toward the surrounding world and its full diversity. In 1929, Sergey Fedorovich Oldenburg, Secretary of the USSR Academy of Sciences, leading orientalist and the greatest specialist in collections management in museums wrote: *‘In all cultural work, one must always remember that the most important task is to teach a human being to carefully observe and listen... One must teach everybody to respect, value and protect what was created by nature and cannot be restored, if the monument of nature is destroyed, as well as the ancient monuments created by the human beings’*. We emphasize that Oldenburg was a social scientist, but even he positioned the monuments of nature first. This was in 1929 and what



17. **Loparite** twin with **aegirine**, albite and potassic feldspar. FOV: 2.5 × 3.5 cm. Burpala, NE Prebaikalia, Siberia, Russia. FMM #ST6230/89780.

tives'), a clearly weighed, often intuitive² understanding of various aspects of such importance and their comparative significance. Stepanov was undoubtedly an outstanding connoisseur of the subject; minerals as chemical matter, as crystalline physical and geological bodies with their own laws of development, and as products of natural processes. The important role belongs to the extent of previous study and precise identification of a mineral to be placed into collection. This is one of aspects that defines the vast scientific value of his collection. At the same time, Stepanov was a man of highest culture who understood well the importance of links between mineral specimens and historical events, personalities and phenomena, clearly recognizing the social, humanitarian importance of mineralogical objects. And, finally, the aesthetics of a mineral specimen was linked to the aesthetics of sense representation in his eyes. This was the foundation of the famous Stepanov's art of mineral specimen preparation. He was in fact the first to introduce this kind of work as an important element of museum practice in the USSR. Along with this, he loved and valued the beauty of minerals as well.

A combination of all these aspects characterizes the approach of Stepanov to selecting a specimen for inclusion into his collection: what to accept, why and in what form. During the 1970s, Stepanov developed his scale of qualitative estimation of mineral specimens, taking into account their scientific value, rarity and aesthetic characteristics. Being quite schematic (because to include all the diversity of the mineral world is unrealistic), it nevertheless created the possibility of being not simply qualitative, but also a 'semi-quantitative' evaluation of numerous specimens.

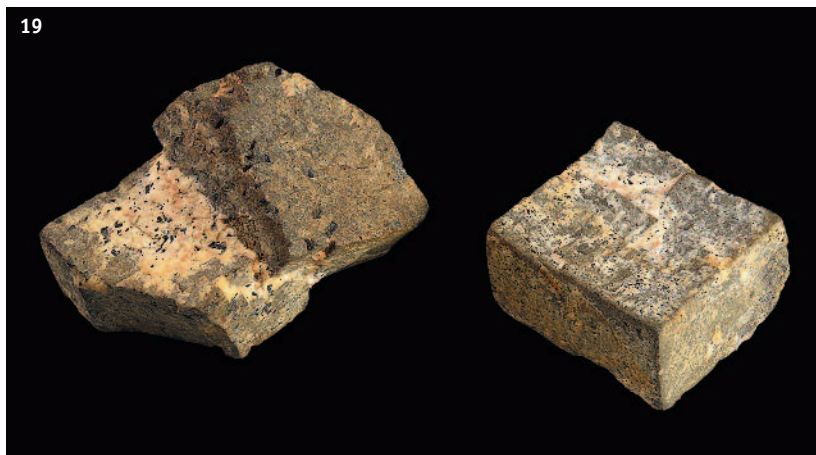
We can find concrete examples in the catalogue of the Stepanov collection and its labels: there are clear, usually quite brief, but sometimes extensive, exact remarks explaining the significance and value of a specimen. In addition, he developed and applied a quite elaborate system of symbols for relatively common characteristics of the specimens (quality, rarity, degree of study, special properties, etc.) in his collection. There was no such practice before him in our country. One can discuss whether he took into account everything, used correct accents and appropriate symbols, which is strictly speaking not too important. It is essential to recognize that



18. **Barite**: a "skeleton" which was filling a system of radial and concentric fissures in a carbonate-clayey septarium. 7 × 9 cm. Ushkuya gorge, Eastern Karatau, Kazakhstan. FMM #ST2162.

² "Intuition" is an equally valued method of understanding of nature. The bases of intuition are:

1) personal intuition skills of someone; 2) primary material, a pile of facts at his disposal; 3) strong and constant strain of mind. This interesting definition of intuition we have found in the novel *Territory* by Russian geologist and writer Oleg Kuvaev (1973).



19. **Rutile** pseudomorph after **narsarsukite** crystals (1.2 x 1.8 x 2 and 0.7 x 1.2 x 1.5 cm). Verkhnee Espe, Tarbagatai, Eastern Kazakhstan. FMM #ST6079.



20. **Magnetite**: blocky crystal (1.2 x 1.5 cm) with andradite crystals on rodingite. Tamvatnei, Chukotka, Russia. FMM #ST5831.



21. **Yuksporite**: radial fibrous aggregate with microcline. 6 x 10 cm. Eveslogchorr Mt, Khibiny, Kola Peninsula, Russia. FMM #ST4752.

22. **Cassiterite**: crystals and crystal clusters on muscovite. 4 x 7 cm. Kara-Oba, Central Kazakhstan. FMM #ST6047.

23. Nodule of china-like **gearsutite**. 10 x 13 cm. Baynazar, Central Kazakhstan. FMM #ST1260.



27-28. Photocopies of several tags to items of Collection A of V.I. Stepanov (both sides of tag are shown) and page of Introduction to written catalog of Collection A with symbols elaborated by the author for compact characteristics of mineral specimens and applied to catalog and tags are given here.

We selected typical examples of tags, where V.I. Stepanov reported not only necessary characteristics of mineral specimens but highlighted various important features of the exhibits. These are outstanding size of crystals and aggregates (metacinnabar, native antimony), unusual morphological and genetic singularities of mineral (metacinnabar, malachite), high museum quality of specimen (svetlozarite, malachite) or its historical importance (malachite), and rarity of good mineral specimens from this locality (mangancolumbite). Optical data for svetlozarite (= dachiardite) and chemical data for mangancolumbite are shown in the tags for the specimens studied.

Special symbols suggested and used by V.I. Stepanov in associated materials to his collection. The complete list of symbols and their meaning are given on the shown page of the Collection A catalog (Fig. 28). These symbols allow evaluation of character and degree of certainty of specimens, and their museum quality and rarity; they inform specimen sizes, explain names unrelated to mineral species, clarify why any deposits are of interest, and indicate thin section or another sample additional to specimens.

131. (перевод) КОЛ. ИМГРЭ (Степанов)
77. Сурьма 13x10
массивная мелкозернистая с изометрич.
олихитом кварца, замещает неравно-
мерно-зернист. буркандинскую
кварц. жила. Замещение сурьмы
антимонитом и гидроомеином
(без)
Св.-руднопроявл. **Буркандинья**
в р-не Сусуман, в автодрассе
Юго-Нера - Магадан
Магадан. обл.

478. Метациннабарит
3-5 мм зернышки корочко-образов. неясно-
титески савошникованной октаэдра
эпидоксидом наделяют на кавер-
нозный агрегат 3x2,5 см крупнокрист.
печенковой кинквонды с реликтами
замещенного более ранней метациннаба-
рита, приспичен 4,3 см. Кварца.
о. Карелинский
Сев. Камчатка

2090. Малахит 27
7x4x1,5-3 см. призм. новообразование
по атакманту с карбонатом туркмен-
ских крист. малахита (бросович
в кустовом бурении "Болос" с
печенковой кинквонды
8.1.1980 г. в руднике Юго-Нера
Туркменская С.-С.-Р. рудн.
г. Крас.-Турбинск
ср. Урал

1976 В.С. Звездов (ИМГРЭ)
перевод
Самое крупное выделение св. на
территории СССР на 1979 г.
Необычная изв. св. хотя характерна.
Для этого типа мин.

(1977) ЦИТИТОВ (ИМГРЭ)
перевод
От редких минер. вторичного
возникновения св. на кинквонды
необычно крупными кристаллами.
Особая ценность!

1941 г. Свердловск (В.И. Степанов)
1/3 кисти В.И. Степанова и ИИ
опубликовано Крис. описание
Старинный обр. из партии
уникальных минер. по атакманту
Юго-Нера, в руднике Юго-Нера
на 1980 г. с карбонатом и не-
такого типа, агр.

3136. Светлозарит
17x8 мм. неплотный сферолит (скол)
шелковистый с трещинами концентри-
ческой спайности с гейландитом
и мурденитом в лимониде андезита
5x3 см
бухта Разбойничья
хр. Карагай, Карадаг
Вост. Крым

**МИНЕРАЛОГИЧЕСКИЙ МУЗЕЙ
И М Г Р Э 6360.**
Инв. № _____ Колл. _____ м. х. _____
та- МАНГАНОКОЛУМБИТ
пятиугольные конусовидные призматич. крист.
в массиве кварца с мусковитом и
из центр. части № 2, Тузактинский уч. Прителецкая
пегматит. м-е сподумена, 20 км. к в от оз. Телеского
Земельный Алтай

1979 А.А. Ефимов (Стр. ИГЭ)
Опт. № 1
слаб. двупр.
1-й прямос. погас.
оригинал 2^е
Находки в СССР.
пр = 1,475
пг = 1,477
Лугинский образец
(лучше болгарских)
всех!

1977 НАКЕЛИН № 27/65 (ИМГРЭ)
хр. НГШуриковой 5/м данн. Акеллина
(MnO, 89 Fe, 0,14) (Nb, 14 Ta, 0,81 Ti, 0,02) O₆
MnO - 15,62
FeO - 2,45
CaO - 0,18
MgO - 0,18
TiO₂ - 0,23
Nb₂O₅ - 37,09
Ta₂O₅ - 44,20
SiO₂ - 0,12
Σ 99,98
Видимо единственный обр.
в музеях СССР.

Условные обозначения:

К наименованиям:

Золото - выды

Электрум - разновидности по х/с.

Вюрццит - подвиды

аквамарин - морфологич. разновидности.

метастибный - полимеры и стекла.

? Висмутотинтинатит - требует подтверждения существования выд.

шпирмерит? - требует подтверждения диагностики

• тетраэдрит - образцы для контроля важно установить разновидности.

теннантит - изученные образцы (только диагностика).

теннантит ("биннит") - образцы первоначально этикетки

К названиям М-и

? Нагз, ГЭР - есть сомнения в правильности указания М-и и района.

Демутатовое? Якутия - есть сомнения в правильности указ. М-и, при точности района.

купроаурид ▲ - обр. с первоначальной М-и.

твалчрелидзит ▲ - авторский обр. первоначального

сущ. - изуч. образцы - описания выд. - тот оригинал "опубликов. данных"

лаптакарит ▲, ▲, ▲, место первой находки минерала

графит - опубликов. данные об аналитич. образцах. в СССР и 2) авторский обр.

• Тыто, Япония - образцы с зарубежных М-и.

Березовск - знаменитые, классические для характеристики формирования месторождения или исторически ценные.

К характеристике качества размеров образцов

★ - уникальные образцы по качеству

★ - уникальные образцы по редкости.

И - образцы иллюстрируют историю, ценность

□ - микроминералы (известные только в шлифах)

U - растворимые в воде минералы

U - растворимы в воде. минералы нестойкие на воздухе

× - минералы, разрушающиеся при хранении или портящиеся на воздухе (окисляющиеся, тешнящиеся).

○○○ - минералы известные только в землевых, плотных или плотных землевых агрегатах

◇ - 4^я нах. региональный.

Размер образцов

U крошка, кусок - в пробирке

до 3 см.

до 4 см.

до 6 см.

6-7 см.

> 7 см.

ср. штудр

☒ большого штудр.

— полированные обр.

Наличие препаратов

(левая страница.)

③ - прозрачные шлифы (количество)

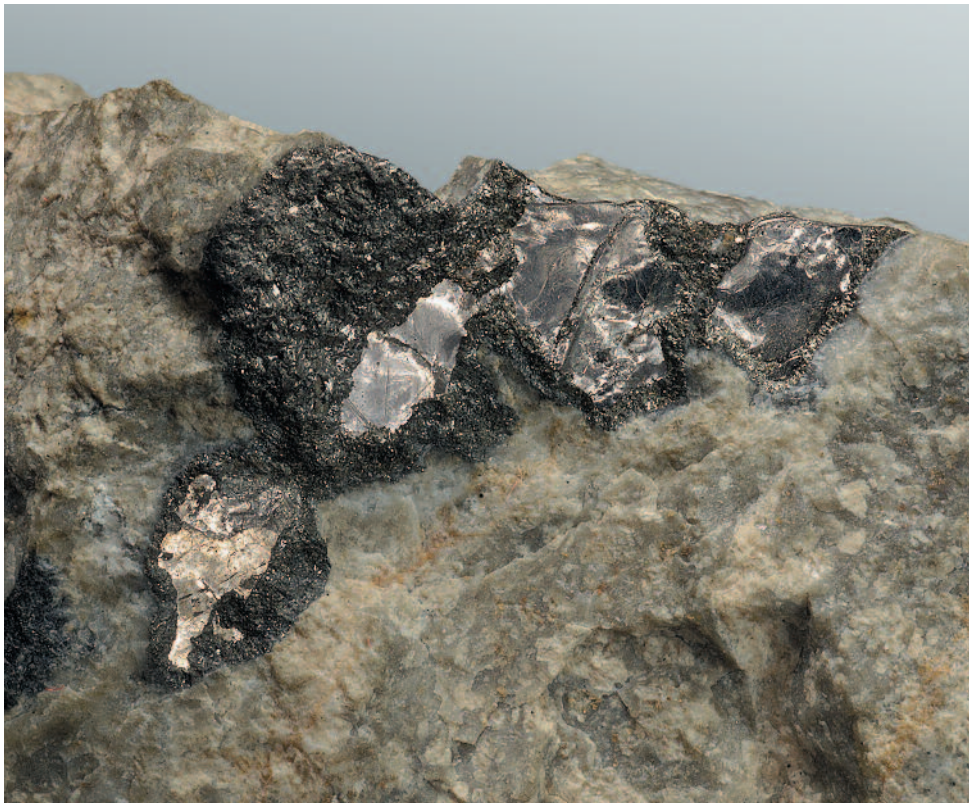
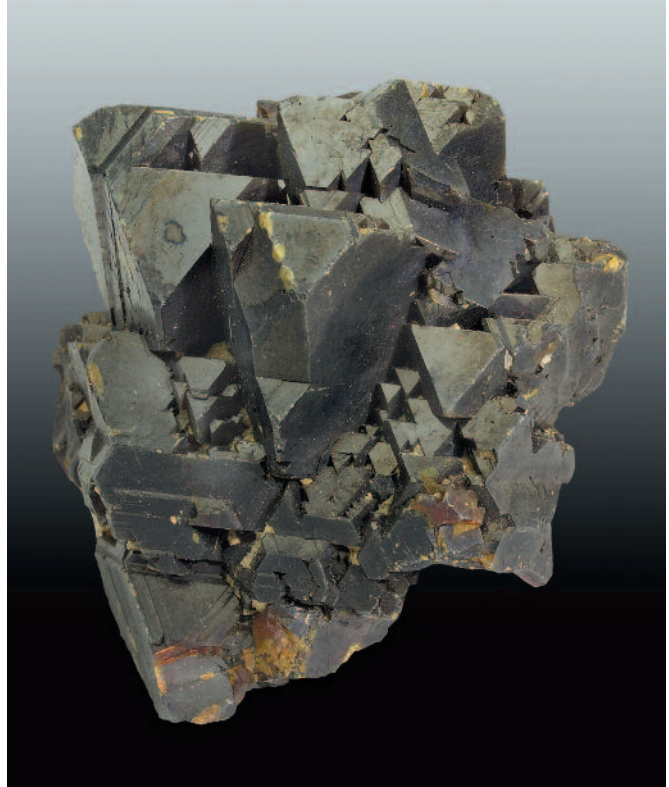
② - полированные шлифы (количество)

Изученность образцов

цумоит - оригинал полностью детально изучен (+ 4а)

лелингит инструментально диагностир. обр. (рентген, опт. (плотн.))

лелингит - и место рентген. пленки



43. **Wurtzite** black divergent crystals in white calcite. 3.5 x 4.5 cm. GyöngyöSOROSZI, Mátra Mts, Hungary. FMM #ST562/87874.

44. Brown **sphalerite** blocky (multiterminated) crystal. 3 x 4 cm. Berezovskoe deposit, Middle Urals, Russia. FMM #ST513/OP1865.

45. **Sulphotsumoite** and **joseite-B** fine-grained aggregate forming rims around **tsumoite** lamellae in the feldspar-quartz veinlet in rhyolite. FOV: 2.5 x 3.5 cm. Burgagylkan, Magadan Oblast, Russia. FMM #ST228/87426.

46. Bright green short prismatic crystals of **beryl** (emerald) with actinolite in phlogopite glimmerite. 3 x 3.5 cm. Cheremshanskiy mine, Emerald Mines, Middle Urals, Russia. FMM #ST3587.



47. **Malachite** pseudomorph after **atacamite** prismatic crystals. 4 x 7 cm. Tur'inskiye Mines, North Urals, Russia. FMM #ST2090.



species, subspecies and varieties, as well as writing the mineral formulae. The paper provides the clearest definitions on this subject among all of the publications that we were able to read in Russian.

In *Collection A*, Stepanov mentioned 1297 mineral species, almost half of the total number known at the end of the 1980s. In this respect, only the two largest USSR museums, namely the Fersman Mineralogical Museum of the USSR Academy of Sciences (1968 species) and the Mining Museum of the Leningrad Mining Institute (1795 species) outnumbered his collection.

Today, the *Collection A*, kept as a separate collection in the Fersman Mineralogical Museum, includes 8570 specimens representing more than 1300 mineral species, taking into account the rules of modern nomenclature. Here are some statistical data on this collection.

The specimens geographical distribution is as follows:

I. By countries

Russia	4339	Belgium	1	Guinea	15	Peru	6
		Burma (Myanmar)	1	Hungary	111	Poland	40
other countries of the former USSR		Bolivia	5	Iceland	2	Rep. South Africa	4
Azerbaijan	103	Brazil	26	India	41	Rumania	45
Armenia	43	Bulgaria	123	Iran	1	Rwanda	4
Byelorussia	1	Canada	55	Italy	44	Serbia	16
Georgia	119	Chad	1	Japan	51	Slovakia	26
Kazakhstan	875	Chile	7	Kenya	1	Somali	3
Kirghizia	376	China	110	Macedonia	4	Spain	9
Moldavia	2	Columbia	3	Madagascar	16	Sri Lanka	3
Tajikistan	255	Congo	24	Malawi	1	Sudan	1
Turkmenia	78	Cuba	14	Malaya	1	Sweden	22
Uzbekistan	121	Czech Republic	88	Mexico	47	Switzerland	5
Ukraine	223	Denmark	100	Mongolia	61	Taiwan	1
		DR Congo (Zaire)	12	Morocco	55	Tanzania	4
other countries		Finland	13	Mozambique	13	Tunisia	1
Afghanistan	12	France	20	Namibia	16	Turkey	6
Algeria	34	Gabon	1	Nepal	2	USA	139
Argentina	4	Germany	136	North Korea	2	Vietnam	3
Australia	9	Great Britain	24	Norway	26	Zambia	1
Austria	24	Greece	3	Pakistan	4	Zimbabwe	3

also specimens with addresses:

Antarctic	1	Indian Ocean	1	Yugoslavia	3
Czechoslovakia	3	Middle Asia	4	Unknown	317
				(incl. synthetic):	47

Countries-top producers (not less than 100 specimens):

Russia	4339	USA	139	Hungary	111
Kazakhstan	875	Germany	136	China	110
Kirghizia	376	Bulgaria	123	Azerbaijan	103
Tajikistan	255	Uzbekistan	121	Denmark	100
Ukraine	223	Georgia	119		

Totally, 7130 specimens (83%) suit on these 14 countries.

It is worth mentioning that the *Collection A* contains 1714 specimens from outside of the USSR (20% of the total number), including at least 600 from the capitalist states, which is an absolute record among private collections in the Soviet Union, when such material was not readily available to the collectors.

II. The main mineral localities (by countries, ≥ 15 specimens selected):

Russia:		Tas-Khayakhtakh (Polar Yakoutia)	29	Azerbaijan:	
Lovozero	451	Tamwatnei	27	Dashkesan	90
Khibina	412	Tyrnyauz	26		
Dal'negorsk	207	Mednoruyanskoe	25	Uzbekistan:	
Nizhnay Tunguska	123	Yelash	21	Shor-Su	24
Ural Emerald pits	116	Astafeyevskoe	19	Kurgashinkan	15
Vishnevye Gory	103	Karasug	19	Ustarasai	15
Berezovskoe		Vuoriyarvi	18		
(Middle Urals)	94	Afrikan	16	Turkmenia:	
Il'men Gory	75			Gaurdak	18
Belorechenskoe		Kazakhstan:		Beineu-Kyr	15
(North Caucasus)	66	Djezkazgan	108		
Slyudyanka	55	Kara-Oba	64	Georgia:	
Nazyamskie Gory	53	Kairakty	54	Lukhumi	26
Pitkaranta	50	Inder	43		
Murun	47	Akchatau	39	Hungary:	
river Kotuy basin		Upper Espe	30	Gyongyosoroszi	24
(Guli, Odikhincha)	46	Upper Kairakty	29	Mulato	19
Kovdor	43	Ak-Kezen'	23		
Inagli	42			Czechia:	
Saranovskoe	40	Kirghizia:		Přibram	23
Talnakh	39	Khaidarkan	147		
Kester	38	Chauwai	31	Denmark (Greenland):	
Kertch	36	Kutessai II	29	Ivigtut	42
Burpala	35	Kadamdjai	22	Ilímaussaq	30
Karadag	34				
Borshchevochnyi Ridge	33	Ukraine:		China:	
Katugin	33	Volodarsk-Volynskii	46	Bayan-Obo	22
Khovu-Aksy	32	Perga	24	Koektogai	20

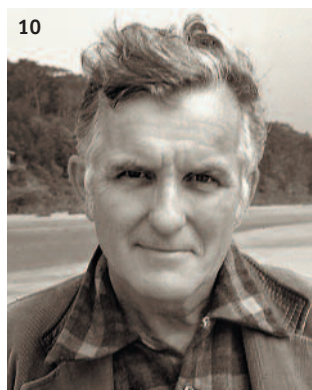
Numerical prevailing species (selection not less than 40):

Calcite	297	Cinnabar	69	Galena	51
Quartz		Zircon	69	Aragonite	49
(including chalcedony varieties)	192	Natrolite	68	Dolomite	49
Sphalerite	149	Muscovite	65	Magnetite	46
Baryte	109	Sulphur	58	Chalcopyrite	46
Pyrite	109	Beryl	55	Diopside	45
Fluorite	95	Malachite	54	Siderite	43
Celestine	91	Molybdenite	53	Topaz	40
Apatite (all species)	72	Stibnite	52		

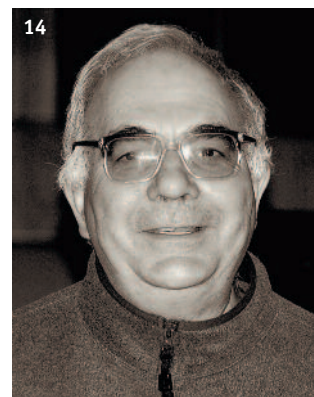
*These 25 minerals comprise 2026 specimens,
i.e. 24% of the whole number of exhibit items of the Collection A.*



1. Yuri S. Kobylashev (1935–2009).
2. Evgeny I. Semenov (b. 1927).
3. Vyacheslav Y. Volgin (b. 1929).
4. Alexander P. Khomyakov (1933–2012).
5. Lev S. Borodin (b. 1927).
6. Boris Z. Kantor (b. 1930).
7. Alexander A. Godovikov (1927–1995).



8. Arkady G. Zhabin (1934–2007).
9. Vladimir V. Bukanov (b. 1930).
10. Richard V. Gaines (1917–1999).
11. Alexander A. Evseev (b. 1949).
12. Nina D. Sindeeva (1910– ?).
13. Vladimir V. Ivanov (1928–2015).
14. Mikhail N. Maleev (b. 1940).



Persons presented mineral specimens for Collection A by Victor I. Stepanov

Kobylashev Yu.S. (c, m)	321	Sobolev S.F. (c)	33	Mineev D.A. (r, m)	19
Semenov Ye.I. (r)	158	Efimov A.F. (r)	31	Kalita A.P. (r)	18
Volgin V.Yu. (r)	123	Murashko M.N. (r, c)	31	Proshchenko E.G. (r)	18
Sadilenko K.M. (c)	106	Gruzdev V.S. (r)	30	Spridonov E.M. (r)	18
Khomyzkov A.P. (r)	89	Ilupin I.O. (r)	30	Tikhonenkov I.P. (r)	18
Bogutskii I.F. (c)	88	Frishman N.I. (c, r)	30	Khalturina I.I. (r)	18
Borodin L.S. (r)	88	Belakovskii D.I. (m, r)	29	Kristiansen R. [Norway] (c)	18
Kantor B.Z. (c)	85	Khaustova S.M. (r)	29	Abramov D.V. (m)	17
Godovikov A.A. (r, c, m)	83	Hori H. [Japan] (c)	29	Bezsmertnaya M.S. (r)	17
Zhabin A.G. (r)	75	Laz'ko E.E. (c, r)	28	Voloshin A.V. (r)	17
Bukanov V.V. (r)	70	Stepanov A.V. (r)	28	Pelepenko V.A. (c)	17
Gaines R.V. [USA] (c, r)	67	Gorchakov P.N. (r)	26	Lauseger G. [Austria] (c)	17
Evseev A.A. (m)	66	Klopotov K.I. (c)	26	Aleksandrov V.B. (r)	16
Pertsev N.N. (r)	51	Titov I.N. (r)	26	Gerasimovskii V.I. (r)	16
Sindeeva H.D. (r)	48	Ganzeev A.A. (r)	25	Kuz'menko M.V. (r)	16
Ivanov V.V. (r)	45	Fedorchuk V.P. (r)	24	Kutukova E.I. (r)	16
Maleev M.N. [Bulgaria] (r, c, m)	42	Slyotov V.A. (c)	22	Nefedov E.I. (r)	16
Kapustin Yu.L. (r)	40	Khvostova V.A. (r)	21	Guillemin C. [France] (r, c)	16
Varhegy G. [Hungary] (r)	40	Zalashkova N.E.	20	Ankilovich E.A. (r)	15
Tsaregorodtsev C.V. (c)	37	Fedorov P.L. (c, r)	20	Manucharyants B.O. (r)	15
Vlasov K.A. (r)	33	Ginzburg A.I. (r)	19		
Dymkov Yu.M. (r)	33	Ermilova L.P. (r)	19		

r – researcher,
c – collector,
m – museum worker



15. Yuri L. Kapustin
(1933–2002).
16. Sergey V. Tsaregorodtsev
(1953–1986).
17. Kuzma A. Vlasov
(1905–1964).
18. Yuriy M. Dymkov
(1926–2014).
19. Anatoly F. Efimov
(1935–2015).
20. Mikhail N. Murashko
(b. 1952).
21. Vyacheslav S. Gruzdev
(1928–1977).



B.Z. Kantor – photo # 6; S.N. Nenasheva – photo # 7; V.V. Bukanov – photo # 9; J.S. White – photo # 10; A.A. Evseev – photos # 11 and 20;
I.V. Pekov – photo # 14; V.A. Slyotov – photo # 18.