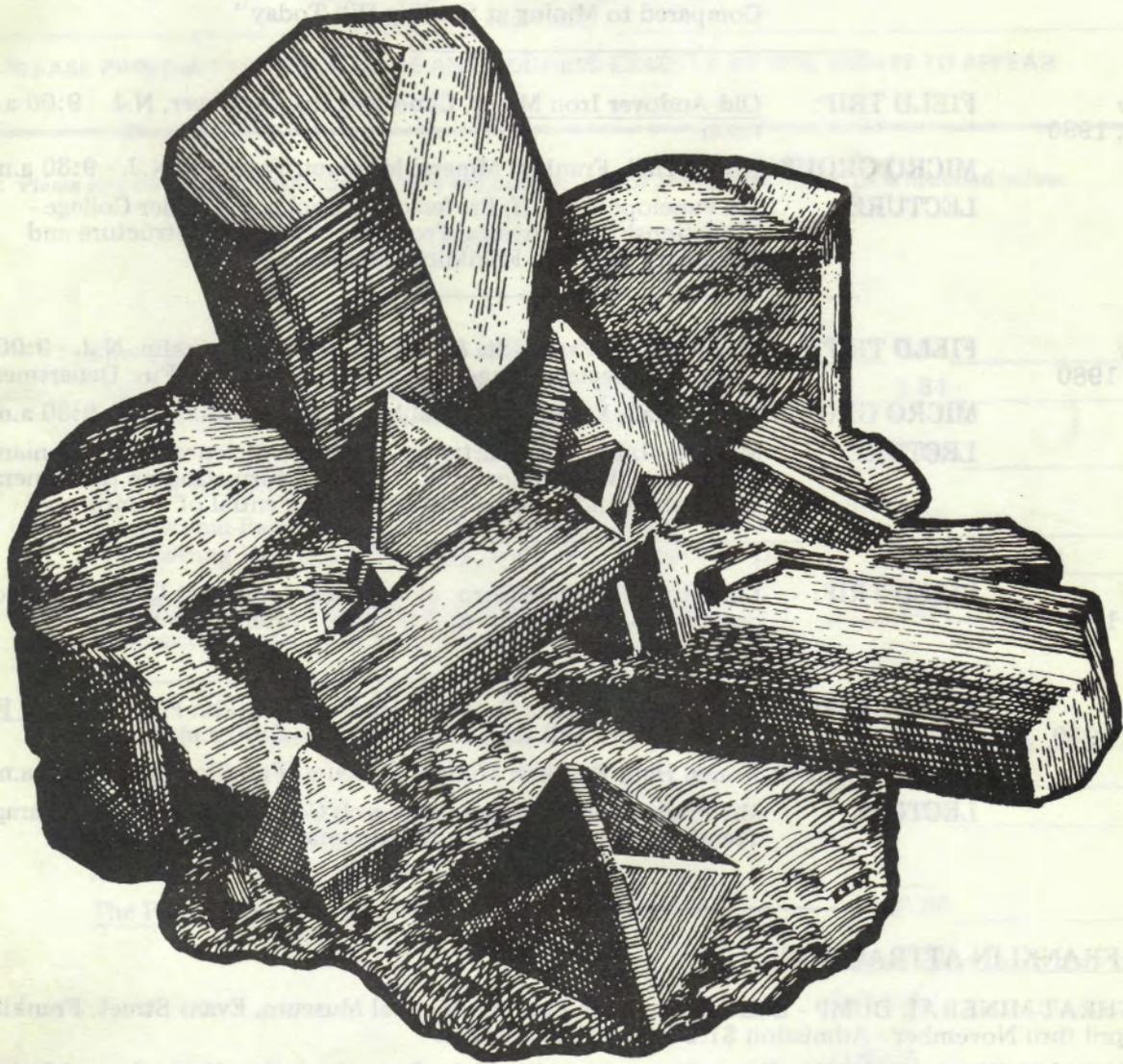


THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY



Volume 21

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Number Two^{One}



Spring Program

FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY, INC.

1980

Regular Society activities consist of field trips, micro-mineralogy study sessions and lecture programs. Field trips vary as to time and location according to schedule. Morning micro-mineralogy study sessions take place from 9:30 a.m. to noon in Kraissl Hall at the Franklin Mineral Museum. Afternoon lecture programs begin at 2:00 p.m. at the Hardyston Twp. School, Rt. 23, Franklin, N.J. - pre-meeting activities begin at 1:00 p.m.

Saturday
March 15, 1980

FIELD TRIP: GERSTMANN Franklin Mineral Museum, 14 Walsh Rd., Franklin, N.J. 9:00 a.m. to noon.

MICRO GROUP: GERSTMANN Franklin Mineral Museum, 14 Walsh Rd., Franklin, N.J. 9:30 a.m. to noon. This meeting only due to closing of FMM.

LECTURE: Mr. Robert A. Svecz, Resident Geologist, New Jersey Zinc Co.-G+W, Sterling Hill Mine, Ogdensburg, N.J. "Mining at Franklin Compared to Mining at Sterling Hill Today"

Saturday
April 19, 1980

FIELD TRIP: Old Andover Iron Mines, Limecrest Rd., Andover, N.J. - 9:00 a.m. to noon.

MICRO GROUP: Kraissl Hall, Franklin Mineral Museum, Franklin, N.J. - 9:30 a.m. to noon.

LECTURE: Dr. Penelope Althoff, Professor of Geology at Rider College - "Relationship of Physical Properties to Atomic Structure and Chemistry of Some Franklin Minerals"

Saturday
May 17, 1980

FIELD TRIP: Shuster Park, Parker St. & Buckwheat Rd., Franklin, N.J. - 9:00 a.m. to noon - by special arrangement with the Franklin Fire Department.

MICRO GROUP: Kraissl Hall, Franklin Mineral Museum, Franklin, N.J. - 9:30 a.m. to noon.

LECTURE: Mr. Pete J. Dunn, Department of Mineral Sciences, Smithsonian Institution, Washington, D.C. - "New Information on the Minerals of Franklin and Sterling Hill and the Potential of Tomorrow"

Sunday
May 18, 1980

FIELD TRIP: Limestone Products Corp. of America, Limecrest Quarry, Limecrest Rd., Sparta, N.J. - 9:00 a.m. to 3:00 p.m. - Interclub outing.

Saturday
June 21, 1980

FIELD TRIP: Limestone Products Corp. of America, Franklin Plant (former Farber Quarry), Cork Hill Rd., Franklin, N.J. - 9:00 a.m. to noon.

MICRO GROUP: Kraissl Hall, Franklin Mineral Museum, Franklin, N.J. - 9:00 a.m. to noon.

LECTURE: Mr. Fred J. Parker, Exxon Research Corp., Linden, N.J. - "Paragenetic Trends among the Sterling Hill Arsenates"

DAILY FRANKLIN ATTRACTIONS

BUCKWHEAT MINERAL DUMP - Entrance thru the Franklin Mineral Museum, Evans Street, Franklin, N.J. - Open April thru November - Admission \$1.50 adult; 75¢ student.

FRANKLIN MINERAL MUSEUM - Evans Street, Franklin, N.J. - Open April thru November - Admission \$1.50 adult, 75¢ student - Closed Monday and Tuesday - Hours also apply to Buckwheat Mineral Dump. (Note: Wednesday thru Friday hours for buses - Friday thru Sunday hours for individuals - Sunday P.M. only).

GERSTMANN FRANKLIN MINERAL MUSEUM - 14 Walsh Rd., Franklin, N.J. - Open year round on weekends and on weekdays by appointment - No Admission Fee - Donations accepted.

TROTTER MINERAL DUMP - Main Street (behind Boro Hall), Franklin, N.J. - Open year round except during inclement weather. Admission \$2.00 - Mngr. Mr. Nick Zipco on call.

F.O.M.S. OFFICERS FOR THE YEAR 1980

President	Warren Miller, RD1, Kennedy Mill Road, Stewartville, N.J. 08886
1st Vice President	Ralph E. Thomas, 11 Riverdale Road, Yardley, Pa. 19067
2nd Vice President	Joseph Cilen, 92 Westervelt Avenue, Hawthorne, N.J. 07506
Secretary	Helen Warinsky, 695 Suffern Road, Teaneck, N.J. 07666
Treasurer	William J. Trost, 3735 Huntingdon Pike, Huntingdon Valley, Pa. 19006

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John L. Baum '80	Alice Kraissl '80
Warren Cummings '80	Frederick Kraissl '81
John Kolic '81	John E. Sebastian '81
Bernard Kozykowski '80	Robert Svecz '81
Wilfred R. Welsh '80	

COMMITTEE CHAIRMEN

Auditing	Rudolph C. Appeld
Field Trip	John E. Sebastian
Historical	John L. Baum
Identification	Ewald Gerstmann
Museum	John L. Baum
Nominating	Wilfred R. Welsh
Program	Ralph E. Thomas

F.O.M.S. NOTES

A new decade of Society activity lies ahead to be guided by a group of officers and trustees dedicated to strengthening our existing programs while reshaping and expanding them to meet the needs of the future. Many tasks stand before us. The nature of our economy and the ponderous energy problems, which more than ever before influence us as individuals, now dictate that we as a mineralogical society also must reevaluate the manner in which we pursue tomorrow.

In keeping with our stated purpose, we must become more involved with others in order to maintain and stimulate future interest in Franklin and Sterling Hill. Fundamentally, ours is an educational organization. It behooves us, therefore, to meet the call from the local educational system for assistance in its effort to make the young people of the community more aware of their cultural and scientific heritage. Intimately related to us, the Franklin Mineral Museum requires our aid as it struggles to meet the burden of supporting itself through present trying times. Another nucleus of activity very important to us, the Annual Franklin-Sterling Mineral Show, is faltering and in need of our assistance. Its sponsor, the Kiwanis Club of Franklin is seeking our advice and participation in its effort to reverse this downward trend. The time exists, now, when we can step forward and demonstrate our ability and willingness to work together with other members of the community to give renewed purpose and direction to the cultural and scientific future of Franklin and Sterling Hill.

With your support, our officers and trustees will stand in the forefront to meet this challenge. President Warren Miller returns to head an ambitious Executive Committee. Ralph E. Thomas will serve us as 1st Vice-President. His enthusiasm is quite evident in the excellent program of speakers he has assembled for our Spring lectures. Joseph Cilen, a respected mineral collector, has stepped forward and offered his talents and many years of experience to the Society. Helen Warinsky as Secretary and William Trost as Treasurer, return to continue their fine work. Our trustees have all served previously. Your editor joins the Board of Trustees in order to assure a productive avenue of communication between our journal and our governing body.

This past October our Society held its 20th Anniversary Dinner at the Perona Farms Restaurant in Andover, New Jersey. The dinner was attended by nearly one hundred members and guests.

During the dinner, Past-President John E. Sebastian was presented with a plaque in honor of his many years of dedicated service to the F.O.M.S. as an officer, trustee and particularly as Field Trip Chairman. It is under his careful direction that we have been able to maintain an accident free record. Through his efforts we have been able to continue a successful field trip program during a time when many areas are being closed to mineral collectors. Following a brief business meeting, our first President, Richard "Dick" Hauck entertained those present while conducting an auction which ultimately contributed \$700.00 to the Society treasury. Our guest speaker for the evening was John L. "Jack" Baum. He presented a slide program depicting the evolution of interest in Franklin and Sterling Hill. His witty remarks during his presentation provided a wealth of fascinating background information which highlighted the evening's activities.

All of us who attended the dinner found it to be quite enjoyable. Many have expressed a desire to do it again. When and how soon is a question to be decided by you as members. If you have a desire to see this sort of event repeated, perhaps annually, please convey your wishes to an officer or trustee soon.

F.O.M.S. MINUTES

During the interim between this and the last issue of this journal there were three meetings of the general membership and executive committee.

At the general membership meeting in September it was announced that the Rudeville-Bodnar Quarry has been sold and is now closed to mineral collectors. The future of the property is uncertain, however, an effort will be made to regain access to this important collecting locality as soon as the final disposition of the property is determined. The meeting was attended by two delegates from the Kiwanis Club of Franklin who presented Alice and Fred Kraissl with plaques in recognition of their many contributions to the Franklin Mineral Museum. An executive committee meeting followed the general membership meeting. At that time plans for the 20th Anniversary Dinner were finalized. Two proposals, one to have the F.O.M.S. endorse a Gem Show at the Playboy Club-Hotel at Great Gorge, and a second to increase the individual membership dues from \$5.00 to \$7.00 per year while providing a family membership for \$10.00, were tabled for further action by the general membership.

A general membership business meeting was conducted during our 20th Anniversary Dinner in October. A majority of those present rejected an informal proposal seeking F.O.M.S. endorsement of a Gem Show at the Playboy Club-Hotel at Great Gorge. Unanimous endorsement was given to a proposal to increase individual membership dues to \$7.00 per year while providing for a family membership for \$10.00 per year. The new family membership will permit full participation in all Society activities while limiting issuance of the Picking Table to one copy per family.

Our annual general membership meeting was held in November. At that time those present officers and trustees who were subject to election or reelection were voted into office.

FRANKLIN MINERAL MUSEUM

A new statue, to honor and symbolize all miners who worked the Franklin and Ogdensburg Zinc Mines, will be installed in the front lawn of the Franklin Mineral Museum. The New statue, to be of life size and finished in reinforced bonded bronze, will replace the original statue carved of wood, which was not capable of withstanding the outdoor elements. This statue has been retired indoors in the Museum's Mine Replica.

The Board of Directors of the Mineral Museum, in co-operation with the Sussex County Arts Council, held a contest to create a new statue. John Baum, Committee Chairman, represented the Franklin Mineral Museum and Patricia Stafford, President, represented the Sussex County Arts Council. A number of Contestants entered and submitted their proposals. After reviewing and voting, the entries were reduced to two. Carrie Rutherford Karasik of Port Jervis submitted a model to be made of reinforced bronze. Both models were ideal in expressing the motif intended and were of the highest professional caliber. Carey Boone Nelson was awarded the commission because her submission depicted the realism of a miner at work. A fund has been established and the statue is intended to be paid for through personal contributions, which will be gratefully appreciated.

Carey Boone Nelson is well known for sculptures of Historical Figures, such as Martin Luther, Eleanor of Aquitaine, the Marquis de Lafayette, and Daniel Boone. Her works are displayed in the Missouri State Capital, the Hall of Fame, Colgate University, Wagner College, the Pentagon and many others.

It is anticipated that the statue will be ready for dedication in May of 1980, in conjunction with the annual Miners' Day Reunion and memorial services.

The Franklin Mineral Museum, located on Evans Street in Franklin, N.J. is open to the public Wednesday through Saturday, 10:00 - 4:30 P.M. and on Sundays 12:00 - 4:30 P.M., April through November. It is only 50 miles from New York City and features the mining and mineral heritage of the area. Guides are ex-miners and mineral collecting is permitted on the adjacent Buckwheat Dump. There is a nominal charge.

Your contribution will honor the miners of Franklin Minerals and perpetuate their memory. Please send checks to - Franklin Mineral Museum, Inc. Statue Fund, 6 Evans Street, Franklin, N.J. 07416

It has been stated that an interest in minerals is one of the most rapidly growing avocations or hobbies adopted by those who wish relaxation from their daily activities. If this is true an interest in Franklin Minerals may already be a predominant interest and if you are one of us please read further.

Up to the comparatively recent present, the Franklin Mineral Museum was self supporting. Bus loads of students from schools in the area paid admissions and were escorted through the exhibit section showing Franklin Minerals, taken through the replica mine by knowledgeable leaders who explained the various features and answered questions from the students. The schedule for various groups was so tight that careful planning was required to preclude overlapping groups from overtaxing the facilities and some were happy to collect at the Buckwheat Dump.

Then came the energy crunch with high fuel prices and the constant threat of fuel limitation. Boards of Education with very limited budgets were forced to cut back on extra curricular activities and the museum suffered. At a recent Board of Trustees meeting, it was reported that the museum is slipping backward, at the moment, to the extent of \$2,000.00 per year with the prospect of further inroads if the situation worsens. Fortunately, during better years, a small reserve was built up in the form of a savings account which has acted as a temporary cushion so there is no current deficit, which it should be clear must not happen.

During the past few years the mission of the museum has been to act as an educational center for those interested in Franklin Minerals. Both the N.J. Senate and Assembly have enacted resolutions memorializing the Franklin-Ogdensburg Mining Area as the Fluorescent Mineral Capitol of the World. Consequently, it has been regarded as an important priority to study and be prepared to teach in the foreseeable future the characteristics of Franklin fluorescent minerals of which there are approximately 53.

There have been reported approximately 2,000 distinct species of minerals in general. These are represented by approximately 277 at Franklin or over ten percent. Of these there are currently over 24 found only at Franklin and Sterling Hill. Franklin Minerals have found a place in museums all over this country and world wide. It is expected, therefore, that the Franklin Mineral Museum be the place to which students of Franklin Minerals are to come to obtain current information.

With this forward, it should be appreciated why it is appropriate to ask those interested in Franklin Minerals to come to the assistance of the museum. An initial action was taken to authorize a Franklin Mineral Museum Endowment Fund. Many corporations, mineral societies and some foundations interested in educational activities may wish to contribute to this endowment fund, the income to be used for current expenses. Individuals who are similarly motivated may wish to take part. The Franklin Mineral Museum, Inc. is a tax exempt corporation and has been constituted state tax exempt as a historical site which has helped in minimizing expenses. To further economize, it was determined to reduce the days the museum will be open as most of the attendants serve on an hourly basis. However, this can be easily expanded during the open season if bus loads of students want accommodation.

Donations to the Endowment Fund should be in units of \$100.00 so they can be properly invested. If individuals wish to contribute less but still be of assistance, Life Membership in the amount of \$50.00 or Annual Membership in the amount of \$5.00 are recommended.

A MINERAL NEW TO SCIENCE

HAUCKITE

In the last issue of the Picking Table we were fortunate to again announce the discovery of a mineral, new to science, at the Sterling Hill mine. We are again pleased to announce the discovery of yet another mineral, new to science, from the same mine. Your editor quotes the following, intact, from recent communication with Pete J. Dunn, Dept. of Mineral Sciences, Smithsonian Institution, Washington, D.C. 20560.

"A new mineral has been found at Sterling Hill, Ogdensburg, Sussex County, New Jersey. It is orange to light yellow in color and occurs as rosettes of hexagonal tabular crystals in varied association. The new mineral has been named HAUCKITE in honor of Richard Hauck of Bloomfield, New Jersey. Subsequent to the formal description, more details will be published on this species in the Picking Table."

We congratulate Richard Hauck and extend our thanks to Mr. Dunn for providing the Picking Table with this announcement.

MINERAL NOTES

Research Reports

LAWSONBAUERITE

In the Fall 1979 issue of the Picking Table we were able to announce the discovery of a mineral new to science as being found at the Sterling Hill mine, Ogdensburg, N.J. It was named lawsonbauerite in honor of the late Lawson H. Bauer, who was chief chemist of the New Jersey Zinc Company until his death in 1954.

The formal description of lawsonbauerite has been published and the following abstract has been prepared from the article entitled "Lawsonbauerite, a new mineral from the Sterling Hill mine, New Jersey, and new data for torreyite," by Pete J. Dunn, Donald R. Peacor and B. Darko Sturman, which appeared in the American Mineralogist, Vol. 64, pp. 949-952 (1979).

Introduction

The new mineral described herein was found in the Sterling Hill mine by a miner, John Kolic, of Rockaway, New Jersey. It was called to the senior author's attention by Mr. Kolic and Mr. Ewald Gerstmann of Franklin, New Jersey. In spite of the mineral's rather insignificant appearance amid a decomposed sussexite-pyrochroite assemblage, they had noticed it by examination with a binocular microscope and recognized it as a mineral new to their experience. This acute observation was a critical component of the discovery of lawsonbauerite, and they are to be commended for their observation and scientific curiosity.

We take pleasure in naming this new mineral lawsonbauerite in honor of the late Lawson H. Bauer (1889-1954), chief chemist of the New Jersey Zinc Company (Fron del, 1955). Lawson Bauer published 18 mineralogical papers, among them the description of nine new minerals, all of which are still valid species. It is particularly appropriate that lawsonbauerite is the manganese analog of torreyite, a species first noted by Lawson Bauer and then called "delta-mooreite" (Bauer and Berman, 1929). His analyses have provided a wealth of information about the chemistry of the minerals of Franklin and Sterling Hill, and his thoughtfulness in writing his analyses directly upon the unused portion of the analyzed specimen has ensured the correlation of his analytical data with specific specimens.

Holotype material is preserved in the Smithsonian collection under NMNH catalog no. 143003. The mineral and the name have been approved by the IMA Commission on New Minerals and Mineral Names.

Physical and optical properties

Lawsonbauerite is colorless to white. The luster of both fresh fracture surfaces and crystal faces is dull to slightly vitreous. There is no cleavage; lawsonbauerite breaks with an even fracture and is moderately brittle. The Mohs hardness is approximately 4½. The density, determined using heavy liquid techniques, is 2.87(4) g/cm³, in reasonable agreement with the calculated value of 2.92 g/cm³. Lawsonbauerite is neither fluorescent nor phosphorescent in ultraviolet radiation.

(Editor's Note: Refer to original article for optical properties.)

Morphology



Fig. 1

Crystals of lawsonbauerite on the type specimen are very small (less than 0.5 mm) and are prismatic and bladed in habit. The crystals are elongated on the *b* axis and flattened parallel to {001}. The forms present are [001] and [100], in order of decreasing dominance. We observed no twinning, etch figures, or epitaxy with other species. Lawsonbauerite does have a strong tendency to exhibit parallel growth. Lawsonbauerite crystals from another specimen were more complex, but too small for goniometric measurement. They were examined using a scanning electron microscope, and a representative photomicrograph of lawsonbauerite is shown in Figure 1. In this photomicrograph, the crystals are markedly prismatic and are clearly arranged in parallel growth.

X-ray crystallography

(Editor's Note: Refer to original article for X-ray crystallography.)

Chemistry

Lawsonbauerite was chemically analyzed with an ARL-SEM-Q electron microprobe using an operating voltage of 15 kV and a sample current of 0.15 uA. The data were corrected using a modified version of the Magic-4 computer program. The standards used were: synthetic ZnO (Zn), manganite (Mn), barite (S), and hornblende (Fe,Mg). A wavelength-dispersive microprobe scan indicated the absence of any elements with atomic number greater than nine except those reported herein. A scan by ion microprobe established the absence of any elements with atomic number less than ten, except for abundant hydrogen and oxygen.

Water was assigned by difference based on (1) the close crystallochemical relationship between lawsonbauerite and torreyite; (2) the fact that water by difference is very close to the theoretical value; and (3) the presence of significant hydrogen, as indicated by ion microprobe. Although there was insufficient lawsonbauerite for the direct determination of water, there was adequate type torreyite for simultaneous thermogravimetric-evolved gas analysis which yielded 25.9 percent H₂O, confirming Bauer's determination of 26.39 percent, and, by analogy, our assignation of water by difference in lawsonbauerite. The water in torreyite is partially lost under high vacuum (2 percent loss at 25^o C for 20 hours) with the remaining 23.9 percent being evolved in six stages between 50 and 505^o C.

The ideal chemical formula for lawsonbauerite is (Mn,Mg)₅Zn₂(SO₄)(OH)₁₂ · 4H₂O. The fact that zinc approximates to eight atoms per unit cell in both torreyite and lawsonbauerite, and in another semi-quantitative analysis not published here, suggests that zinc likely occupies a unique site, relative to that of magnesium and manganese.

Occurrence and paragenesis

Lawsonbauerite occurs as small, bladed, prismatic crystals intimately intergrown in random arrangement with severely altered fibrous sussexite and pyrochroite. On the type specimen, the crystals are coated with a dull black coating which resembles secondary manganese oxides but yields no diffraction pattern. The coating might have originated from the alteration of lawsonbauerite or the decomposition of the associated pyrochroite. This coating is easily removed by rubbing, thereby exposing the white or colorless lawsonbauerite crystals. Associated species are zincite, calcite, and franklinite. The calcite is intimately mixed with sussexite, and dissolution of the calcite-sussexite admixture leaves a sussexite network similar to that seen on the surface of the specimen. Lawsonbauerite appears to have formed at the same time as sussexite and to have been exposed by the leaching away of the calcite. However, the badly altered nature of the specimen precludes a precise statement on the sequence of formation of these species.

According to Mr. Kolic's careful observations, lawsonbauerite was found in the 1570E stope, about 10 feet below the 1300-foot level in the mine. Several specimens were recovered, but the mineral must be considered very rare. This new species adds one more mineral to the list of 23 species (including kolicite) known to occur only at Franklin or Sterling Hill.

Subsequent notations

Subsequent to the publication of the formal description of lawsonbauerite, the senior author advises that this mineral appears to be relatively abundant at Sterling Hill in light of recent discoveries. Recent finds have also revealed that there is a distinct cleavage which was not observable in the original study material. We have also been advised that the ideal formula for lawsonbauerite is tentative and subject to review following additional study.

KOLICITE

In the Spring 1979 issue of the Picking Table we were proud to announce the discovery of yet another mineral new to science as being found at the Sterling Hill mine, Ogdensburg, N.J. It was named kolicite in honor of John Kolic of Rockaway, New Jersey, in recognition of his contributions to the advancement of knowledge about the mineralogy of Franklin and Sterling Hill, New Jersey.

The formal description of kolicite has been published and the following abstract has been prepared from the article entitled "Kolicite, a new manganese zinc silicate arsenate from Sterling Hill, Ogdensburg, New Jersey," by Pete J. Dunn, Donald R. Peacor and B. Darko Sturman, which appeared in the American Mineralogist, Vol. 64, pp. 708-712 (1979).

Introduction

The new mineral was called to the authors' attention by Mr. John Kolic of Rockaway, New Jersey, and Mr. Ewald Gerstmann of Franklin, New Jersey, in the summer of 1978. The X-ray powder diffraction pattern and the physical characteristics of the mineral did not match those of any known species, and we proceeded on the assumption that it was a new mineral. Subsequent analysis has proven it to be a new mineral.

We take pleasure in naming this new mineral kolicite in honor of John Kolic, who found the mineral and recognized it to be a unique and interesting phase. The mineral and name have been approved by the Commission on New Minerals and Mineral Names. IMA. Holotype material is preserved in the National Museum of Natural History, Smithsonian Institution, under NMNH catalog number 143765. The pronunciation of the new mineral name is KO·LIK·AIT.

Physical and optical properties

Kolicite is orange in color, and the streak is very light orange. The hue is similar to that of most bright orange wulfenite with no tinges of red or brown. The Mohs hardness is approximately 4½. Kolicite is a brittle mineral and breaks with an even fracture. No cleavage was observed. This lack of cleavage is noteworthy in that some other minerals of similar composition, such as kraisslite and mcgovernite, do have one perfect cleavage, although holdenite does not. The density of kolicite, determined by heavy-liquid techniques, is 4.17(2) g/cm³, in excellent agreement with the calculated value of 4.20 g/cm³. Kolicite is neither fluorescent nor phosphorescent in ultraviolet radiation. Kolicite resembles a fractured garnet at first glance, but the anisotropy, pleochroism, and inferior hardness are diagnostic. Kolicite is easily soluble in cold 1:1 hydrochloric acid, and to a lesser degree it is also soluble in 1:1 nitric acid.

(Editor's Note: Refer to original article for optical properties.)

Chemistry

Kolicite was chemically analyzed using an ARL-SEMQ electron microprobe with an operating voltage of 15 kV and a beam current of 0.15 uA. The standards used were: synthetic ZnO for zinc, synthetic olivenite for arsenic, manganite for manganese, and hornblende for silicon, iron, magnesium, and calcium. The data were corrected using the Magic-4 computer program. A spectrographic analysis indicated the absence of any light elements, and a wavelength-dispersive microprobe scan indicated that only the elements reported are essential to kolicite. Water was determined by DTA-TGA as a weight loss of 5.5% at 625° C. Analysis of several samples indicated very little variation in composition. The resultant analysis of the type sample provided data permitting calculation of the cell contents, in part, which yielded 8.14 As per cell. Because the space-group equipoints have ranks 4, 8, and 16, and because solid solution between As and other elements is unlikely, we have normalized the cell contents to 8 As. This can be interpreted to correspond ideally to $(\text{Mn,Mg,Fe})_7\text{Zn}_4(\text{AsO}_4)_2(\text{SiO}_4)_2(\text{OH})_8$ with Z=4.

In a later section we show that kolicite is closely related both chemically and structurally to holdenite and gerstmannite. In the structures of these minerals Zn is tetrahedrally coordinated (Moore and Araki, 1977 a,b), although the coordinating ions are OH and O in holdenite, and O in gerstmannite. The final form of the formula of kolicite should probably be consistent with tetrahedral coordination of Zn, but the results of a crystal-structure analysis, now in progress, will be necessary for an unambiguous definition.

X-ray crystallography

(Editor's Note: Refer to original article for X-ray crystallography.)

Morphology

Crystals of kolicite were observed on only two specimens which were noted, after the characterization of the species, by Mr. Ewald Gerstmann who generously permitted us to borrow them. The largest crystals are 0.5 mm in diameter, but the crystal faces are so rounded as to preclude morphological description by goniometric techniques.



Fig. 1

A small seam on one specimen yielded some very tiny crystals (about 0.05 mm). Through the generosity of Mr. Gerstmann, several of these were removed and studied by means of the scanning electron microscope. A representative photomicrograph of kolicite is shown in Figure 1. Due to the roughness of crystal surfaces (perhaps caused by etching) and the extremely small crystal size, we cannot make precise statements about the morphological orientation of kolicite crystals or the precise indices for the faces observed. However, some general observations are possible. Kolicite crystals exhibit nearly identical morphological development on the one specimen studied. The crystals are pinacoidal in habit and predominantly tabular. The principal forms are pinacoids and dipyramids. All crystals have a very irregular surface and curved crystal faces, perhaps as the result of severe etching. The largest pinacoid is striated parallel to the long direction of the crystals, and the crystals appear to be centrosymmetric, as required by the space group.

Occurrence

Kolicite was found in April of 1977 by John Kolic, a miner at the Sterling Hill mine. According to Mr. Kolic, the mineral was found in the 1020 longitudinal stope, about 30 feet above the 1400 foot level, in the east branch of the west vein of the orebody in a shear zone with abundant slickensides. Kolicite encrusts ore comprised of red willemite and franklinite. The ore contains very little calcite. No other arsenate minerals were found in the immediate area of the kolicite occurrence. Given the fact that only about 15 specimens were recovered, kolicite must be regarded as a rare mineral at the type locality, and its occurrence adds one more species to the present list of 22 species known to occur only in the Franklin and Sterling Hill orebodies.

Kolicite occurs with the previously mentioned ore-suite and the following associated minerals: willemite, sonolite, friedelite, and also calcite, the last mineral to form in the assemblage. Kolicite is younger than sonolite and friedelite and contains colorless acicular crystals of secondary willemite which appear to have formed simultaneously with kolicite. No obvious epitaxy exists between the kolicite and the willemite or other associated species. One specimen of kolicite shows kolicite in contact with holdenite.

Note added in proof

The discovery by Mr. Kolic of a specimen in which kolicite was in contact with holdenite prompted an examination of the type holdenite from Franklin, New Jersey (NMNH 95434). Kolicite is present on the specimen as minute crystals imbedded in holdenite. Hence, kolicite was first found in the Franklin mine sometime prior to 1913 but was not noticed, and its characterization waited until the recent find in the Sterling Hill mine.

UVITE

This mineral, a member of the tourmaline group, remained relatively obscure until a few years ago when it became the subject for an article entitled, "Uvite, a New (Old) Common Member of the Tourmaline Group and Its Implications for Collectors," by Pete J. Dunn, Daniel Appleman, Joseph A. Nelen and Julie Norberg, *Mineralogical Record*, Vol. 8, No. 2, Mar-Apr 1977, pp. 100-108. This article caught many mineral collectors by surprise, raised their eyebrows, and taught a great many of us that nothing in the science of mineralogy can be assumed. In light of the fact that the tourmalines from Franklin played a significant role in the study which precipitated that article, an abstract is offered here for your enlightenment.

INTRODUCTION

Tourmaline is a name applied to a group of mineral species consisting of elbaite, dravite, schorl, buergerite and uvite. Although these species all have very similar crystal structures and appearance, they comprise a broad range of chemical compositions. Tourmalines are found in many different environments. They repose in most mineral collections and are popular with collectors because they occur in a variety of colors and because they frequently form euhedral crystals.

The chemistry of the tourmaline group was a cause of much bewilderment to early chemists and mineralogists. This early confusion led Ruskin (1891) to mention in discussing tourmaline, that "on the whole, the chemistry of it is more like a medieval doctor's prescription, than the making of a respectable mineral."

The tourmaline group, until recently, has usually been said to consist of only four species: elbaite, schorl, buergerite and dravite. These conform to the general formula for the tourmaline group: $\text{Na}(\text{R})_3\text{Al}_6\text{B}_3\text{Si}_6\text{O}_{27}(\text{OH},\text{F})_4$. The above species designations have been made on the basis of the dominant element in the R position of the formula, which may be either lithium/aluminum (elbaite), ferrous iron (schorl), ferric iron (buergerite), or magnesium (dravite).

Inasmuch as there is broad and extensive substitution of elements in the tourmaline group, few tourmaline specimens have been found to be pure end-members. Most tourmaline crystals are, in fact, mixtures of two or more species. Iron can exist in either the ferrous or ferric state and is frequently found in both oxidation states within the same crystal. Both simple and coupled substitution mechanisms can be present simultaneously.

Those tourmalines in which calcium occupies the site usually filled with sodium have been largely ignored.

Dravite crystals with a significant calcium content were reported as early as 1888 (Riggs) but chemists and mineralogists had not yet agreed on a satisfactory formula for tourmaline. High-calcium dravites were ignored in the quest for an ideal formula to encompass the majority of tourmaline analyses. The excellent analyses of Riggs (1888) and his insights into the chemistry of this complex group, coupled with the definitive work of Kunitz (1929), shed much light on tourmaline chemistry and gave us many of the species designations in use today.

In preliminary work, microprobe chemical analyses of many gem quality brown tourmalines showed that they were almost all calcium-rich, and many had little or no sodium. Considering that much dravite is formed in metamorphosed limestones where calcium is abundant, it seemed likely that other dravites might also be calcium-rich. A detailed examination of dravite appeared necessary so the present study was initiated.

Kunitz (1929) proposed a theoretical end-member, $\text{H}_8\text{Ca}_2\text{Mg}_8\text{Al}_{10}\text{Si}_{12}\text{B}_6\text{O}_{62}$, which may be rewritten as $\text{CaMg}_3(\text{MgAl}_5\text{B}_3\text{Si}_6\text{O}_{27}(\text{OH})_4)$ to conform to the general formula cited previously. Kunitz proposed this molecule to explain the existence of analyses of three calcium-rich magnesium tourmalines from Ceylon, Gouverneur, New York, and De Kalb, New York. He named this proposed theoretical end-member "uvite" for the province of Uva of Ceylon (Sri Lanka).

We have demonstrated that uvite does exist in nature and that it is a valid end-member in the tourmaline group. We have shown that there is complete miscibility between dravite and uvite and that uvite is the exact calcium analog of dravite.

Uvite was submitted to the IMA Commission on New Minerals and New Mineral Names for approval. It was the judgement of the Chairman of the Commission that the term "uvite" was already well-established in the literature, and thus was out of the jurisdiction of the Commission.

MORPHOLOGY

Crystals of uvite do not exhibit any peculiar or diagnostic morphology which might aid in their identification. Forms present, and their relative dominance, are not diagnostic for the species. Uvite crystals which are quite gemmy are, for the most part, tabular on [0001], but uvite from Gouverneur, New York, is frequently elongated and pyramidal in habit. Franklin uvite is usually somewhat equant. The Ceylon uvites examined in this study were mostly stream pebbles of gem quality. Fine crystals of brown tourmaline from Ceylon were described by Worobieff (1900) as being very rich in forms, with one crystal having 59 different forms. Additional morphologic observations on magnesium tourmaline were made by Pfaffl and Neggemann (1967) who noted the predominance of the prism [1120] over the prism, [1010] in 70 magnesium tourmalines from Bayrischer Wald, Bavaria, and a reverse relationship in iron-rich tourmalines from Drachselsrieder mine near Arnbruck.

PHYSICAL AND OPTICAL PROPERTIES

Uvite has a Mohs' hardness comparable to that of dravite ($-7\frac{1}{2}$). The density of the purest (most calcium rich) uvite ranges unsystematically from 2.96 to 3.06. The range is the same for pure (most sodium rich) dravite. Although calcium is nearly twice as heavy as sodium and one might expect an increase in the density with increasing calcium content (inasmuch as the cell volumes of end-member uvite and end-member dravite are very similar), the concomitant substitution of magnesium for aluminum balances this. The net result is that specific gravity is of no use in the determinative process. The calculated value for uvite, NMNH C5212, is 3.01 compared with the observed value of 2.97.

The color of uvite is variable. Most uvite, like dravite, is brown. Notable exceptions to this are the colorless De Kalb, New York, material and the light green crystals from Franklin, New Jersey, both of which have very low iron content. In general brown uvites demonstrate a correlation between color and iron content, the color darkening with increasing iron to near opacity when the iron content exceeds 0.8%. The same relationship exists in dravite, supporting the observations of Slikvo (1957), who suggested that the chromophore causing brown color in tourmaline was Fe^{+3} .

Uvite is uniaxial negative, $w > e$. The streak is variable; light green, light brown, or white. The refractive indices of uvite do not differ from those of dravite and are thus of no use in determining the species. Although Kunitz (1929) did present a graph of variation of refractive indices with increasing calcium/sodium ratio, his observations have not been supported by the present study and his observed range in values may have been influenced by iron substituting for magnesium or aluminum in his samples. Since the refractive indices of tourmalines increase with increasing iron and manganese content (Deer et al., 1962), samples were chosen for optical examination which had a very low iron content ($<0.41\%$ FeO) and which varied from 95% to 51% of the uvite end-member. Dravites with comparable low-iron contents were not found.

Both uvite and dravite, when low in iron content, fluoresce a weak mustard yellow color under short-wave ultraviolet radiation. There is no response in long-wave ultraviolet, and no phosphorescence in either wavelength.

Uvite and dravite, therefore, are indistinguishable on the basis of their physical and optical properties.

CHEMISTRY

Uvite, $CaMg_3(Al_5Mg)B_3Si_6O_{27}(OH,F)_4$, is the calcium analog of dravite, $NaMg_3Al_6B_3Si_6O_{27}(OH,F)_4$, and is thus an end-member in the tourmaline group.

The substitution of divalent calcium (Ca^{+2}) for monovalent sodium (Na^{+1}) in magnesium tourmaline requires a coupled substitution. There is a concomitant increase in divalent magnesium (Mg^{+2}) substituting for trivalent aluminum (Al^{+3}) to provide electrostatic charge balance. Magnesium tourmalines with $Ca > Na$ are thus uvite and those with $Na > Ca$ are dravite.

NOTES FOR COLLECTORS AND CURATORS ON SPECIFIC LOCALITIES

Franklin, New Jersey - Fine specimens of both brown and light green magnesium tourmaline have been found at this locality for many years, and are in most major mineral collections today. Although the tourmalines are not found in the zinc orebody, they are common in the white calcite marble of the Franklin area, and especially at the Fowler quarry (Palache, 1935). They are notable for their size, development of forms, and the lovely specimens resulting from the contrast with the white marble (Figure 1) in which they repose.



Fig. 1



Fig. 2

SUMMARY

In summation, uvite is a rather common mineral. It is abundant at various localities and fine specimens already grace most major, and many minor, mineral collections. In general, brown tourmalines from metamorphosed limestones are usually uvite.

Although the above statements might sit somewhat uncomfortably with collectors long since used to the convention wherein all black tourmalines are schorl, and all brown tourmaline is dravite, mineral names represent chemical compositions, and the correct nomenclature is as follows:

Dravite - magnesium tourmaline with sodium greater than calcium.

Uvite - magnesium tourmaline with calcium greater than sodium.

Fifteen specimens from Franklin were examined in this study, and were chosen to represent the various colors and habits of the Franklin material. Fourteen of the fifteen specimens are uvite and contain 75 to 100% of the uvite end-member. The light brown, dark brown, light green, and rich green crystals are all calcium-rich, but no one color more than the others. The light green Franklin uvites have a much lower iron content than the brown crystals, but the cause of the green color is unexplained.

The only sodium-rich crystal (dravite) from Franklin is a rather unique specimen on exhibit in the Hall of Minerals at the Smithsonian (R18133). This crystal (Figure 2) has a very dark brownish-green color and notable morphology; the crystal is comprised of a trigonal prism [1010] and pedion [0001] with only slight pyramidal modifications. This crystal is quite unlike the common Franklin uvites which are highly modified and frequently equant in habit.

Inasmuch as zinc is found in most Franklin minerals, it was sought for in the analyses of this study. Zinc impurities were negligible and did not exceed 0.05% in any of the specimens. This is not too surprising as the uvites are not found in the zinc orebody but in the marbles of the area.

Hamburg, New Jersey - This uvite locality was known as Rudeville in the older literature and crystals from here are referred to by Palache (1935). Here, as at Gouverneur, New York, the uvites are associated with tremolite crystals, in calcite. Crystals from Hamburg were described by Eakle (1894). Six specimens from this locality were analyzed and all have calcium greater than sodium and are thus uvite.

SHUSTER PARK

or A last gasp at "Parker" field collecting

by Jim Thompson

An Introduction

The easterly most railroad grade in Shuster Park at Franklin may well represent the last locality where mineral collectors may find, at first hand, some of the famous "Parker Shaft" minerals. Unfortunately, due to an incredible lack of interest shown by collectors, the three collecting opportunities permitted in this area last year by the Franklin Fire Department may have been our last chance to collect minerals at this locality.

Before the colors fade, we offer here a summary of what Shuster Park yielded in 1979.

Several points need be noted. In this article we are confining ourselves to the easterly most railroad grade in the park. The minerals encountered in relation to the limestone fill quarry operations which are adjacent to the park are not covered here. Also, these observations are based upon one collector's findings supplemented by watching, listening and looking as other collectors did their work. As such, it is hardly a perfect or complete summary. Persons with other species, observations, etc., are asked to send a description of them to me or at least tell me about them in person at a Society meeting - or better still - write them up for the Picking Table yourself. This site and it's uncovering might well prove to be of far greater historical and scientific importance than we now realize.

History of the Railroad Grade

This abandoned railroad grade in Shuster Park is without a doubt one of the purest mineral dumps remaining in the Franklin area. All of the material in it was probably in place before 1899 and maybe as early as late 1897 or early 1898, none seems to have been added after that date. Specimens found at this locality can justly be labeled "Parker Shaft."

The first, and perhaps only, reference to this site was made in an article by John A. Manley in the Mineral Collector, Vol. 5, No. 3, (1899). In describing the site (in reference to caswellite) Manley noted that, "a few specimens were obtained from a fill-in on the railroad, which had been made from rock from the dump of the Parker shaft."

Sometime after the closing of the Parker shaft in 1909, the area to the south of the shaft was developed into what is now known as Shuster Park. Once the pride and joy of the residents of Franklin, the park fell victim to underground mining operations and had to be closed due to ground subsidence not long after it had been opened. Today, with the subsidence at rest, the Franklin Fire Department has acquired control of the property and is in the process of restoring the park.

The Minerals

The following mineral species or varieties were observed or reported as being encountered during the 1979 collecting trips:

Allanite	Clinohedrite	Lead
Andradite	Copper	Margarosanite
(hydroandradite)	Esperite	Microcline
Apatite ¹	Franklinite	Rhodonite
Barite	Hancockite	Serpentine ³
Bustamite	Hardystonite	Willemite
Calcite	Hematite	Zincite
Celsian	Hendricksite	Zircon
Chlorite ²	Hyalophane	

¹(an unanalyzed member of this group, possibly svabite, was found).

²(an unanalyzed member of this group, possibly stilpnomelane, was found).

³(an unanalyzed member of this group, possibly antigorite, was found).

Interesting Occurrences

Andradite: Numerous crystals of this mineral were found. The largest, although poorly formed, was several inches across. A great many specimens contained perfect ¼" crystals which were frequently embedded in an attractive field of snow-white calcite. One noteworthy specimen was associated with light green svabite crystals.

Bustamite: Several specimens of the classic fluorescent "association" of bustamite with hardystonite and clinohedrite were found.

Caswellite: (hydroandradite) - This rare pseudomorph of fine grained andradite after mica was found in moderate amounts. Much of it appeared unweathered and fresh. Specimens exhibited both a rich copper-bronze color as well as an unusual silver-grey color.

Celsian: This rare barium feldspar was frequently seen as small sky-blue zones within larger masses of white hyalophane feldspar. One unusually rich specimen, over an inch across, was intimately associated with andradite garnet containing an attractive willemite crystal.

Hyalophane: Although unanalyzed, the abundant masses of white feldspar encountered are probably this mineral.

Rhodonite: Several masses of this mineral, some of them weighing over five pounds, were found. However, the majority of them were badly weathered and discolored. Modest pink cores of some specimens survived to lend themselves to cutting.

Implications

From the specimens that have been found to date at this locality, it is possible to suggest that the railroad grade first described by Manley may have been constructed of waste rock from the first 900 feet of the Parker shaft. This is supported by the absence of large amounts of hardystonite and related calc-silicate minerals which were first reported at that level of operation. The minor amounts of hardystonite that were observed were associated with andradite, a calc-silicate "skarn", indicating the operations may have been just short of the orebody. Most of the "ore type" minerals observed, particularly franklinite and willemite, further suggest a contact condition between the orebody and the country rock.

In Summation

It is again urged that those of you who collected on the railroad grade in Shuster Park make known any unusual discoveries made while on these collecting trips. The combined data from each of us, properly compiled and preserved, may provide an important clue to future geochemists and mineralogists as they attempt to study the complex nature of the orebody at Franklin.

(Editor's Note: In May the F.O.M.S. will conduct a field trip in Shuster Park. The Franklin Fire Department has generously permitted us to conduct what may well prove to be the last field trip to this locality. Plans for the redevelopment of Shuster Park currently necessitate the burying of the abandoned railroad bed and its minerals. It would be indeed sad if we were to lose this important collecting site before we have an opportunity to realize its full potential. Unfortunately, due to a deplorable lack of interest on the part of mineral collectors, this appears to be far more a reality than a possibility. Perhaps, a substantial turn-out for this field trip can provide enough encouragement for the Franklin Fire Department to modify its redevelopment plans for the park to include a collecting site from which both they and mineral collectors will benefit. This field trip will be open to Society members free-of-charge. Non-members will be permitted to collect upon making a nominal donation to benefit the Franklin Fire Department. There will be no weight limit. We strongly encourage you, and your friends in other mineralogical societies, to take part in this field trip. The time is here now for all of us to show our concern for the future of mineral collecting at Franklin and Sterling Hill).

THE PHOTOGRAPHY OF MINIATURE MINERAL CRYSTALS

by

Alfred L. Standfast, M.D.

Undoubtedly, the best appreciation of micro-minerals is viewing them with a good binocular microscope. It is impractical, however, to show large groups the beauty of miniature crystals without pictures. Second best is with color slides.

Although the binocular microscope has much more depth of field than high power compound microscopes, better depth can be obtained with a simple microscope or lens containing a diaphragm together with bellows. In pursuit of the latter, the following are some suggestions on macrophotography giving improved depth without the microscope.

The Camera

The first requirement is a good 35mm single lens reflex camera with provision for interchangeable lenses and light measuring cells at or near the viewfinder. An optional focusing screen for macrophotography will provide an added advantage.

Accessories

A bellows with an extension of 15cm or more, that can be combined with a focusing rail (the combination being called an auto-bellows) is essential. Attach the camera to the bellows and rail, which in turn are attached to an upright stand. The whole assembly is better balanced this way thus reducing the chance for vibration.

An Upright Stand

This can be purchased, but I prefer a 2 by 6 inch wood plank about 18" long which can be weighted on the underside with sheet metal. Three or four rubber cups used to support furniture can be attached to the bottom to act as feet. Mount to the middle of the plank a 1" by 2" hardwood upright about 15" long. A strong shelf bracket may be used to hold the two pieces securely at right angles. Heavy wood is preferred because it is less subject to vibration than metal. Note that the slightest vibration can spoil magnified pictures. The auto-bellows should then be mounted on the upright by drilling $\frac{1}{4}$ " holes at intervals to accommodate a $\frac{1}{4}$ " x 20 or 14/20 thread machine screw needed to "fix" the assembly.

Next, a sturdy table or bench is needed to set the stand on. A thick pad of newspapers set beneath the stand will help eliminate vibration. Because illumination in the viewfinder is markedly diminished with magnification up to 35 times, it is desirable to find an area with subdued light, perhaps a corner or even a basement. Bright walls or other reflecting points should be avoided to prevent glare. Beware of dust.

Lenses

- A. - A 50 or 55mm focal length f4.5 for magnification from 0.5 to 2.5 X is basic. A macro lens that can be stopped down to f16 or 22, and possibly mounted in reverse, is preferred.
- B. - A 35mm macro lens is helpful for magnification from 1.5 to 7 X.
- C. - A 20mm macro lens suitable for magnification from 4.5 to 12 X may be desirable, however, a special bellows lens may be needed if you are working with Olympus or Canon equipment.
- D. - A 12.5mm (or less) cine' lens (reversed) for magnification from 17 to 25 X is worthy of your consideration. One might be obtained from an old standard 8mm movie camera.

Film

When working with a filament lamp light source, tungsten type Kodachrome 40 for 3400 K; or Ektachrome EPY 50 for 3200 K; or possibly Eastman negative film will produce good results. Daylight film may be used with flash, but previewing and meter reading for shadows and reflections are not possible. Transparent color slides give the sharpest results. Correction filters may be required to match the light source.

Lighting

- A. - A single high intensity lamp can be very helpful for focusing and balance.
- B. - A movie lamp (3200 K or 3400 K) will be needed at a distance of 40 cm. or more.
- C. - A projection lamp (3200 K) in a housing may prove useful. Caution - this and the movie lamp become quite HOT.
- D. - A microscope lamp (3200 K) is another that can become quite useful.
- E. - A fiber-optics lamp (3200 K or 3400 K) will provide intense cool light for vugs, however, they are expensive.
- F. - A clear 100 or 200 watt lamp (3200 K) with a small filament may be useful in seeking detail.

The Specimen and its Mount

A heavy one-third sphere of lead or solder, molded from an old ash tray, which can be tilted at different angles in a caster cup will make a practical swivel mount. Set it on black felt. The specimen or micromount box should then be secured to the swivel mount with molding clay. Larger specimens may be simply supported with pieces of clay. Prevent glare by surrounding the specimen with black velvet or felt. A word of caution - plastic boxes may have to be darkened to prevent glare

Exposure

In some SLR cameras, the exposure may be read directly in a well protected (from light) viewfinder. Caution - even reflections from eyeglasses may affect the reading. With higher magnification, over 5 X, use time exposures with less illumination, by opening the shutter and using a light switch to time exposures; problems with vibration can also be minimized in this manner. Increase the exposure when working with a dark central object surrounded by a bright periphery. When the opposite condition prevails, decrease the exposure. Some hand held exposure meters have fiber-optic attachments that may be used on small areas, however, the readings are not as accurate as in the camera viewfinder. Diffusion of light may present another problem, therefore, with magnification over 10 X use f8 rather than f16 and adjust your exposure accordingly.

Magnification Measurement

The Simplest way to determine magnification is to view a metric scale in place of the subject. Divide the short diameter of 24mm by its viewfinder count for the answer; i.e., $24/6 = 4$ X magnification.

Hazards

Dust and static electricity. Caution - tiny crystals may break free in the fight to remove resistant dust particles. High frequency cleaning will remove most dust, however, here too there is a risk. A camel's hair brush, bird feather, or even an ear syringe blower are useful in dealing with dust. Beware of common sources of dust such as clothing and bedding. Vibration is another demon; passing trucks, motors and even camera shutters can contribute to this problem. Glare is another hazard to avoid; keep light from striking the lens aperture.

In Conclusion

Trial and error, and practice, are all part of the game. Nothing is exact. Don't be easily discouraged.

THE SUSSEX CALCITE COMPANY

by John L. Baum

It is the nature of successful mining operations that they tend to attract the unscrupulous and the perennial optimist. The success of the New Jersey Zinc Company following the consolidation of interests controlling the Franklin and Sterling deposits at the turn of the century was no different. The hopeful sank shafts on lean iron ore showings west of Sterling and east of Lake Wallkill, and pits were dug on spinel outcrops east of Franklin and in the Amity, New York area northward on the strike. The biggest mistake however was the operation of what may be known as Munson's Quarry in Franklin behind the A&P shopping center. This is more properly the Sussex Calcite Quarry.

In 1906 a group of promoters issued a booklet entitled How Fortunes Are Made. It starts out by pointing out what poor places banks are for the investor, and quotes the favorable record of certain selected mining shares regarding dividends and capital appreciation, among them The New Jersey Zinc Company. Then the invitation is issued to invest in the New Jersey Mineral Company. Purchase of shares is made easy, the price being \$12.50 for cash or \$15.00 on the time payment plan of 10 percent down and 10 percent per month for 9 months. The authors of this gem point out that since the capitalization of the New Jersey Mineral Company is but one fifth that of the nearby New Jersey Zinc Company, its dividends should be five times as great.

The Munson family, a respected name in the area, somehow was persuaded to put its adjacent property into the pot, resulting in 475 acres of opportunity. The prospectus goes on to state that the zinc ore to be produced will be sold without crushing or beneficiation, eager buyers from abroad having offered to purchase the output as is. Zinc Company production figures are inserted in the brochure at this point to indicate an anticipated value of output of ten million dollars a year, and the State geological survey and Frank Nason, a noted geologist of that time, though a bit of an eccentric, are quoted. Nason's report was glowing and it was on this report that the venture was founded, this report and the proximity of the known zinc mines.

However, in case the zinc didn't work out, there was always the white limestone which could be used in cement manufacture and in blast furnaces. Here alone a fortune awaited the stockholder, and of course there was the dairy farm, with a reported herd of 110 head. Calculations were given to indicate the expected dividends, and even the appreciation in value of the stock was thoughtfully revealed. Newspaper clippings were reproduced, one of which told how "the story of additional zinc deposits first became public when several drunken miners, who had been discharged by the New Jersey Zinc Company, began telling stories of a rich new vein which had been struck, but which ran in a different direction from the ore now being worked."

The most telling point of this entire offer was a money back guarantee, good for six months, of full rebate plus interest at six percent, on the price of the stock. Now we are ready to buy stock, and grateful for the chance. But wait. What's this? The annual report of the State Geologist for 1906 is at hand, and it takes issue with the implication that the State in any way endorses the claims being made. It states that exploration drilling has failed to reveal additional ores, that such testing is very expensive, that the property in question is not in large part underlain by white limestone but by useless blue limestone, and that Frank Nason's report as given was sufficiently abridged as to mislead.

A year later, in his annual report for 1907, the State Geologist reported that such was the flow of letters of inquiry concerning the promotion directed to the State Geologist, and so fraudulent did the promoters' claims appear, that the Post Office Department summoned the officers of the New Jersey Mineral Company to a fraud hearing. The officers admitted that they had collected over \$180,000 and had spent over \$70,000 in stock promotion and sales, that their officers had been drawing salaries totalling \$13,780 per year, that an expensive office was maintained on Wall Street, that no funds had been spent on

zinc mining, that only \$20,000 had been paid on the purchase of the property despite the promotor's valuation of the property at \$400,000, that \$35,000 were spent developing the quarry with its railroad spur, and that only \$25,000 remained in the till. It appeared that widows and orphans were taken by the promotion. On December 2, 1907, a fraud order was issued against the New Jersey Mineral Company. Served them right, too.

On December 14, 1907 the company filed with the Secretary of State of New Jersey the certificate of change of name which would white wash the affair, and the Sussex Calcite Company was born. Another fraud order was soon forthcoming. Records on file in the archives of the Franklin Mineral Museum from which this material is abstracted indicate that there was a stockholder's meeting on April 12, 1911 at which it was reported that there was cash on hand of \$651.93 and bills recievable of \$811.50, which facts indicate that not much business was being done. 'An annual meeting report in 1914 stated the farm was paying the current charges but that there was no income from mining leases. At the 1924 special meeting of the stockholders a new mining lease was authorized with outside interests, and some exploration drilling was done, one of the holes being the deepest diamond drill hole in North America at the time. Nothing of value was found.

Following World War II the property reverted to the Munson family, the New Jersey Zinc Company bought the mineral rights, and subsequent surface sales included the Lasolo farm, the A&P shopping center, the bowling alley and the Hardyston Township School, as well as the Armory and the adjacent factory. It seems unlikely that the promotors originally intended anything crooked but enthusiasm, lack of knowledge of mining requirements, and developing desperation forced their hands. Anyhow, the property has a story to tell.

A Note of Congratulation

It is with great pleasure that we announce the successful completion of his doctorate work by Past-President Frederick Kraissl, Jr., which has culminated in his being awarded his Ph.D. from California Western University. The subject of his thesis was "The Mechanics of Color in Gems and Minerals." One finds this achievement particularly noteworthy inasmuch as Dr. Kraissl chose to pursue his graduate work only after entering semi-retirement following over a half-century of practice as a licensed Professional Engineer and highly successful businessman. We extend our warmest congratulations to Dr. and Mrs. Kraissl and look forward to a presentation on his thesis work at a future meeting of our Society.

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Kushner	A Guide to Mineral Collecting at Franklin and Sterling Hill, New Jersey	_____	3.00	_____
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