

GENERAL AND HIS COLLECTION

THE MINERAL COLLECTION OF G.P. CHERNIK AT THE FERSMAN MINERALOGICAL MUSEUM OF RAS

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This article tells about a Russian Army Major-General, Georgiy Prokofievich Chernik, who donated more than 300 mineral specimens to the Fersman Mineralogical Museum and describes the present-day condition of this collection.

9 photos, 8 references.

The village of Yasenskaya, Krasnodar region, has a unique local history museum. Its main exhibition is comprised of the materials donated by the village residents, and the museum keepers treat these people with great appreciation. Their portraits are displayed in the museum halls, and the book with a list of the contributors is kept at the central location. The slogan at the museum entrance says: "Museum is a memory book of humankind". It gets us thinking that even natural science museums are not only collections of natural "memorials", but also preserve the memory of the people who found and saved these memorials for future generations.

The Fersman Mineralogical Museum of Russian Academy of Sciences is not an exception. The list of the authors donated specimens to the museum includes more than 3000 names. Among them are famous Russian and foreign scientists, museum workers, college and school students, amateurs and professionals, collectors, and patrons.

Biographic review

This article presents a story about a Russian Army Major-General, Georgiy Prokofievich Chernik. His life picturesquely reflects the fate of many people who lived during the breaking era at the junction of the 19th and 20th centuries. Chernik himself is an example of dedicated and broadly educated person, who found a way to combine his service and professional scientific work.

The search of materials about G.P. Chernik was like a detective story. Laconic records "Colonel Chernik" in the collection acquisition books did not provide any clues other than his military affiliation. Thus, our imagination drew a

headquarters office having some "special assignments" at Borneo, Sumatra, Ceylon; many of his donated specimens were from those places. Data on military officers, especially colonels, had to be kept in military archives. Indeed, the Russian State Military Historic Archive (RSMHA) had a service list of Georgiy Prokofievich Chernik. Information from that document immediately changed all our perceptions of this person. Instead of a "headquarters colonel" we discovered an army General. You can see it for yourself from the key excerpts from the archive paper (RSMHA, 1916). Comments in parenthesis are given by the authors.

Service list of the Engineer Commander of the XI Army, Military Engineer, Major-General, Chernik Georgiy Prokofievich

December 26th, 1916

Major-General Georgiy Prokofievich Chernik

Engineer Commander of the XI Army

Orders: St. Stanislav I, II, and III Degree; St. Anna II and III degree, St. Vladimir III degree with swords and IV degree with swords and bow.

Born January 6th, 1864

Origin – upper class of the Black Sea Cossack army, listed in Kuban army, Chelbaskaya Stanitsa.

(Stanitsa Chelbaskaya, Eisk district of the Kuban region in steppe zone, Middle Chaglas River, 46 verst from the Leushkovskaya Station, Vladikavkaz rail road).

Orthodox Christian

School: Petrovsko-Poltavskaya Military Gymnasium (i.e. Petrovskii Poltavskii cadet corps, which was opened in 1840, then transformed into a military gymnasium in 1965, and in 1886 again became a cadet corps).

Nikolaev Military College (Nikolaev Military Engineering College historically originated from an engineering school that was founded in 1804.

The college was established in 1819 and was named the Main Engineering College. Since 1855, it was called Nikolaev Engineering College in memory of Emperor Nikolai I. The College was located in the Mikhailovskii Engineering Palace in St. Petersburg. Among the alumni of this college were many famous people who made an impact in Russian culture and science – F.M. Dostoyevskii, Ts.A. Kyui, D.V. Grigorovich, P.N. Yablochkov, and E.I. Totleben, and others).

Nikolaev Engineering Academy (The Academy was founded in 1855 as a part of the Emperor's Military Academy for officer classes of the Main Engineering College. Since 1863, it became an independent institution. Among the alumni of the Academy were General D.M. Karbyshev, artist A.S. Vereschagin, architect B.A. Malinovskii, and military historian A.M. Zaionchkovskii. In 1932, the Academy was transferred to Moscow and then disbanded).

Service List

March 15th, 1882. After graduating from gymnasium, entered the Nikolaev Military College, CADET.

October 4th, 1882. UNDER-OFFICER

August 14th, 1884. SUB-LIEUTENANT. 2nd Caucasus field engineering battalion – military service, participation in field engineering works for shore defense in Batumi.

September 1st, 1886. Trip to Petrograd for taking exams to enter the Nikolaev Engineering Academy.

STAFF-CAPTAIN

December 4th, 1888. After completing studies in the Academy, assigned to serve in the Engineering Corps under the order of the Main Engineering Commandment.

November 16th, 1889. Assigned to the Ivangorod Fort, where he served until 1901 and received the title of lieutenant-colonel.

April 13th, 1893. Permanent Member of the Russian Physicochemical Society at the Petersburg University.

March 13th, 1898. According to the presented diploma of the Emperor's Petrograd Mineralogical Society of January 29th, 1889, signed by most august President of the Society, Princess Eugenia Maksimilianovna Oldenburgskaya, ... for his contributions to science, (Chernik) was elected a permanent member of the Emperor's Petersburg Mineralogical Society.

November, 26th, 1901. Sent from Ivangorod to serve under order of the Main Engineering Commandment.

January 17th, 1902. Accepted to Petrograd Fort Engineering Commandment

January 28th, 1904. COLONEL

November, 15th, 1904. Assigned to the Inspector's office of the 3rd Manchur Army and departed to the Army unit.

December 2nd, 1904. Arrived to Mukden

Notes on combat participation:

Participated in combat against Japan in 1904–1905 while serving in the 3rd Manchur Army. (The document further provides details of daily reconnaissance work of Colonel Chernik to determine the location of artillery units constantly being under hostile fire).

February 25th, 1905. Being among the personnel retreating (from Mukden) in the rearguard along with the Army Commander (Aleksander Aleksandrovich Bilderling), (Chernik) directly participated in rearguard combat under intense artillery cross-fire, attempted to stop and organize the retreating units of different armies, forming teams out of separated soldiers. This day (Chernik) was shell-shocked and received head trauma (losing hearing of his left ear, injuring an eye and left side of his face), but did not leave the ranks. He entered the zone of combat at 8 am and left it at 5 pm. (From both sides, eight armies (about 600 thousands people and 2300 artillery cannons) participated in the Mukden battle. The combat zone ranged up to more than 150 km on the front line and 50 km deep. The battle lasted 19 days. During this battle, the Russian army lost 89 thousands people in casualties, and Japanese army lost 71 thousands).

February, 27th, 1905. Joined Army Headquarters and carried out various tasks.

November 28th, 1905. Assigned to the Main Engineering Commandment.

July, 19th, 1906. Assigned a Headquarter Officer.

January 28th, 1909. Elected a life-time member of the Russian Geographic Society.

September 13rd, 1914. Joined war combat.

October 5th, 1914. Assigned to serve under the order of the Head of the engineering unit of the 8th Army.

June 7th, 1915. Corps Engineer of the 17th Army.

Notes on combat participation:

On April 30th, 1915, ... passages across rivers San and Barich (at that time region of the

Russia-Poland border) were restored and several bridges and drives to them were repaired in the burning village of Kalnikovo under the hurricane hostile artillery fire, before its occupation by Austrians.

Further, repeated notes are given, such as: "inspected the trenches at the front line of the 35th infantry division.." or "trenches were under artillery fire". In these notes, only numbers of the military units change and definitions "gun fire" or "hand fighting" are occasionally added.

Notes "on combat participation" end with the record: "further information on the participation of the corps units in combat until April 10, 1916, were lost with the baggage during the railroad travel from the front headquarters to the new service location and cannot be restored with absolute assurance."

March 31st, 1916—August 14th, 1916. Stewart of the 1st Construction Crew of the rear region of the Southwestern Front.

April 10th, 1916 — MAJOR-GENERAL

October 15th, 1916 — Commander of the engineers of the XI Army

October 6th, 1916 — Arrived to the army headquarters

April 24th, 1917 — Departed from the XI Army to a new service location as the Main Commander of the engineering work in the rear region of the Southwestern Front

July 6th, 1917 — Appointed the Head of the Committee for Inventory and Distribution) of technical resources of the Southwestern Front.

October 12th, 1917 — Departed from the active army to Petrograd to participate in the work of the Committee for State Defense.

October 26, 1917 — Return from Petrograd to the active army

Life off-service:

Married (first marriage) to Elena Alekseevna Kochina, has daughter Ekaterina (October 1st, 1884), son Rostislav (September 21st, 1910), and daughter Lyudmila (October 20th, 1916).

Here, the list is interrupted, but includes 2 later inserts:

May 1st, 1922 — pledged allegiance to Red Army

April 15th, 1924 — demobilized from service on grounds of redundancy

Further we continued our search at the Russian State Military Archive (RSMA), which hold documents since 1917. There is no search by name, so we had to meticulously browse

through all the documents of the Main Engineering Department, where Georgiy Prokofievich could supposedly be on service. Indeed, it was found that since September 1918, he was a Permanent Member of the Engineering Committee of the Main Military-Engineering Department (EC MMED) — the supreme organ dealing with military engineering and technical areas. The reviewed files did not contain any information shedding light on biographic milestones of Georgiy Chernik, however some minor details we found can be of interest. We sorted some of the curious facts from G.P. Chernik's biography, which seem most important and best representing that period, and are presenting them here in chronological order.

September 25th, 1918 — Chernik is listed among the candidates "to fill the staff of the re-organized EC MMED"

January 27th, 1920 — The MMED list of family members residing in the same household includes: "permanent member of the Committee Chernik Georgiy Prokofievich, wife — Elena Alekseyevna, sons — Rostislav (10 y.o.), Oleg (2 y.o.), daughter Lyudmila (3 y.o.), and wife's parents Kochin's Aleksey Petrovich and Pavla Vasilievna"

The same document indicates the address in Moscow where the family lived: 30 Trubnikovskii per.

February, 1920 — Name Chernik is listed among the employees of MMED and subordinate institutions "from whom 3-day salary is withheld to benefit the foundation of the "front week" — 435 rubles"

Further Chernik's name repeatedly appears on the lists for receiving the norms of potato, flour, cabbage, firewood..."

May 7th, 1920 — Chernik is on the list of permanent members of EC as a participant of the fortification section. The column "Personal expertise" says "chemistry and explosives"

December, 1920 — correspondence regarding establishing a personal salary for G.P. Chernik and personal application from Georgiy Prokofievich, in which he indicates that he has more than 40 publications and is "one of very few experts in explosive substances"

June 10th, 1920 — "Military Engineer Chernik, G.P., is appointed the permanent representative of MMED in the Special Group of

Extraordinary Komissar for fire arms and explosive substances"

The personal file of G.P. Chernik was held in 1921 archives (RSMA, 1921), which continues the service list:

The most recent title in old army – Major-General

Service in RKKA from – September 1918

Service in White Army – dash

War participation – 1904–1905, 1914–1918

Wounds, contusions – wounded, shell-shocked

Military awards RKKA – dash

Marital status – married

Children and other family members – 4 sons: 33, 28, 12, and 5 years old, 2 daughters: 38 and 6 years old, grandson: 6 years old, 2 granddaughters: 12 and 11 years old.

We should note that the documents in the files for 1917–1923 are quite interesting not only by their contents, but also their appearance. The records are often written or typed on back sides of old forms, torn pieces of paper; many typed copies are almost unreadable. Thus, the most interesting document among the found archive papers was written on the rear side of the August-21 page of a tear-off daily calendar for 1922:

Record ind. №1101

Engineering Committee

July 11, 1923

№141704

To: Director of the 1-st Main Military Economic Storehouse

Based on the information from the Main Military Economic Administration, according to GNS (?) order, permission slip of June 27, № 20578, was issued for dispensing 1 pair of warm stockings, 1 pair of warm foot wrappers, 1 wool fufaika (man's jersey), 1 waterproof tarpauline raincoat, 1 pair of valenki (felt boots), 1 pair of leather mittens, 1 fur hat, 1 waist belt, and 4 arshins of tarpaulin cloth to the Permanent Member of EC MMED G.P. Chernik, who is assigned to travel within a scientific exploratory crew for studying the Khibiny Massif on the Kola Peninsula. Since G.P. Chernik has already left for the trip, the Engineering Committee is asking for a permission to send these items to the director of the technical library of the Committee P.M. Volkov, according to the presented proxy letter, for further shipment the items to the present location of G.P. Chernik.

This was the last document found in the military archives.

After demobilization from the army in April 1924, Georgiy Prokofievich apparently devoted his time to mineralogy and chemistry, i.e. continued the work that had been his life-time interest. Information about this side of G.P. Chernik's life is not systematic and was gathered bit by bit from different sources. Here we present it in the chronological order.

G.P. Chernik's involvement in mineralogy was first mentioned in a document from a military archive, when he became a member of the Mineralogical Society on March 13th, 1898. In 1902, the first publication by G.P. Chernik appeared in the catalog of the Russian State Library – "A few words about the composition of two rare associated minerals found in the Batumi area", in Annual Almanac on Geology and Mineralogy of Russia, Warsaw, 1902. The list includes 22 articles published in different editions; almost all of them present studies of chemical composition of minerals.

Archives of Russian Academy of Sciences preserved the letters written by G.P. Chernik to Vladimir Ivanovich Vernadsky. One of them contains the data of chemical analysis of parisite from Manchuria:

Letter of G.P. Chernik to V.I. Vernadsky (page 1)



The image shows a handwritten letter on aged paper. At the top, there is a header in Cyrillic script. Below it is a table with columns labeled A, B, C and rows containing numbers and symbols. The handwriting is in Cyrillic script. Below the table, there is more text in Cyrillic and a signature at the bottom.

	A	B	C		A	B	C		A	B	C
1.1	100	100	100	100	100	100	100	100	100	100	100
1.2	100	100	100	100	100	100	100	100	100	100	100
1.3	100	100	100	100	100	100	100	100	100	100	100
1.4	100	100	100	100	100	100	100	100	100	100	100
1.5	100	100	100	100	100	100	100	100	100	100	100
1.6	100	100	100	100	100	100	100	100	100	100	100
1.7	100	100	100	100	100	100	100	100	100	100	100
1.8	100	100	100	100	100	100	100	100	100	100	100
1.9	100	100	100	100	100	100	100	100	100	100	100
1.10	100	100	100	100	100	100	100	100	100	100	100
1.11	100	100	100	100	100	100	100	100	100	100	100
1.12	100	100	100	100	100	100	100	100	100	100	100
1.13	100	100	100	100	100	100	100	100	100	100	100
1.14	100	100	100	100	100	100	100	100	100	100	100
1.15	100	100	100	100	100	100	100	100	100	100	100
1.16	100	100	100	100	100	100	100	100	100	100	100
1.17	100	100	100	100	100	100	100	100	100	100	100
1.18	100	100	100	100	100	100	100	100	100	100	100
1.19	100	100	100	100	100	100	100	100	100	100	100
1.20	100	100	100	100	100	100	100	100	100	100	100
1.21	100	100	100	100	100	100	100	100	100	100	100
1.22	100	100	100	100	100	100	100	100	100	100	100
1.23	100	100	100	100	100	100	100	100	100	100	100
1.24	100	100	100	100	100	100	100	100	100	100	100
1.25	100	100	100	100	100	100	100	100	100	100	100
1.26	100	100	100	100	100	100	100	100	100	100	100
1.27	100	100	100	100	100	100	100	100	100	100	100
1.28	100	100	100	100	100	100	100	100	100	100	100
1.29	100	100	100	100	100	100	100	100	100	100	100
1.30	100	100	100	100	100	100	100	100	100	100	100
1.31	100	100	100	100	100	100	100	100	100	100	100
1.32	100	100	100	100	100	100	100	100	100	100	100
1.33	100	100	100	100	100	100	100	100	100	100	100
1.34	100	100	100	100	100	100	100	100	100	100	100
1.35	100	100	100	100	100	100	100	100	100	100	100
1.36	100	100	100	100	100	100	100	100	100	100	100
1.37	100	100	100	100	100	100	100	100	100	100	100
1.38	100	100	100	100	100	100	100	100	100	100	100
1.39	100	100	100	100	100	100	100	100	100	100	100
1.40	100	100	100	100	100	100	100	100	100	100	100
1.41	100	100	100	100	100	100	100	100	100	100	100
1.42	100	100	100	100	100	100	100	100	100	100	100
1.43	100	100	100	100	100	100	100	100	100	100	100
1.44	100	100	100	100	100	100	100	100	100	100	100
1.45	100	100	100	100	100	100	100	100	100	100	100
1.46	100	100	100	100	100	100	100	100	100	100	100
1.47	100	100	100	100	100	100	100	100	100	100	100
1.48	100	100	100	100	100	100	100	100	100	100	100
1.49	100	100	100	100	100	100	100	100	100	100	100
1.50	100	100	100	100	100	100	100	100	100	100	100

Letter of G.P. Chernik to V.I. Vernadsky (page 2)

October 30, 1906

Dear Sir Vladimir Ivanovich!

At the present time, I finished the quantitative analyses of those rare-earth minerals that I was lucky to find in Manchuria and some of which You picked for crystallographic (measurements). As was suggested before, the mineral proved to be parisite (presumed museum number 16340). In this material, I distinguished three categories: the first is represented by the small most transparent crystals of honey-brown color; another group is represented by medium-size relatively transparent pieces of a similar color, which constitute the core parts of some crystals. These are the most abundant (among which You selected the examples for the measurements).

In spite of the small amount of the rare mineral material, I was able to complete the analyses (maybe even satisfactorily). Hence I prepared a short notice, which I handed to A.P. Karpinsky for publishing in Transactions of Min. Soc. Also there I included the analyses of the grains that were found together with parisite and proved to be malacon.

Regarding Your contribution, I only mentioned that the crystallographic analysis was performed by you, and a similarity was found with the parisite from Montana. I could not address this matter in more detail since I did not feel I had

a full right to do so and did not know your further intentions.

If you wish, A.P. said the article can be supplemented with Your data or ... (illegible) ... Just in case if you are interested in the results, I am enclosing them here.

If you would like to know more details, my article is now in A.P. Karpinsky's hands, and he probably would not mind giving it to You for reading, since there is hardly a hope for its publication in the near future.

I ask You, Dear Sir, to be assured of my absolute respect and always being at Your service....

It should be noted here that the museum collection keeps 4 specimens from Manchuria, which were probably collected during the Russian-Japanese war, although they were donated to the Museum in 1906 – 1907.

The second letter is more personal:

March 26th, 1917

Dear Vladimir Ivanovich!

Congratulations to You on the up-coming holidays of Pascha and my best wishes.

How did the recent events affect you? Browsing through "Kiev Mysl" and "Russkoe Slovo", I did not see Your name mentioned, although I believe the wave of events that passed over Petrograd could hardly leave you aside. The internal disorder has a really bad influence on us here: with the freedom of printed word, statements of extreme character issued by the Soviet of Working Deputies reach the army and undermine the discipline (in its roots). Certainly, some severe measures have to be taken sometimes – i.e. trials, when words and speeches do not work anymore. That was a big mistake to allow army to participate in politics. This is totally incompatible with the hard reality of the war situation.

The army pledged allegiance to the Temporary Government, unanimously and sincerely, after it became known that the Emperor abdicated the throne, and I believe that if there were attempts of counter-revolution, they would not find any support among the military. Of course, I am talking about our XI Army.

The one thing that I wish is that the Temporary Government fully used the strength of its power and did not allow any interference in its decisions...

At this point, the text is interrupted. Obviously, the rest of the letter was not saved.

It is known from the literature that in 1921 G.P. Chernik separated and analyzed fergusonite-(Y) from intergrowths with samarskite and other minerals in specimens from the Blumovskaya Mine collected in 1914 (Popov and Popova, 2006).

In 1923, Georgiy Prokofievich traveled to Khibiny with A.E. Fersman's crew. As a result of this expedition, six papers were published on the chemical studies of Khibiny minerals (calcium ancyllite, velerite, and eudialyte).

In 1927 (according to an unverified source), Georgiy Prokofievich traveled to Baikal Region by Fersman's assignment, where he studied minerals of Slyudyanka.

The last known works by G.P. Chernik were on the mineralogy of the Khibiny and Slyudyanka: "Results of the analysis of some minerals from the Khibiny laccolith of Kola Peninsula", *Gornyi Zhurnal*, 1927; and "On Mineralogy of Slyudyanka", *Proceedents of the Mineralogical Museum, Academy of Sciences of the USSR*, 1927, Issue 3.

Twenty one specimens of those collected by G.P. Chernik in Khibiny are held at the State Geological Museum and 97 specimens from Slyudyanka are held in our museum.

The name of G.P. Chernik is mentioned in published V.I. Vernadsky's dairies (2006). The record of December 28, 1938, says: "It turned out that the Samoilov's article on the Kashinskii meteorite was already prepared in 1921, and then apparently some doubts were raised about Chernik's analyses..." There is a comment to this record made by the editor, Doctor of Geological and Mineralogical Sciences, V.P. Volkov: "Chernik Georgiy Prokofievich (1864–?) – mineralogist, chemist, in the early 1930s – engineer at the Institute of Mechanical Processing of Mineral Deposits ('Mechanobra'); author of many publications on chemical mineralogy".

There is a later mentioning of G.P. Chernik's name; however this information would need a careful verification, which is now hardly possible. The inventory book of the Mineralogical Museum of the Russian Academy of Sciences lists two smithsonite specimens (№34307 и №34308), which were delivered to the museum in 1933, but there is a remark in the book: "collected 1932".

Finally, the last published material about Georgiy Prokofievich Chernik was the book "Scientists of Leningrad" issued by the Academy

of Sciences of the USSR in 1934. This book contains data "about each scientist and his or her scientific expertise – the information typically supplied by the scientists themselves and therefore supposedly accurate". Here we have the following information: "Chernik Georgiy Prokofievich, born 1864, engineering construction, construction mechanics, analytical and mineralogical chemistry, analysis of rare-earth minerals. 63 Proletarskooi Pobedy St., apt. 16. Scientist, Academy of Sciences of the USSR, Engineer at Mechanobra. Member of the Section of science employees". This information means that in 1934, Georgiy Prokofievich Chernik lived in Leningrad and worked as an engineer at the institute "Mechanobra".

At first it seemed impossible to establish the date of death of Georgiy Prokofievich. Search of archives did not give us any results. Then help came from the employees of the Vasileostrovskii ZAGS. On our request, they found a death certificate which said "Citizen Chernik Georgiy Prokofievich died January 12th, 1942, at the age of 77, of which a record is made in the registry of death acts, № 2710 of January 17th, 1942. Place of death – Leningrad; cause of death – dystrophy." Comments to such a record are hardly necessary.

G.P. Chernik's specimens at the Fersman Mineralogical Museum RAS

Georgiy Prokofievich donated a total of 399 specimens to the museum. Those include 135 names, which represent 105 presently acknowledged mineral species. By location, the specimens represent 82 deposits outside Russia and 2 Russian deposits (Ilmeny and Slyudyanka).

In this collection, there are a number of rare mineral species and varieties. Also, the geographic reference of many of the specimens is quite unique. Only Chernik's collection has native platinum from Borneo Island, gorceixite from Brazil, uraninite from Ceylon, euxenite from Volyn, graphite from Burma, the cassiterite from Malacca Peninsula in Malaysia. 52 out of 99 museum specimens from the Borneo (Kalimantan) Island and 18 out of 19 specimens from Sumatra were donated by Chernik.

It should be noted that G.P. Chernik donated not the whole collection at once (like many our authors did), but supplied separate specimens during 30 years, from 1903 to 1933. Some of the specimens can be seen in this article. We



Native platinum, 2.5 x 1.5 cm. Choco, Columbia.
FMM No 5195.
Tourmaline (max 3 cm). Kuruwiti, Ratnapura, Sri Lanka. FMM No 11256



tried to restore the order in which the specimens were acquired. We certainly cannot claim that all details of this investigation are perfectly accurate.

Thus, in 1884, sub-lieutenant G.P. Chernik served in Batumi and participated in field engineering works. Probably the specimens from the Caucasus were collected during that time. These include unique natural alloys of noble metals – rhodite (rhodium gold) and porpezite (palladium-gold). At a much later time, microprobe analyses of Chernik's porpezite showed that in addition to the phases dominated by gold (AuPd-Au₂Pd series), there are also phases in the intergrowths in which palladium is notably dominant. Palladium content at certain points is as high as 94.4 wt. %, i.e. the exceptionally rare mineral – native palladium – was additionally found in the specimens. Chernik's interest in noble metal chemistry is also confirmed by the only synthetic specimen provided by him – acicular crystals of gold amalgam, which was synthesized, according to the records, by chemist Fedor Vasilievich Vilm (1845–1893). Obviously, the collaboration of Chernik with Vilm, an expert in chemistry of platinum group metals, is related to the finds of such rare minerals.

November 20th, 1895–December 20th, 1896. Sub-Colonel Chernik went to a two-month trip abroad for a vacation (RSMHA = PГBИYА, 1900). Based on the time, it was a trip to Europe. A collection of 51 specimens, most of which were from Germany and Norway, was handed to the Museum. Apparently, some of the specimens were bought or given to Chernik by scientists whom he met in Europe. The book of records contains remarks to specimens № 5237 (xenotime) and № 12126 (dysanalyte): "from Prof. Mayer" and "from Prof. Gussak". It is also assumed that the platinum nugget from Columbia, 38.25 g in weight, which was brought to the Museum along with other European specimens, was also purchased in Europe.

November 15th, 1904–November 28th, 1905. Colonel Chernik was at army service in Manchuria. Probably, the coal specimens and an interesting piece of amber from the Suchang coal mines were collected at that time.

The most intriguing voyage of Chernik was to the Eastern countries. Judging by brought specimens and published works, he visited Borneo, Sumatra, Sri Lanka, Madagascar, India, Pakistan, and Thailand. Maybe the geographic span of this trip was somewhat narrower, and some of these specimens were just purchased from "The Borneo company's Mines" (about which there is a note in the data base) or from other collectors.

There is no documentary evidence about the dates of this trip. We can assume that it occurred between 1906, when G.P. Chernik was "appointed a headquarter officer" and 1909, when he was elected "life-time member of the Russian Geographic Society". The service list does not have any other records between these two events. There is a record in the incoming specimens book for 1909 – "some specimens were collected personally", i.e. there is almost no doubts that this trip in fact took place.

The specimens from the Kola Peninsula were collected during the Khibiny expedition of 1923. As was mentioned before, in 1927 Chernik worked at Slyudyanka. However, on closer examination of the Chernik's specimens, one can notice that the principle of selection was quite different from the tradition of that time. There are almost no "exhibition" specimens, well-shaped crystals, or aesthetically attractive pieces, even from the regions famous by collection material, such as state of Minas-Jerais (Brazil), Sri Lanka, Kashmir (India), deposits of jewel-quality corundum in Southeastern Asia. Instead, one can see a wide selection of typical specimens from parent ores and placers, which are sources of many chemical elements – Mn, Ni, Cr, Zr, Zn, Sn, radioactive elements (U, Th), rare elements (Ta,

Nb), rare-earth elements (Y and lanthanides), and noble metals (Au, Pt-group). The specimens of gold and platinum from Borneo are enriched schlichts 0.5 to 1.2 g and small individual grains of iron-platinum and osmium-iridium minerals, hundredths of gram in weight.

It seems that minerals were interesting to Chernik above all as a natural material for studying chemical elements in the earth crust. Further, this task was taken over by the new area in geosciences – geochemistry, which originated somewhere at the threshold between the 19th and 20th centuries.

During this period, the last empty cells in the Mendeleev periodic table were filled (at least with the stable elements). Most of discoveries during that time were related to the group of lanthanides. Looking through the list of specimens donated to the Mineralogical Museum, one can notice Chernik's particular interest in the minerals of rare-earth elements. Even at Mukden "under unceasing fire of hostile artillery", Chernik managed to collect small (up to 3 mm in size) crystals of the calcium-rare-earth fluoride-carbonate, parisite.

It is likely that besides chemist's and explorer's curiosity, Chernik also had a task of finding promising strategic resources. Such metals as Mn, Ni, Cr had been long known to be used as alloying additives to steel. Probably, his interest in minerals of zirconium and rare elements is also related to military metallurgy. Chernik's specimens are usually quite small (some of them do not exceed hundredths of a gram in weight); however total of 8 listed specimens of zirconium ore (zircite from Brazil) have mass of several kilograms. This amount would provide a starting material for pilot-scale experiments. It is known that addition of just 0.1% Zr results in significant increase in the hardness and viscosity of steel, which is necessary for manufacturing armored

protective plates and shields. Quite a large number of specimens in the collection represent columbite. It is known that niobium is used as an alloying additive and nitrogen scavenger for the heat resistant steels for artillery cannons.

The strategic interest in Sn deposits in Southeastern Asia is also understandable: before 1930s, Russia had no significant resources of this metal.

Obviously, Chernik's interest in coal (specimens from Sumatra and Borneo were listed in the museum collection) and oil (as indicated in inventory books: 10 jars from different wells on Borneo and 98 (!) jars from wells on Sumatra) can be explained by the search of the energy resources for Russian Navy. The oil specimens were later (in 1929) handed over to the Institute of Oil.

Possibly, Chernik's interest in minerals of rare-earth and radioactive elements was not pure exploratory. Only 20 years passed between the discovery of the radiogenic helium in minerals by Ramzai and bombings of London by German dirigibles filled with the helium recovered from the monazite sands very similar to those handed by Chernik to the museum collection.

Some information about personal connections of Chernik in 1912 is given by the record for one of his donated calcite specimens from the Alupka area: "garden of the Grand Duke Georgiy Mikhailovich (Ai-Petri terrace)". No wonder, the engineer-colonel, member of the Russian Geographic Society could certainly visit the mansion of the Grand Duke. Grandson of Nikolai I – Georgiy Mikhailovich Romanov – was almost the same age as Chernik and, as a Life-Guard officer of the Cavalry and Artillery Brigade, could know Chernik from army service. Georgiy Mikhailovich was also a curator of the Russian Museum of the Emperor Aleksander III since its founding. Chernik knew and collaborat-

Monazite (max 2 cm). Balangoda, Ratnapura, Sabaragamuva province, Sri Lanka. FMM No 11261



Corundum (11 x 8 cm). Sapfir Mine, Kashmir, India. FMM No 19057





Chrysoberyl (1 x 0.7 cm). Matara district, Sri Lanka.
FMM No 11266

Cassiterite, 3 x 2 cm. Perak, Malacca peninsula, Malaysia.
FMM No 19027

Photo: Michael B. Leybov

ed (at least since 1906) with V.I. Vernadsky, who at that time was a curator of the mineralogical division of another museum in Petersburg — Geological Museum of Academy. In 1912, after moving from Moscow to St. Petersburg, Vernadsky started his work at the museum, which was later re-named "Peter the Great Geological and Mineralogical Museum". In the same year, a number of Vernadsky's specimens collected in Crimea were enlisted in the museum, including some pieces from the Alupka area. Thus, there is enough ground to suppose that Chernik knew and met Vernadsky and the Grand Duke personally. After 1919, when Grand Duke Georgiy

Corundum (0.8 x 0.5 cm). Ratnapura district, Sri Lanka.
FMM No 11301



Mikhailovich, along with other grand dukes, was executed in the yard of the Petropavlovsk Fort, it is hard to believe that any evidence would be preserved about the relations of G.P. Chernik and employees of the Mineralogical Museum with members of tsar dynasty.

Probably, collaboration between another employee of the Peter the Great Geological and Mineralogical Museum, A.E. Fersman, and G.P. Chernik gave Fersman substantial information on the strategic role of the mineral resources. Later Fersman emphasized this role during his service on the Committee on Natural Productive Resources of Russia and in his published works "Geology and War", "War and Strategic Resources", and "Atoms at War".

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