





KRISTALLE

photo by Wendell E. Wilson

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MINERAL MUSEUMS *of*
EASTERN EUROPE

by PETER BANCROFT



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FRONT COVER:

Proustite crystal, about 4 cm from Schneeberg, East Germany. Collection of the Freiberg Mining Academy. Photo by Jürgen Karpinski.

INSIDE FRONT COVER:

Gold from the St. Josefs mine, Verespatak, Romania (left); manganite from Ilfeld, East Germany (center); wulfenites from Mezika, Slovenia, Yugoslavia (top); and silver from the Anton mine, Wieden, West Germany. The color plate is from Rheinhard Brauns' (1903) *Das Mineralreich*; it shows a colorless beryl (top, second from left) from the village of Schaitanka near Ekaterinberg, Ural Mountains, USSR; a group of emerald crystals in biotite schist (center left) from the emerald mines on the Takowaja River, 85 km east of Ekaterinberg; an aquamarine crystal (lower left) from Adun-chilon near Nertschinsk, Transbaikalia, USSR; a large golden beryl crystal from Mursinka near Ekaterinberg; a pale yellow beryl (right) from Mursinka; and two pale aquamarine crystals (top right) from Nertschinsk.

INSIDE BACK COVER:

Stibnite, 18 cm, from Romania.

OUTSIDE BACK COVER:

Heliodor crystals and cut stone from Wolodarsk, Ukraine, USSR.

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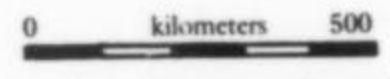
MINERAL MUSEUMS OF EASTERN EUROPE

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EASTERN EUROPE

LAMBERT AZIMUTHAL EQUAL AREA PROJECTION



- * Location of mineral museums discussed in the text
- Location of other mineral museums - see Appendix

INTRODUCTION

Mineral museums in Eastern European countries are rich storehouses of rare and beautiful crystals, gemstones, fossils and meteorites. Some museums also feature priceless antique mining documents and memorabilia, and libraries stocked with rare old mineralogy books. For the most part, curatorial staffs are young men and women possessing doctor's degrees in the earth sciences. Best of all, these professionals are friendly and available, and many are fluent in English.

According to a survey of world mineral collections conducted by the International Mineralogical Association (Zwaan and Petersen, 1977), there are well over five million mineral specimens in institutional collections worldwide. Of these, over 22% (nearly 1.2 million) are in Eastern European collections and are rarely seen by Western eyes.

The 15 mineral museums covered in this article represent Czechoslovakia, the Soviet Union, the German Democratic Republic (some East German curators prefer their region to be known as "Central Europe"), Hungary, Poland, Romania and Yugoslavia. Most of these museums have outstanding mineral collections, but those with ordinary displays are nevertheless charming and interesting and are well worth a visit.

A number of excellent mineral museums were not visited and are therefore not discussed here. These include the Polytechnical Institute of Bucharest, Romania; the University of Babes-Bolyai in Cluj, Romania; the Museum of Mineralogy and Petrography, Sofia, Bulgaria; and Charles University and the Institute of Chemical Technology, both in Prague, Czechoslovakia, among others. The museums selected here for detailed coverage in the text are those which I have personally visited and for which I have been able to obtain sufficient background information and photos. Information on 52 Eastern European mineral museums is given in the Appendix.

A typical Eastern European mineralogical museum is tucked away in a difficult-to-locate, famous old building originally designed for another purpose. No two museums are even remotely alike, each having a personality of its own. All seem to be well visited by groups of local citizens and school children. Noticeably absent are foreign travelers, probably because tours which originate in Western countries simply don't list Eastern European mineral museums as prime attractions. But with a bit of effort mineral museums can be located. They tend to be found in major cities, in large universities and in important mining districts of long standing.

A great boon to mineral collectors and mineralogists who like antiques is the mineralogical museum's perennial poverty. Available funds tend to be quickly dissipated by salaries, utilities and occasional acquisitions, and little is left for mineral hall modernization. Consequently some Eastern European mineral museums still appear much as they did a century ago. The facilities of an old museum may be every bit as intriguing as the mineral collection itself.

Upon entering one of the older galleries the visitor immediately steps back in time. He will probably pass through an ornate, brass-trimmed oak door into a room filled with Victorian-era display cabinets. Cases contain rows of specimens identified by faded labels affixed to hardwood bases handturned many years ago. The distinctive heavy aroma of old oils, paints and woods is everywhere. Lighting can be a problem, so the serious visitor will be wise to bring along a pencil flashlight for illuminating dusty specimens and dark corners of display cases.

Mineral collections in the Eastern Bloc tend to favor minerals from local mines. Because most of the best crystals from the Harz, Erzgebirge and Transylvanian mining districts are black or gray sulfides and sulfosalts, entire displays may appear somewhat drab. When more colorful oxides and silicates are displayed,

naturally bright colors may be subdued by deposits of dust or a coating of soot. But to assume that these collections are without exceptional crystals, rare minerals or type locality specimens would be a mistake. Some mineral collections easily rank with the world's best. If in doubt the visitor would be wise to counsel with the curator in seeking out the better crystals in the collection. Inquiry could lead to other rooms or buildings which house mining memorabilia, antique book collections, scientific instruments and historical mining documents. Some museums display photographs and personal papers once belonging to mineralogical giants of an earlier era—men like Abraham Gottlob Werner (1749–1817), professor of mineralogy at the Bergakademie Freiberg, D.D.R.; Baron Sigmund Zois (1747–1819), whose collection became the backbone of the Prirodoslovni Slovenije Museum in Ljubljana, Yugoslavia, and for whom zoisite was named; and Russia's Peter the Great who, in 1725, inaugurated the Russian Academy of Sciences and its Mineralogy Museum.

By far the best way to visit Eastern European museums would be to travel by private automobile. Easily available at any major Western European airport, a car rental agency can provide a choice of vehicles, road maps and car insurance. It is relatively easy to travel in Eastern Europe with only a knowledge of English. Peasants and townspeople are friendly. Unaccustomed to foreign visitors, members of the museum's curatorial staff may well regard your visit as a treat. And these professionals can advise you about worthwhile private collections, provide locations of local mine dumps, and may even send you off with a letter of introduction to your next mineral museum.

Main roads in Eastern Europe are generally safe for travel, and a good map will get the driver past road signs with indecipherable instructions. Be prepared for overreaction by customs agents and security guards at many border crossings. Delays of two to four hours are not uncommon. Border officials display unusual curiosity about tape recorders, Bibles, sleeping bags and the operational controls of Vanagon roofs. In Romania the driver must purchase gasoline coupons not redeemable at all service stations. Everything moves at a slower pace: service at cafes, police check points and untethered animals crossing the road. In spite of some inconvenience, you will experience an exciting world quite unlike the Western countries.

Some severe difficulties were overcome in gathering materials contained in this survey. Many curators found it necessary to obtain permission from someone higher up—the museum director or even a cabinet minister of the government—in order to participate in the project. Photography, particularly of mineral specimens, was nearly always a problem. Many museums don't have staff photographers, and local commercial photographers are unfamiliar with the difficulties and skills peculiar to good mineral photography. Where color film was used, facilities may not have been available for developing. On one occasion minerals were sent to another country to be photographed. And it was not uncommon to send undeveloped film to a second country for processing. In other words, it was a considerable chore for curators to provide adequate photography and background information. For their valuable assistance I am extremely grateful.

The reader will detect an imbalance in the quantity and quality of photography and text from one museum to the next. This disparity is primarily reflective of local logistics difficulties rather than shortcomings in the collections themselves.

Eighty-one important mineral museums in Western Europe were beautifully described and illustrated by Burchard and Bode in their books *Mineralien Museen in Westeuropa* (1985) and *Mineral Museums of Europe* (1986). This more modest effort on Eastern European museums will, we hope, serve as a useful complement. These institutions offer the Western collector, curator, mineralogist and mineral historian a unique opportunity to learn more about a wide range of exotic mineralogical subjects and historically rich cultures. The competent and friendly curators and staff members at Eastern museums benefit as well from their contact with us. We have much to learn from each other, and a strong common interest which can bridge any international, political or cultural gap.



MINERALOGICAL EXHIBITS
Slovak Mining Museum
Banská Štiavnica

SLOVAK MINING MUSEUM

Banská Štiavnica, Czechoslovakia

Like many Czechoslovakian mining towns, Banská Štiavnica (originally known as Schemnitz) is very old. Celtic tribes first worked the gold, silver, lead, copper and zinc orebodies which surfaced in more than 120 veins. A document dated 1156 identifies Banská Štiavnica as the oldest mining district in all of Czechoslovakia.

Early miners built homes and businesses in a little valley called "Old Town." In 1242 Tatarian tribes sacked and burned the village. Three years later King Bela IV signed the *Stadt Peuch*, a town book which gave him control and ownership of the mines and authorized the rebuilding of the town. It also ordered that all gold and silver be sold to the Erar's mint-office in nearby Kremnica. This was to be Europe's first mining document dealing with the legality of mining.

During the wars that followed, Old Town was seriously damaged, and those structures that were not burned by the invaders were totally destroyed by a devastating earthquake in 1443.

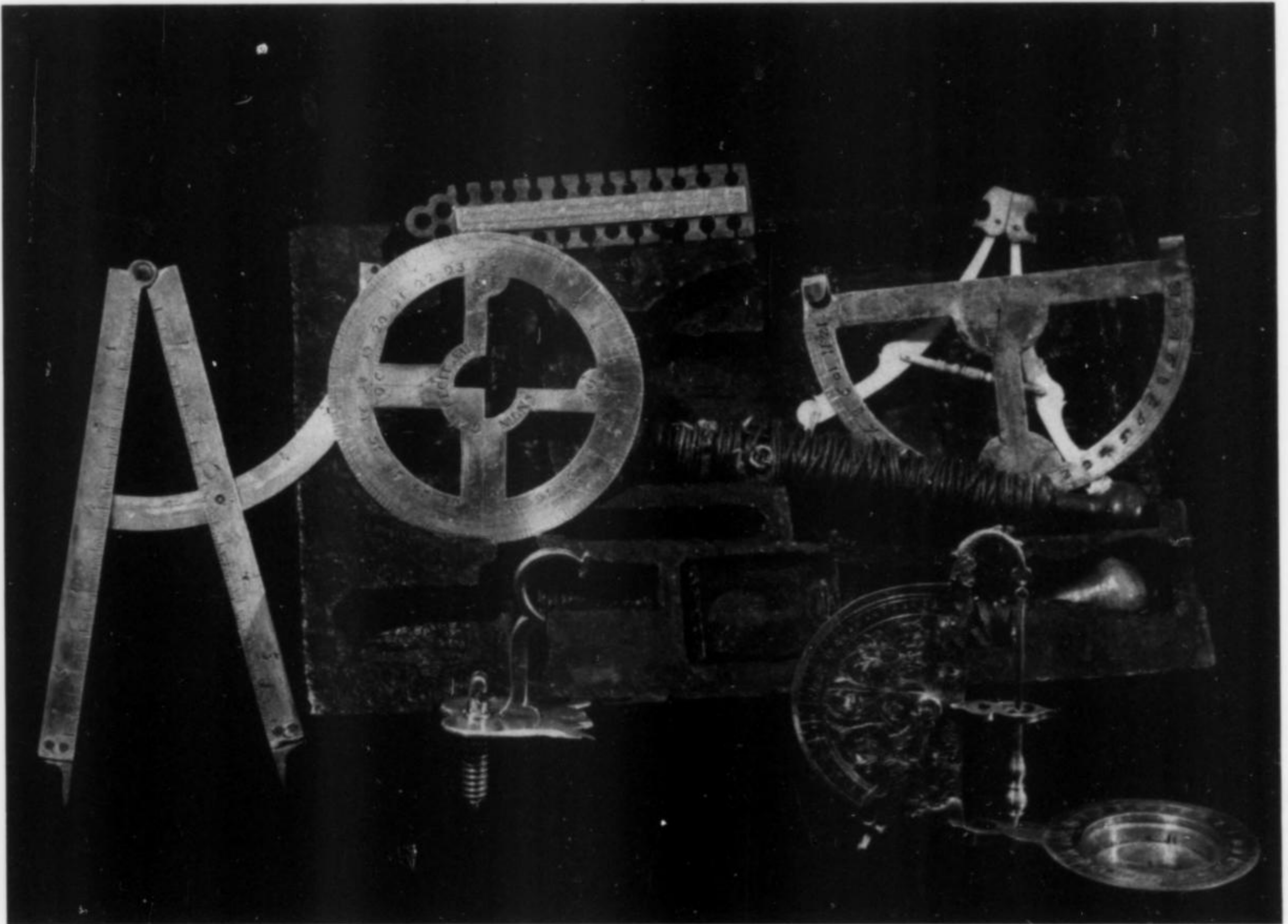
From the ashes the new town of Schemnitz was founded and became the most important mining center in the monarchy. The crossed hammers symbol of mining was first used in the thirteenth century near Kremnica. By 1535 about 4000 Schemnitz miners were employed in scores of mines, each independent from the others. Here gunpowder was first introduced as a mining explosive in 1627.

The Mining Academy (the second in Europe) was established in 1770, and its geologists and engineers were instrumental in the continued prosperity of the area's mines.

The Slovak Mining Museum was founded in 1964 and was the outgrowth of the Municipal Museum (1900) and the State Mining Museum (1917). The first mineral collections were assembled by mining geologist Lajos Cseh. Ivan Herčko (candidatus scientiarum historicarum) is the museum custodian, a position he has held for 21 years.



ING. IVAN HERČKO
Museum Custodian
Slovak Mining Museum



MINE SURVEYING INSTRUMENTS
16th & 17th centuries, Schemnitz

The Slovak Museum is divided into a number of sections, each housed in different facilities. The ancient fortress *Starý zámok*, now a national monument, displays creative metal arts by the miners. Portions of the museum's 20,000 minerals are on exhibit in the *Berggericht* (the former Mining Court). Directly under this building is the old *Spitaler* vein gallery which is open to visitors. Various types of mine timbering are featured. The *Klopačka* has an exposition about the "miner's class struggles in Slovakia." The building's tower houses an original *klopačka* ("knocker's board"), a peculiar wooden bell which, when struck with a wooden mallet, gave a far-reaching sound that called miners to their shifts.

The Open Air Museum is divided into two sections: the Overground and the Underground. The Overground has a miner's room with miner's lamps, headgear and paraphernalia from the old Sophia, Ruphus and Mary shafts. Hoisting machines and other machinery are scattered about.

One of the world's great mining trips can be taken into the Underground section, which has been fully restored in ancient galleries dating back to the seventeenth century.

The main ore minerals of Banská Štiavnica are galena, sphalerite and chalcopryrite. Incomplete records indicate that between the years 1672 and 1936 Banská Štiavnica mines produced an incredible 45 metric tons of gold and 2250 metric tons of silver.

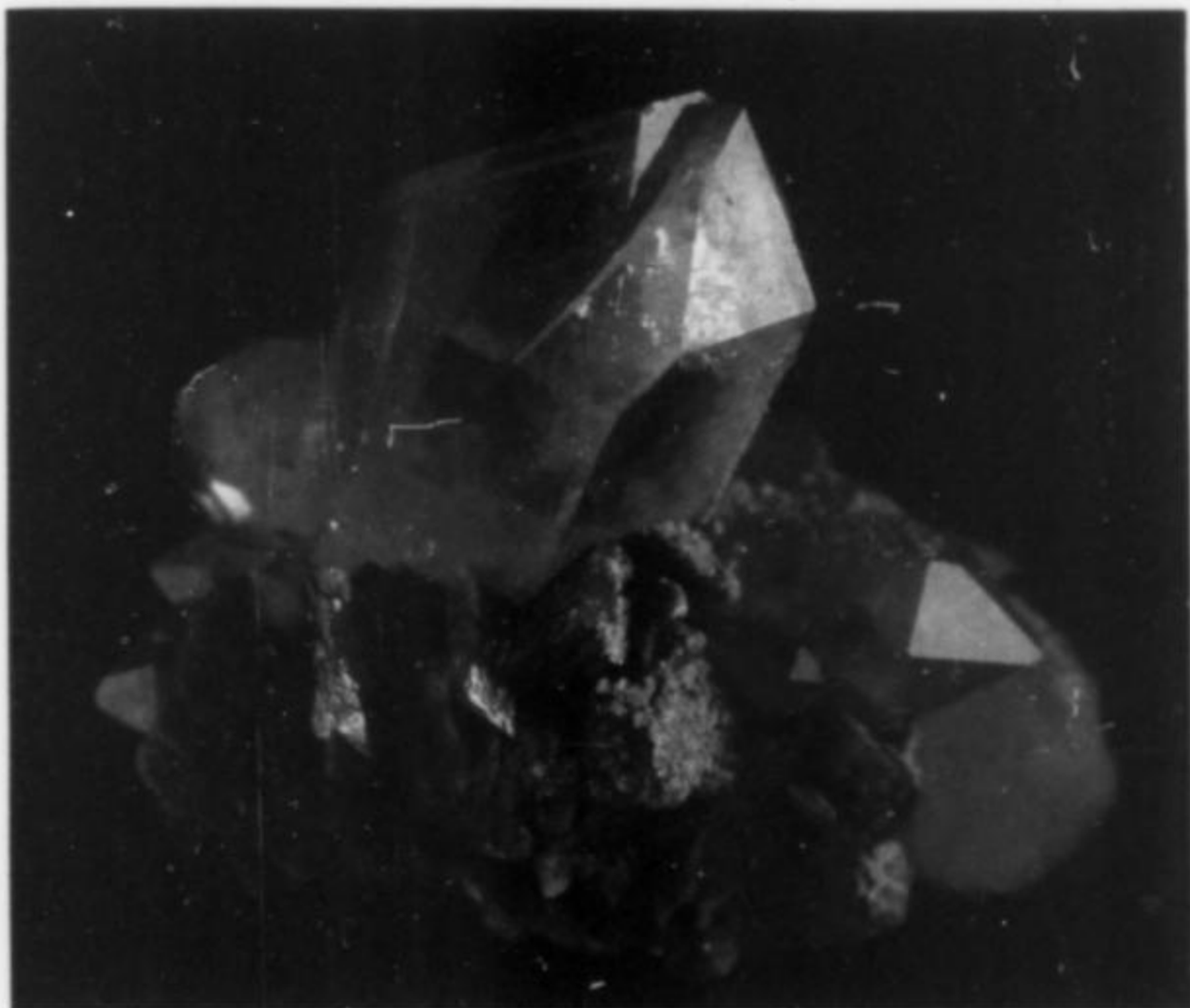
Today Banská Štiavnica is a charming little mining town nestled in central Czechoslovakia among tree-covered mountains about 115 kilometers north of Budapest, Hungary.

The Museum is open weekdays from 8 a.m. to 3 p.m. A friendly staff headed by Custodian Ivan Herčko assists visitors.



POSTAGE STAMP

Commemorating the 200th Anniversary
of the Banská Štiavnica
Mining Academy in 1964



QUARTZ & SIDERITE
Nizna Slana, Czechoslovakia
Slovak Mining Museum Collection



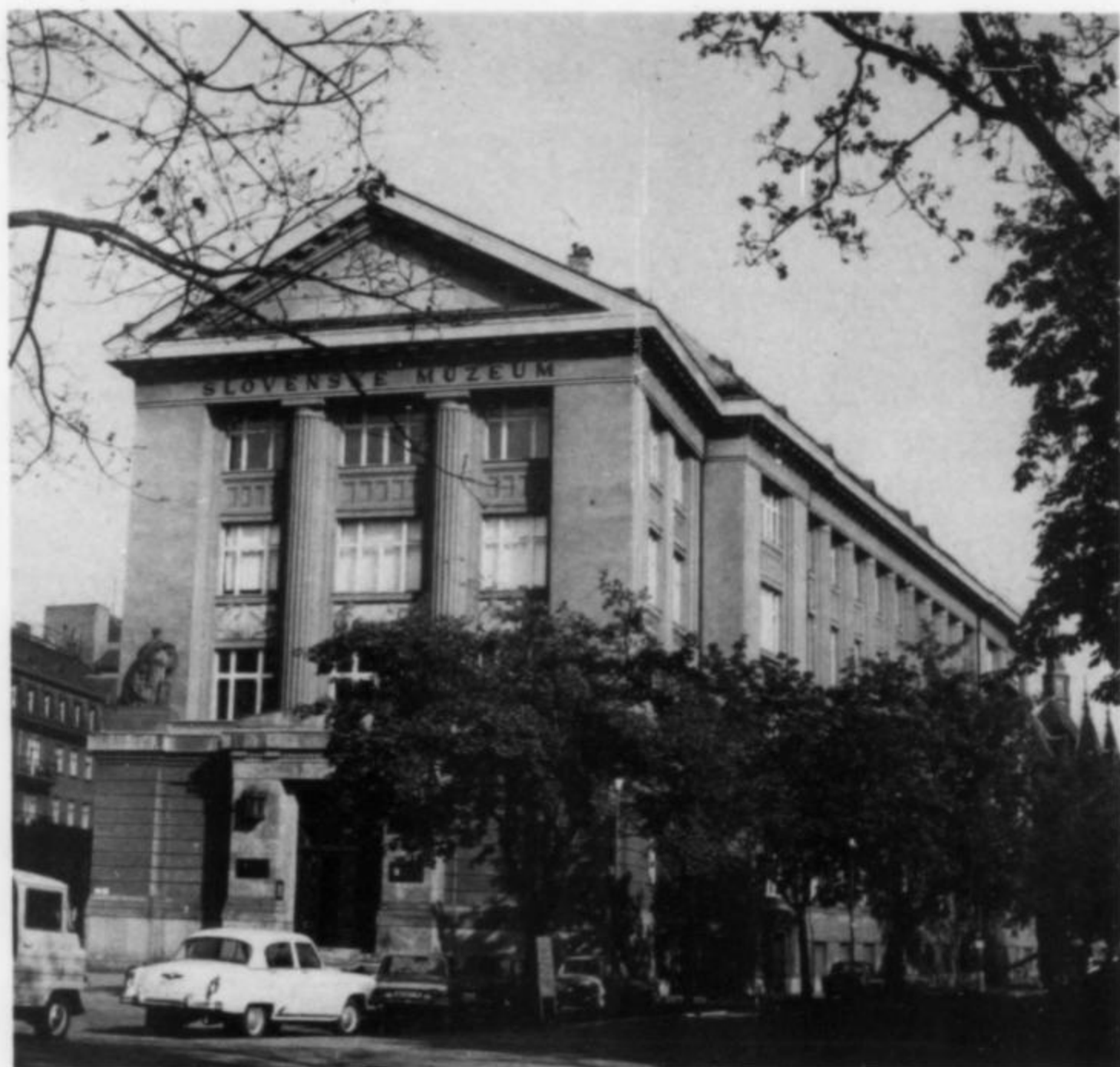
SCHEMNITZ MINER'S CUP
ca. 1840



STIBNITE
Kremnica, Czechoslovakia
Slovak Mining Museum Collection
15 cm



STIBNITE & QUARTZ
Kremnica, Czechoslovakia
Slovak Mining Museum Collection
19 cm



SLOVAKIAN NATIONAL MUSEUM
Bratislava, Czechoslovakia

SLOVAKIAN NATIONAL MUSEUM

Bratislava, Czechoslovakia

The Slovakian National Museum is located in the Czechoslovakian city of Bratislava which is about 57 km due east of Vienna, Austria. Bratislava is the capital of the eastern portion of Czechoslovakia known as Slovakia.

The Slovakian National Museum was founded by Andrej Kmet' in 1893. Early museum departments were established for botany, archeology and geology. The fossil remains of the mammoth in Kmet's collection were the first found in Slovakia.

Many of the early mineral collections in Czechoslovakia were either partially or totally destroyed by bombing raids during World War II. Thus nearly all mineral specimens now in the Slovakian National Museum were collected during the last 30 years.

Czechoslovakia has been blessed with many mines which, over the centuries, have produced large quantities of outstanding crystallized minerals. Notable mining areas include Příbram, Stříbro, Jáchymov and Činovec in the Bohemian Massif; and Banská Štiavnica and Kremnica in the Western Carpathians of Slovakia. Mineral collecting has always been popular in Czechoslovakia, and fine collections were established in various museums and in some private homes. Eventually many private collections were bequeathed to national mineral museums. Unfortunately, many of the best collections were later "politically transferred" to museums in Vienna and Budapest. (But luckily one great old collection of minerals was left virtually intact, and is today an important part of the Národní Museum in Prague).

Interesting pegmatitic contact and metamorphic zone minerals from Moravian localities include pink and green tourmaline found at Dobrá Voda; green tourmaline, schorl, sekaninaite and smoky quartz from Dolní Bory; corundum from Pokojovice; lepidolite from Rožná; and beryl and chrysoberyl from Maršíkov.



DR. OL'GA BEĽOŠOVÁ
Curator
Mineralogical & Geological Collections
Slovakian National Museum



MINERALOGICAL EXHIBITS
Slovakian National Museum



STIBNITE
16 cm; Kremnica, Czechoslovakia
Slovakian National Museum Collection

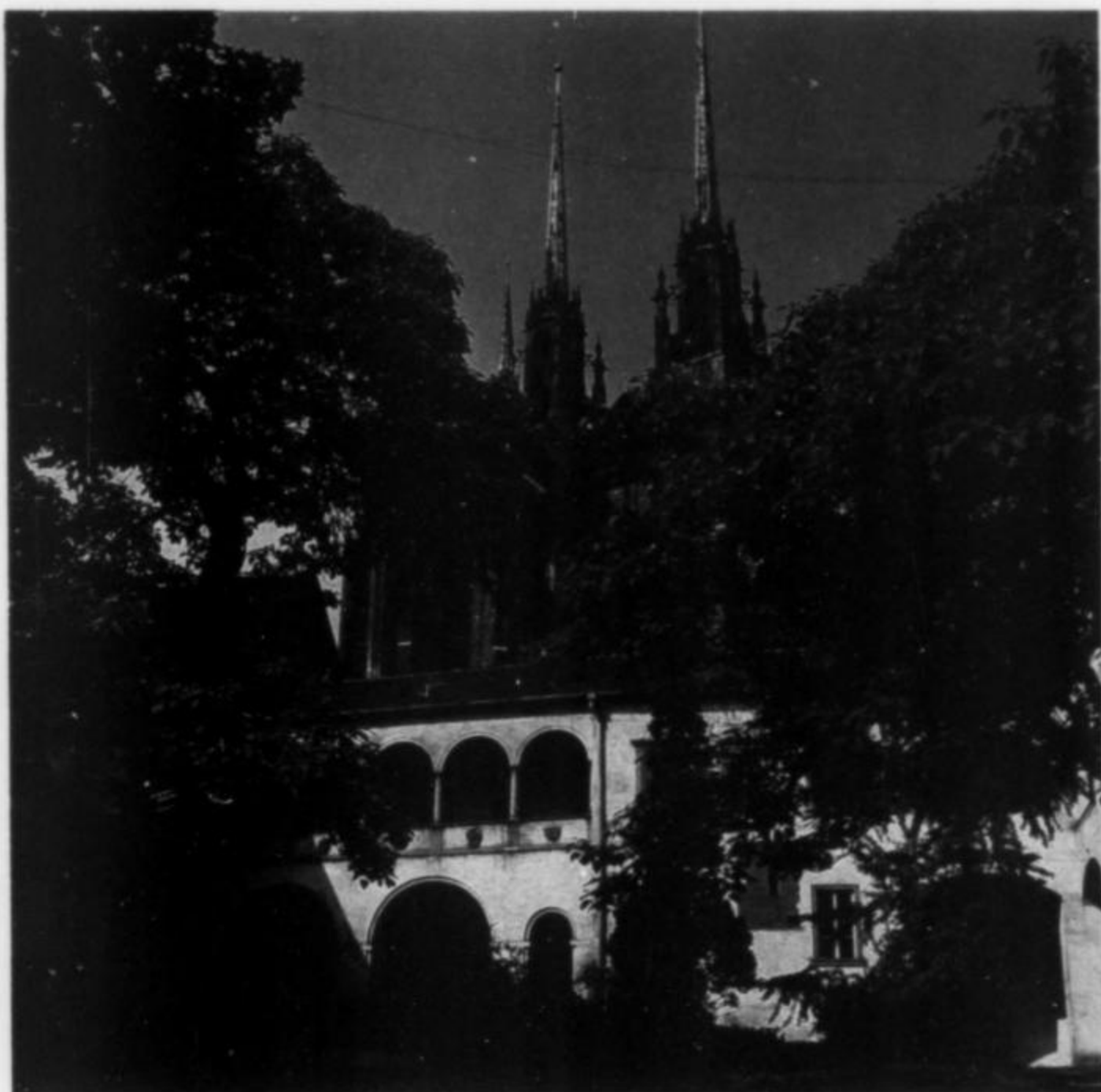


ARAGONITE
Italy
Slovakian National Museum Collection
9 cm

Today the Slovakian Republic maintains 63 museums which employ 1874 specialists. The Slovakian National Museum is the most important and is one of but a handful that staffs mineralogical and paleontological departments. The mineral collection at the Slovakian National Museum numbers 20,000 registered specimens and 2700 rocks. The mineral exposition occupies the Museum's second floor. There are exhibits in mineralogy, petrography, "The minerals of Slovakia," and "The geological development of Slovakia."

Curator Dr. Oľga Belešová and her staff are active in soliciting new mineral acquisitions, in assisting with the publication of the Museum's annual chronicles and in greeting visitors.

The Museum is open to the public daily except Monday from 9 a.m. to 5 p.m.



MORAVIAN MUSEUM

*17th century building called the Bishop's Yard
Petrov Cathedral in background*

MORAVIAN MUSEUM

Brno, Czechoslovakia

The Moravian city of Brno is located near the center of Czechoslovakia, about 120 km north of Vienna, Austria. Brno's architecture is a gracious mixture of old and new. In Old Town a long list of unusual buildings awaits the visitor, including the prominent Spilberk Castle, the Episcopal Court, the vegetable market and the Old Town Hall. Nearby is the beautifully baroque Mahen Theater. Modern Brno is known for its trade fairs, industrial center, Grand Prix automobile races, parks, restaurants and colored leaded glass.

Brno dates back to the eleventh century. In 1243 A.D. the young town gained prominence when it was granted town and market rights from King Wenceslas I.

The Moravian Museum was founded in 1818 with a mineral collection as one of its features. The collection has grown to 150,000 minerals and rocks of which 100,000 are from Moravia. Plans call for major reconstruction of the mineral wing and its displays to be completed by 1990. In the meantime, small exhibits of minerals are maintained for visitors.

The mineral department staff under the direction of Chief Custodian Dr. Anna Pfeiferova and mineralogist Milan Novák, is actively engaged in various researches. In 1984 a paper was produced with staff involvement about the secondary uranium minerals found in the Rychlebske Hory Mountains of Northern Moravia. Depicted are excellent photomicrographs of becquerelite, studtite, uranophane, parsonite and zeunerite. Outstanding crystals in the Museum's collection include hessite crystals (up to 2 cm) on quartz crystals with gold from Boteş, Romania; a proustite crystal group (6 x 8 x 10 cm) from Chañarcillo, Chile; a perfectly formed rubellite crystal (6 x 8 x 10 cm) from Řečice, Moravia; and a large epidote crystal (3 x 4 x 11 cm) on prehnite from Sobotín, Moravia.

The Moravian Museum presents equally interesting exhibits of ancient artifacts, antique furniture (arranged in period room settings), mammals, birds and a beautiful butterfly display.

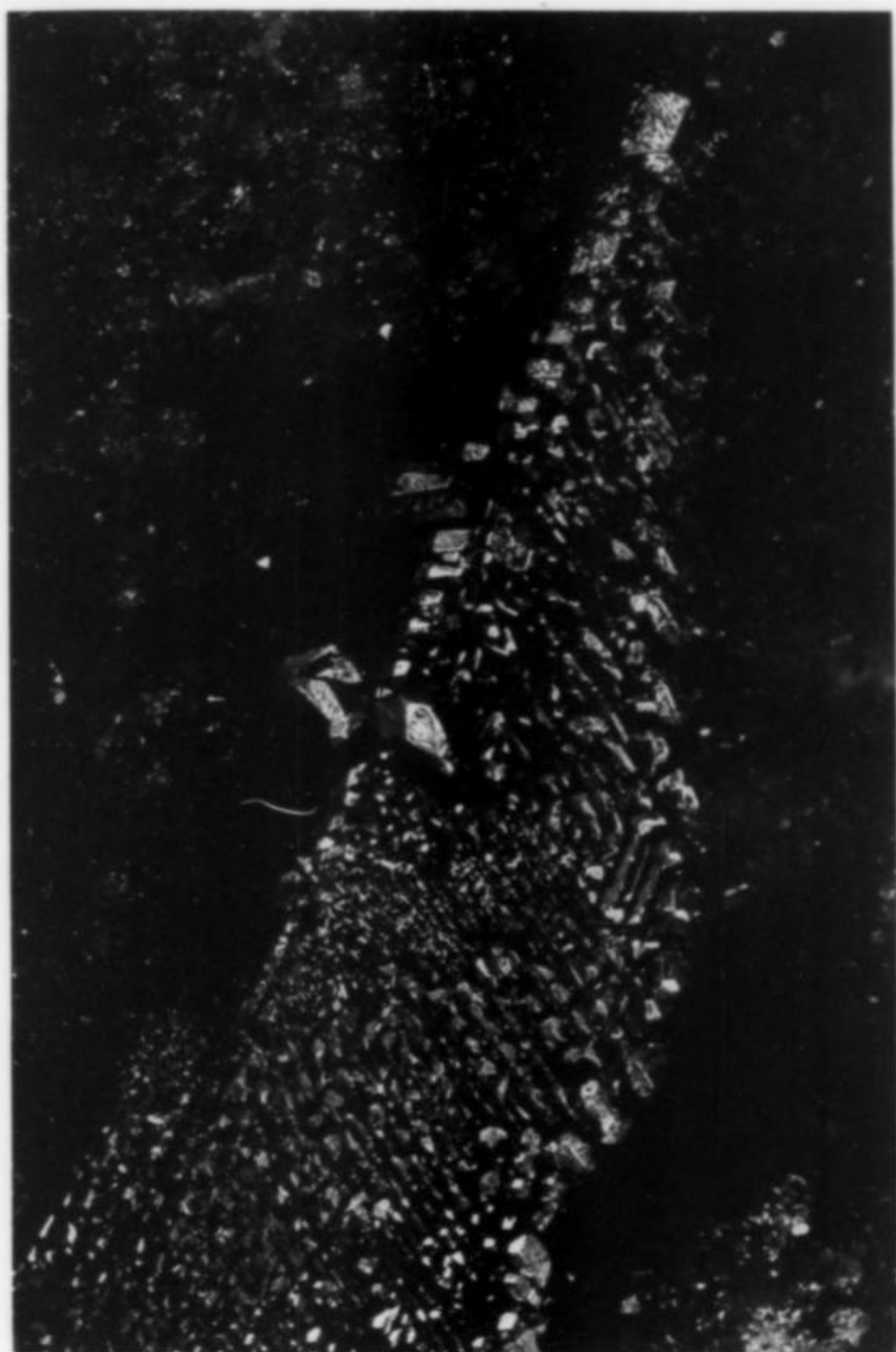
The Museum is open Tuesday through Sunday from 9 a.m. to 6 p.m.



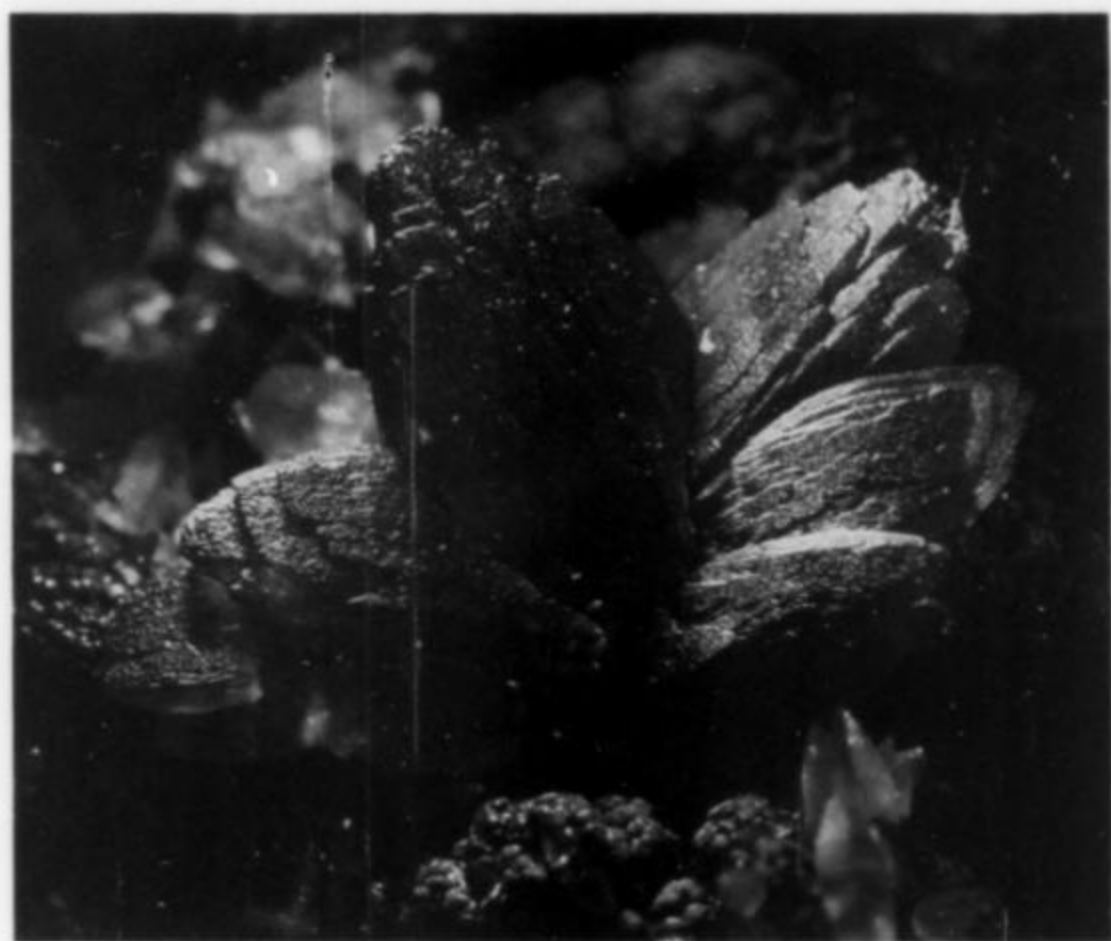
HESSITE

1 cm crystal

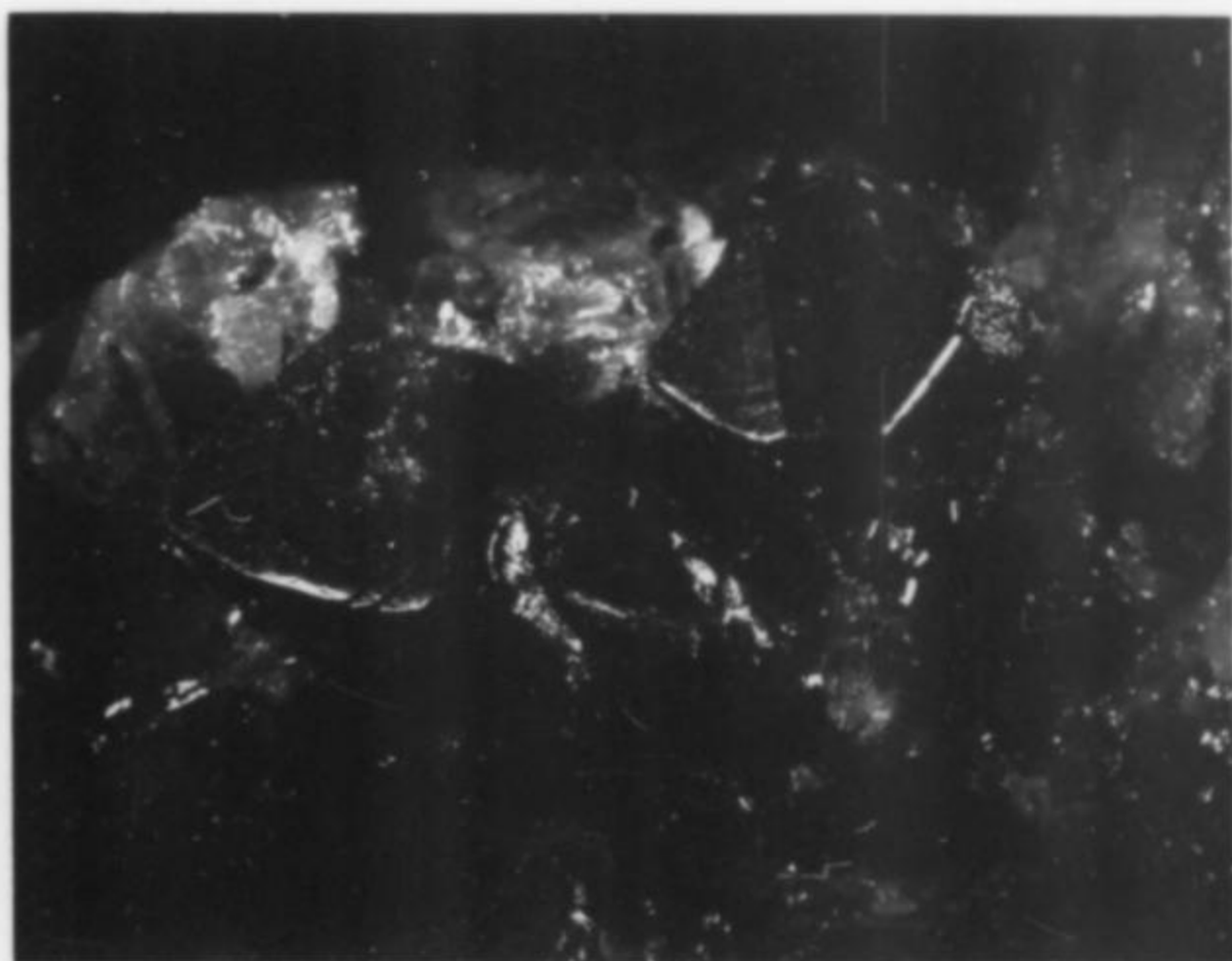
*Boteş Zalatna, Romania
Moravian Museum Collection*



GOLD ON QUARTZ
Rosia Montana, Romania
 Moravian Museum Collection
 4 cm



RHODOCHROSITE
Wolf mine, Herdorf, West Germany
 Moravian Museum Collection
 1.5 cm



CINNABAR
Almaden, Spain
 Moravian Museum Collection
 1.5 cm



DEVILLINE
Špania Dolina, Czechoslovakia
 Moravian Museum Collection
 1 cm



NARODNI MUSEUM
Facade under reconstruction

NÁRODNÍ MUSEUM

Prague, Czechoslovakia

Prague, capital of Czechoslovakia, has a long history steeped in music, art, poetry and notable restaurants. During the sixteenth, seventeenth and eighteenth centuries great silver and lead mines were being developed; fortunately many nobles of the court and various mineralogists took an active interest in preserving noteworthy crystals.

During the late 1700's a series of private mineral collections were established in Bohemia including those of Count Kasper Maria Sternberg (sternbergite), Ignaz von Born (bornite), and physicians J. Mayer and F. A. Reuss. A good portion of these collections was derived from earlier "Cabinets of Curiosities" and the study sets of alchemists. Many early scientists believed that private collections could better serve mankind by being assembled into centrally located public expositions. Through their considerable influence, "Museum naturae Pragense" was founded in 1786 and was open to visitors one day a week. The Empress Maria Theresa, much impressed with the new museum, issued an order that the best mineral specimens from all Czechoslovakian mines were to be sent to this Cabinet. In 1828 her fine assemblage of minerals was donated to the Patriotic (National) Museum.

The new collection, endowed by 500,000 golden coins, encouraged collectors to sell or donate their collections to the Museum. First purchased for an estimated 100,000 gold coins was the 5000-piece Sternberg collection, packed into 30 cases and hauled into Prague by seven horse-drawn wagons. Other acquisitions were from F. X. Zippe (zippeite), aristocrat F. A. Kolovrat and Emperor Franz I. At first the national mineral collection was kept in one of Sternberg's palaces in Prague. In 1892 the mineral collection became the first exhibit in the newly opened National Museum (Národní Muzeum) of Prague, where it is still on display today.



DR. JAROSLAV ŠVENEK
Curator of Minerals
Národní Museum



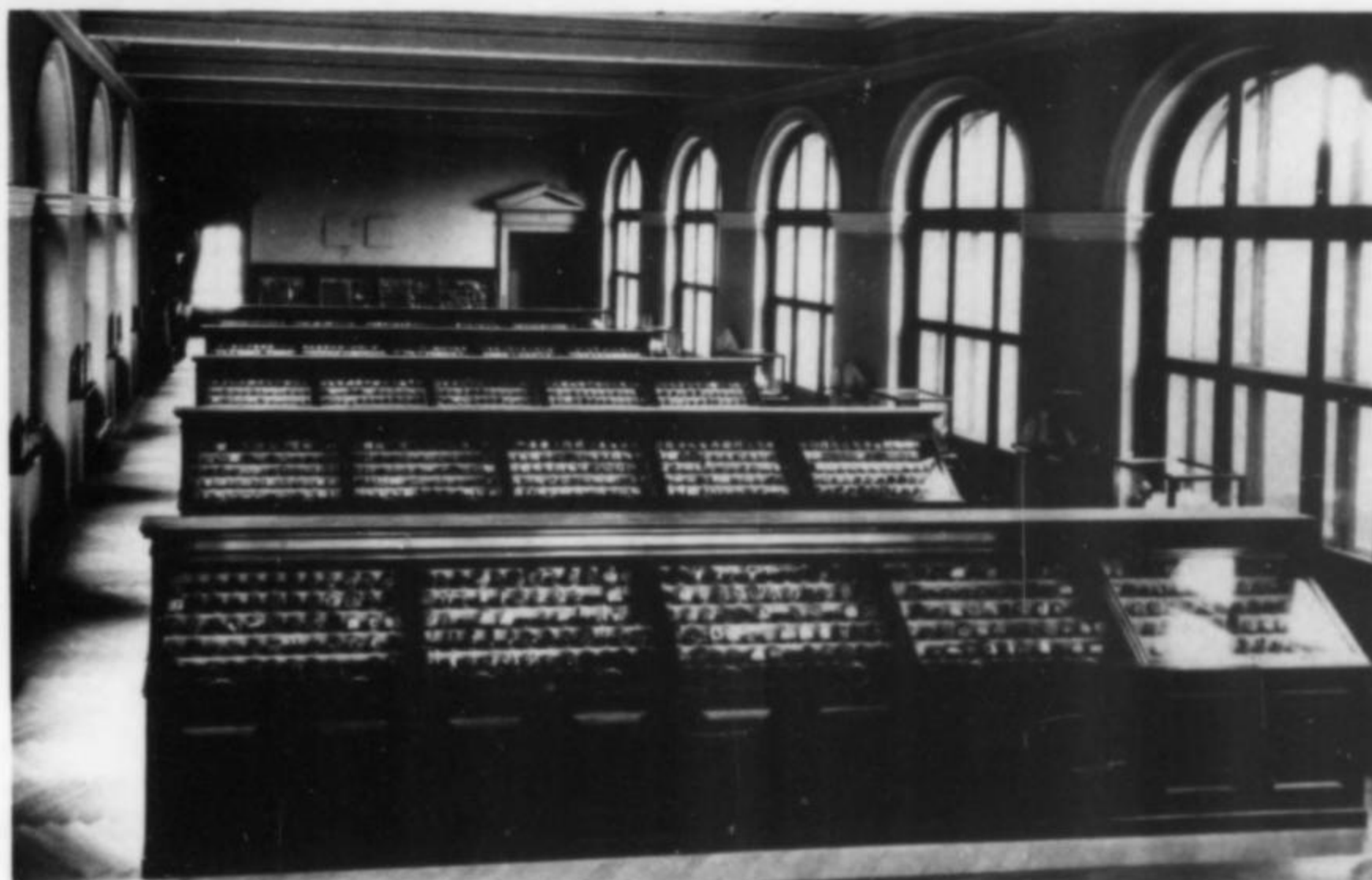
GRAND STAIRWAY
Národní Museum



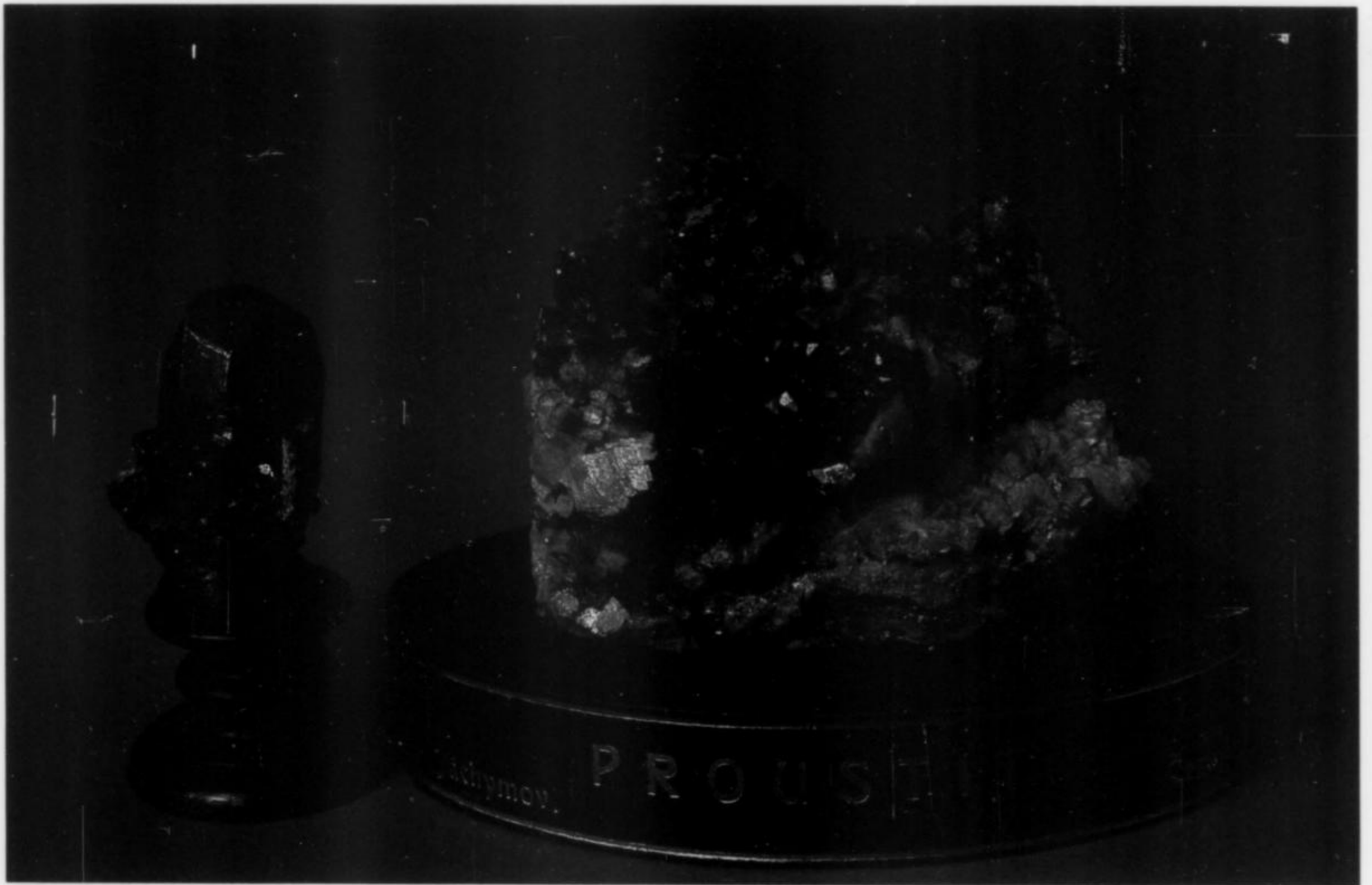
41. Q. 128 Bookplate



EARLY MINERALOGICAL LITERATURE
Národní Museum Collection



MINERAL GALLERY
One of three
Národní Museum



PROUSTITE

*Jáchymov, Czechoslovakia
Národní Museum Collection
single crystal: 4.5 cm*

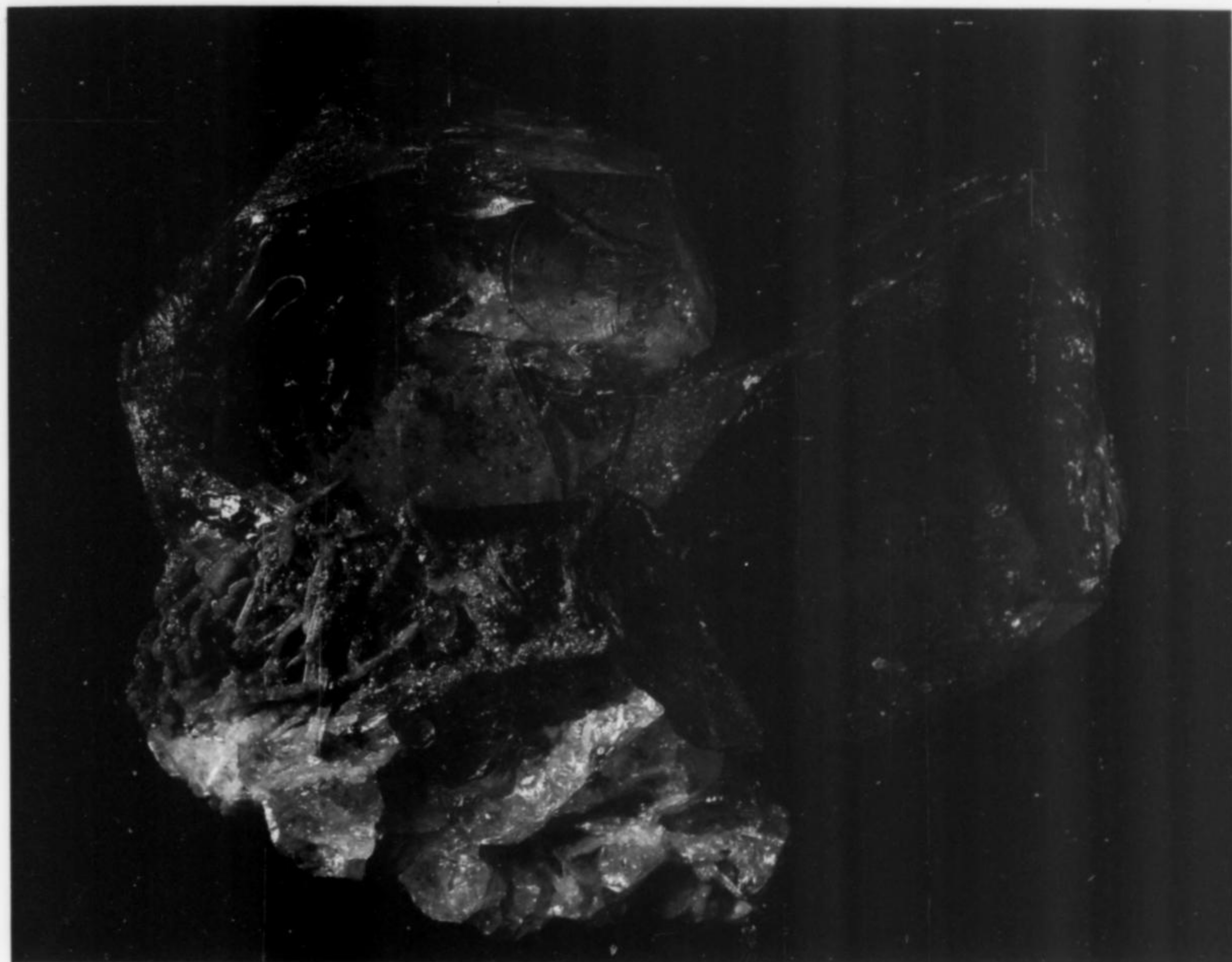


MAGNETITE

*Lercheltini, Switzerland
Národní Museum Collection
14.7 cm*

BARITE

*Příbram, Czechoslovakia
Národní Museum Collection
7 cm*



By 1985 the Museum's mineralogical and geological collections exceeded 150,000 items as follows: 120,000 minerals, 20,000 precious stones (mostly polished), 500 meteorites (from 205 falls) and 20,000 tektites (mostly moldavites). Recent acquisitions of crystals include a 16 x 30 x 37-cm morganite from Brazil; a flat druse of transparent aragonite from Czechoslovakia; a 27-carat ruby from Burma; a 42-carat diamond from South Africa; and a 990-carat aquamarine from Brazil.

Little has changed in the appearance of the National Museum building since 1892. Its multi-staired ornate central hall is bright all day from a mammoth 140-pane skylight. Curved entrances on all three upper floors lead to various collections housed in hundred-year-old cases. On occasional evenings the many lights of the Great Hall play on hundreds of spectators seated on stair treads while large orchestras and choirs entertain in Czechoslovakian musical splendor.

The museum staff is personable and friendly. Many staff members speak English and all are knowledgeable in their fields. Should the visitor be limited in time, two contacts are paramount. Dr. Jaroslav Švenek, author and nationally recognized mineralogist, gives an outstanding tour of the mineral halls. A knock on the door of the telephone switchboard room will bring a cheery "hello" from "Brave George," who was blinded and maimed while playing as a boy with a World War II hand grenade. George will shake hands, man his switchboard, and run through elaborate symphonies on a nearby upright piano with his left hand—the only one he has.

The Museum is open daily from 9 a.m. to 5 p.m., as it has been for many years, interrupted only on August 20, 1968, and the days that followed, when invading Soviet tanks nearly destroyed the building.

BERYL
Pala, California
Národní Museum Collection
9 cm

STATE MUSEUM OF
MINERALOGY & GEOLOGY
Dresden



STATE MUSEUM *of* MINERALOGY *and* GEOLOGY, DRESDEN

Dresden, East Germany

Dresden has long been one of Europe's most beautiful cities. Well known for its tree-lined streets, parks, opera houses, theaters and restaurants, it is a pity to visit Dresden today only to see many of these pre-Victorian structures in ruins from Allied bombing raids during World War II. Modern buildings have replaced whole blocks of destroyed edifices, and much of Dresden's Old European charm has thereby been lost forever.

On the bright side, however, is the reactivation of Dresden's museums. Particularly so is the evident progress of the Dresden Art Museum with interesting displays, including a painting of American black activist Angela Davis behind barbed wire greeting visitors as they enter.

The Staatliches Museum für Mineralogie is a three-storied nineteenth century stone block building topped by an ornate Victorian-style tower. Forty wide steps lead to the entry on the second floor where newly decorated mineral galleries house the oldest known collections in the German Democratic Republic. The first recorded collection dates to the catalogs of the Elector of Saxony, printed in 1587, and was a part of the Elector's *Kunstkammer* or arts assemblage.

In 1728 the Saxon Court established a scientific museum which included a department of mineralogy with Johann Heinrich von Heucher (1677-1746) as its curator. From the beginning the museum specialized in Saxon minerals and ores which today total more than 65,000 items. A few hundred are on display. Exhibits feature minerals by locality and by donors.

In more recent years the Museum has purchased a number of important mineral collections, beginning in 1805 with the Racknitz Collection (5500 specimens). Most interesting from this group of minerals is a 600-gram piece of silver, the sole remaining piece from the legendary "Saxon table of silver." It is also the oldest traceable mineral specimen in the world. The "table" was a solid block of

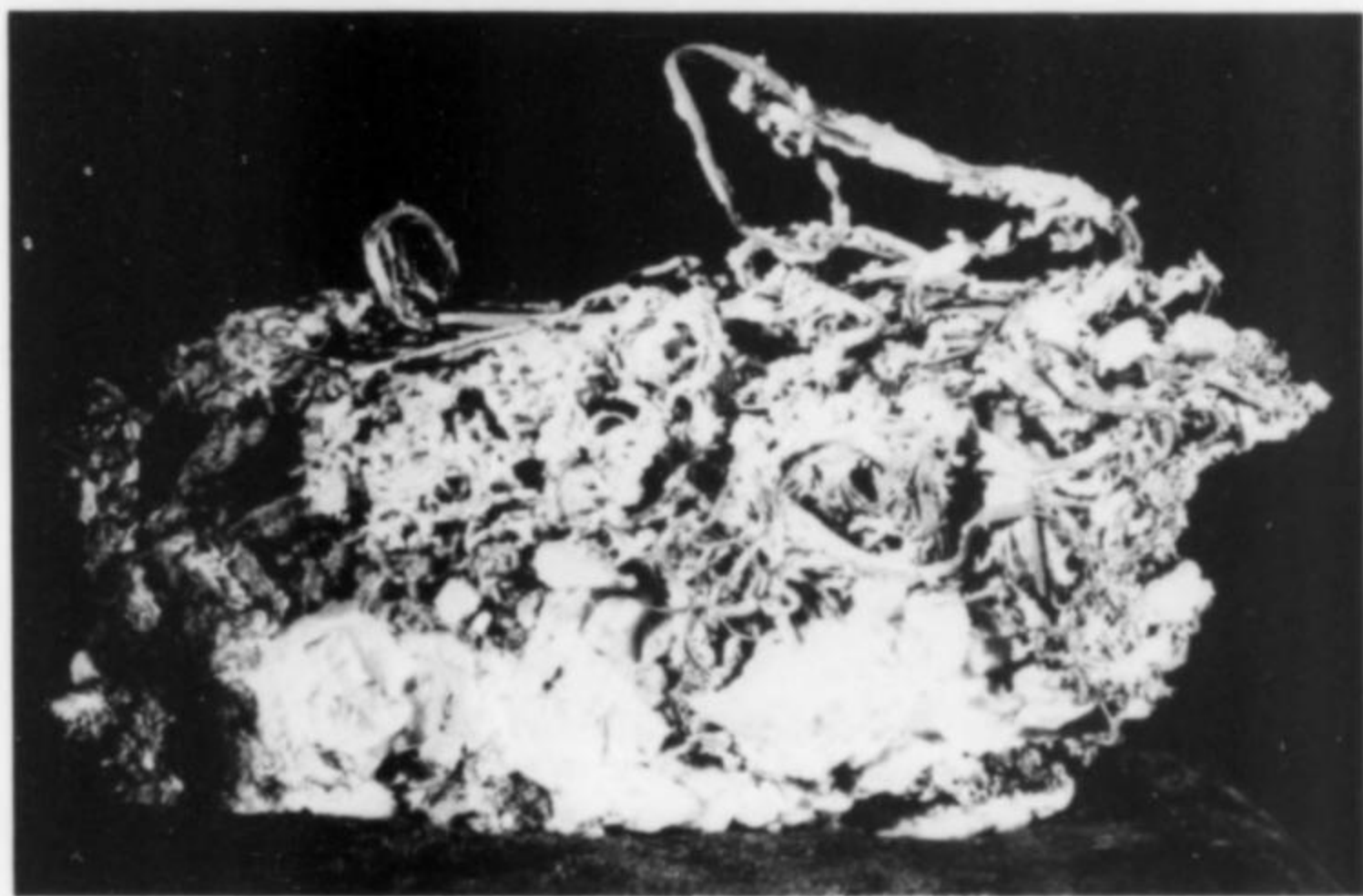


DR. W. QUELLMALZ
Curator

*State Museum of Mineralogy & Geology
Dresden*



MINERALOGY EXHIBITS
State Museum of Mineralogy & Geology



pure silver carved from an ore mass 4 meters long and 2 meters high and from which 20 tons of silver were recovered. In 1477 Saxon Prince Albert was served dinner from the table while it still rested deep in a Schneeberg mine gallery.

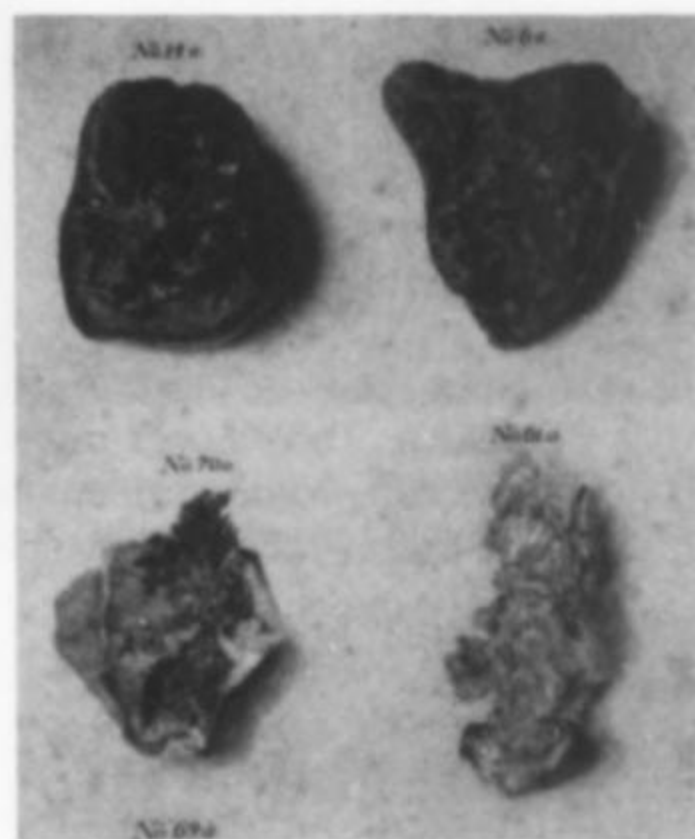
In 1940 the Baldauf Collection containing 10,000 items was purchased for 250,000 marks. Included are a large number of minerals (many of which are of good size) from famous European and American localities. Most of the mineralogical collections in the museum were evacuated during the war and thereby saved from destruction when the exhibition rooms were bombed. Collections bought after World War II are especially rich in Saxon minerals from Freiberg, Schneeberg and Altenberg.

Two of the museum's most interesting specimens are silvers on loan to the Museum of Mineralogy in Strasbourg, France. One, "the Cross of Silver," is 22 cm in height and was found in the St. Georg mine at Schneeberg in 1623. The other, 33 cm tall, is also from Schneeberg and was mined in 1896.

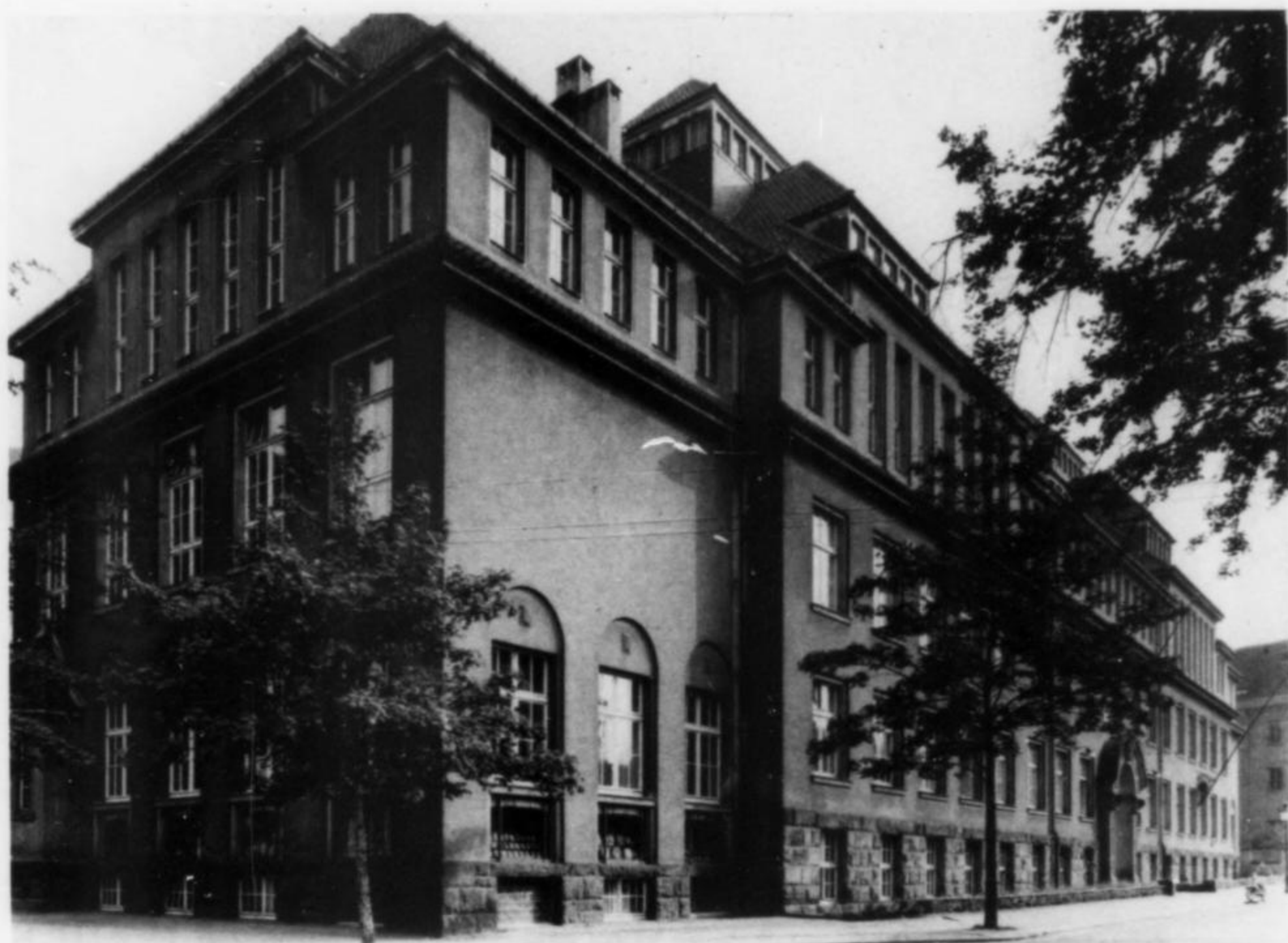
The Museum Director is Dr. Gerhard Mathe and the Curator of Mineralogy is Dr. Werner Quellmalz.

The Museum is open Wednesday to Sunday 9 a.m. to 1 p.m. and from 2 to 4 p.m.

SILVER
Himmelfürst mine, Freiberg, East Germany
State Museum of Mineralogy & Geology
Collected in 1907; 21 cm



GOLD SPECIMENS
C. H. Eilenburg (1750) Gold Catalogue
Library
State Museum of Mineralogy & Geology
Dresden



FREIBERG MINING ACADEMY
founded 1765

FREIBERG MINING ACADEMY

Freiberg, East Germany

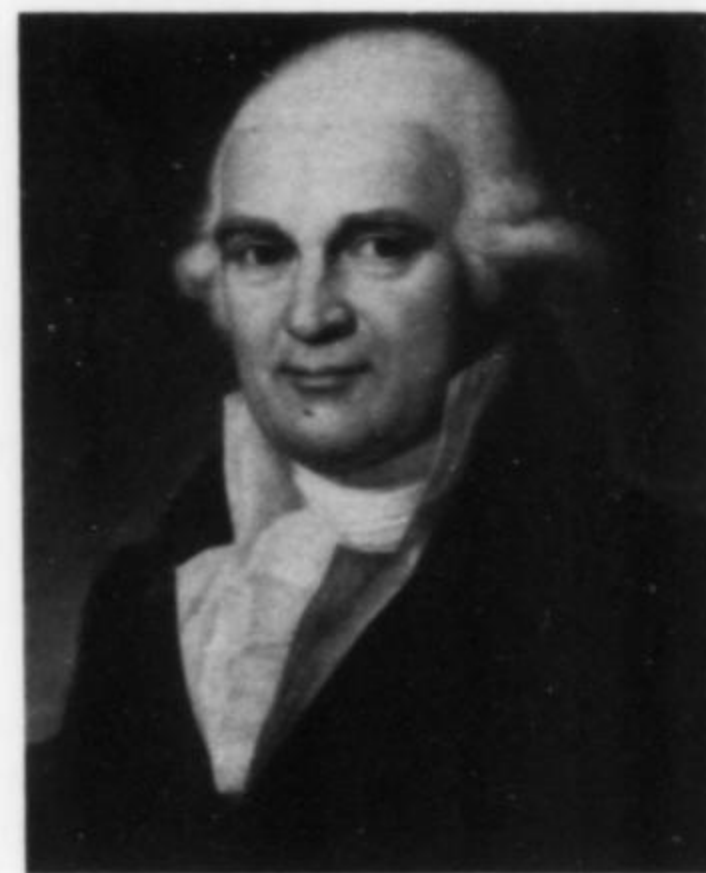
The Freiberg Mining Academy (Bergakademie) is the world's oldest mining school. It was founded in November, 1765, by Prince Xavier of Kur-sachsen. The school's mineralogical museum was established at the same time under the name "Stuffencabinet" (cabinet of specimens), probably based on a pre-existing collection which had been started by C. E. Gellert (1713–1795).

The museum's first prominent professor was Abraham Gottlob Werner (1749–1817) (wernerite). Werner developed a fine 8043-piece mineral collection which he sold to the museum for 40,000 Thalers, and which is still preserved intact. During his 42 years as Professor, Werner became one of the world's most famous mineralogists; the Mining Academy's building, constructed in 1916 and still in use, bears his name.

Early curators continued developing the mineral collection: C. F. Mohs (1773–1839), F. A. Breithaup (1791–1873) (breithauptite), A. J. Weisbach (1833–1901) and F. W. Kolbeck (1860–1943) (kolbeckite). During World War II the mineral collection was stored in Freiberg's Schloss Freudenstein for safekeeping. The collection has continued to grow until now more than 70,000 items are cataloged. Only 5% of the collection is on display, with the balance reserved for study by teachers and scientists. Current staff efforts are devoted to the acquisition of new mineral species and the plan to completely document East German minerals.

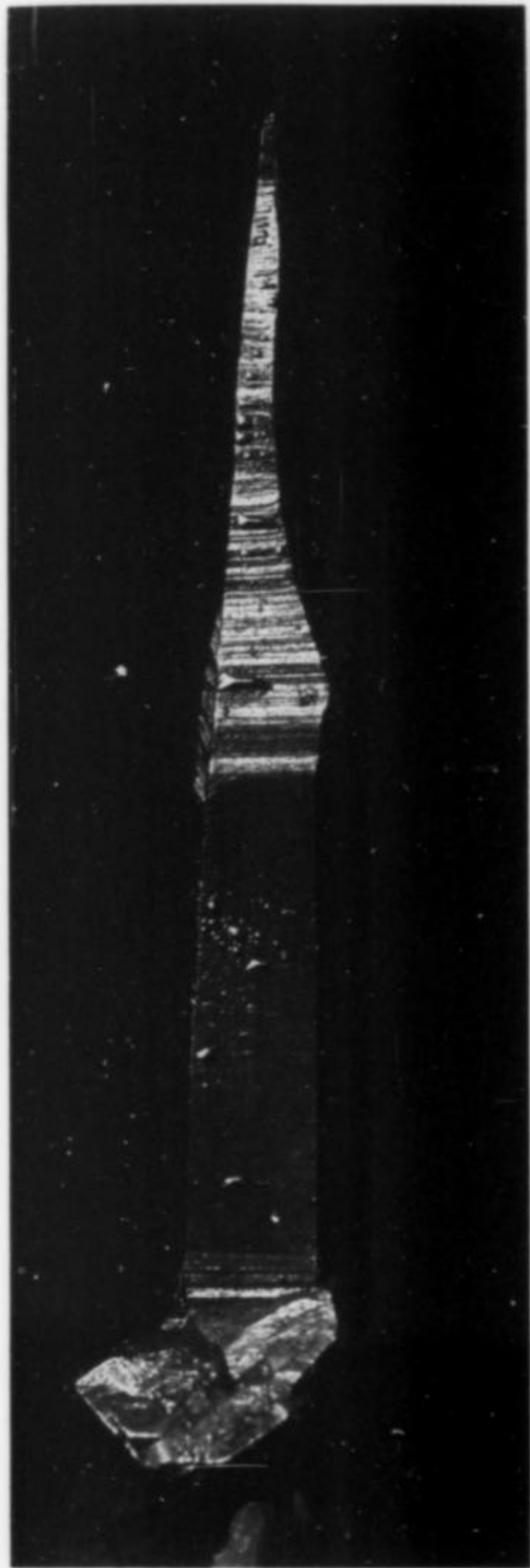
The Werner building stands next to the sidewalk, with seven mineral displays arrayed along its walls for passers-by to admire. Otherwise, the five-story stone and cement structure on quiet, tree-lined Brennhaugasse is unpretentious.

Inside the visitor is surrounded by scientific displays and portraits of past instructors who rank as giants in the history of mineralogy.



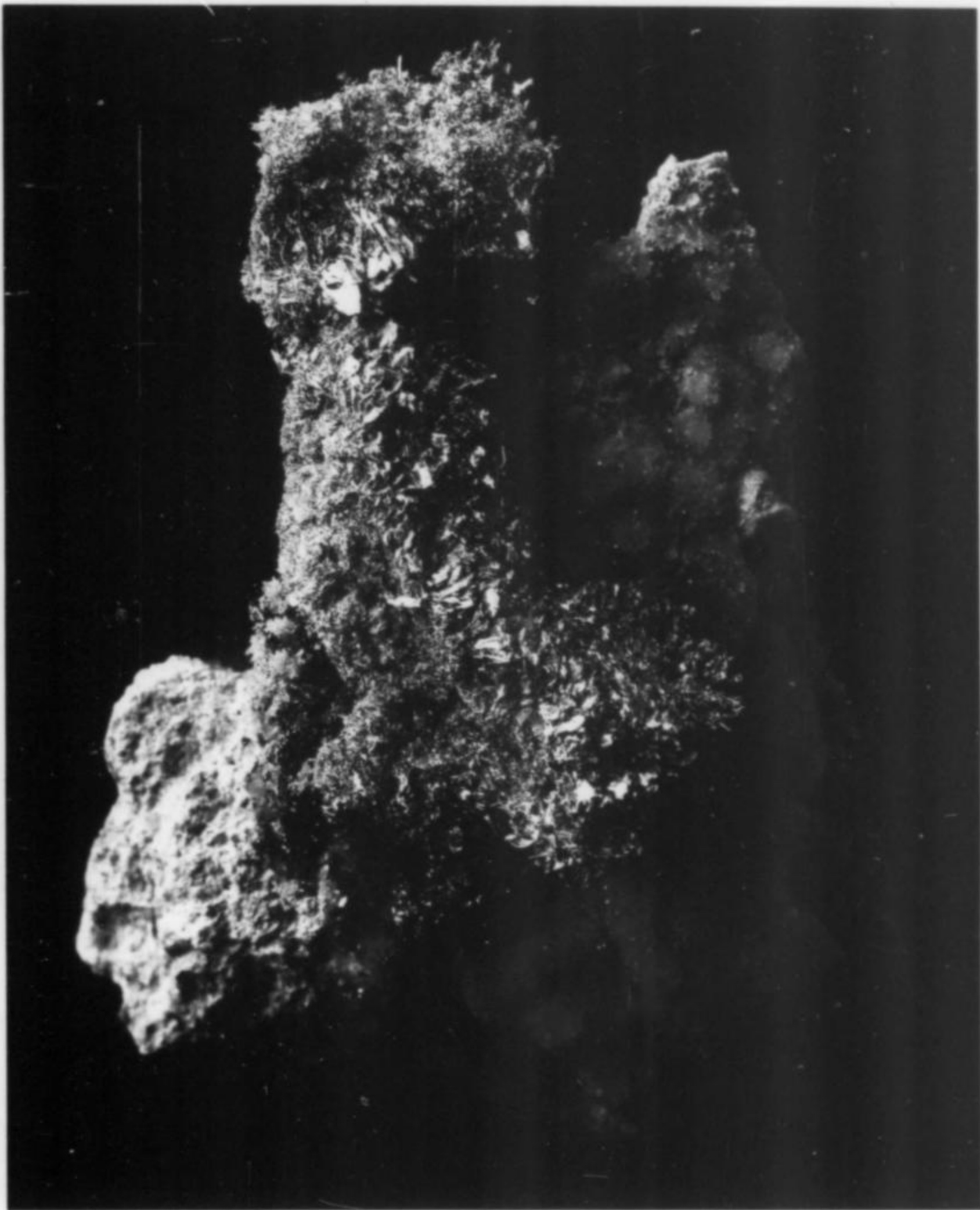
ABRAHAM GOTTLLOB WERNER
(1749–1817)

First curator and professor of mineralogy



ACANTHITE

Brand mine, Freiberg, East Germany
Bergakademie Freiberg Collection
5 cm



ERYTHRITE ↓

Schneeberg, East Germany
Bergakademie Freiberg Collection
10 cm

GOLD

Maszari mine, Brad, Romania
Bergakademie Freiberg Collection
12 cm



DEMY

alogy



CHAPEL, ELIZABETH MINE
19th century miners at prayer before
going underground
Room still preserved in Elizabeth Mine Museum

The Academy remains first of all a school. Stairs leading to the second floor stop at a fluorescent display in front of which Curator Fritz Hofmann may be found lecturing a group of students. Across the hall stands a bronze bust of A. G. Werner. Curators' offices and classrooms occupy the east wing of the second floor. The entire west wing is devoted to displays of minerals and gemstones, comprising one of Europe's greatest collections. Old mining documents, miners' lamps, surveying and laboratory equipment (most of which is solid brass), and mineral reserves are housed in other parts of the building.

The Elizabeth mine is an integral part of the Mining Academy. This facility is a working mine where Academy students are taught practical mining techniques underground. The Elizabeth museum contains a dozen or so rooms filled with old mining machinery, miners' tools and clothing, assay equipment and antique maps. The famous nearby Abraham, David and Ludwig shafts are closed forever, but their remains—miles of tunnels and great galleries, some of which are 300 meters below the surface—underlie Freiberg and the Mining Museum. Mineral buffs may wish to drop by Freiberg's Stadt- und Bergbaumuseum and its marvelous collection of very old mineral books and photographs.

The Mining Museum is rich in German minerals. Not a few specimens are unique and some rank as the best in the world. Memorable crystals on exhibit or stored in cabinet drawers are: a whole suite of proustites; one of the world's greatest miniatures, a 5-cm slender acanthite without damage; numerous argentites and pyrargyrites; fine crystallized golds; outstanding silvers; and beautiful orange and blue fluorites.

English-speaking Fritz Hofmann is knowledgeable about the collections, particularly their histories. He is also a good companion to distant mines or for lunch in a local beer garden.

The visitor should look beyond Freiberg's businesslike appearance. Various town sections date to the sixteenth century. Mines which once serviced 1000 silver lodes in the Freiberg district are dead, but their headframes still stand tall. Portions of the old town wall with neighboring pits (previously water-filled moats) are still visible. Take along a camera. Old mines, dumps and mills are everywhere!



WHEWELLITE
with calcite & pyrite
Schlems, East Germany
Bergakademie Freiberg Collection
6 cm



HARZ MUSEUM
Wernigerode

HARZMUSEUM

Wernigerode, East Germany

The historic little city of Wernigerode lies in the Harz Mountains approximately 190 km southwest of Berlin. The Harz range is home to scores of famous lead, manganese and silver mines, some of them dating to the twelfth century. The Harz mines were innovative in addition to being very rich. They were the first on the European continent to use steam engines. Harz engineers are said to have originated wire ropes (steel cable) for raising men and ore in deep shafts. Miners caught birds in the forests and taught them to sing, so they could be used for gas detection. Now each year Benneckenstein holds a finch-singing contest.

With the partition of Germany following World War II a new border was created which divided the Harz Mountains as well as the mining regions. The old mines of the eastern Harz mountains are now closed and nearly all artifacts and even the mine dumps have been hauled away. The mountains, however, remain beautiful and are visited by picnickers in summer and skiers during winter.

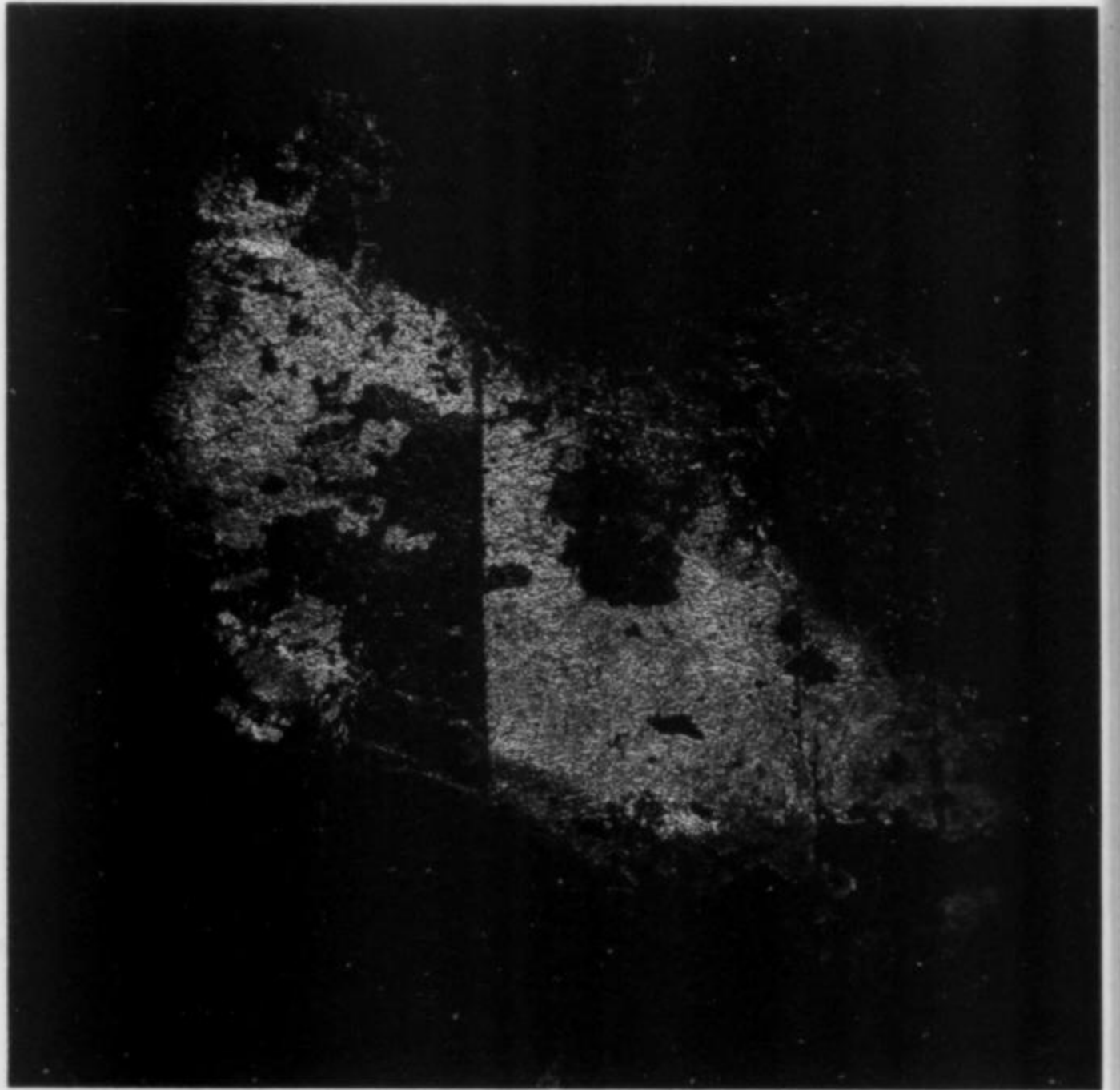
The Harzmuseum is situated in the oldest part of Wernigerode. The building was constructed in 1840 using an ancient foundation dating back to the Middle Ages. There are fifteen small rooms on two floors which are used for displays. The Museum research program studies the history of the Harz region, and formulates environmental plans to preserve the landscape for future generations. Exhibits depict these philosophies. Fossils are important, and the museum staff points with pride to an Upper Cretaceous oak fossil leaf from the Harz which matches those previously found in New Mexico, thus proving that 90 million years ago continental drift had not yet separated America from Europe.

Displays of old mining lamps, surveying equipment and early photographs of mines now long defunct are especially attractive. The mineral exhibits, though modest in size, are representative of the area. There are fluorite crystals from



HARTMUT KNAPPE
(right) Curator, Harzmuseum

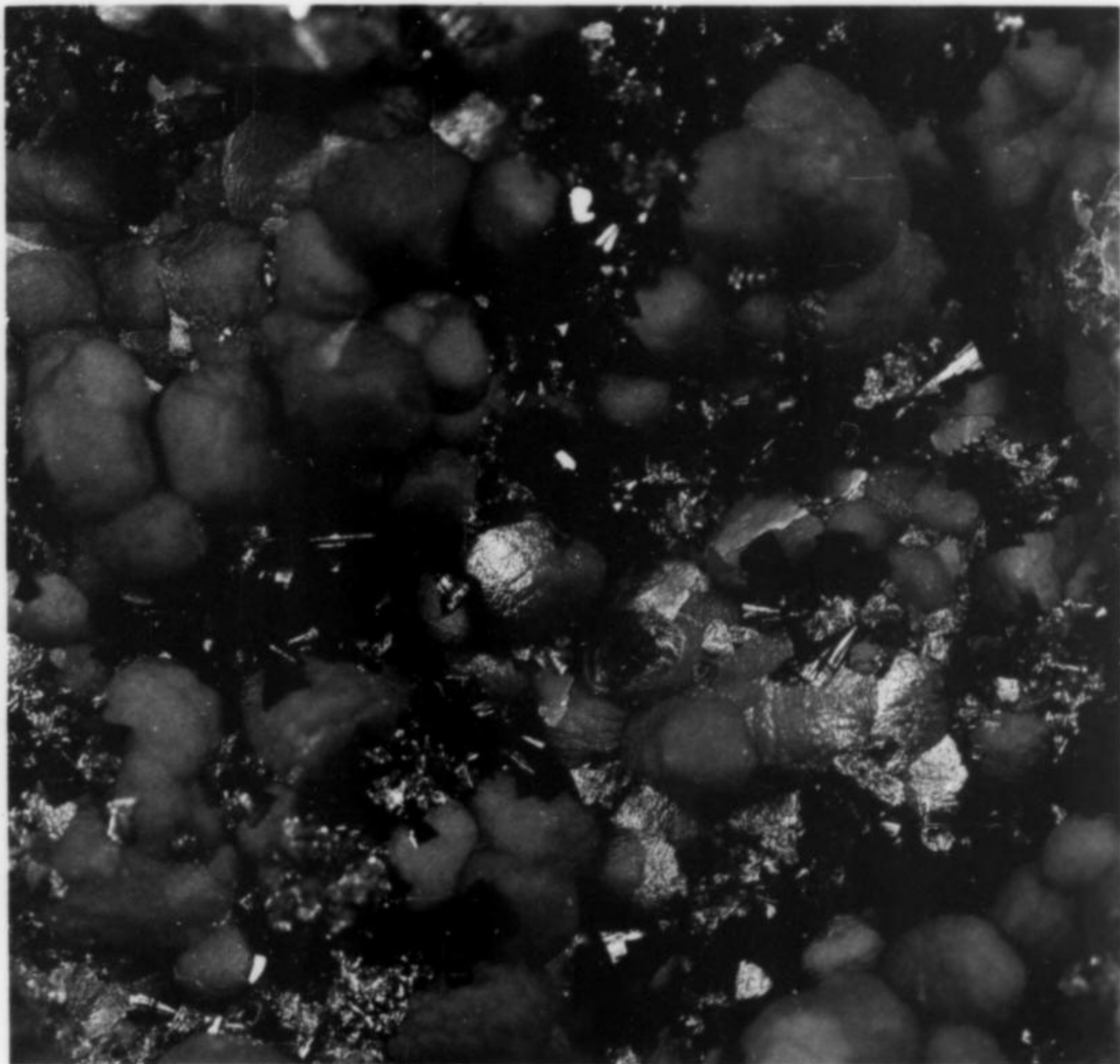
FOSSIL FISH REPLACED BY SILVER
Harz Mountains, East Germany
Harzmuseum Collection



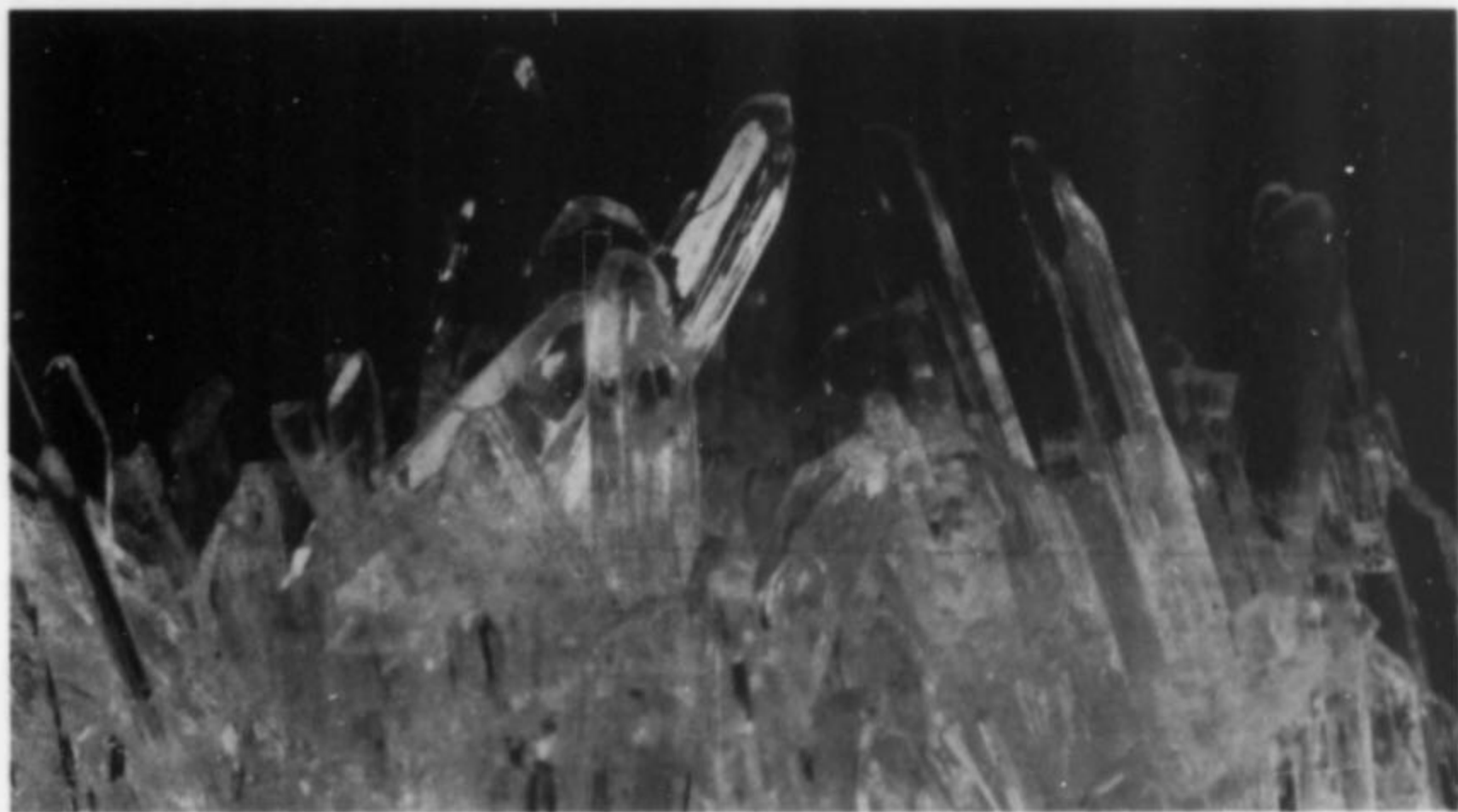
MINER'S TANKARD
Solid silver, 1912
Harzgerode-Neudorf area
Harzmuseum Collection



HARZ MINER'S LAMP
1860's



CRONSTEDTITE
with spheroidal siderite & pyrite
Gernrode, East Germany
Harzmuseum Collection
 2.5 cm



HYDROBORACITE
Woffleben, Ilfeld, East Germany
Harzmuseum Collection
 6 cm

Roffleberode, highly modified galena crystals on siderite from Neudorf, and manganite crystals mined at Ilfeld. Other displays are devoted to plants, insects and birds.

Most recently, the Harzmuseum began polishing Harz minerals. Local craftsmen followed suit and now sell a wide variety of polished specimens to tourists, including rhodonite, hematite (which is crisscrossed by veins of pyrite) and blue-white slag from a 300-year-old furnace.

Quaint "old town" and modern "new town" with a backdrop of the lush Harz Mountains, all just 100 kilometers south of the Berlin Access Highway, is a visitor's delight, especially during the warm summer months. English speaking Dr. Hartmut Knappe is an excellent guide for his museum and a source of information on what to see in the Harz region. The museum is open daily through Saturday from 9 a.m. to 5 p.m.



HUNGARIAN NATURAL HISTORY MUSEUM

HUNGARIAN NATURAL HISTORY MUSEUM

Budapest, Hungary

In 1802 Count Ferenc Széchenyi founded the National Museum and at the same time gave his very valuable antique collection to the new institution. Palatine József, the country's highest administrator at that time, officially opened the museum and also made the first donation of minerals. Later Countess Julianna Festetics presented an even more important collection to the curator, József Jonas.

The Department of Mineralogy was established in 1839 and a number of extraordinary mineral collections were acquired from Szájbély, Fauser, Brunswick, Forray, Lobkowitz and Weiss. In 1847, a neoclassical building designed by Mihály Pollack was completed, and the museum's various departments moved in.

The mineral collection's golden age began with the support of two self-sacrificing and generous maecenas—Andor Semsey (andorite and semseyite) and József Krenner (krennerite). Semsey was a very rich landowner who devoted most of his income to the development of geological studies with the emphasis on mineralogy. Krenner was a great mineralogist and, among his many scientific achievements, discovered the new minerals andorite, lorándite, fizelyite and semseyite.

Spectacular acquisitions were added to the Museum's mineral collection until it was considered to be one of Europe's premier assemblages. Eventually the mineral collection totalled 68,577 items with 1085 pieces on display. Of particular interest was the Museum's accumulation of Hungarian opal.

More than 2000 years ago history's first opals were mined near Dubnik in the southern Carpathian Mountains in what is now Czechoslovakia. Before these mines closed for good in 1932 a steady stream of fine opals found its way to the collection drawers of the Hungarian National Museum. In time the Museum's aggregate of opals was considered to be the world's best.

Then on November 4, 1956, Russian troops invaded Hungary. Soviet tanks



DR. ANTAL EMBEY-ISZTIN

Chairman

*Department of Mineralogy & Petrology
Hungarian Natural History Museum*



EARLY MINERALOGICAL LITERATURE
and antique mining tools
Hungarian Natural History Museum

SEMSEYITE
Kisbánya (Chiuzbaia), Romania
Hungarian Natural History Museum Collection
collected in 1883; 12 cm





RUSSIAN MALACHITE
*examined by assistant curator
 Hungarian Natural History Museum*

reportedly trying to silence a Budapest radio station, fire shells which struck the National Museum with devastating effect. Eighty percent of the mineral collection, including all of the opals, was destroyed. In addition, historical documents and records, antique microscopes and old photographs were burned. It is depressing indeed to look through drawer after drawer in the Museum's mineral reserves only to see hundreds of crystallized specimens, once displayed in the mineral halls, now fire stained and shattered.

From the time of destruction a talented curatorial staff of men and women has exerted considerable effort to compensate for the losses, but 31 years later the collection is still far from its former glory. Nevertheless, remaining specimens, new acquisitions, a rehabilitated mineral hall and a friendly English-speaking staff, make a visit well worthwhile.

The Museum's Director General is Dr. István Matskási, and the head of the Mineral Department is Dr. Antal Embey-Isztin. The Mineral Museum is at 14-16 Muzeum Court, Budapest, and is open daily except Monday from 10 a.m. to 6 p.m.



GREAT MINERAL HALL
Loránd Museum
unchanged since the 1880's

LORÁND UNIVERSITY MINERAL MUSEUM

Budapest, Hungary

The Natural History Department of the Royal Hungarian University was founded in 1774. Mineralogy classes were started with the help of the enormous private collection of its first professor—Mathias Piller. The University was located in Nagyszombat (now Trnava, Czechoslovakia).

Between 1771 and 1785 the University moved first to Buda and then to Pest (at that time each was an individual royal town, both merging to become Budapest in 1871). In 1781 the University bought the collection of Princess Maria Anna (daughter of Hungarian Queen Maria Theresa) for 20,000 gold florins. The collection comprised 10,000 pieces from all over the world and was organized and labeled by Ignaz von Born (for whom bornite was named). In 1788 Professor Piller presented type specimens of wehrlite to the university, one of which still exists. In 1800 the 26,000-piece Piller collection was accessioned which, when inventoried in 1811 and recorded in the *Catalogus Revisionalis*, proved to be the largest single mineral collection ever acquired by a university.

The 818-piece collection of the Grand Duchess Alexandra Pavlovna (daughter of Russian Tsar Paul I who died in Hungary) was received as a present in 1809.

In 1831 István Szajbély (szaibelyite), a Transylvanian mining engineer, bequeathed a collection which contained the type specimen for szaibelyite. This piece is still in the university's collection.



PROF. JÓZSEF SZABÓ
(1822–1894)

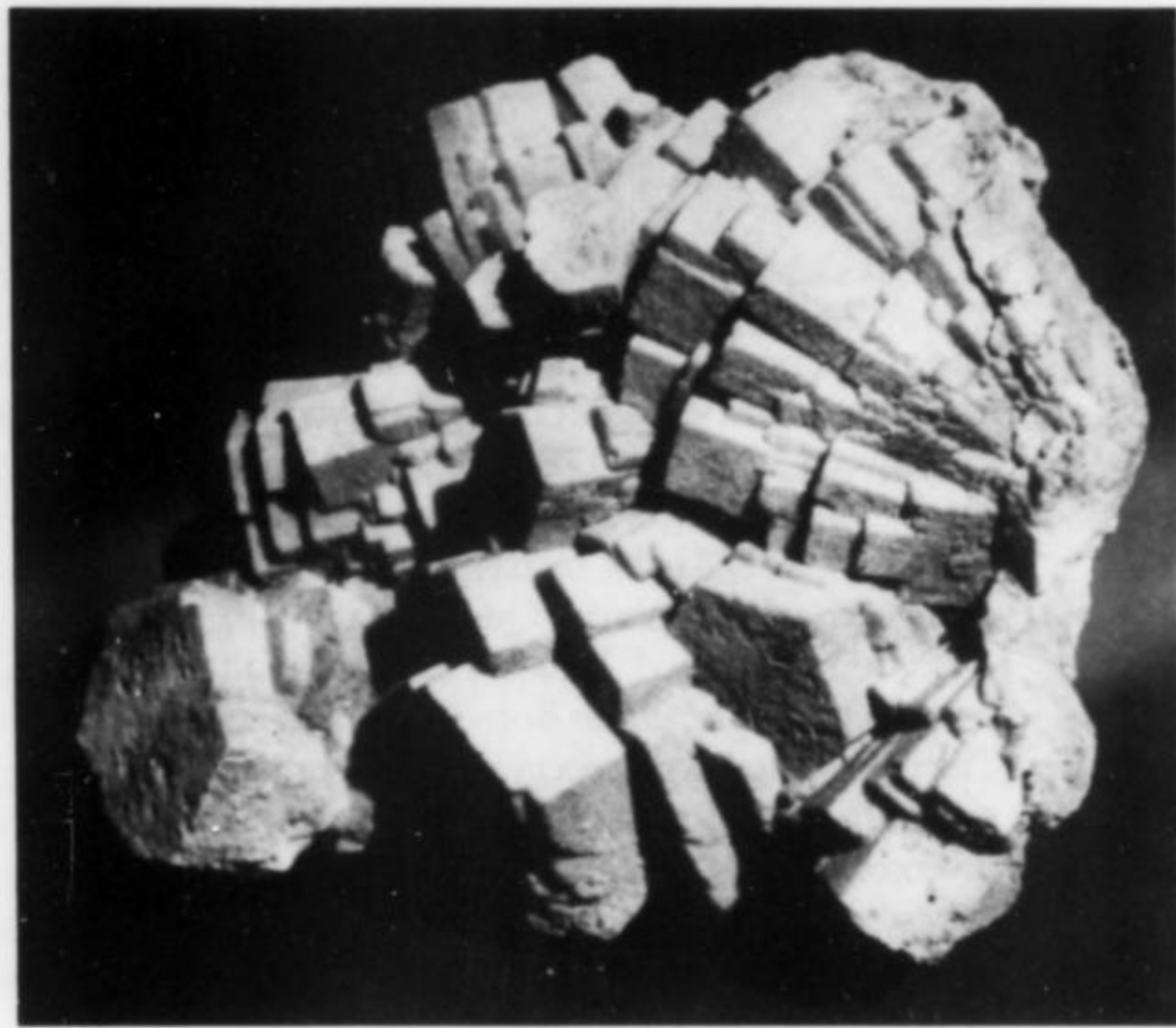
Early curator of the Loránd Museum



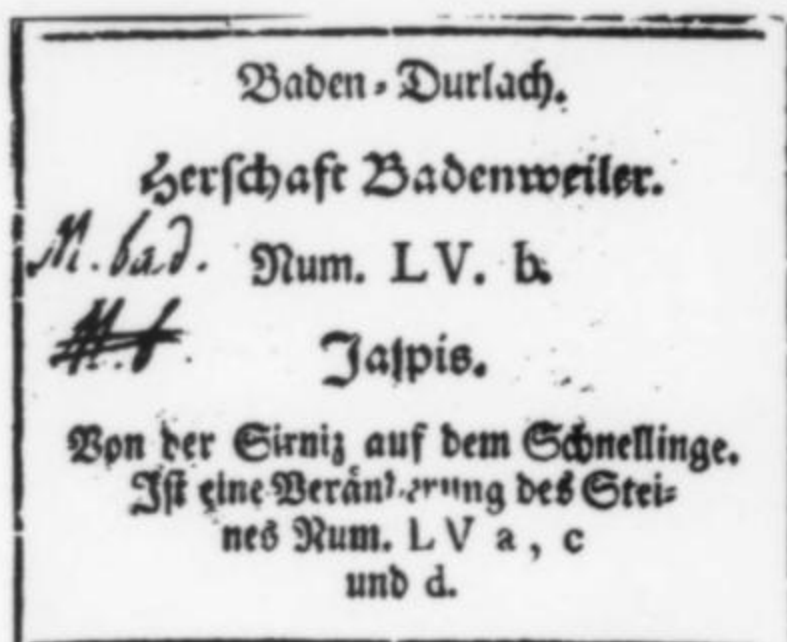
LORÁND UNIVERSITY NATURAL SCIENCE BUILDING
Budapest
 1890 photo; building looks the same today



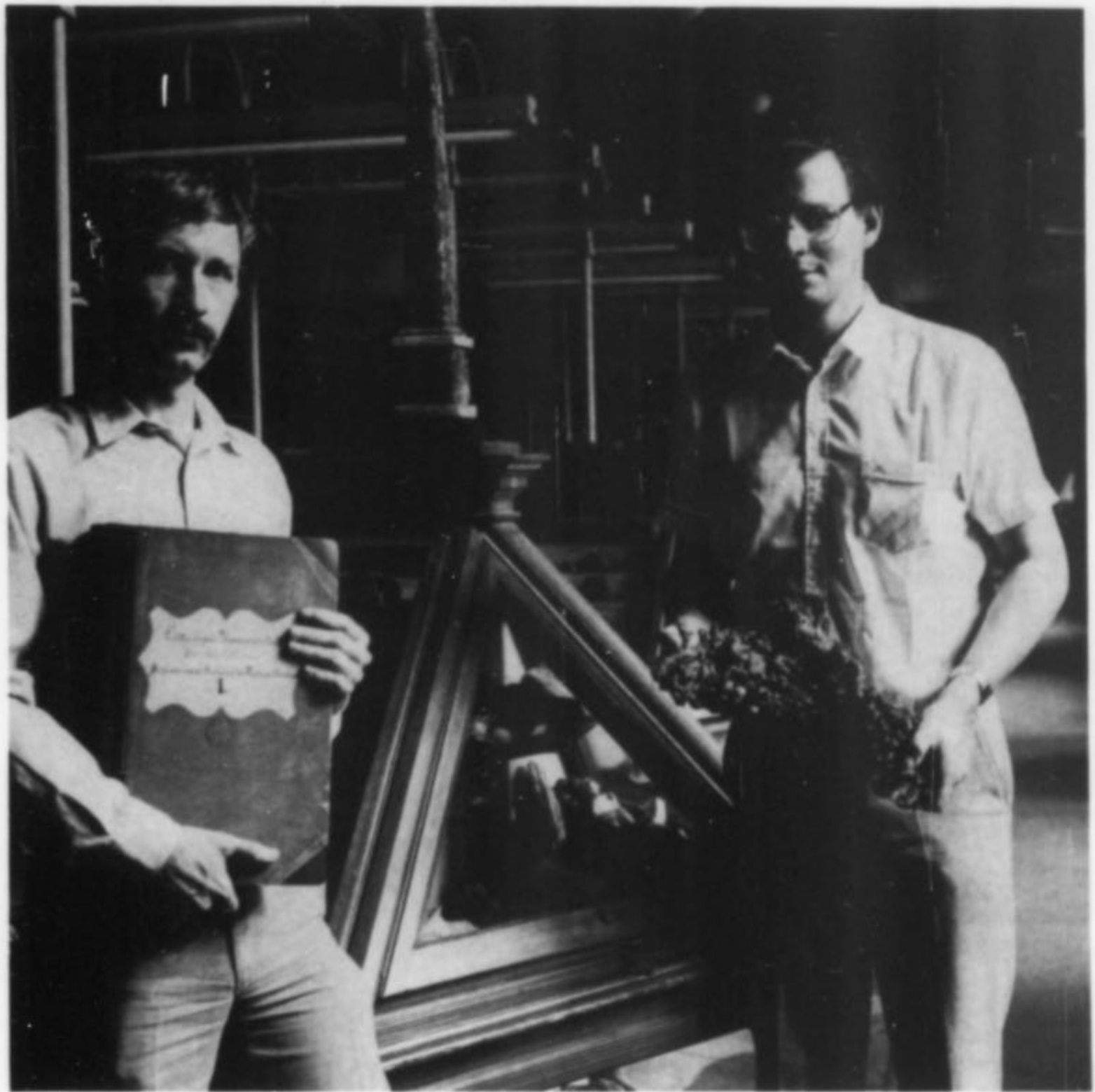
MELLITE
Csordakút, Hungary
 Loránd Museum Collection
 crystal: 3 cm



CALCITE AFTER ARAGONITE
Selmechánya, Czechoslovakia
 Loránd Museum Collection
 25 cm



MINERAL LABEL

*Maria Anna Collection, 1781**Loránd Museum Collection*

GÁBOR PAPP & TAMÁS WEISZBURG

*Curators**Loránd Museum**holding original catalog of the Maria Anna Collection, and copper specimen collected recently at Rudabánya, Hungary*

During the Hungarian War of Independence (1848–49) the collection was moved for safekeeping but poor care ruined many important pieces. During the next 40 years a number of collections were added including the 3500-piece systematic collection of Anton Fauser (fauserite). József Szabó became collection curator and a golden era of collecting began. Szabó traveled widely to mining regions and to where collections were being offered for sale. He corresponded with mineralogists all over the world, including James D. Dana.

The new natural history building was inaugurated in 1886. During the period of 1895–1913 Professor József Krenner (krennerite) and Baron Andor Semsey (semseyite, andorite), both already deeply involved with the Hungarian National Museum, still found time to develop the Loránd University collection into one of the most important mineral assemblages in the world. The mineral collection was not significantly damaged during the World Wars. When the National Museum in Budapest burned in 1956, the Loránd University collection (named for physicist Eötvös Loránd (lorandite)) became the main base of teaching and mineralogical research in Hungary.

Today's visitor finds a true time machine. Simply stepping into the university's "Great Mineral Hall" sends one back to the 1880's. The parqueted hardwood floor is the same one that Krenner and Semsey walked. Doors on the hand-turned wooden cabinets were once unlocked by Szabó to install new acquisitions. And the white vaulted ceiling three stories above continues to peer down upon a Carrara marble statue from Princess Maria Anna's collection. Other museums may install antique displays, but the entire "Great Mineral Hall" is one giant antique. Only a few inconsequential changes have been made. Fluorescent light fixtures have been suspended over each display case. Small brass padlocks serve in place of original cabinet locks. And specimen labels are new and neat. For the unusual in mineral facilities, this century-old installation *must* be visited.

Currently professors Kálmán Sztrókay and Elemér Szádeczky-Kardoss provide professional leadership. Mineral collection curators are Tamás Weiszbürg and Gábor Papp. The collection is not open to the public but can be visited by appointment.



SALTWORKS MUSEUM
Wieliczka, Poland

WIELICZKA SALTWORKS MUSEUM

Wieliczka, Poland

Wieliczka (pronounced *Vyalitchka*) and its Saltworks Museum are located about 15 km southeast of Kraków in southern Poland. The Kraków Saltworks mine has exploited what may be the world's greatest pure halite deposit. Mine tunnels and galleries probe the farthest corners of a solid salt mass 10 km long and 1 km wide with a depth varying from 183 to 335 meters. This enormous salt deposit has been worked for thousands of years and may also be history's oldest continuously worked mine. Brine boiling devices dating to the neolithic age (circa 3500 B.C.) have been found in surface workings on the mine property. It wasn't until the thirteenth century that underground mining methods were used to recover pure rock salt (halite).

According to Knox (1877) "The salt varies very much in purity. Some of it, called *green salt*, has six or seven percent clay; another kind (*spiza*) is mixed with sand, and the third and best sort (*szybik*) lies at the lower levels in unadulterated and beautifully transparent crystals."

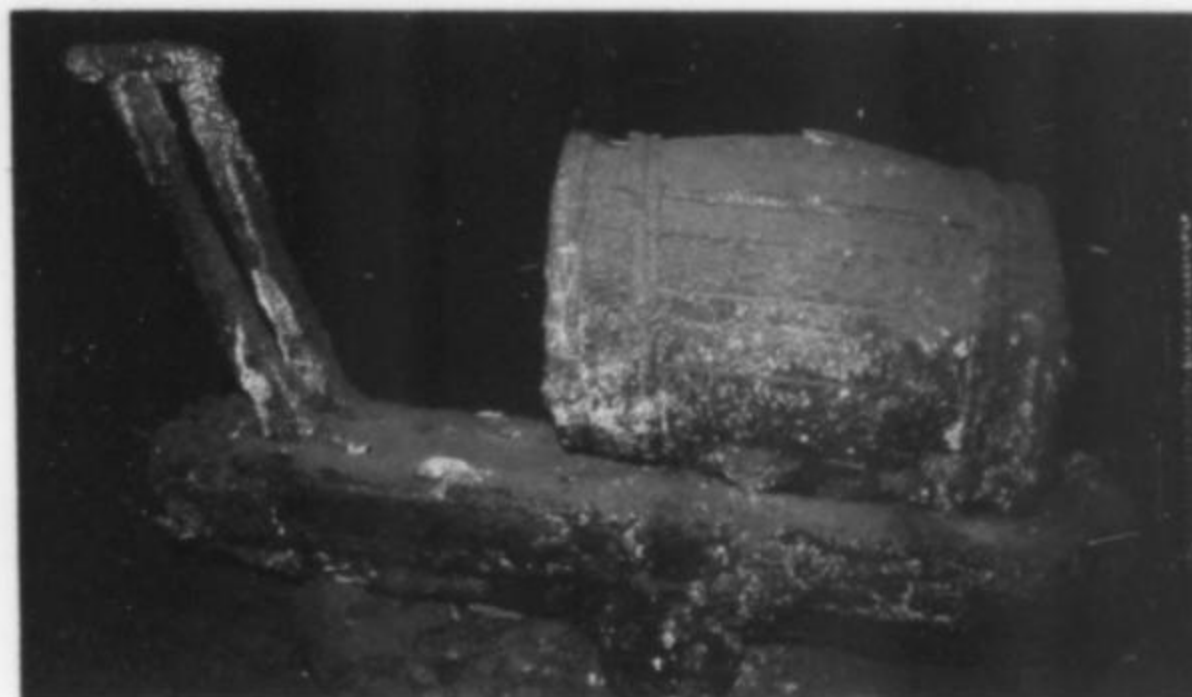
Excavations were extended laterally and downward until they underlaid the entire town and reached far beyond its borders. In all, 26 shafts were sunk into the deposit and another 180 vertical passageways were developed within the mine. Huge wooden machines raised and lowered sisal ropes carrying salt and miners. Mining techniques were constantly being upgraded and not a few innovative machines were created on the site, a large number of which remain as part of the museum. The Saltworks continued to grow until it became the single most important source of income to the Polish government.

The mine had its share of bad times too. Forced to shut down during the Swedish invasion in the late 1600's, there followed a devastating underground fire in 1644 and a miners' revolt which was finally suppressed on "Passion of Christ" hill when 22 ringleaders were butchered in public. In addition, there were underground floods, explosions and massive cave-ins.



WIELICZKA MINER'S CREST
Saltworks Museum

EARLY MINE CART
with cylinder of salt, ca. 1810
discovered in old workings



Visitors have always been impressed by the size of the workings and technical peculiarities of the mining equipment. French mineralogist François Beudant (1787–1850) toured the salt mines in 1818, and described descending the shaft: a hoisting rope, he said, was hung with five or six large loops in which the miners (and visitors) sat while being lowered down the shaft. They formed a sort of living chandelier, the analogy rendered more close by each person holding a lighted candle in his hand. (Visitors today are taken underground in safer and more dignified fashion, by stairway, and are returned to the surface by large mine elevators in the Daniowicz shaft.)

Throughout the mine's history, visual expression of religious faith has been of great importance to the miners. This was first evidenced by the construction of symbolic niches in walls; in later years nearly all chambers on levels I, II and III were converted into holy shrines—true works of beauty. UNESCO has added the Saltworks Museum to its list of Places of World Cultural Heritage. This organization states in its book, in somewhat contorted English: "The Wieliczka genuine and original excavations as well as the objects of mining art represented by sculptures in salt belong to objects without parallel in the world."

The upper levels of the Kraków Saltworks have been turned into a tourist museum. Although the Kraków Saltworks is still a salt producing mine, miners will not be seen. Salt is now recovered by pumping saturated solutions to the surface for processing. The visitor can join one of the never-ending groups of tourists or, for an extra fee, can arrange to be a part of a smaller, more personalized unit. The tourist route begins with a walk down flights of stairs to the third level (135 meters down). Twenty galleries and chambers are visited (about 2% of the mine's total labyrinth). The museum exposition on level III consists of thirteen chambers filled with ancient mining installations and tools representing old haulage and hoisting systems, historical documents, miners' hand tools and lamps, mineral and fossil samples and artistic handicraft goods made by miners centuries ago. Exhibits in the Miejska chamber present models, artifacts, weapons, and coins—all connected with the history of mining at Wieliczka. The Maria Teresa Chamber III contains many glass cases and dioramas of geological interest: minerals, fossils and geological structures. Here groups of giant crystals of halite form perfect cubes up to 10 cm on an edge. There are specimens of anhydrite, gypsum and unusual sulfate minerals like mirabilite. Interesting fossils include carbonized pine cones, seeds, nuts and wood.

The mine trip is 4 km long at a mean temperature of 14° C and requires two and a half hours. Visitors are whisked back to the surface where, upon emerging into the sunlight, they take with them an experience shared by 800,000 tourists who enter the Saltworks Museum each year. For an unbelievable underground tour the Saltworks Museum ranks with the best anywhere.

The Saltworks Museum is open from April 16 to October 15 daily from 7 a.m. to 7 p.m. The rest of the year it is open daily from 8 a.m. to 4 p.m. A modest fee is charged for admission. Group excursions may be arranged by writing: Krakow Tourist Enterprise "Wawel-Tourist," Wieliczka Branch: 32-020 Wieliczka 3, Bohaterow, Warszawa, Poland (includes guide, reservation, entrance ticket, meals and accommodations for the night in private lodgings).



POSTAGE STAMP
Halite crystal group from the
Maria Teresa III Chamber
Wieliczka
specimen: 32 cm



WIELICZKA SALT MINE
19th century miners descending a shaft



CURATORS & GEOLOGISTS
Gold Museum, Brad, Romania

THE GOLD MUSEUM

Brad, Romania

Brad is about equidistant between Budapest, Hungary, and Bucharest, Romania. This little town is one corner of the Golden Tetragon, a famous mining region in the mountains of Transylvania in Western Romania. Other gold mining villages at corners of the geometric figure are Baia de Aries, Săcăraamb and Zlatna.

Beautiful pure gold artifacts dating to the fifteenth century B.C. have been found in Transylvania. Romans conquered and ruled the area from 106–271 A.D. and during this time mined an estimated 180 tons of gold. Some Roman-built tunnels remain today but tourist access is restricted.

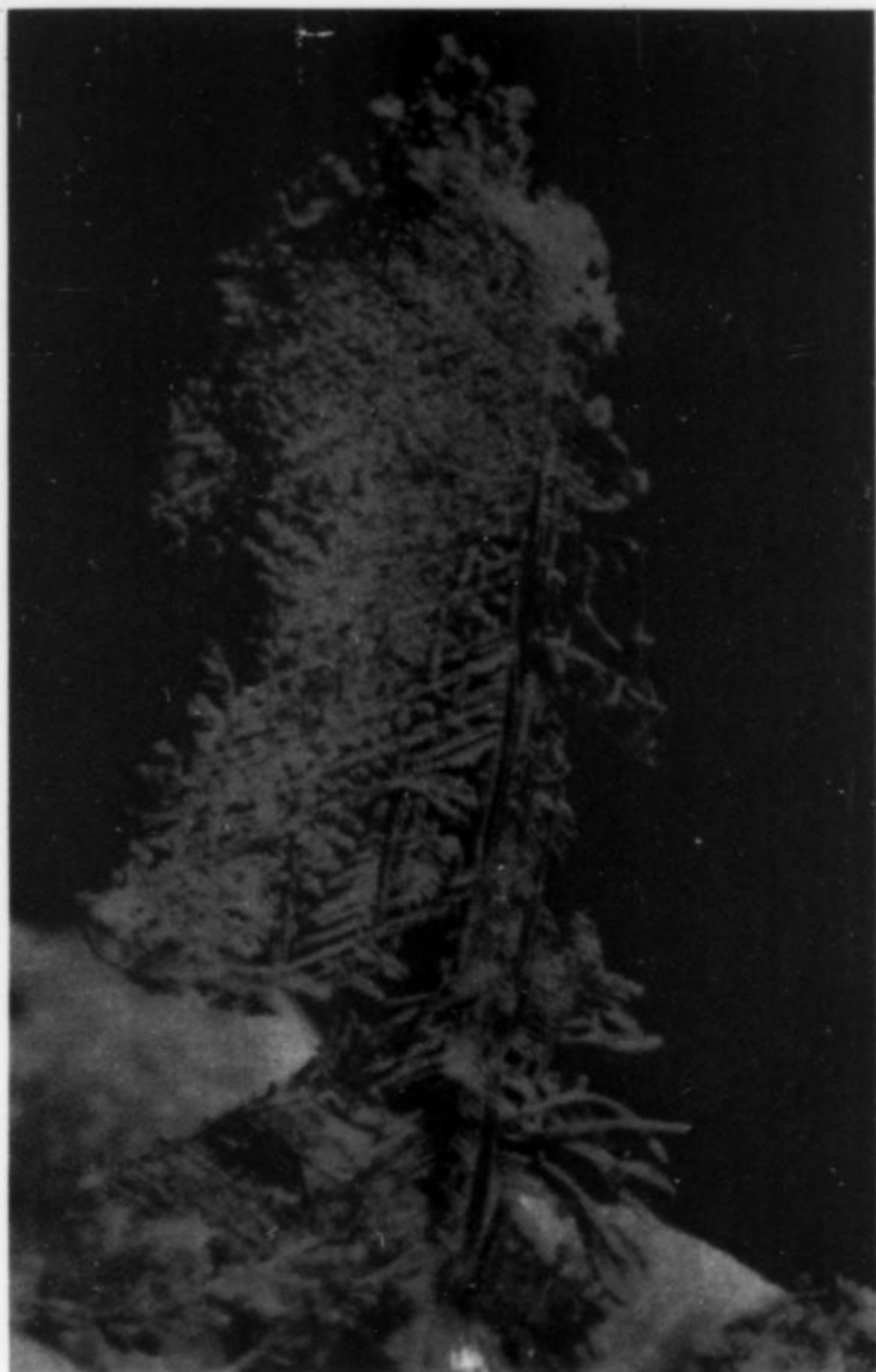
There are many gold mines in Transylvania which are still in operation. Unfortunately production is down from previous years, and because miners now work in low grade ore, gold crystals of mineralogical interest are seldom found. Occasionally reports surface of gold crystals still being found at the Rosia Montana mines, but the specimens don't appear to be abundant or of exceptional size or quality.

The Gold Museum (Muzeul Aurului) at Brad contains a very fine collection of gold crystals, sulfosalts and tellurides. The museum is small, as are individual mineral samples, but a visit is definitely worthwhile. Unfortunately, permission to visit is extremely difficult to obtain. It was necessary for me to contact the Minister of Mines in Bucharest (who oversees the museum) before being permitted inside, and even then photography was prohibited.

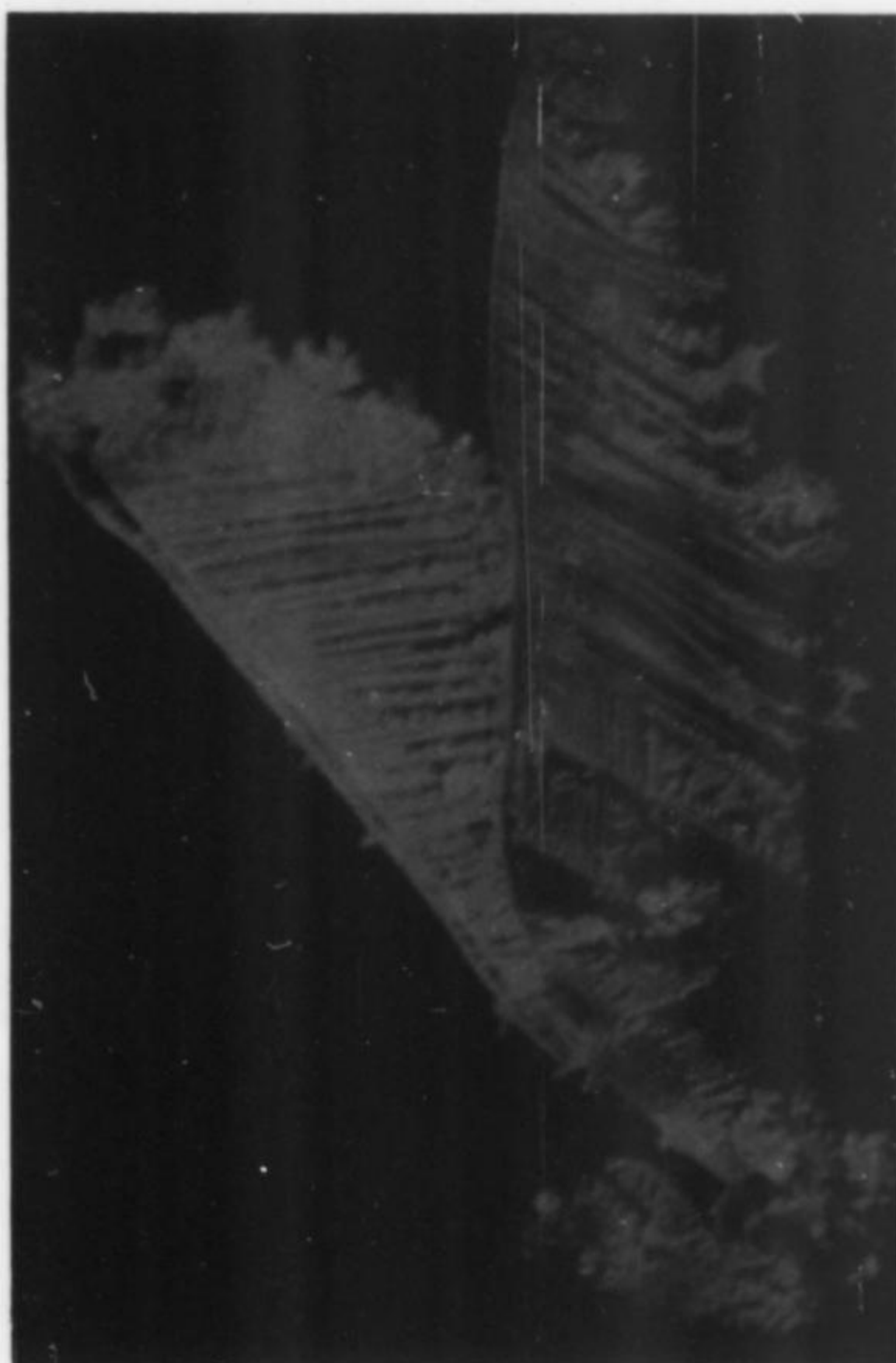
The Gold Museum is a small stuccoed building centered in a well maintained garden surrounded by a low fence and rows of small trees. After unlocking the front door an attendant cordially greeted our party and then conducted us on an hour-long tour of four small rooms. The minerals are carefully displayed in glass cases which fill each room. Gold specimens predominate to such a degree that it



GOLD
Rosia Montana, Romania
Gold Museum Collection
7 cm



GOLD
Masariu, Romania
Gold Museum Collection
 5 cm



GOLD
Masariu, Romania
Gold Museum Collection
 4 cm

is a temptation to ignore other species. Most gold crystals have an intense yellow-gold color, but a few are pale yellow indicating a substantial percentage of silver which would classify them as being argentiferous gold, or electrum. There are no reddish varieties of gold, proof that major amounts of copper are absent in the gold specimens.

The most characteristic gold forms on exhibit are: leaflets or aggregate plates on quartz; moss-like filaments in rhodochrosite and on marcasite and quartz; distinctive, brilliant metallic cubes, octahedrons and dodecahedrons; wires, one of which is very heavy and measures 5.5 cm in length; and exceptionally fine reticulated sheaves resembling dendrites.

The museum also has a small collection of tellurides including sylvanite, nagyagite, petzite, krennerite, tetradymite, hessite and altaite. In addition there are excellent specimens of proustite from Chañarcillo, Chile; hessite from Botés, Romania; millerite from Rhenanie, Germany; semseyite from Herja, Romania; and enargite from Bucium Ibitza, Romania.

Interesting exhibits feature tools used in the remote past by Transylvanian miners for the extraction of gold—bronze axes and picks and stone implements. Remnants of early Roman statues and ceramic pots are also on exhibit.

Travelers who wish to visit the Gold Museum (and who have enough clout to obtain permission) will be captivated by this little facility devoted almost entirely to gold. A letter of request should be addressed to the Minister of Mines at least six months in advance of the anticipated date of arrival.



FERSMAN MUSEUM
Moscow

FERSMAN MINERALOGICAL MUSEUM

Moscow, USSR

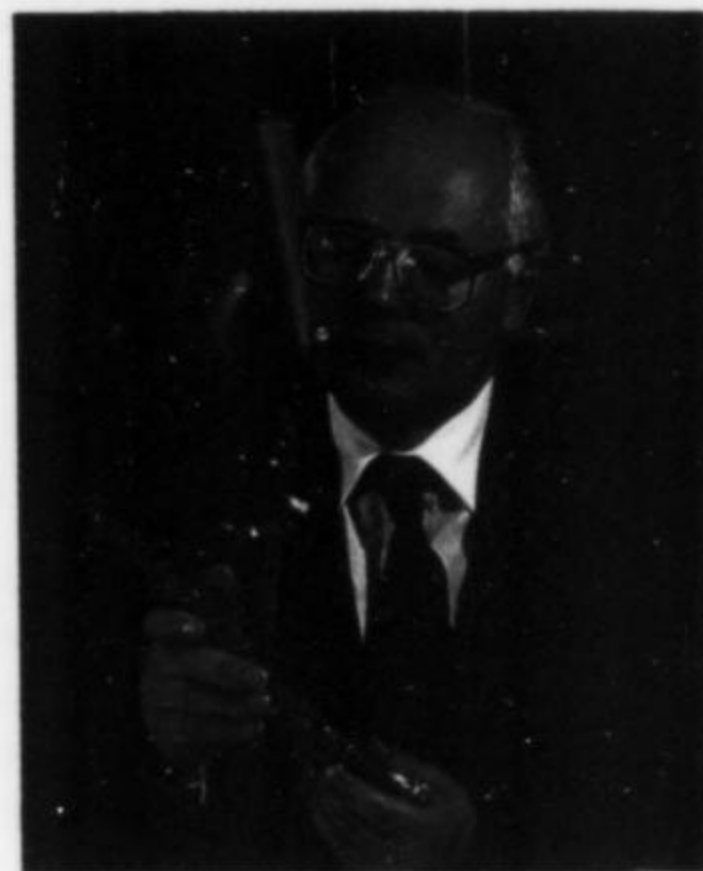
One of the world's most exciting and truly great mineral museums is the Fersman Mineralogical Museum in Moscow. Old-world cabinetwork and general atmosphere, marvelous minerals and a talented and friendly curatorial staff assure the visitor of a rare and delightful experience.

The Fersman Museum boasts one of the world's largest collections of Russian and worldwide minerals and gems, totalling over 120,000 items. The museum is located in the former riding school of Count A. G. Orlov's Neskuchny Palace, and is an excellent example of early nineteenth-century Russian architecture.

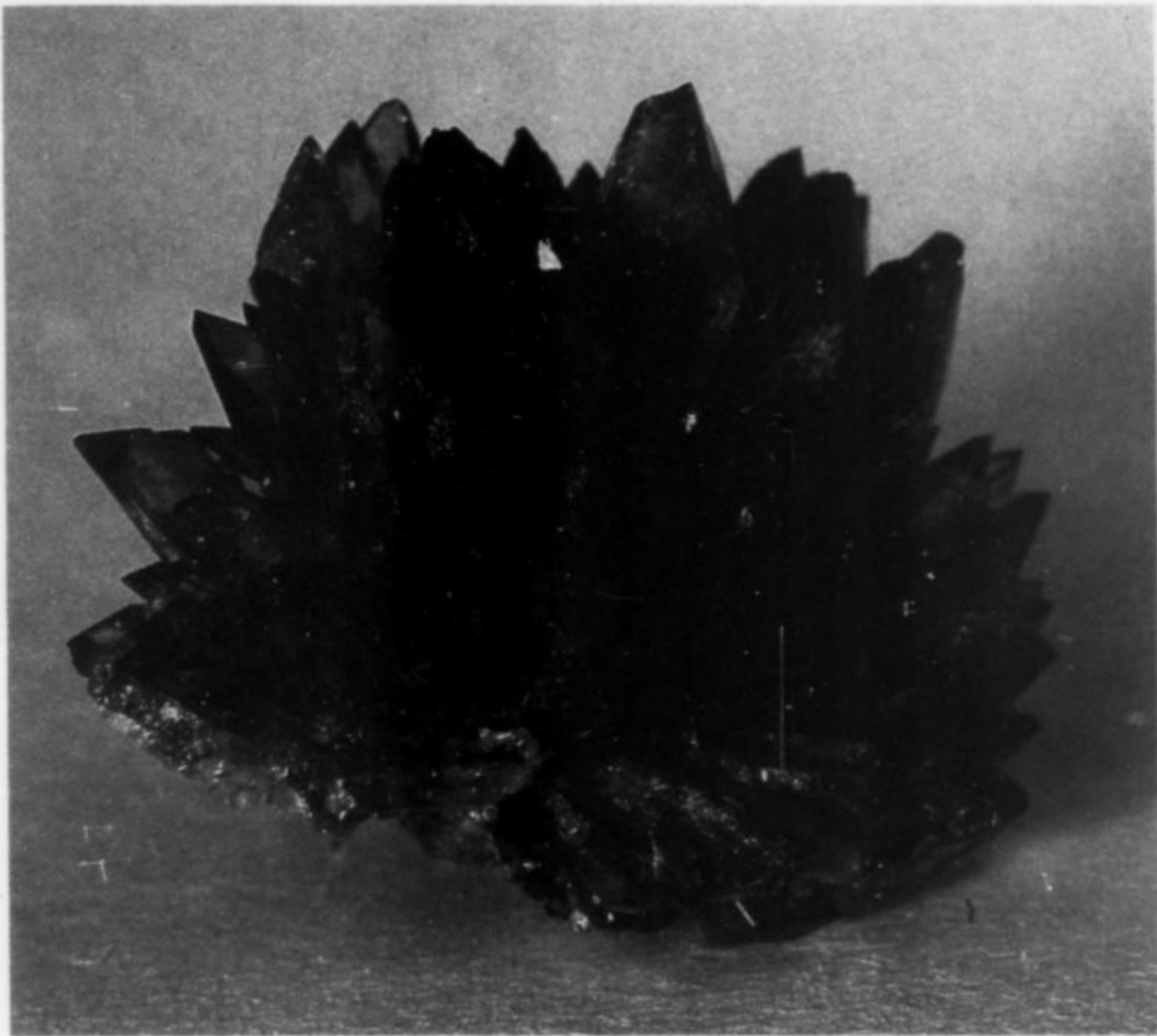
The Museum's origin can be traced back to 1716 when Peter the Great bought his first mineral collection (1195 specimens) from M. D. Gottwald of Danzig. This was the beginning of the mineralogy section of the Chamber of Treasures or *Kunstkammer* of St. Petersburg, Russia's first museum. In 1725 Peter founded the Academy of Sciences, today's parent institution of the Fersman Museum.

Additions to the mineral collection in the Chamber of Treasures were made during expeditions to Saxony, the Ural Mountains, and the Altai region undertaken by Academy members. In 1780 a special exhibition of mineral specimens was opened to the Russian public. The collection flourished under director V. M. Severgin who, by 1836, had enlarged the collection to 20,000 specimens. Following the October Revolution the museum's mineral collection expanded even more rapidly.

In 1919, Academician Alexander Evgen'evich Fersman (1883–1945) became the director of the Mineralogy Museum. Fersman arranged for the purchase of many private collections, and sent teams of young Soviet mineralogists on collecting trips throughout Russia. These large-scale expeditions opened up new mining regions and greatly increased the museum's collections. In 1934, after Moscow was named the national capital, the collection was transferred to new quarters there. In 1956 the Mineralogy Museum was renamed after Fersman.

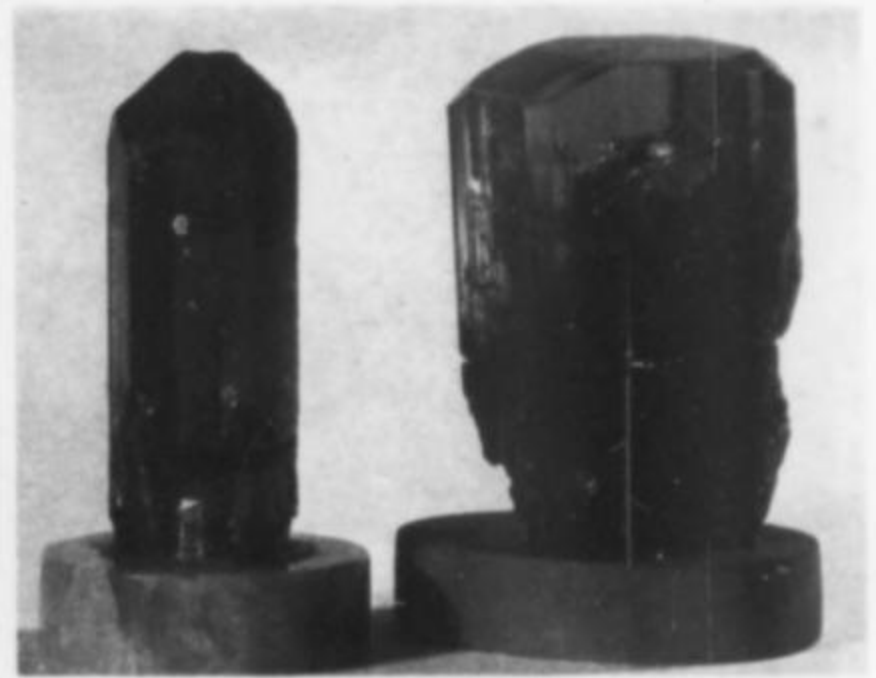


DR. PROF. ALEXANDER GODOVNOV
Director, Fersman Museum
examining Chinese stibnite crystal



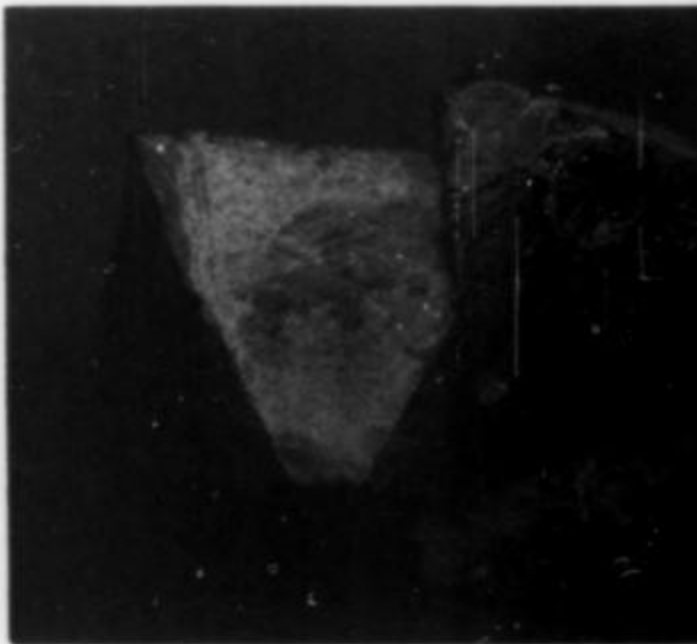
CREEDITE

*Dzhezkazgan, Kazakhstan, USSR
Fersman Museum Collection
collected in 1984; 6 cm*



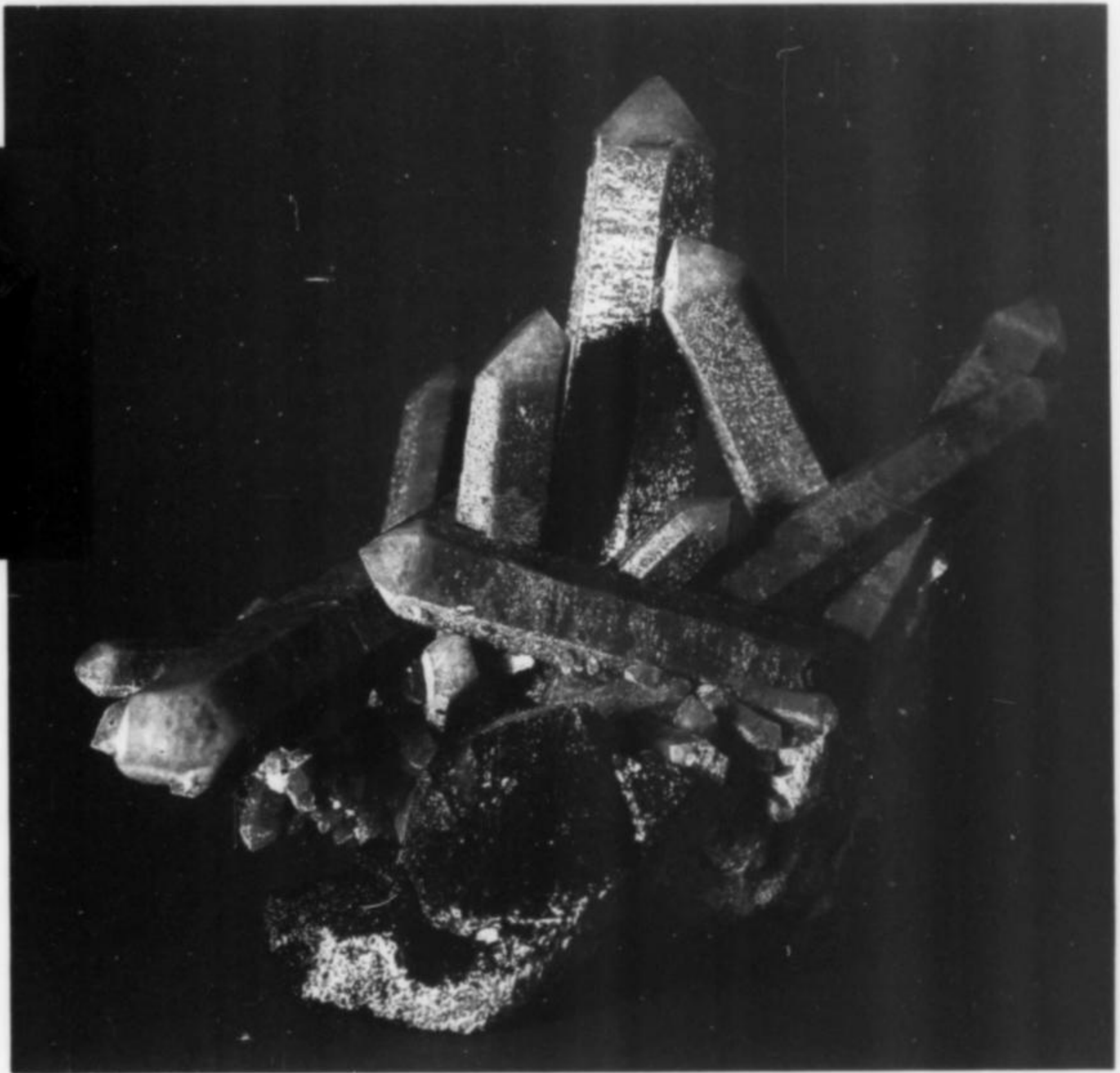
BERYL

*Ural Mountains, USSR
Fersman Museum Collection
7 cm each*



PLUMBOMICROLITE

*Kejvy, Kola Peninsula, USSR
Fersman Museum Collection
collected in 1984; 15 cm*



QUARTZ WITH FLUORITE

*Dzhezkazgan, Kazakhstan, USSR
Fersman Museum Collection
collected in 1984; 17 cm*



DR. VICTOR STEPANOV, DR. LEO BULGAK
holding 35-cm orpiment crystal
from Menkyule, Yakutsk, USSR
Foreground 70-cm group of danburite crystals
from Dal'negorsk, Primorskiy Kray, USSR
Fersman Museum Collection

SILVER

Kongsberg, Norway

Presented to Peter the Great in 1718

PLATINUM

Is River, Perm, USSR

9 cm; 1.7 kilograms

COLLECTION CATALOGS

19th century collections acquired by the
Fersman Museum

Today the museum's main task is to keep enlarging its displays and studies of the earth's minerals. The museum makes its mineralogical material available to other institutions for study (at the time of writing this article, 1000 Fersman mineral specimens were on loan to a major exposition in Hungary). The museum has established broad scientific links with institutions and individual scientists abroad, and the exchange of minerals with other museums receives high priority.

The Fersman Museum mineral collection reflects the scientific skills of past curators like Fersman, G. P. Barsanov,¹ Y. L. Orlov and the present staff of Godovnov, Stepanov and Bulgak.

A number of minerals on display are the best of their species in the world or are world-class specimens. A few incredible minerals in the collection include alexandrite, danburite, orpiment, platinum and perovskite. In addition there is a 15 x 30-cm natrolite crystal, and outstanding crystals of Russian emerald, topaz, diopside, epidote, cuprite and murmanite.

Special exhibitions include meteorites, minerals discovered in the USSR, mineralogenesis, geochemistry, colors of minerals and crafted gemstones. Acrylic and glass labels add a modern touch. Make no mistake; a full day at least should be planned for a visit to this great collection. Fifteen thousand pieces (10% of the collection) are on display.

A taxi will provide easy transportation to the museum, which is open Tuesday, Thursday and Sunday from 10 a.m. to 6 p.m.

¹In 1973 the author and Barsanov threw a frisbee for nearly an hour in the Museum's parking lot, during which the curator said, "I must become familiar with this machine before presenting it to my son."



ALEXANDER E. FERSMAN
(1883-1945)

appointed Museum Director in 1919



EXHIBIT HALL
Mining Institute
Leningrad

LENINGRAD MINING INSTITUTE

Leningrad, USSR

Visitors to Leningrad probably remember reading in *Fodor's Russia* that this Baltic seaport is the most beautiful city in the Soviet Union. High priority is given the State Hermitage, a fabulous complex of buildings, including those of the Winter Palace, which comprise one of the world's greatest museums. The visitor will find within its halls an unbelievable array of historically important treasure that are enhanced by entire walls of malachite, agate, jasper and marble. Of particular interest is the Czar's throne room featuring 40 marble columns and a mosaic map of the Soviet Union set with gemstones from the Ural Mountains. Equally spectacular are entire rooms filled with tables, vases (ormulus; the largest being 184 cm high) and columns all of thickly veneered malachite. This material was mined at the beginning of the nineteenth century at the Gumeshevsk mines in the Ural Mountains, 56 km southwest of Ekaterinburg (now Sverdlovsk). Fashioned at the Peterhof and Ekaterinburg lapidary works, these exquisite examples of mineral art are unique in the world.

In its earliest days (1703–1914) Leningrad was known as St. Petersburg where, from 1870 to 1947, Peter Carl Faberge's craftsmen created splendid objects of silver and gold studded with gemstones. Many Faberge works of art may be admired today in the Hermitage.

Far less known is a much smaller sister museum nearby, the Mining Institute of Leningrad, founded in 1773.

In 1806 Russian architect Andrea Nikiforovich designed a new building to house the collections and offices of the Institute. Departments are: Geology, Petrography, Mineralogy and Physical Science History. The building and its departments still function today. Early acquisitions include a reniform mass of high-grade malachite weighing 1504 kg, a 500-kg quartz crystal, and a huge partially formed gold crystal weighing 774 grams (nearly 2 pounds!)



GOLD
Ural Mountains, USSR
Mining Institute Collection
collected in 1864; 774 grams



In 1825 Czar Alexander I issued an order suspending all mining activity in Russia, so that satisfactory specimens of gold and platinum could be preserved for the Mining Institute's mineral collection. (Can you imagine the President of the United States attempting something like that today on behalf of the U.S. National Museum?) A 36-kg gold nugget was among the many specimens recovered as a result.

During the Second World War the most valuable specimens in the Mining Institute were spirited out of the city before the siege of Leningrad and hidden at Sverdlovsk. The bulk of the collection, which remained behind, was carefully packed and then sunk beneath a dam for several years.

The Institute's 175th jubilee was celebrated in 1948. The Russian fondness for very large specimens again was demonstrated, this time with the addition of a 330-kg group of fluorite crystals, a calcite crystal weighing 297 kg, a 450-kg iron meteorite, and an 800-kg quartz crystal found in the Ukraine. A collection

MUSEUM ASSISTANT PREPARING DISPLAY
Mining Institute, Leningrad



EXHIBIT HALL

Mining Institute, Leningrad
Malachite specimen weighs 1504 kg.



POSTAGE STAMP

Commemorating 200th anniversary
of the Mining Institute, Leningrad



SILVER

Kongsberg, Norway
Mining Institute Collection
8.5 cm

of tables, chairs and panels studded with 495 floral mosaic designs in gemstones was a striking addition to the collection. There are also outstanding examples of historic Russian gem minerals including crystals of morganite, aquamarine, emerald, phenakite, chrysoberyl, alexandrite, rubellite and blue topaz.

The crystal room bulges with crystal models and displays of Russian pseudomorphs, examples of twinning and crystal association. Another room is devoted to meteorites and cosmic mineralogy. The meteorite collection from Russian and foreign falls is rated as one of the world's best. The Mining Institute (today also known as the Superior Institute) houses a fine assemblage of marine invertebrate and vertebrate fossils as well.

The Institute's curator is D. Grigoriov. Museum hours are 10 a.m. to 5 p.m. weekdays.



SLOVENIA NATURAL
HISTORY MUSEUM
Ljubljana, Yugoslavia

SLOVENIA NATURAL HISTORY MUSEUM

Ljubljana, Yugoslavia

One of the oldest yet least known natural history museums in Europe is located in Ljubljana, Yugoslavia. The Provincial Museum, as it was first known, was founded in 1821 and opened its doors to the public in 1831. From the beginning the museum was designed to be a general museum, dealing in local and regional history, ethnography and the study of natural history objects.

In 1888 the Provincial Museum moved into its new quarters at Prešernova Street 20, its home today. Later the museum was divided into three separate branches, all under the same roof: the National Museum (the Narodni muzej), the Slovene Ethnographic Museum (the Slovenski etnografski muzej), and the Natural History Museum of Slovenia (the Prirodoslovni muzej Slovenije). The Natural History Museum features mineralogy, geology, zoology and botany.

Possibly the greatest gift to the museum was the Zois mineral collection. Its creator was Sigmund Zois (1747–1819), whose full title was Sigmund, Baron Zois of Edelstein. Zois was wealthy, owing to a wholesale iron business in Ljubljana and mines and iron plants in Gorenjsko (Carnolia). He was known internationally as a great natural scientist and a superb mineralogist. In 1793 a diploma was bestowed on Sigmund Zois by the Imperialis Leopoldino-Carolina Academia Naturae Curiosorum, Erlangen. In 1805 German mineralogist A. G. Werner named a new mineral zoisite in honor of Sigmund Zois. The type locality of zoisite is Prickler Halt in the Saualpe Mountains of the Austrian state of Carinthia. In 1971 (the museum's 150th anniversary) a bronze bust of Zois was unveiled next to the display of his minerals.

Zois's collection totals about 5000 minerals, ores and rocks. The most beautiful items are exhibited while the rest are kept in the "depot" (storage rooms). Specimens came from localities all over Europe, particularly Transylvania, Hungary and Romania. Zois sent mineral dealer Simon Presern over much of Styria and



SIGMUND ZOIS
(1747–1819)
Yugoslavian mineralogist



EXHIBIT CASES
Zois Mineralogical Collection
Slovenia Natural History Museum



CALCITE
St. Andreasberg, Harz Mountains, East Germany
Zois Collection, ca. 1810
Slovenia Natural History Museum
11 cm

AZURITE & MALACHITE
25 cm Sasca Montană, Romania
Zois Collection, ca. 1810
Slovenia Natural History Museum



ERNEST FANIGER
Curator of Mineralogy
Slovenia Natural History Museum

Carinthia after specimens. The Zois collection was itemized in two catalogs. Both catalogs and all mineral labels were written in German. Zois's personal letters, mineral catalogs and diploma are kept in the nearby Archives of the SR Slovenia (Arhiv SR Slovenije).

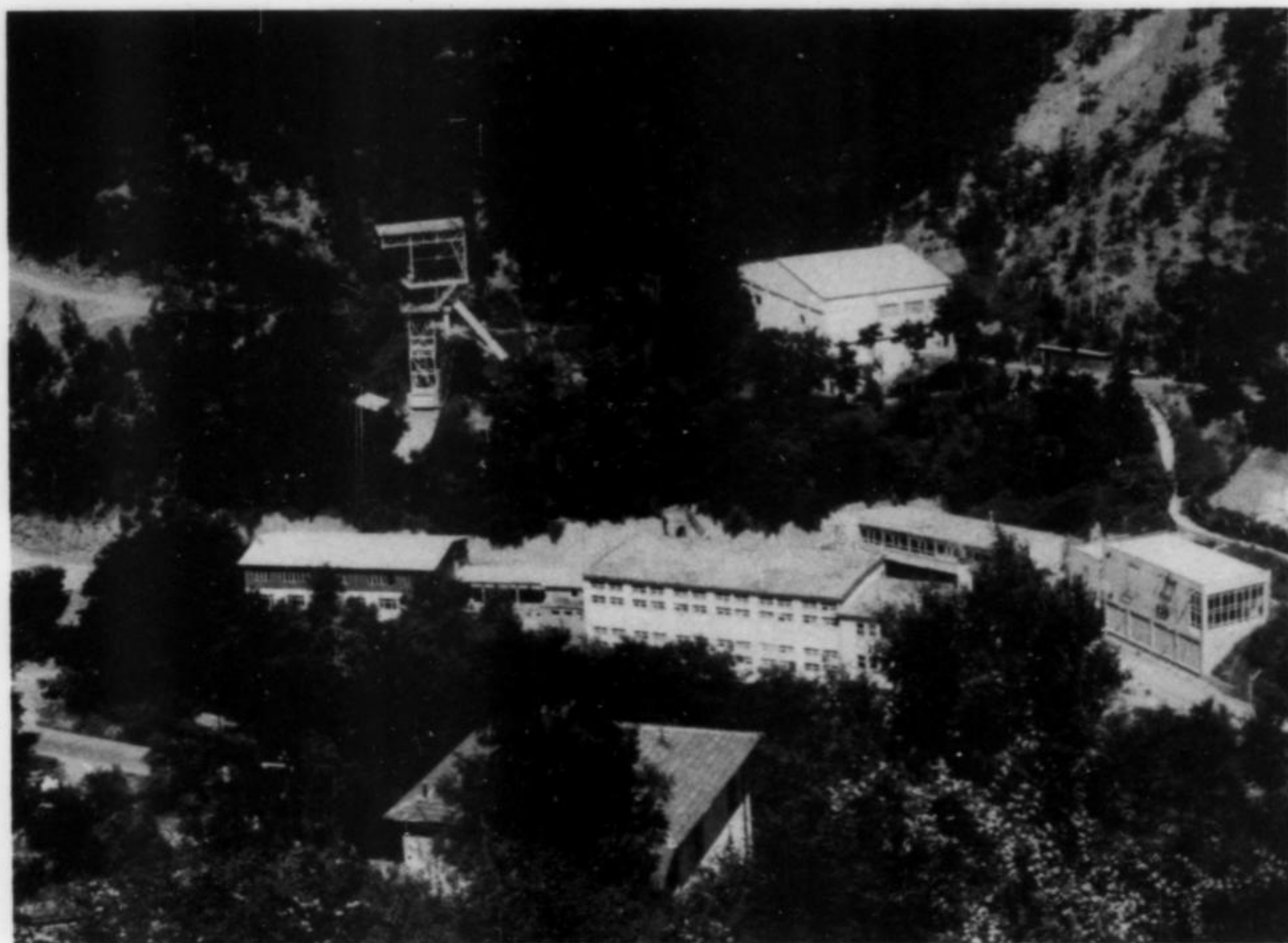
Other important displays in the museum are exhibits of Slovenian fauna and flora. Historically significant is a fine collection of *Conhilia* once owned by Franz, Count of Hohenwart (1771-1844). A particularly valuable object is a herbarium dating to 1696.

Slovenian fossils make up a series of interesting exhibits. Featured are skeletons of the mammoth (*Mammonteus primigenius*), the cave bear (*Ursus spelaeus*), and Triassic fish from the *Birgeriidae* family.

Dr. Ernest Faniger has been curator of the Mineralogy Department since 1953. His research interests include Slovenian magmatic rocks and Sigmund Zois's biography.

The museum is open weekdays from 10 a.m. to 5 p.m.

STARI TRG MINE
and Trepča
Mineralogical Museum



TREPČA MINERALOGICAL MUSEUM

Stari Trg, Yugoslavia

Unlike most Eastern European mineral museums the Trepča Mineralogical Museum does not have a long historical background. But the museum displays beautiful crystals from the Trepča mines whose tunnels and galleries lie directly beneath the museum.

The museum was established in 1966 when it became apparent that spectacular crystals being dug in great quantity from the Trepča mines needed to be put on exhibit for visitors. Now thousands journey each year to the Trepča Museum to see classic examples of lead and zinc minerals.

The Trepča museum, the Trepča mine and Stari Trg mine are clustered together. The nearest city is Kesovska Mitrovica, 10 km southwest on the Sitnica River. The museum and mine complex is equidistant from Yugoslavia's capital of Belgrade to the north and the Grecian border to the south—each being about 215 km away.

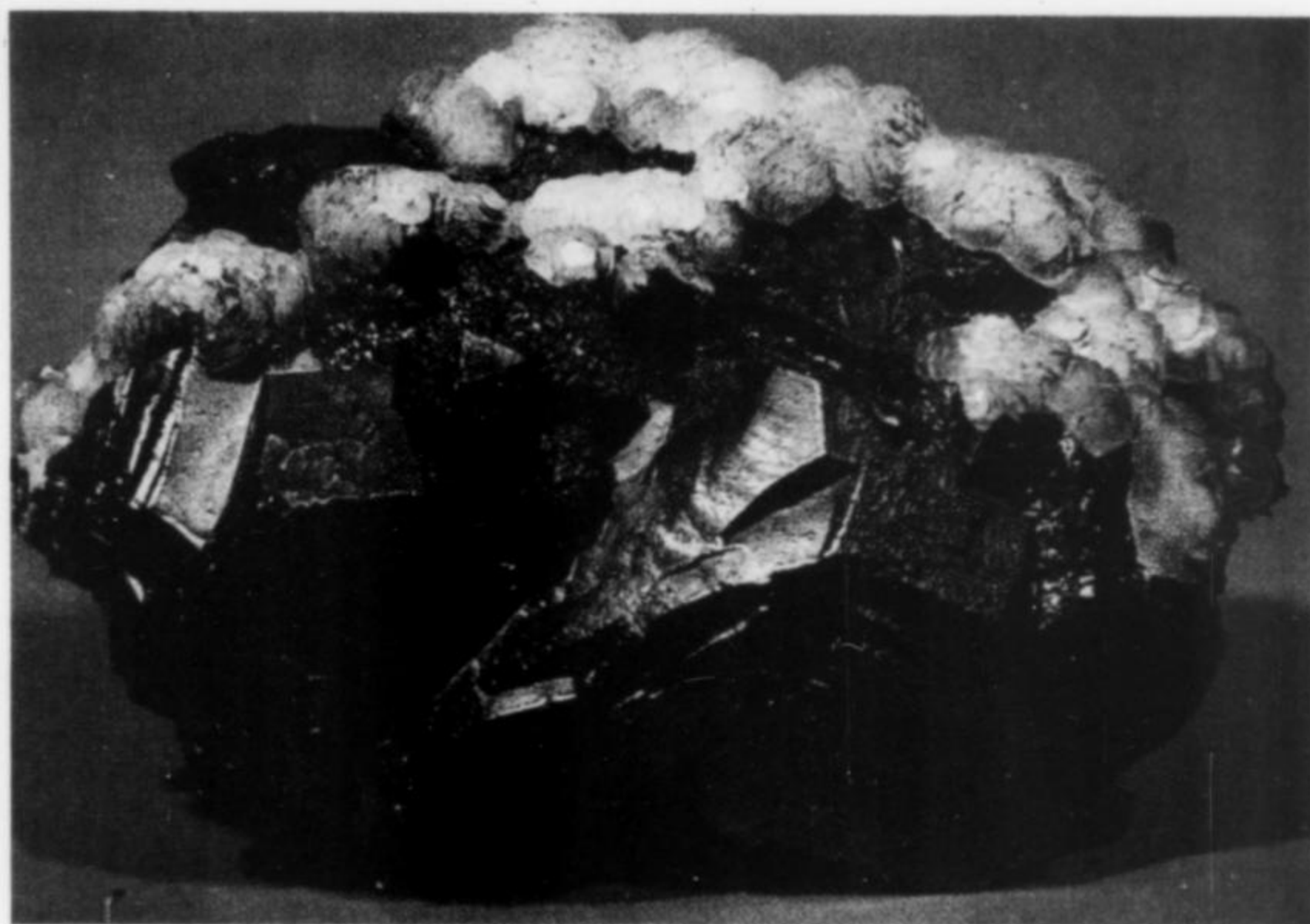
Surviving artifacts indicate Trepča mines were exploited in early Roman times. The first written record on Trepča as a mining district dates from 1303 A.D. In 1389 Serbia became a vassal principality of the Turks, and mining at Trepča declined until the eighteenth century when the mines finally closed. In 1926 a British company, Trepča-Mines Ltd., reopened the old workings and exploration revealed reserves of 1,700,000 tons of highgrade ore.

Working conditions were harsh at Trepča. In 1938 alone there were 25 deaths and more than 100 serious injuries in the mines. Seventy-five miners were dismissed because of tuberculosis. There followed two violent strikes and then World War II, after which the Communists took over the mines.

Mine management is proud of improved working conditions and safety records, as well as the Trepča restaurants which distribute hot meals to miners underground at minimum charge. Production records show Trepča to be one of the most important lead-zinc mines in Europe.

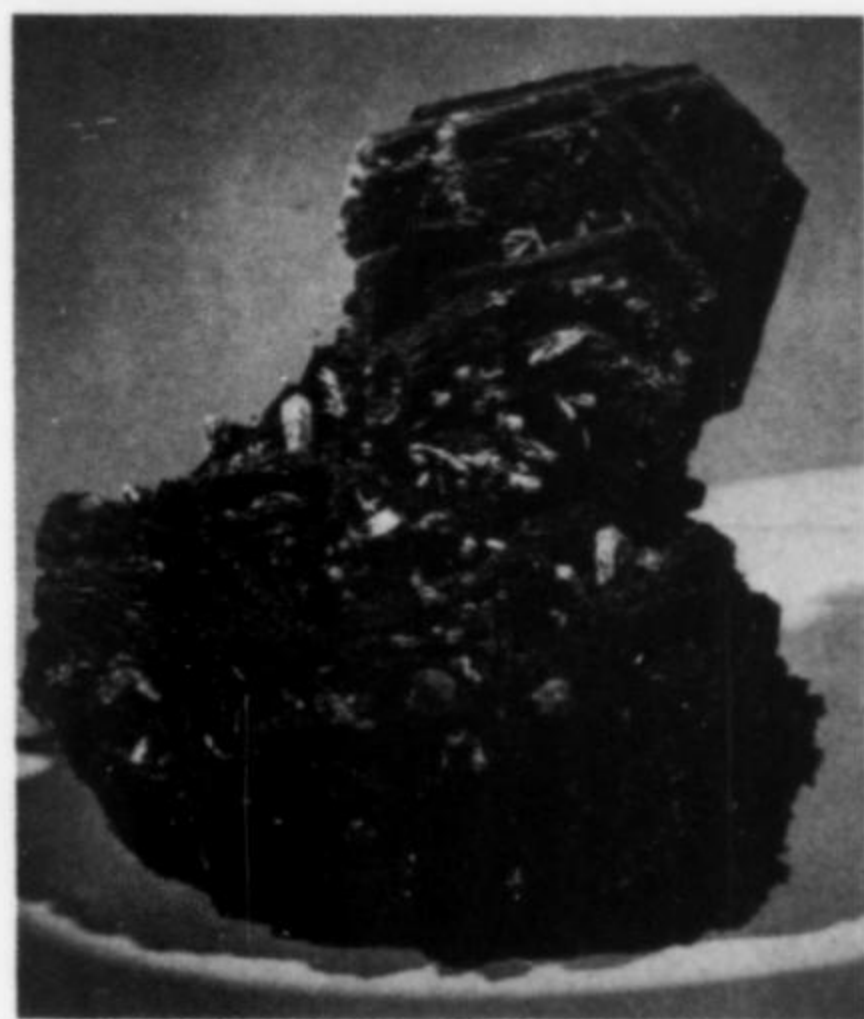


DRAGA BLAGOJEVIĆ
Curator of Mineralogy
Trepča Mineralogical Museum



GALENA WITH CALCITE
Trepča, Yugoslavia
Trepča Mineralogical Museum
18 cm

MINERAL & MINING EXHIBITS
Trepča Mineralogical Museum



PYRRHOTITE
11 cm, Trepča
Trepča
Mineralogical
Museum



Astounding quantities of attractive crystals have come from the Trepča mines in recent years, and more than 70 mineral species have been found there. Minerals which occur in fine crystals are: pyrrhotite, pyrite, chalcopyrite, sphalerite, arsenopyrite, galena, marcasite, tetrahedrite, bournonite, enargite, quartz, rhodochrosite, calcite, ankerite and vivianite. To the delight of mineral collectors, individual mineral specimens frequently exhibit as many as five associate species. Trepča mines produce substantial quantities of the rare elements gallium, tellurium, thallium and germanium, all as byproducts of lead and zinc production.

The Trepča Museum collection exceeds 2000 specimens from local mines. There is also a display of foreign minerals. Many of the Trepča specimens exceed 30 x 30 cm and the very size of these pieces provides space for wonderful associations of ore and non-ore minerals. Particularly interesting are intermixed groups of well-formed galena, sphalerite, chalcopyrite and calcite crystals. Bright grass-green vivianite crystals are outstanding.

The museum also maintains a valuable collection of old mining documents and memorabilia. Its director, Draga Blagojevič, opened the museum's doors in 1966 and still greets visitors today. The museum is open weekdays from 7 a.m. to 2 p.m., but with prior arrangement may also be available on weekends.

APPENDIX

Eastern European Mineral Museums

MUSEUM	YEAR FOUNDED	TOTAL MINERAL SPECIMENS	SPECIALTY
Bulgaria			
<i>Museum of Mineralogy and Petrography</i> <i>Dept. of Geology and Geography</i> University of Sofia, "Kliment Okhridsky" 15 Russky Boulevard 1000 Sofia	1891	9,400	Bulgarian minerals
<i>National Museum of Natural History</i> <i>Bulgarian Academy of Science</i> 1 Russky Boulevard 1000 Sofia	1902	4,000	Vitosha Mtn.; Rila Mtn.; Rhodoplex Mtn.
Czechoslovakia			
★ Slovenské banské muzeum <i>[Slovak Mining Museum]</i> okres Žiar nad Hronom Banská Štiavnica	1927	20,000	Slovakian ore minerals
Katedra mineralógie a kryštálografie <i>[Dept. of Mineralogy and Crystallography]</i> Univerzity Komenského Bratislava	1940	10,000	

★ Discussed in the text

★ Slovenské národné múzeum [<i>Slovakian National Museum</i>] Vajanského nábrežie 2 Bratislava	1958	20,000	
Katedra mineralógie a petrografie [<i>Dept. of Mineralogy and Petrography</i>] University Purkyně Kotlářská 2 Brno	1919	10,000	Czechoslovakian minerals
★ <i>Moravian Museum</i> Dept. of Mineralogy and Petrology Náměstí 25, února 8 Brno	1818	81,000	Moravia, Silesia, Bohemia, Slovakia
Lab. pre výskum nerastných surovín [<i>Mining Research Lab, Mining Faculty</i>] Švermova 5c Košice	1953	4,000	Regional and local minerals
Východoslovenské múzeum [<i>Museum of Eastern Slovakia</i>] Náměstí Maratónu mieru 2 Košice	1958	6,000	Eastern Czechoslovakian mining districts
Múzeum Vlastivědný ústav v Olomouci [<i>Municipal Museum of Natural Science</i>] Náměstí republiky 5, 6 Olomouc	1908	10,000	Jeseníky Mtns., pegmatites; alpine minerals; contact minerals
Slezské múzeum [<i>Silesian Museum</i>] Vítězného února 35 Opava	1958	4,000	
<i>Mining University</i> Ostrava-Poruba	1849	10,000	Příbram; Jeseníky Mtns.
<i>Dept. of Mineralogy, Geochemistry & Crystallography</i> <i>Charles University</i> Albertov 6 Praha 2	1882	20,000 (incl. rocks)	Czechoslovakian and European minerals
<i>Institute of Chemical Technology</i> <i>Dept. of Mineralogy</i> Suchbátarova 5 Praha 6	1835	25,000	Katanga; Tsumeb; Cornwall; Příbram; Binntal; Mexico; Madagascar; Kola Peninsula
★ Národní Muzeum [<i>National Museum</i>] Václavské náměstí 68 115 79 Praha 1	1786	129,000	Czechoslovakian ore minerals; tektites
East Germany Museum für Naturkunde [<i>Museum of Natural History</i>] Humboldt Universität Berlin	1770	250,000	Meteorites
★ Staatliches Museum für Mineralogie und Geologie [<i>State Museum for Mineralogy and Geology</i>] Augustusstrasse 2 DDR-801 Dresden	1560	65,000	Saxony minerals and ores

★ Bergakademie Freiberg <i>[Freiberg Mining Academy]</i> Sektion Geowissenschaften Brennhausgasse 14 DDR-92 Freiberg, Saxony	1765	70,000	East German minerals; A. G. Werner's private collection
Sektion Geologische Wissenschaften <i>[Dept. of Geological Sciences]</i> E. M. Arndt Universität Greifswald Fr. L. Jahnstrasse 17a DDR-22 Greifswald	1804	12,000	
Staatliche Kunstsammlungen Görlitz <i>[State Collections, Görlitz]</i> Demianiplatz 1 DDR-89 Görlitz	1950	8,600	Gersdorf mineral collection (1760-1807)
<i>Mineralogical Museum</i> <i>Division of Mineralogy, Section of Chemistry</i> Martin Luther Universität Domstrasse 5 DDR-402 Halle/Saale	1788	25,000	Harz Mtns.; Thuringia; Mansfeld; Halle/Saale
Goethe-Nationalmuseum National Forschungs und Gedenkstätten der Klassischen deutschen Literatur Am Frauenplan 1 DDR-53 Weimar	1780	1,600	
★ Harzmuseum Wernigerode	1840	?	Harz Mtns. minerals
Hungary			
★ <i>Mineralogical Institute and</i> <i>Dept. of Petrography and Geochemistry</i> Eötvös Loránd University Múzeum korut 4/A H-1088 Budapest VIII	1860	40,000	Hungarian Basin and Carpathians; Gold tellurides of Transylvania
<i>Hungarian Geological Institute</i> Nepstadion ut 14 Budapest XIV	1869	20,000	Ore minerals
<i>Institute for Mineralogy and Geology</i> <i>Technical University of Budapest</i> Sztoczek-utca 2 Budapest 112	1871	2,700	
★ Természettudományi Múzeum Asványtar <i>[Hungarian Natural History Museum]</i> <i>Dept. of Mineralogy and Geology</i> Múzeum korut 14-16 Budapest VIII	1802*	44,000	Hungarian, Czechoslovakian and Romanian minerals
Cathedra Mineralogica et Geologica Universitatis Scientiarum de L. Kossuth nominatae <i>[Dept. of Mineralogy and Geology]</i> <i>[L. Kossuth University]</i> P. O. Box 4 Debrecen 10	1930	2,900	

* Destroyed by fire in 1956 and subsequently rebuilt

<i>Inst. of Mineralogy, Geochemistry and Petrography</i> <i>Attila József University</i> Táncsics M. u. 2 Szeged	1924	5,000	Hungary; Carpathian Basin
Poland			
<i>Academy of Mining and Metallurgy</i> <i>Inst. of Mineralogy and Mineral Deposits</i> al. Mickiewicza 30 30-059 Kraków	1920	1,600	Polish minerals
<i>Geological Institute</i> Rakowiecka 4 02-517 Warsaw	1919	2,300	
<i>Ziemi Museum</i> <i>Polish Academy of Science</i> Warsaw	1935	21,000	Large amber collection
★ <i>Wieliczka Saltworks Museum</i> c/o Krakow Tourist Enterprise 32-020 Wieliczka 3 Bohaterow, Warsaw	?	?	Polish halite specimens
<i>Muzeum Mineralogiczne Uniwersytetu Wroclawskiego</i> <i>Zaklad Mineralogii i Petrografii Instytutu</i> <i>Nauk Geologicznych</i> <i>[Mineralogical Museum, University of Wroclaw]</i> <i>[Dept. of Mineralogy and Petrology]</i> <i>[Institute of Geological Sciences]</i> ul. Cybulskiego 30 50-205 Wroclaw	1813	20,000	Largest mineral collection in Poland; largest meteorite collection in Poland
Romania			
★ <i>Muzeul Aurului</i> <i>[Gold Museum]</i> Brad	?	300?	Gold, sulfosalts, gold tellurides
<i>Polytechnical Institute</i> Bucharest	?	?	
<i>University of Babes-Bolyai</i> <i>Department of Geology and Mineralogy</i> Strada Kogalniceanu nr. 1 3400 Cluj-Napoca	?	?	
Soviet Union (European region only)			
<i>Museum of the Geological Institute</i> <i>Kola Academy of Sciences</i> Fersman Str., 14 Apatity 184200	1952	1,300	Regional collection, Kola Peninsula
<i>Geological Museum</i> <i>Geological Board</i> <i>Azerbaijan SSR Council of Ministers</i> Vakhram Agaev Str., 100a Baku 370073	1970	950	Ore minerals, regional minerals
<i>Geological-Mineralogical Museum</i> <i>Grozny Oil Institute</i> Ordzhonikidze Square, 100 Grozny 364902	1968	1,000	Systematic; gemstones; regional

Geological Museum Geological Sciences Institute Ukranian Academy of Sciences Lenin Str., 15 Kiev 252030	1928	8,000	Systematics; gemstones; ore minerals of the Ukraine
Chernyshow Central Research Geological Museum Sredny Prospect, 74 Leningrad 199026	1895	15,000	Systematic; regional
★ Mining Institute of Leningrad Leningrad Mining Institute 21 Line, 2 Leningrad 199026	1773	47,000	Systematic; crystals; pseudomorphs; regional
Mineralogical Museum Lvov State University Stcherbakov Str., 4 Lvov 290005	1852	13,000	Systematic; gemstones; regional
Museum of V. I. Lenin Ilmen State Reservation Miask 456301	1920	1,200	Ilmen Mtns. minerals
★ A. E. Fersman Mineralogical Museum USSR Academy of Science Leninsky prospect, 18-2 Moscow V-71	1716	83,000	Extensive collection with many specialties
Mineralogical Collection Institute of Mineralogy and Geochemistry of Rare Elements Sadovnicheskaya Nabereszhnaya, 71 Moscow 113127	1964	15,000	Type specimens; cave minerals; systematic
Mineralogical Museum Moscow Geological Prospecting Institute Marx prospect, 18 Moscow 103012	1755	50,000	Systematic; crystals; gemstones
Museum of Earth Sciences Moscow State University MGU, Leninskie Gory Moscow 117234	1955	10,600	Systematic; ores; crystals; gemstones; regional
Geological Museum Institute of Mineral Resources Ukranian Ministry of Geology Kirov prospect, 47/2 Simferopol 333620	1958	600	Ukrainian minerals
Ural Geological Museum Sverdlovsk Mining Institute Kuibyshev str., 30 Sverdlovsk 620219	1937	6,700	Ural Mtns. gemstones and minerals
Yugoslavia			
★ Prirodoslovni muzej Slovenije [<i>Natural History Museum of Slovenia</i>] Prešernova Str. 20 Ljubljana	1821	5,000	Sigmund Zois collection (1747-1819)
★ <i>Trepča Mineralogical Museum</i> Stari Trg	1966	2,000	Trepča district minerals

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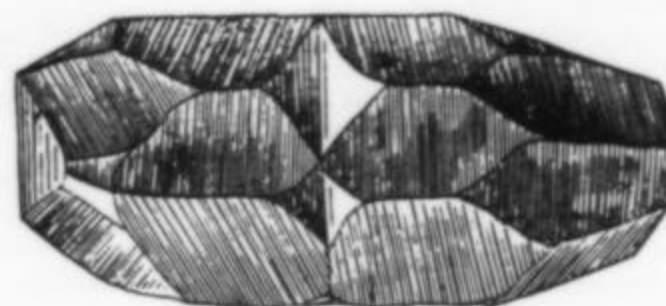
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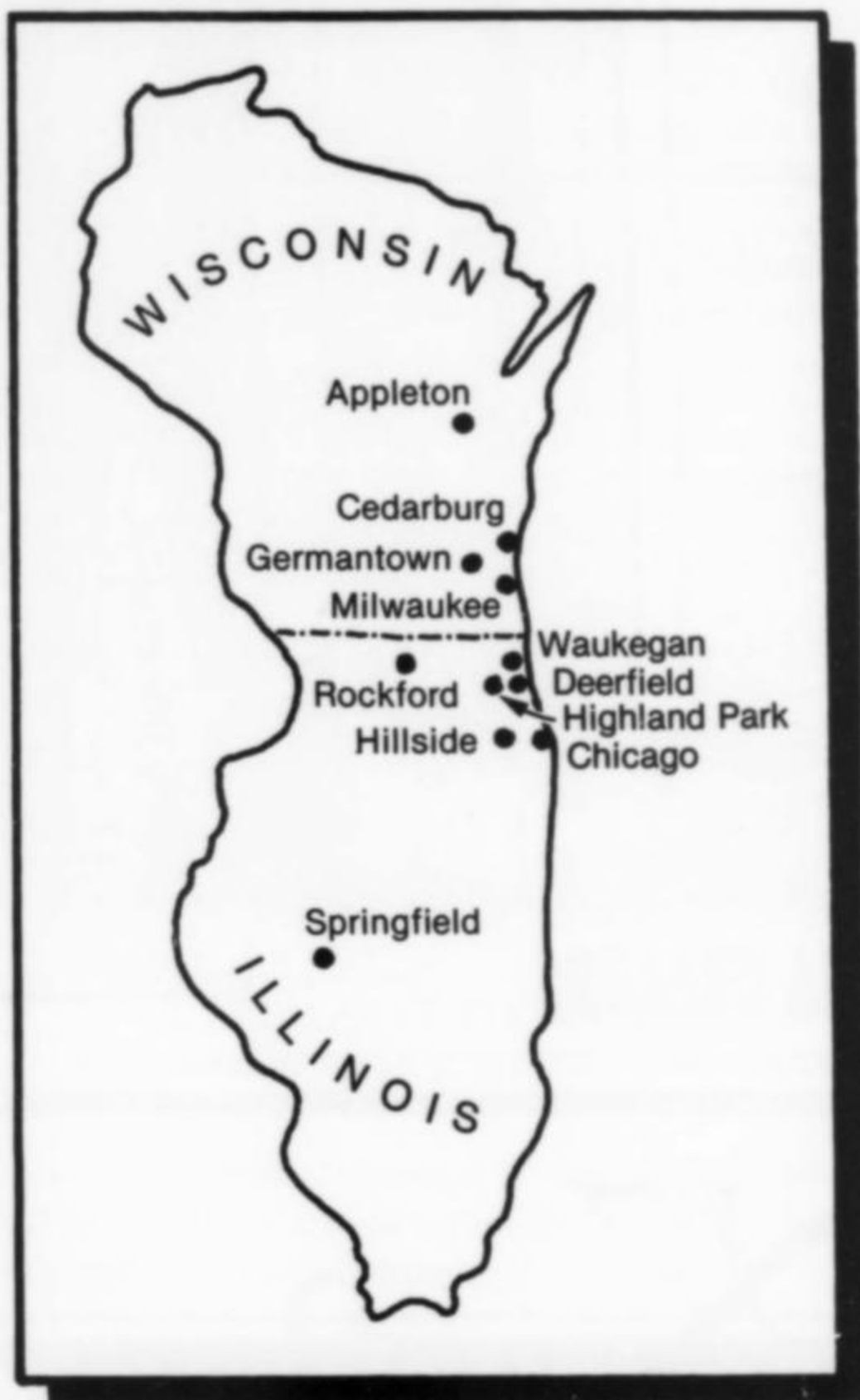
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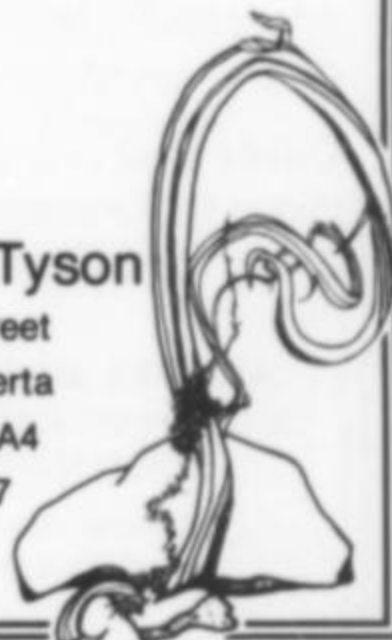
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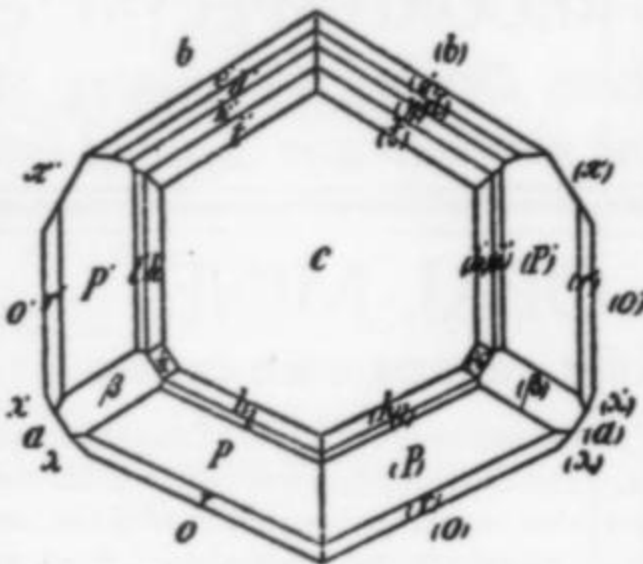
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- Mar. 4-6 NY State Armory, 14th St. & 6th Ave., NYC
- Mar. 12-13 Delaware Mineral Society Brandywine Caterers Claymont, De.
- Mar. 19-20 Montgomery County Mineral Society Gaithersburg Fairgrounds Gaithersburg, MD
- Mar. 19-20 Old Airport Terminal Albuquerque, NM
- Mar. 25-27 Scottish Rite Temple San Diego, CA

SHOWS

- Jan. 16-17: Santa Ana, CA
- Jan. 21-24: Denver, CO
- Feb. 11-14: Tucson Community Center Tucson, AZ
- Feb. 19-21: Mesa, AZ
- Feb. 20-21: Pasadena, TX
- Feb. 27-28: Jackson, MS
- Mar. 3-6: Phoenix, AZ
- Mar. 5-6: Corpus Christi, TX
- Mar. 11-13: Kansas City, MO
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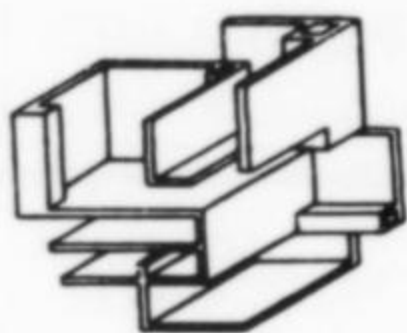
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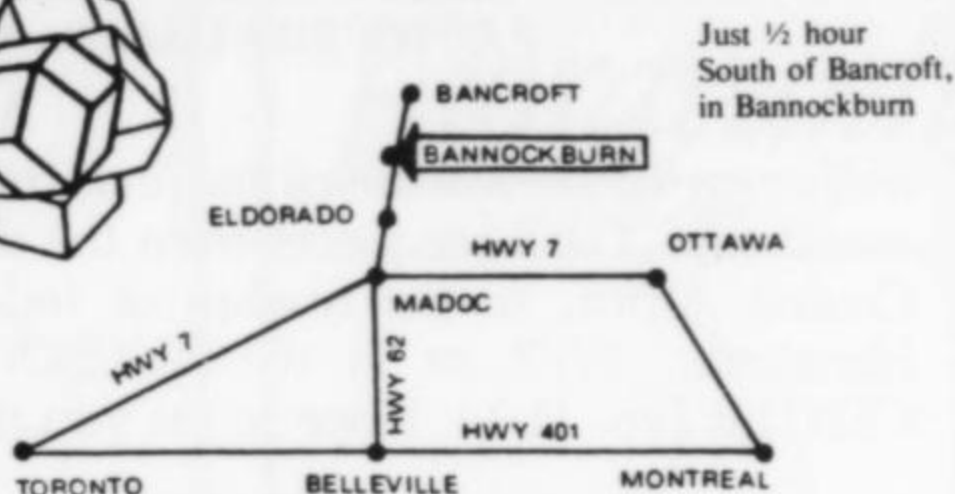
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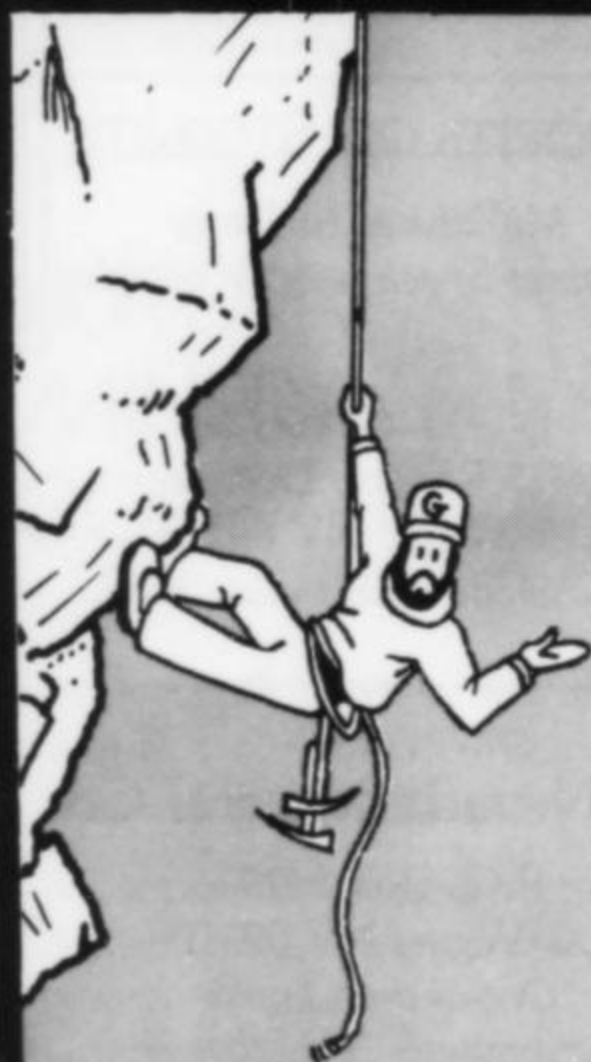
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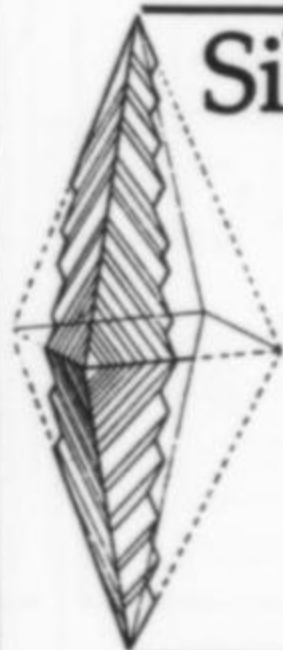


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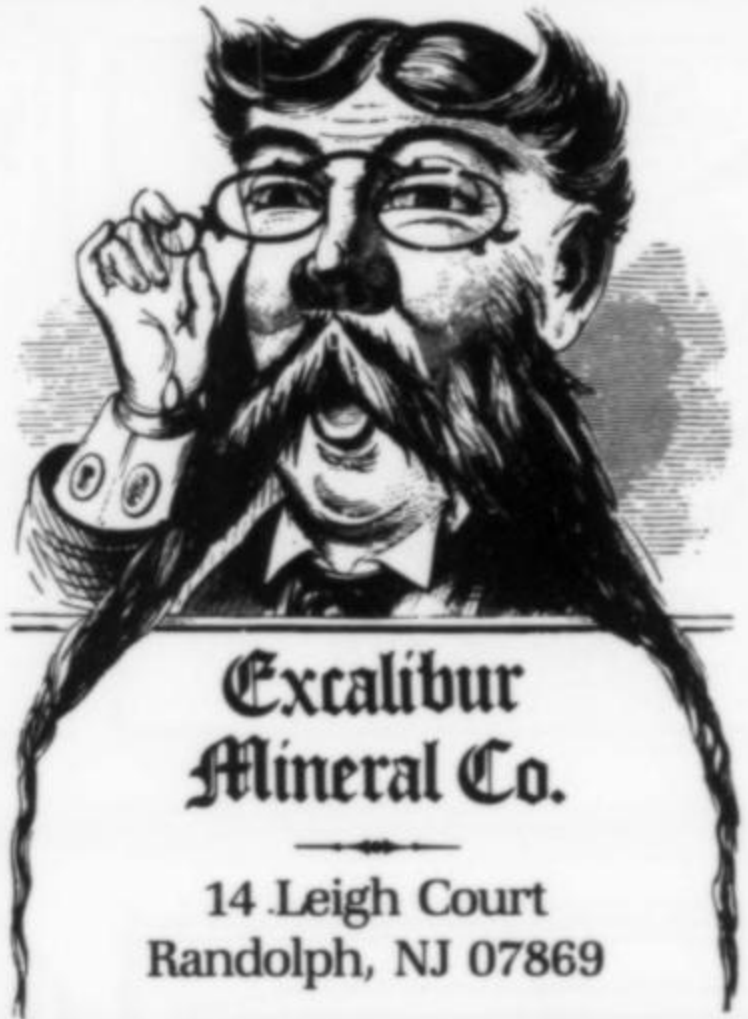
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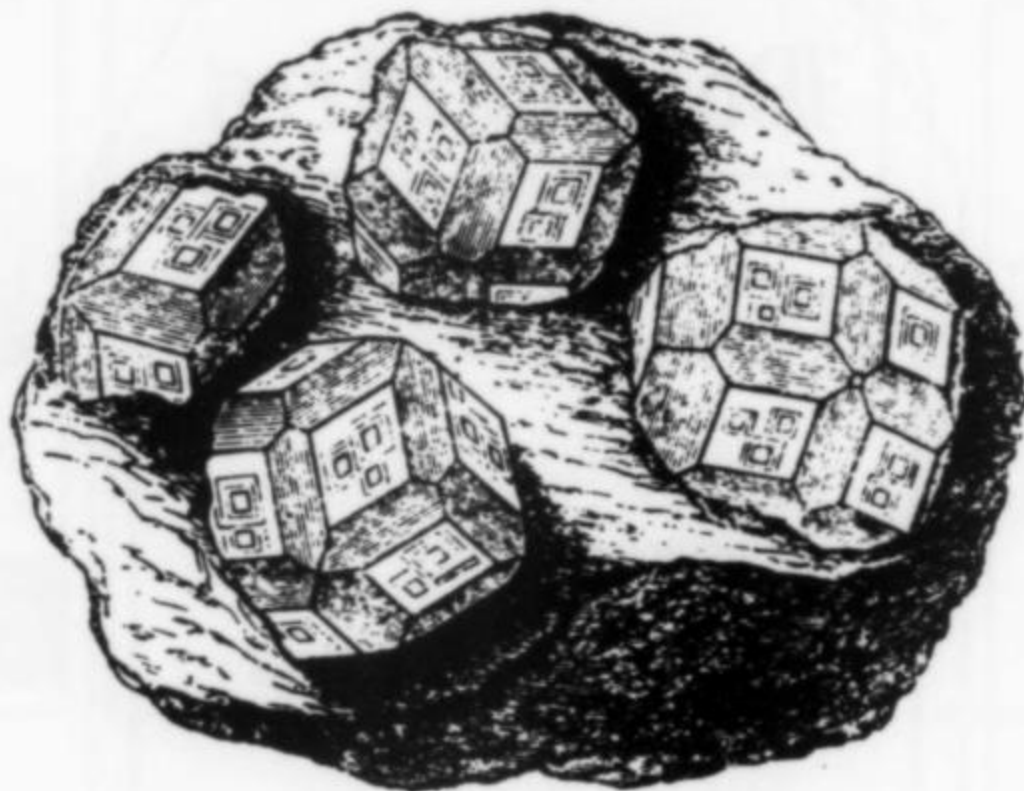
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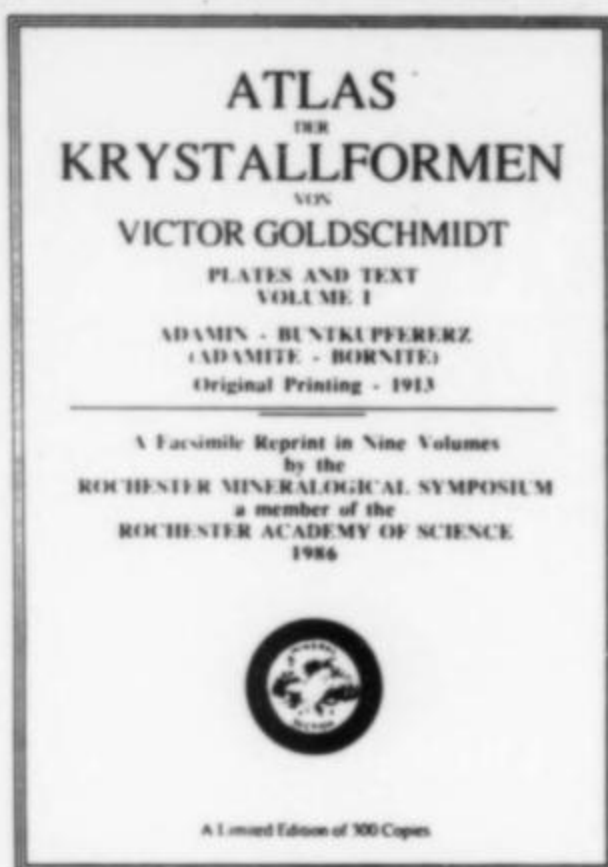
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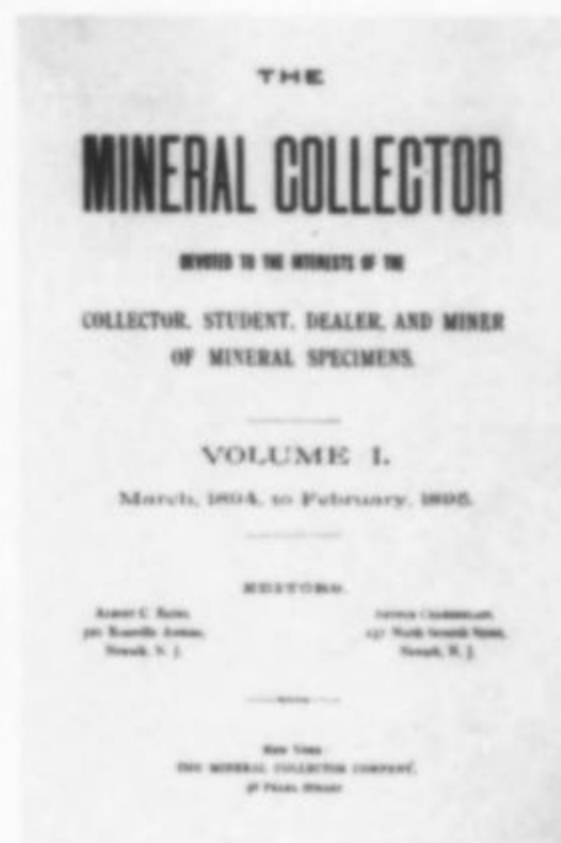
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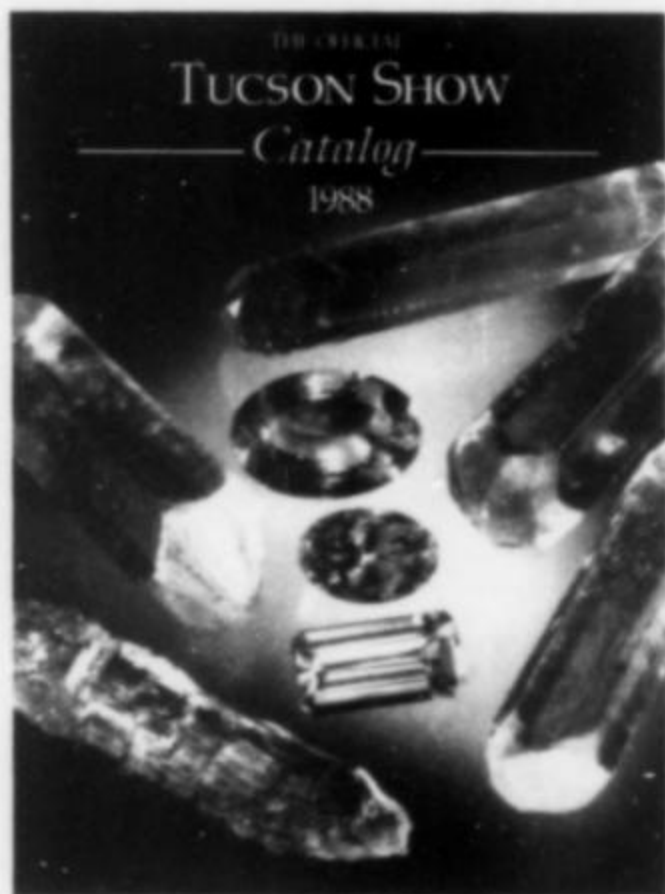
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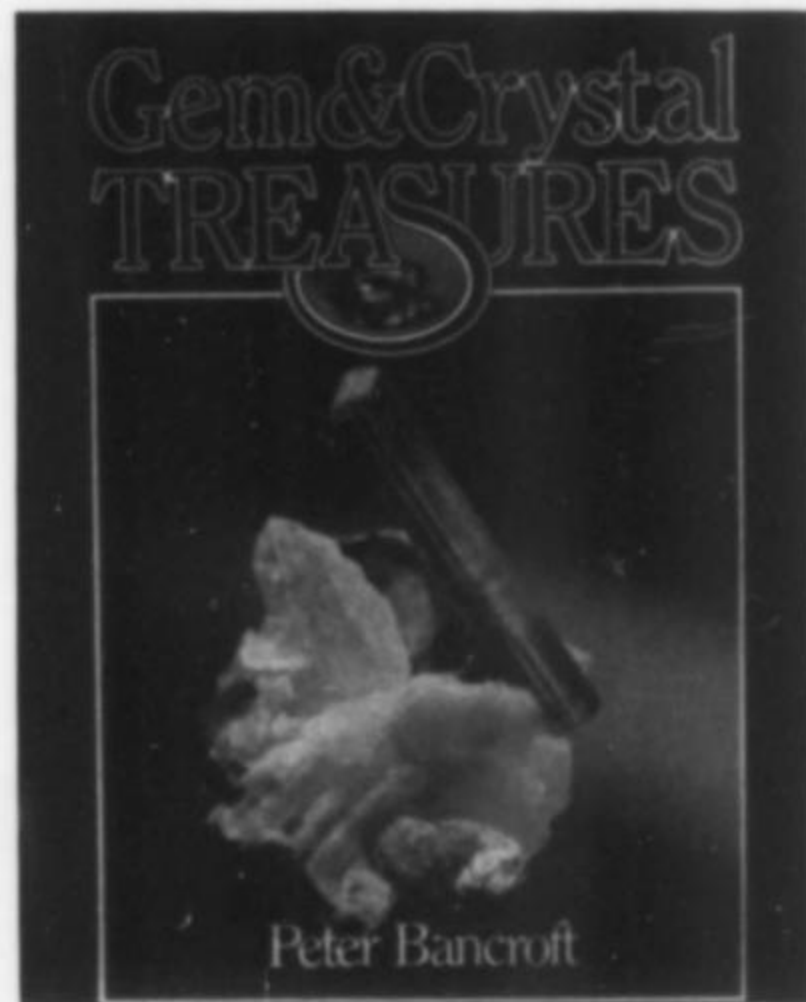
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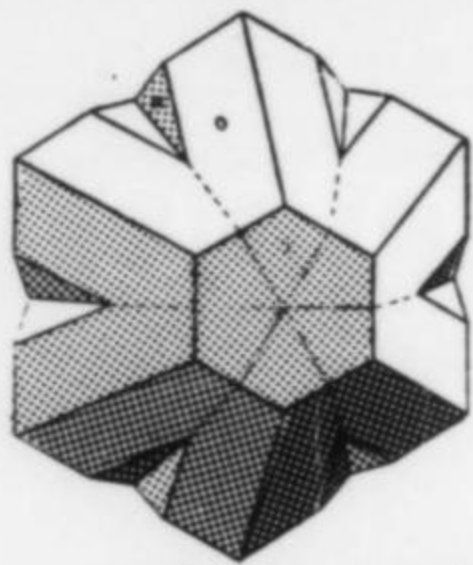
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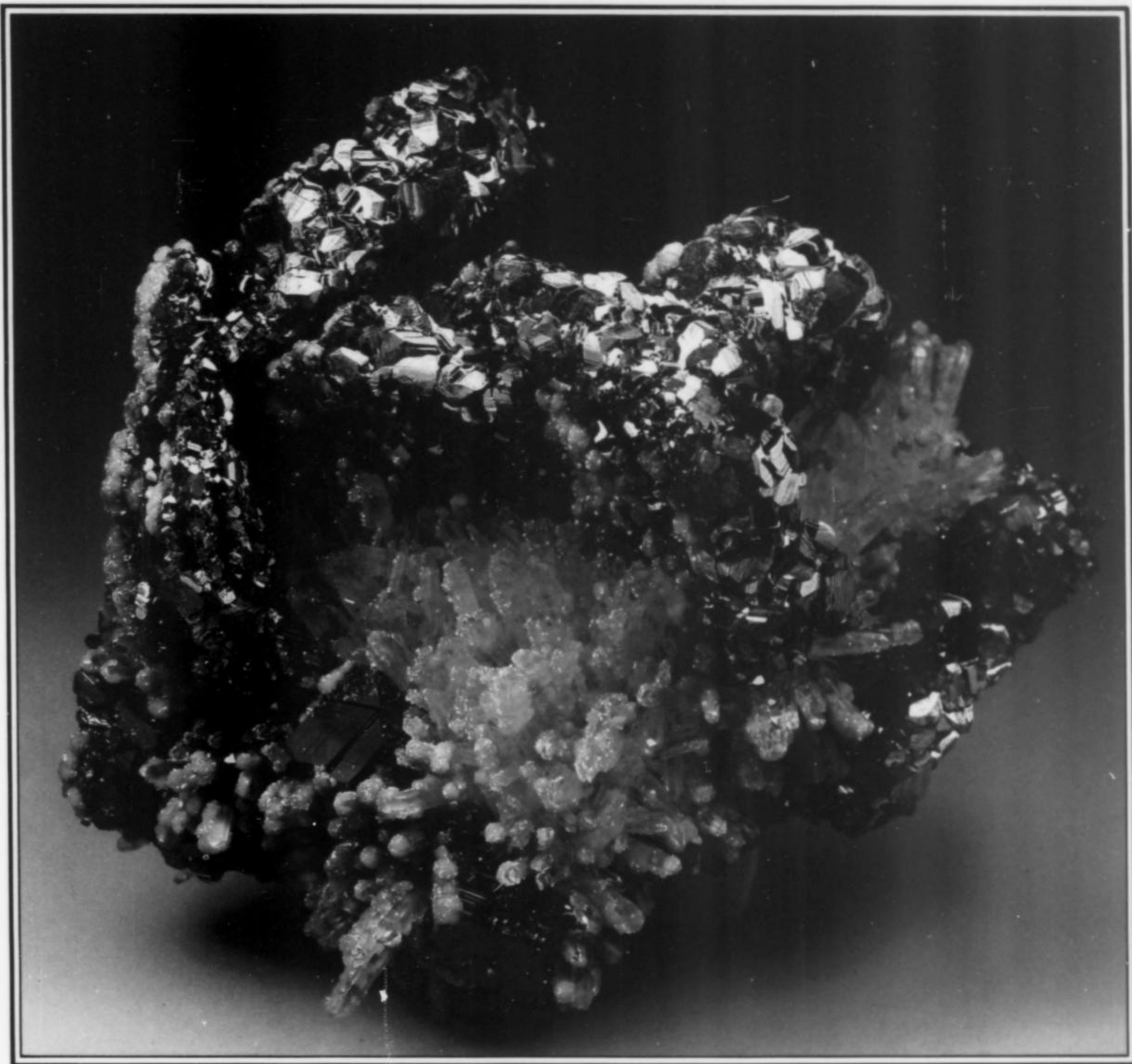
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