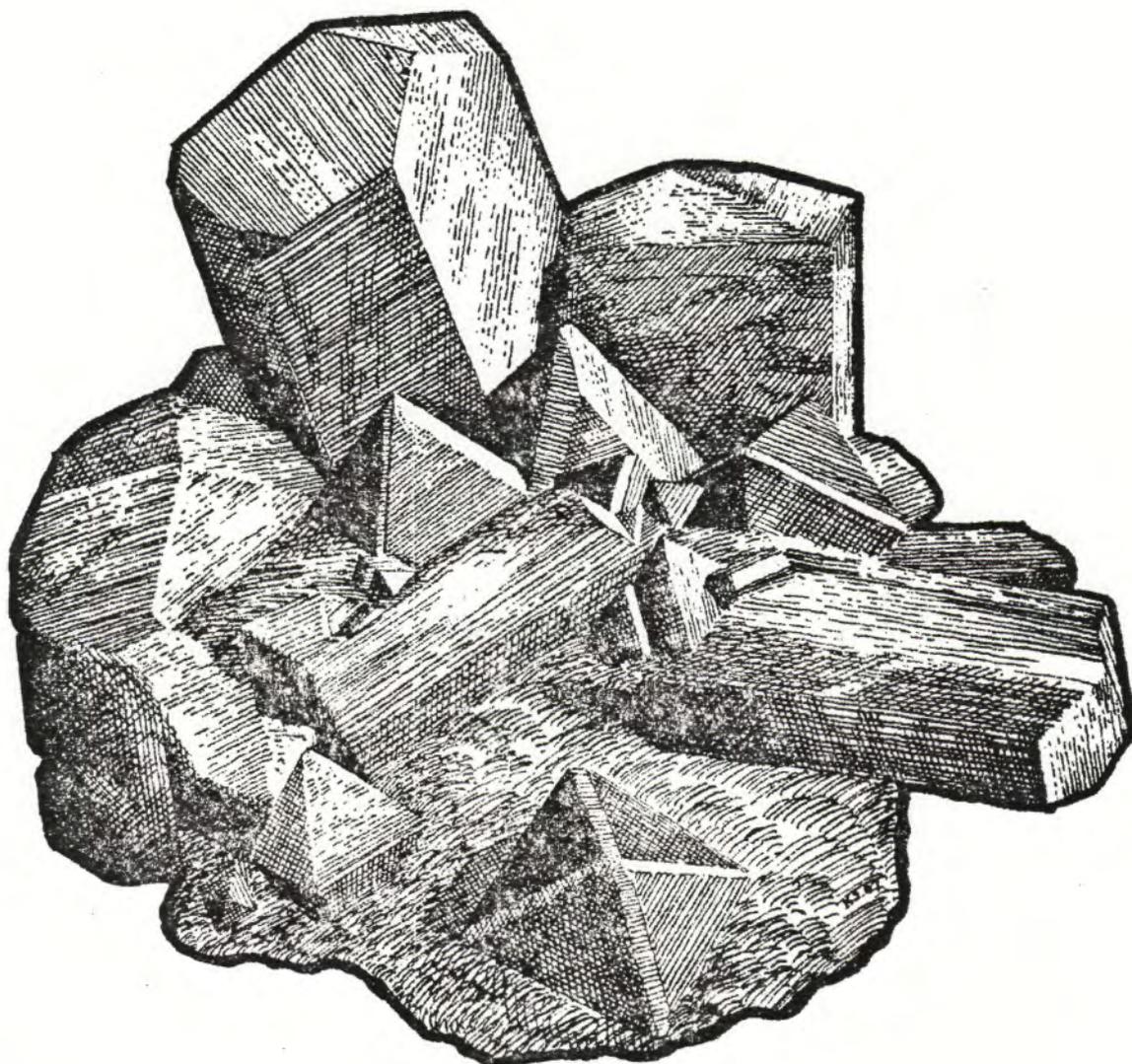


THE PICKING TABLE

JOURNAL OF THE FRANKLIN-OGDENSBURG MINERALOGICAL SOCIETY



VOLUME 15

AUGUST 1974

NUMBER 2

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F.O.M.S. NOTES

With the gasoline shortage now a bad memory (permanently we hope), the F.O.M.S. Fall meetings will be held at the Hardyston School, Routes #23 and #517, Franklin, N.J. The members who did attend the Spring meetings are still talking of the excellent presentations by our speakers and the beautiful slides of Franklin minerals that were shown. The Fall program, scheduled by Chairman Fred Kraissl, promises to be equally interesting. Again, the emphasis is on Franklin mineralogy. The speakers scheduled are experts in their field; the subjects are different and important. Attendance at these sessions is sure to prove interesting and informative and a real help to collectors of every degree. Plan to attend and bring a friend.

When attendance at field trips drops, Chairman John Sebastian worries. And with good cause, for every field trip, regardless of the number of previous visits to the locality, still produces good material for the collector. Recently the Trotter Dump has been producing good specimen material. For this reason another visit to this locality has been scheduled for November. Our other two field trips have also produced good material regularly. Join your fellow members. Come and do a little digging and you too should find some keepers.

John also advises that the Limecrest trip this year was again very well attended and productive. He was particularly pleased with the conduct of all collectors and with the assistance he received with the parking chores and safety patrol. Such cooperation from visiting groups is heartening and beneficial to all as it helps insure everyone's return to that locality next year.

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Treasurer Bob Thomas advises that that the FOMS/Franklin Mineral Museum reprint of Charles Palache's "Professional Paper #180 - The Minerals of Franklin and Sterling Hill, Sussex County, N.J." is available by mail. The regular paper covered issue is \$5.00 and the hard covered issue \$7.50. Also available are a limited number of reprints from Economic Geology of the Frondel/Baum paper "Structure and Mineralogy of the Franklin Zinc-Iron-Manganese Deposit, New Jersey". The price of this very important paper is \$1.75. To order these papers, as well as other literature, please use the form on the last page of this issue.

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In the February issue of The Picking Table, Editor Frank Z. Edwards advised of his removal to Florida and requested that news of interest to Franklin collectors and mineralogists be sent to him by mail. That request is repeated - your contributions are most welcome. However, please correct the address to 726 Floresta Drive, Palm Bay, 32905; phone number still (305) 723-4966. This is our permanent address, and the previous invitation for Florida visitors to stop by for conversation and refreshment is also renewed.

Our thanks are extended to those who did supply information for this issue of The Picking Table. These included Dave Cook, Jack Baum, Bernie Kozykowski, Bill Welsh, John Sebastian, Peter Chin, John MacDonald, Joe Warinski, Warren Miller, Fred Kraissl, Alice Kraissl and Louise Borgstrom. Their contributions are most welcome.

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Franklin Mineral Show

The 18th Annual Franklin-Sterling Mineral Exhibit sponsored by the Kiwanis Club of Franklin will be held on Saturday, October 12th and Sunday, October 13th, 1974. Hours on Saturday - 9:00 A.M. to 8:00 P.M.; Sunday, 10:00 A.M. to 6:00 P.M.

The admission price of \$1.50 per adult and \$1.00 for children provides admission to the Franklin Armory with exhibits and dealer section; to the Franklin Mineral Museum including the Mine Replica and famous Fluorescent Display; and to the Buckwheat Dump for specimen collecting. A shuttle bus will provide quick transportation to all areas.

Free parking will also be provided.

Continuing the practice of the last two years, a booth manned by members, will sell Franklin mineral specimens only.

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Dr. Paul B. Moore

In past issues of The Picking Table we have referred to and cited the work of Dr. Paul B. Moore on Langban and Franklin minerals. In November, 1973 his contributions to mineralogy were recognized in the receipt of the Mineralogical Society of America Award for 1973. The presentation remarks by the MSA President, Dr. Joseph V. Smith, stated "Paul B. Moore is a brilliant young mineralogist. Although only 32 years old his publications amass a grand total of 74 as of January 1973. Paul is a perfect example of how a first rate amateur mineralogist can develop into a first rate professional. All members of our society can be proud of him." Dr. Moore accepted the medal with a most unusual speech, which is quoted herewith for its uncommon interest to our members.

"My fascination in minerals began when, aged 12 years, I was inspired by Bill and Mary Welsh, both dedicated school teachers and outstanding amateur mineralogists who brought the world of beautiful and mysterious natural things to the classroom. Soon after, I was known to pester nearly every adult in sight who had an automobile and free weekend so that I could get to the Parker Shaft mine dump in Franklin, N.J. - some thirty miles from home - to collect among the most extraordinary minerals known to science. My understanding and intelligent parents early encouraged this combination of curiosity and quest for goals. I even managed to infect some of my boyhood chums with the interest and we could be witnessed stumping up Grand Avenue in Paterson, New Jersey, from bus stop to destination - bristling with crowbars, sledge hammers and collecting bags to Garrett Mountain in the First Watchung Range and the then accessible New Street quarries, where after diligent effort and bruised knuckles, most beautiful zeolites were culled. My hobby became "fixed" at 15 when Brian Mason, then at the American Museum of Natural History in New York, pressed reprints of Langban and Franklin mineralogy into my hands, and I soon fell under the spell of Palache's Professional Paper 180, the classic treatise on the mineralogy of the Franklin and Sterling Hill zinc mines. Charles Palache was my hero then, and I once planned a "Journey to the East" to seek out my Guru, but as a lad I was too shy and frightened to meet the Great One. I regret never having met Palache, but Cliff Frondel doubtless carries on the Palache spirit, and I am pleased to count this esteemed colleague among my personal friends.

Since then, my goals have changed but my style has not. My collection of 4,000 personally collected samples of some 1,000 species no longer exists intact. It was sold piecemeal to provide funds for my expeditions to rather unusual and inaccessible places in search for rare and magnificent Rhopalocera. The wheel has turned one cycle; my boyhood amateurism and enthusiasm revisited me again, now directed toward butterflies! The joy from uncovering a rare roeblingite at Franklin was magically transformed into the joy from capturing *Morphotenaris schonbergi*, one of the glories of my collection, in a remote New Guinea jungle.

My early and rather peculiar interest in rare and improbable things manifests itself in my choice of problems to this day. The weary splitting of hundreds of rockbridgeite fibers to obtain that one single crystal was a pleasure even surpassing my discovery of that roebingite many years ago. The quest, spanning one decade, for mitridatite, strunzite, and cacoxenite eventually brought triumph. The personal removal of some thirty species of phosphates, ten of which are new to scientific intelligence, in all their paragenetic glory from one altered triphylite pod exposed only six months ago at the Palermo pegmatite, another childhood haunt, brought back flashes of old phantasies. The lonely and countless hours in the computation center wrestling with the "blue monster" were hardly fruitless in retrospect.

Yet I wish not to paint myself as a "Childe Harold". Much of my patience and zest for hard work goes back to an early introduction into the brass knuckles facts of life by my parents and grandparents and their instructions on the dangers and ultimate dissatisfactions of idleness, sloth and sloppiness. Paraphrasing Lord Acton, "innocence corrupts and impotency corrupts absolutely". I smile when I think of a translated quote from the old Bruckner to the young Mahler: "Now I have to work very hard so that at least the Tenth Symphony will be finished. Otherwise, I will not pass before God, before Whom I shall soon stand. He will say "why else have I given you talent, you son of a bitch, that then you should sing My praise and glory? But you have accomplished much too little!" Alfred Russell Wallace wrote his monumental "Narrative of Travels on the Amazon and Rio Negro" when he was but 30 - based on three years of solitary and dangerous expedition - followed by his even more colossal narrative of his seven year expedition throughout the Malay Archipelago. Compared with men as these, my contribution to human knowledge and enlightenment has been miniscule. Yet, I continue to derive great personal satisfaction from my studies and trust this shall continue for some years to come.

Professionally, many colleagues and professors of the past have helped me along the way. Most of all, I single out Joe Smith as the wellspring for my eventual professional development. The improbable event of having the President of the Society, once my mentor, provide the praeludium to my presentation, is too much a temptation to let pass in silence.

I wish to offer a few reflections about our Society and what it stands for. It is not out of arrogance but out of deep concern that you must hear me further. The Mineralogical Society of America was created largely through the generosity and support of dedicated amateurs as well as professionals, the most signal figure having been Colonel Washington Roebling. In its early years, many virtuoso performances in pure mineralogy were offered - the papers of Palache, Berman, Peacock and Schaller, for example. Where is this spirit today? What does the Society symbolize, if anything? Why aren't more of our dedicated amateurs present at this meeting? Is it true that our science has become so obscure and specialized that the amateur can no longer play a supportive role? Or have we become too arrogant, too ensconced in specialties? Who among us can go out and teach the inquisitive man in the street of the mysteries and marvels of the natural inorganic world? Who among us will strive to encourage the devoted amateur and treat him as an equal? Who among us can claim equally deep interests in the humanities and in other realms of nature - the dedication to and love of music of a Palache or a Peacock, the love of flowers of a Schairer, the love of gems of a Foshag? The Society represents to me a human institution, not a hard, cold, amorphous thing. It represents a focal point where the creators of hard, specific, objective knowledge become persons, where authors and readers become human and real. If the sparks of the Society - enthusiasm, love of minerals, a sense of confraternity - are quenched, it will surely die an ananymous death without even the dignity of a funeral cortege.

I say these words because I am proud of my award and the Society of which I am a member and want future recipients to be assured that they can look to their Society with pride and not with a sense of achieving a goal in silver which after its receipt is transmuted into lead.

I conclude my reflections with two highly personal observations. First, the most brilliant crystal structure analyst of minerals in this country, if not the world, is my colleague and chief collaborator, Takaharu Araki, who analyzes Patterson maps as a Go champion proceeds with his "Bead Game" on to victory. Second, I have so far failed to provide any student to the scientific community who has received solely my guidance, and the prospects of finding a willing soul at the moment appears dim. This is unfortunate, for the problems in pure mineralogy are seemingly endless and my list of programs and projects would take more than one life time to complete. Naturally, any dedicated student with a talent in pure mineralogy is always welcome in my laboratory, which includes the great outdoors as well as the solitude of the X-ray and goniometric facilities."

* * * * *

We are indebted to Messrs. Wing and Mayberry of the U.S. Department of Agriculture, Agricultural Research Service, North Central Region, Peoria, Ill., who were kind enough to send us a copy of a press release describing a new process for recovering metals. We quote the release:

"A corn starch compound offers industry a new way to recover metals dissolved in water says a chemist in USDA's Agricultural Research Service.

Recovering expensive metals at the industrial plants where they are used permits reusing them, conserves them as limited natural resources, and reduces dangers of toxic levels in public water supplies and city sewage sludge. Metals in sludge can limit its use in replacing scarce fertilizer.

Metals that can pollute water include lead from making batteries and gasoline antiknock agents; silver from photographic processing and making mirrors; mercury from chlorine and lye production, zinc from galvanizing roofing, gutters and wire; chromium from leather tanning; copper from wire, plumbing and chemical manufacturing, and all metals, especially cadmium, from plating or mining. Although trace amounts of some metals are required in plant and animal nutrition, excessive amounts can be toxic.

Robert E. Wing says the process developed at the ARS Northern Regional Research Laboratory, Peoria, "offers industry a way to reduce concentrations of almost all heavy metals to levels below strict discharge limits." Public concern has caused most state authorities to set strict limits on levels of metals in discharged waste water.

The ARS process, not yet in use, offers advantages over methods now used, but Dr. Wing says, "No one method is the ultimate answer. Several will have to be combined."

In the new process, a starch compound that does not dissolve in water, cross-linked-starch xanthate (pronounced zanthate), is mixed with water containing dissolved metal. Negatively charged xanthate groups draw the positively charged metal ions out of the solution to form a sludge. Metal and starch are recovered from the sludge by treating it with nitric acid.

Metal sludges from other removal processes are discarded or used as land fill. Metals are lost for reuse but can get into water.

The starch xanthate process is effective over a pH range from 3 to 11 and in the presence of up to 10% of salt. It removes metals quickly, achieving its greatest effect within the first 30 to 60 seconds.

After 5 minutes stirring in metal solutions in laboratory trials, starch xanthate lowered concentrations of copper from 31,770 to 20 parts per billion (ppb); lead from 103,600 to 25 ppb, and mercury from 100,000 to 3 ppb. Laboratory trials gave similar reductions of nickel, cadmium, chromium, silver, zinc, iron and manganese.

The insoluble starch xanthate process is an advancement from an earlier process that required an expensive cationic polymer as well as starch xanthate. Dr. Wing eliminated need for the expensive polymer by making starch xanthate from corn starch made insoluble by crosslinking. The cross linked corn starch is available commercially.

It is combined with sodium and sulphur by reacting it with carbon disulfide and lye, (sodium hydroxide) to make insoluble sodium starch xanthate. In water with metals, it acts like a resin in a household water softener exchanging the sodium for the metal. (Softened water has had sodium substituted for dissolved minerals like calcium.)

Starch xanthate was developed at the Northern Laboratory as a paper strengthening agent, an application now going into industrial trials. It was tried next for replacing carbon black in strong, light colored rubber, then for coating latex particles in making powdered rubber. Powdered rubber would require less power than conventional slab rubber in grinding and mixing to make rubber products."

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Franklin Ore Body Structure and Mineralogy

The paper, long awaited by students of Franklin mineralogy, by Clifford Frondel and John L. Baum was published in Economic Geology, volume 69, number 2, March/April 1974, pages 157-180, entitled "Structure and Mineralogy of the Franklin Zinc-Iron-Manganese Deposit, New Jersey". As expressed by the authors "The purpose of the present paper is to present detailed geological information on the Franklin ore body newly released by the New Jersey Zinc Company, together with first hand studies, and to discuss the bearing both of this information and of recent mineralogical studies on existing theories of origin of the deposit." Collectors interested in these phases of Franklin mineralogy are urged to read the entire paper. For our other members we quote the abstract:

"The Franklin and nearby Sterling Hill ore bodies are interpreted as originally stratiform deposits of sedimentary origin. This material was recrystallized and markedly deformed by regional dynamothermal metamorphism at the sillimanite grade during late Precambrian time.

Internally, the Franklin ore body is composed of bed-like or lens-like bodies of ore and calcsilicates. They are arranged in a laminated fashion conformable to the synclinal structure of the ore body and to sedimentary structures in the enclosing marble. The individual ore units vary widely in the relative proportions of franklinite, willemite, zincite, calcite, and accessory manganese-bearing silicates of the olivine and chondrodite groups. The sedimentary protore is believed to have been largely carbonatic, with zincite formed by the thermal decomposition of smithsonite or of solid solutions in the smithsonite-rhodochrosite-siderite series.

The calcsilicate bodies are characterized by calcite, manganoan andradite, rhodonite, bustamite, pyroxenes and amphiboles containing much Mn and Zn, barium feldspars rich in Pb and Sr, hendricksite, vesuvianite, wollastonite, and minor franklinite. They represent the recrystallization of relatively highly argillaceous material intercalated in the original sedimentary sequence. In both their detailed mineralogy and their content of minor and trace elements, the calcsilicate bodies show close similarities to metamorphosed sedimentary manganese deposits. The similarities do not wholly extend to the ore units because of the presence therein of much more Zn and much less Si and Al.

Most of the over 230 different minerals that have been identified at Franklin and Sterling Hill are either weathering products or are associated with low temperature hydrothermal veinlets and altered areas. The hydrothermal mineralization is believed to derive from the reworking of the minerals of the primary ore and calcsilicate bodies by a regional metamorphism that was later and of lower grade than the original recrystallization. Only about 25 minerals are common first stage metamorphic constituents that characterize the original deposit in a genetic sense. Intrusive pegmatites are postore and have had a negligible effect on the mineralization of the deposits."

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Fluorescent Corner

In the February 1971 Picking Table we announced the formation of the Fluorescent Mineral Society. Don Newsome, President of this organization, advises that now they have over 120 members from 33 states, Canada, Australia, New Zealand and Sweden. They publish a newsletter four times a year, an Annual Journal, have a trading list and hold silent auctions. Yearly dues are \$5.00. If interested in membership, write to Mr. Don Newsome, 9111 Morehart Avenue, Pacoima, Calif. 91331.

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Correction

After 14 years of typing the Picking Table and monthly bulletins for the F.O.M.S., Louise Borgstrom has finally made a mistake, proving again that we are all human. In the February 1974 Picking Table in discussing freak fluorescents, page 7, 2nd paragraph, one sentence was omitted. This sentence should be inserted between the 3rd and 4th lines in that 2nd paragraph - Pat Gross asked Jack Baum to determine the cause of the fluorescence. He found that "on the drusy quartz is a coating containing willemite with a poor short wave fluoresnce. Also, there is a thin film ----- Please add this sentence to your copy.

Gypsum/Selenite/Quartz

Also, in discussing gypsum or selenite fluorescence, I stated that "John MacDonald advises that all specimens he has handled of micro crystals of selenite from Sterling Hill fluoresce a good red under short wave." John says this is not so and sets the record straight. I quote a letter from John:

"Just received The Picking Table and read about the fluorescent Gypsum. I do not have any micro crystals of Gypsum that fluoresce red. I do have a large piece of fluorescent calcite, with fluorescent willemite from Sterling Hill. On top of this piece are perfect monoclinic crystals of Gypsum up to 1/2" long. These crystals do fluoresce a blue white long wave and a weaker blue white short wave. The response is very vivid. This specimen was displayed twice at the Franklin Show but was not noticed by many collectors.

I have seen micro specimens labeled Selenite from Sterling Hill. I have examined many of these specimens and the micro crystals are orthorhombic. In July 1964 I purchased some of this material from the 1200 ft. level, Sterling Hill. In November I gave a piece to Dr. Alexander Knoll to identify. He advised me by mail on 12/27/64 that these micro crystals were found to be CELESTITE by chemical and optical tests.

I have just acquired some showy quartz crystals in ore from Sterling Hill. They fluoresce green S.W. with a weaker green L.W. The quartz crystals are in what appears to be agatized quartz in calcite with franklinite and willemite. The agate is pinkish. Most unusual. It looks like real agate but the matrix proves that it is from Sterling Hill."

Margarosonite

Dr. Warren Miller has investigated the nature of fluorescence in margarosonite. He was kind enough to write up his investigation for The Picking Table for which we thank him. His report follows:

"In the past, margarosonite specimens from Franklin, N.J. have occasionally been found which have zones which fluoresce pink or red under short wave ultra violet light in addition to the usual blue color. This pink-red fluorescence has usually been attributed to the presence of red fluorescent axinite which is intermixed with margarosonite. This assumption seemed reasonable since the two minerals have been found associated with many specimens from the Parker Shaft.

It seemed somewhat odd, however, that in many of the specimens exhibiting the pink fluorescence, no pure axinite with a red fluorescence was observed. Furthermore, the physical appearance of the pink and blue fluorescent zones in the margarosonite is identical.

In order to determine the exact nature of the pink fluorescent material, it seemed appropriate to determine its chemical composition. The material chosen for study was from a well crystallized margarosonite specimen in the Gerstmann collection which had bright blue fluorescent margarosonite as well as zones which fluoresced various shades of pink and red.

A semi-quantitative emission spectrographic analysis of the red fluorescent material indicated that it was composed primarily of calcium, lead and silicon, with a small amount of manganese (1.2% by chemical analysis.) No aluminum or boron was observed above the 0.01% level, and since axinite is an aluminum borosilicate its presence in the material was ruled out.

In order to establish that the material was not a new unreported calcium lead silicate, an x-ray powder pattern of the material was obtained and it showed that the material was indeed margarosanite with no other material present.

Based on this limited study, it appears as though margarosanite can fluoresce two different colors, red and blue, with the pink material being a mixture of the two. Different activators may be responsible for the different fluorescent response. This is not unusual since it is well known that some willemite, calcite, fluorite and other minerals can each fluoresce many different colors depending on the presence of trace impurities which can act as activators." (End of quote of Dr. Warren Miller)

Most Franklin collectors associate margarosanite only with other Parker Shaft minerals. In his investigations into the Harvard Franklin collection, David Cook found margarosanite in other associations and believes that it can be found throughout the entire ore body. In my own collection I have a specimen which appears to be from either the hanging wall or footwall, with margarosanite plates imbedded in calcite and with some associated quartz. It fluoresces a vivid blue.

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Hardystonite

In my listing of the Franklin fluorescent minerals in the August 1972 issue of The Picking Table, I stated that "All hardystonite is not fluorescent. When so, the response is under SW only and is from a blue to violet." Several members have since advised that they have noted a long wave response. Don Newsome advises that he and Dick Bostwick (now associated with Ultra Violet Products, Inc.) have found some specimens that fluoresce blue violet under a well filtered Long Wave. Bernie Kozykowski stated that hardystonite "will very often present a vivid blue fluorescent response to long wave U.V.; this unfortunately is not an absolute but does occur more than often enough to be accredited. In fact the long wave response is brighter than the short wave response." This is sufficient evidence to note on your records that hardystonite may also fluoresce a vivid blue under long wave.

Hydroxyapatite

Hydroxyapatite which had been accepted as an accredited mineral and fluorescent from Franklin has been discredited and should be removed from both lists. Investigation of the source material showed no Franklin associations but normal associations for the Portland, Conn. and other New England pegmatites. This is another case where some collector thoughtlessly unloaded foreign material on a Franklin dump for some one else to collect and create confusion.

Barite

Bernie Kozykowski and I have been having some correspondence trying to resolve differences in our fluorescent mineral list for Franklin/Ogdensburg. In his last letter, Bernie described a new barite find at Sterling Hill. I quote:

"There has been an interesting find of Barite at Sterling Hill in the past few months. In this latest find, the barite occurs as small clear golden brown crystals, some of which are incredibly beautiful under the hand lens or microscope. Their

clarity is similar to that of topaz. In size they range from microscopic to perhaps a quarter inch long. They have been encountered in low temperature fissures in a low to fair density ore area in the middle of stope 1010 between one cut below and four cuts above the 800 ft. level. The material has formed in the fissures over a massive matrix consisting of brown willemite and franklinite, fine grained, in a calcite matrix with minor amounts of sphalerite. Also associated with the crystals is what appears to be a poorly formed bladed white barite not too unlike the material found at Franklin. One specimen I've seen also contained a substantial amount of rhodochrosite crystal clusters of similar size. The white barite does not fluoresce, but the golden brown crystals fluoresce quite well. The response is a fair blue gray under the short wave and a good tan cream under long wave. They also present a weak but obvious phosphorescence. It may be that both responses are equal but the fluorescent willemite and calcite found as the massive base detracts from the short wave response. So it seems we have a new response for our list. The material has been x-rayed by Dr. Warren Miller and confirmed. Personally I'd like, as always, a second analysis even though the crystal form, etc. fits. I really don't have any doubt at all, it's just that the fluorescent responses are so different. And would you believe it, I just can't get a specimen or two for us as yet!"

Anorthite

Bernie and I also have been having a considerable to do over anorthite. In my August 1972 listing for anorthite I stated "Two responses are reported for this mineral - anorthite from the pegmatites cutting the ore body are reported to fluoresce pale blue SW - no reaction LW. On colorless grains from the Franklin limestone, the response is given as white or cream SW only. Very few specimens of anorthite from the area have been validated. The responses given above can also apply to microcline and tremolite. Specimens purporting to be anorthite should be carefully checked."

Bernie's position - "This one may soon be discredited. The reason for this is that neither Jack Baum nor I can find any validated material. In fact we cannot even find questionable material which will give a consistently favorable response. Even the anorthite associated with the Sterling Hill corundum requires a good stretch of the imagination before you can say it is fluorescent and then it may not occur at all. However, we are still looking."

My reply "This mineral does not occur in the orebodies, except for the corundum association at Sterling Hill. All mention of this species is either in the pegmatites cutting the ore body at Franklin or in the Franklin limestone. The U.V. responses given are from specimen material from these two sources. I, personally, have not seen any of this material but it is validated in Palache and Frondel and specimens are in the Harvard collection. So, discreditation is out. But specimens are scarce probably because no one looks for them or can visually recognize them. In the walls around the Trotter Dump, Dr. Frondel traced a pegmatite vein for several hundred yards (two years ago.) Maybe a U.V. exploration of this vein at night will prove interesting. Jack Baum knows this location and I'm sure he would be glad to show it to you. It is also possible that some of the blue fluorescent microcline found in the pegmatite material on the river side of the Buckwheat Dump might be anorthite. At any rate, while this is a very scarce species specimenwise for Franklin, I still consider it a valid fluorescent."

Bernie now states "I am still convinced that anorthite can only at best be considered as extremely doubtful as a fluorescent. If I can't find a fluorescent specimen by the first of the year I will definitely remove it from my list."

In order to resolve this question, will any member who has fluorescent anorthite from Franklin or Sterling Hill, please write to me or Bernie giving full details. This would be greatly appreciated.

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Bernie's talk on the Franklin fluorescent minerals was beautifully illustrated with slides prepared by Mr. Henry Van Lenten of Hibernia, N.J. The slides were especially noteworthy because of the high fidelity reproduction of the fluorescent colors. We will see if we can get an article from Mr. Van Lenten on photographing fluorescent minerals for a future issue of The Picking Table.

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New Minerals

Fuchsite

The following paper was submitted for publication in The Picking Table by Mr. Silvio Crespo, a teacher in the Earth Science Department, Jefferson Township (N.J.) High School, who has been working with Franklin minerals for several years. The X-ray work on the fuchsite was done by Mr. Crespo at Montclair State College; the spectrometric work by Dr. Jean-Paul Picard, Chief of the Propellants Division at Picatinny Arsenal. We are extremely grateful that Mr. Crespo selected us for the publication of his find. His paper follows:

"A new sheet silicate has been identified at Franklin, N.J. Fuchsite, a species of mica similar to muscovite, has been found and identified. The type specimen was found in the Trotter Dump during a collecting trip in 1971 and a second sample in 1972. It is in a matrix of Franklin calcite, but the samples were not in location so that their relationship with other minerals and the mine workings is hard to ascertain. One reason why it has been passed over is that it is not very abundant and its color can be confused with that of other micas found in the Franklin area.

The fuchsite occurs as small books ranging from 1 to 5 mm across the cleavage surface, with a thickness of 2 to 4 mm. Their orientation is in a random fashion, exhibiting no preferred alignment. The books occur in thin zones, with individual books no more than 5 mm apart.

Today two specimens containing fuchsite have been found. This mineral can easily be confused with muscovite in its light green phase and biotite in its dark green phase.

The difference between fuchsite and muscovite lies in the fact that fuchsite has a high percentage of chromium. The Cr replaces the octahedral aluminum. This fact sets fuchsite apart as a different species of mica and not a variety of muscovite (Deer, Howie, Zussman).

The type specimen shows a content of .780% Cr. by mass spectrometric method. Powder method shows a $2M_1$ cell which conforms to Witmore (1946).

The specimen is pleiochroic with the a (alpha), light emerald green; B (beta) green - dark emerald green. $a = 5.20$ $b = 9.05$ $c = 20.01$ α $B = 95^\circ$.

Fuchsite (Cont.)

Vita list for Fuchsite (Franklin)

Formula: $K_2 Al_4 (Si Al_2 O_{20}) (OH,F)_4$ with Cr replacing octahedral Al.

Hardness: 2/2-1/2

Specific Gravity: 2.76 - 3.00

Luster: Vitreous to pearly

Streak: Uncolored

Light Transmission: Transparent to translucent

Color: Dark emerald green

References: 1. W.A. Deer, R.A. Howie, J. Zussman, Rock Forming Minerals,

Vol. 1 and Vol. 2, 1962, Longmans

2. Clifford, T.N., "Fuchsite from a Silurian Quartz Conglomerate, Acworth Twp., New Hampshire", American Mineralogist, Vol. 42, page 566, 1957.

* * * * *

Metastrengite

Metastrengite, another new mineral for the Franklin/Sterling Hill area has been identified by David Cook at Harvard University. The following information was received just too late for the last issue of The Picking Table. We quote Dave Cook with great pleasure:

"As an introduction to my first contribution as an editor of The Picking Table, I would like to thank Frank Edwards and the other people actively involved in the production of this periodical for the opportunity of being a part of it.

My first trip to Franklin took place nearly twenty years ago so I can say that I have been interested in the minerals of the area for three quarters of my life. I have been fortunate to have Henry and Betsy Althoen as neighbors and friends and would like to thank them for their constant encouragement and contributions to my collection.

Due to my present association with Harvard University as a student and as the Assistant Curator of the mineral collections, I have research facilities and specimen material available to me that are not available to most Franklin mineral enthusiasts. I have in the past and will continue to use these advantages to make the greatest possible contribution to the mineralogy of the Franklin-Sterling Hill area and am grateful for the opportunity of using The Picking Table as the vehicle for doing this.

Finally, I would like to say that my greatest inspiration has been my association with Dr. Clifford Frondel of Harvard."

METASTRENGITE, A NEW MINERAL FROM FRANKLIN, N.J.

Metastrengite has been identified by X-ray powder diffraction techniques on a specimen from Franklin, N.J. submitted by Mrs. Alice Kraissl. The specimen originally was a part of the Lewis collection. The metastrengite occurs as pale pink to black microscopic crystals, 1/2 mm in size, associated with orange zincite and what may be massive metastrengite. Both simple crystals and fishtail type twins (Twinned on 101) are present.

Metastrengite is a monoclinic hydrated iron phosphate $4\text{FePO}_4 \cdot 7\text{H}_2\text{O}$, Hardness 3.5/4.00 Gravity 2.76. It also occurs at Eiserfeld, Westphalia, Germany; Pleystein, Oberpfalz, Bavaria and Gonnessa, Sardinia.

Although chemical data is not available for the Franklin material, there apparently is substitution of Mn "" for some of the Fe "" resulting in the pale pink color and its alteration to black on weathering.

Metastrengite is only the third phosphate mineral identified from Franklin - apatite and pyromorphite being the other two. Phosphosiderite is a synonym of metastrengite."

* * * * *

ZnMn Humite

In his discussion of "The Humite Minerals" at the June 1974 meeting of the F.O.M.S., David Cook announced the verification of a new mineral for the Franklin/Sterling Hill area - a ZnMn Humite. Jack Baum submitted the specimen from Sterling Hill to Dave for analysis. It is a 1" x 2" solid piece of massive dark brick red Zn Mn Humite. Other associations are 1/4" franklinite crystals, calcite and willemite.

Dave's talk was both interesting and important and we have requested him to give us a summary for the next issue of The Picking Table.

Chloanthite

At one time included in the verified mineral list of Franklin/Sterling Hill, chloanthite $8(\text{NiAs}_2)$ was removed recently for lack of validated specimen material. It can now be restored to this list as Dave Cook has an x-ray verified chloanthite crystal in his micro collection.

* * * * *

Other Mineral Notes

Torreyite

Since my move to Florida, Jack Baum has been particularly helpful with news, mineral information and reprints of historical papers. I thank him sincerely for his assistance. His paper on Torreyite will particularly be helpful and interesting to our collectors.

TORREYITE - by John L. Baum

The Sterling Hill mineral torreyite is rare, but is probably more abundant than the collector realizes because it does not attract attention to itself by occurring in coarse crystals, or being glass clear, or of an attractive color. It is likely, however, that a number of specimens exist unrecognized in collections and the purpose of this message is to lessen the chance of this rare mineral being overlooked. (Torreyite used to be Palache's delta-mooreite)

To begin with, torreyite occurs in cavities in or adjacent to pyrochroite. Pyrochroite isn't too abundant but it does turn up frequently enough so that one should watch out for it and the less attractive specimens should be carefully inspected

Torreyite - Cont.

because even if they are cheap pyrochroite, they may still contain a treasure in torreyite. For those crude, uncouth, commercial types like myself who want to know what their specimens are worth, I wouldn't dream of pricing a torreyite under \$50.00, no matter how small, and a decent one at \$100.00 would be a bargain.

Having secured a pyrochroite specimen with lighter colored material mixed with the black, or with open cavities, or with a rotten pourous appearance, the collector should examine the specimen for areas of milky blue white color especially on broken surfaces which are relatively dull. Crystals are elongate to chunky and some are compound, with a smaller crystal shape on top of a layer of identical shape on top of still another layer, like the step backs of a city as seen from above. Some pyromorphite also has an appearance like this when the crystals are viewed from the side. Three specimens were examined in this review of which one, a Bauer type specimen had clean cut compound crystals, one had so many smaller crystals it appeared granular like a cinder and the third displayed curved bands of torreyite showing obvious polysynthetic twinning in reflected light. The bands were a millimeter wide and seven millimeters long and a laminated succession of these made up much of this specimen from the Edwards collection.

The crystals examined in this study have a brownish coating or stain, and their sparkle depends on the amount of coating which dulls them. All three specimens exhibit platy pyrochroite and two showed the characteristic rhodochrosite-zincite-fluoborite association. One bore mooreite crystals.

The foregoing description is probably adequate to segregate a lot of the torreyite in collections but it may also inadvertently pick out mooreite which is more common in the pyrochroite association. Here is where optics come into play unless x-ray is available. The indices of refraction of mooreite are lower than those of torreyite, and mooreite crystals tend to show a diamond shaped section, to be glassy, and to be platy rather than chunky.

Hopefully, half a dozen specimens of torreyite will be found as a result of this presentation.

References: Bauer, L.H. and Berman, Harry - American Mineralogist, vol. 14, page 165.
Palache, Charles - U.S. Geological Survey Professional Paper #180,
page 129.
Prewitt-Hopkins, J. - American Mineralogist, vol. 34, page 589.

* * * * *

Edenite

Jack Baum also submitted the following information on a bright green amphibole, most likely edenite. His report follows:

"Bright green amphibole has been found in recent years at Limecrest Quarry and last year at Bodner's Quarry east of Hamburg. In color the mineral is about the shade of grass stain, so noticeable as to suggest the presence of chromium. It occurs as lens-shaped aggregates of mineral grains, each grain on the order of a tenth of an inch or less, closely packed, with interstitial calcite and with the lenses enclosed within the calcite marble. The lenses were undoubtedly beds of no great extent which

Edenite - (Cont.)

were broken and the fragments separated by folding and flowage, resulting in what the French geologists term boudinage, or sausage structure, and the French term has been adopted by American geologists. It is common to see such broken, drawn out, rounded siliceous inclusions in the Franklin marble, some of mica, others of feldspar, or amphibole, or pyroxene, rarely garnet, or of mixtures of these.

Such green amphibole was sent to the Palmerton, Pa. laboratories of the New Jersey Zinc Company for identification by optical, x-ray, and spectrographic investigation. It is very close to, if not, edenite, a variety of hornblend. The spectrographic analysis indicates Magnesium and silicon - each over 10%. Calcium and aluminum each 1% to 10%. Iron 1%. Chromium, vanadium, titanium and sodium each 0.1% to 1.0%."

* * * * *

Other notes on Franklin minerals from Jack Baum:

"Another goodie but not new is a (manganese) brucite from the North Ore Body (Sterling Hill) which may have come from your collection. Typical dark comminuted matrix seen in a beat up sussexite association, with zincite as small spots of brilliant orange red, with a lens of micaceous brucite, golden yellow, somewhat lighter than mcgovernite, platy to compact-fibrous (the appearance of bustamite but, of course, not the color). The lens was 2 x 4 x 1", which isn't bad. The Museum shared this one with Dave Cook. Also another Zn fosterite, similar to but smaller than Harvard's specimen."

"Another item from your collection. You had a "Caswellite" with minor attached fluorescent calcite, about 3" x 3", a pearly good cleavage "mica". This proved to be pyrophyllite by my optics, and the calcite association also suggests it is so. Pyrophyllite is already on our list but I never saw one like this from Franklin."

* * * * *

Homilite

In the February 1973 issue of The Picking Table we announced the verification of Homilite for the Franklin/Sterling Hill area. Dave Cook now advises that the identification was in error. Re-examination disclosed that the "homilite" was just an anomalous colored datolite. Please remove homilite from your list.

* * * * *

Recently Dave Cook analysed four unusual appearing specimens from my collection. A hodgkinsonite/willemite specimen with a brown coating that was guesstimated as arseniosiderite proved to be bementite. A rhodonite from Sterling Hill had areas of dark brown spots with what appeared to be radioactive haloes. The spots proved to be nearly amorphous Zn/Mn oxide and the haloes are oxidation products. A green willemite from Sterling Hill, with similar dark brown spots and "radioactive haloes". We were sure that these were thorites but examination proved that the dark brown areas were 99% willemite with Mn staining. And finally, a specimen from Sterling Hill believed to be konickite or spencerite turned out to be hemimorphite. Three whiffs for a strikeout.

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Recently I had the privilege of examining some of the micro and miniature specimens in the Alice Kraissl collection. Some of the unusual ones (all verified specimens) deserve description. The metastrengite referred to earlier in this issue were lovely clear pink crystals closely resembling those from the Bull Moose Mine, South Dakota, which were available about four years ago. The crystals can easily be mistaken by Franklin collectors for leucophoenicite or gemmy rhodonite.

Another deceptive piece was an axinite matrix. In a small vug among the axinite crystals were perched two crystals with a clear lower half and a milky white upper half. The orientation indicated that these were barite crystals or possibly ettringites. X-ray analysis proved that these were most unusual cahnites.

A fine micro specimen consisted of a pair of brookite crystals. These were easily recognizable by their very sharp crystal forms. They perched nicely on white dolomite crystals.

A Franklin barysilite had a naturally leached surface which gave it a crystallized appearance.

A very fine ilmenite on albite/camptonite. In addition to good sharp single crystals was a beautiful ilmenite rose.

A ganophyllite, very unusual, originally believed to be gageite.

In a mass of manganese oxides, a small vug with five sprays of needle like crystals of manganite.

An old Sterling Hill specimen showing a magnetite band in gneiss with malachite, massive djurleite, and yellowish prisms of sillimanite, which were originally believed to be epidotes.

A Parker Shaft piece of franklinite-willemite ore with pinkish spessartite, white non-fluorescent blades of clinohedrite, closely resembling hemimorphite, and pink hodgkinsonite crystals of a tabular habit. Another piece showed pale pink hodgkinsonite crystals on a slip surface but of a different tabular form. And another of tabular yellow tan hodgkinsonite crystals.

A gray sphalerite from Sterling Hill with colorless cubododecahedrons of fluorite, closely resembling analcites, plus unknown brown prisms.

Another Sterling Hill piece of serpentized ore with colorless hexagonal plates of pyroaurite, radiating fibres of chlorophoenicite, colorless blades of mooreite and reddish brown rhombs of siderite.

And an altered zincite from Sterling Hill with reddish orange paper thin plates of hetaerolite.

* * * * *

Scheelite

In the August 1965 issue of The Picking Table we announced the verification of scheelite from Franklin. At that time we were told that the material came from the Furnace Quarry, which seemed reasonable as scheelite has been found in a number of quarries in Sussex County such as Sparta Junction, Limecrest and others. We are now advised by the finder, Dick Bostwick, that the material came from the "dump material on the Buckwheat end of the ore body". This is verified by the recent finds of scheelite on the Trotter Dump with similar associations. Please correct your records as to the source of this mineral.

* * * * *

Roweite

Two important papers on the very rare Roweite from Franklin, N.J. have appeared in the January-February 1974 issue of The American Mineralogist. Lorenzo F. Aris-tarain, Richard C. Erd and G. Donald Eberlein are the authors of the article "Rowe-ite From Franklin, N.J." pages 66-70, volume #59, Nos. 1 and 2. In addition to the abstract, these gentlemen provide some interesting information in their Intro-duction and Occurrence paragraphs, which we quote:

"Roweite, found at an unspecified location in the zinc mines of Franklin, New Jersey, was described by Berman and Gonyer (1937). Only a single specimen from the type locality (Harvard University Collection #96262) is known to exist, although other specimens may exist in some of the numerous private mineral collections from the Franklin district. The work reported here was performed on a few cleavage frag-ments of the type specimen. We have selected a new unit cell in the conventional setting and have redetermined x-ray, optical and physical data for roweite.

In the original description the mineral was said to occur in a narrow veinlet (approximately 6 mm thick) of almost pure roweite intimately associated with a silky white, fibrous material which was believed to be thomsonite. We found roweite in very close association and in places intergrown, with clinochrysotile but with no associated thomsonite. The wall forming minerals of the roweite veinlet are franklinite, zincite and willemite; inclusions of these minerals are sparse in some roweite crystals. The most abundant included material, however, is clinochrysotile with which roweite may occur as parallel or, less commonly, as complex intergrowths. Roweite replaces anhedral masses of calcite which are in optical continuity through-out a roweite crystal and which show effects of solution. Much of the roweite, however, is essentially free from inclusions of any kind. This is confirmed by the slight amount of insoluble residue found in the analysis of purified roweite by Gonyer (Berman and Gonyer, 1937)."

The investigation also resulted in a new formula, which please note from the abstract which follows:

"The type specimen was restudied. Roweite $\text{Ca}_2\text{Mn}_2(\text{OH})_4\sqrt{\text{B}_4\text{O}_7(\text{OH})_2}$ is ortho-rhombic, with space group Pbam; $a=9.057(1)$, $b=13.357(2)$, $c=8.289(1)$ Å; $V=1002.8(1)$ Å³; $Z=4$. Crystals are subidiomorphic (100) laths that are elongated along (010) to maximum lengths of 5 mm; forms (001), (100), (201), (021), and (401) are present. The original unit cell was reoriented with the transformation to the new setting given by the matrix 010/002/100. The strongest lines of the x-ray pattern (in Å) are 3.974, 100 (201); 2.600, 72 (042), 2.184, 49 (401); 2.264, 32 (400); 1.708, 32 (442).

Roweite is amber to brownish; thin plates are transparent and colorless. $H = 4-1/2$. Cleavages are (100) fair, (001) and (021) poor. The specific gravity (meas) = 2.935 (5); density (calc) = 2.939 g cm^{-3} .

The mineral is biaxial negative, $a=1.646(1)$, $B=1.658(1)$, $\gamma=1.660(1)$; $2V_a=28(2)^\circ$ (Na); dispersion $r < v$, strong; $X=c$, $Y=b$, $Z=a$; moderately pleochroic with Z (yellowish brown) $> Y$ (pale amber) $> X$ (very pale brown to colorless). Nonfluorescent.

The original chemical analysis has been recast, on the basis of a new x-ray structural analysis by Moore and Araki (1974) as $\text{Ca}_2(\text{Mn}_{0.8}\text{Mg}_{0.1}\text{Zn}_{0.1})_2(\text{OH})_4 \left[\text{B}_4\text{O}_7(\text{OH})_2 \right]$.

The paper referred to above is by Paul B. Moore and Takaharu Araki - "Roweite, $\text{Ca}_2\text{Mn}_{2+}^{2+}(\text{OH})_4 \left[\text{B}_4\text{O}_7(\text{OH})_2 \right]$: Its Atomic Arrangement" also in volume 59, Nos. 1 and 2 of The American Mineralogist, pages 60-65. Abstract follows:

"Roweite, $4\text{Ca}_2, \text{Mn}_2^{2+}(\text{OH})_4 \left[\text{B}_4\text{O}_7(\text{OH})_2 \right]$; $a = 9.057(1)$, $b = 13.357(2)$, and $c = 8.389(1) \text{ \AA}$, space group Pbam, possesses a rather peculiar crystal structure. Condensed Mn-O octahedra at $z=0$ link along b by sharing edges and along a by sharing corners to form $\left[\text{Mn}_2^{2+}(\text{OH})_2 \right]$ sheets. The oxygen in these sheets is shared with $\left[\text{B}_4\text{O}_7(\text{OH})_2 \right]$ polyanions located between the sheets at $z=1/2$. This polyborate tetramer consists of two tetrahedra and two triangles and has a linkage topologically identical to that in the $\left[\text{B}_4\text{O}_5(\text{OH})_4 \right]$ polyanion found in the structure of borax.

Mn-O averages are Mn(1)-O 2.20, Mn(2) - O 2.22, Mn(3)-O 2.21, B(1)⁴ - O 1.48, B(2)⁴ - O 1.48, B(3)³ - O 1.37, and Ca^B - O 2.46 \AA.

The extensive condensation of the octahedral fraction and the occurrence of borax-like polyanions are consistent with the paragenesis of roweite, which has crystallized in a basic environment."

* * * * *

Sussexite

In his study of roweite, Dr. Moore also did some work on sussexite. These quotes are from the same paper. "An unpublished study on sussexite by P.B.M. shows that its formula is $\text{Mn}_2^{2+}(\text{OH}) \left[\text{B}_2\text{O}_4(\text{OH}) \right]$." also "The basic borates seamanite, sussexite and roweite have all crystallized at moderate to low temperatures in basic hydrothermal vein assemblages. This is indicated by the frequent co-existence of pyrochroite, $\text{Mn}(\text{OH})_2$, with seamanite and sussexite, the latter assemblage being particularly well developed in veins at Franklin, N.J. In such veins, basic manganese arsenates also occur. At Langban, Sweden, and at other related central Swedish deposits, the assemblage native lead-pyrochroite-basic Mn arsenates is persistent (Moore 1971). These chemical observations are all consistent with seamanite and roweite having formed under basic conditions, and Sussexite, presumably formed at conditions less basic. Sussexite is not only a dense packed structure but apparently has also formed at higher temperatures than these other borates."

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This Fall, the F.O.M.S. will reach its 15th birthday. Historian Fred Kraissl has prepared the following article for the occasion:

HAPPY FIFTEENTH BIRTHDAY F.O.M.S., INC.

Frederick Kraissl, Jr., P.E.
Historian

As we approach our fifteenth birthday, it is well to remember the events and the people who made them possible. Perhaps we should start with the Franklin Mineral Association which was basically a correspondence organization headed by Gerald Navratil who kept people informed of developments concerning Franklin Minerals and Mineralogy in the late 1950s. It was agreed in the fall of 1959 to have a meeting of this association to discuss ways and means to enlarge activities with reference to Franklin Minerals. Gerry called the meeting which was held on the second floor of the Neighborhood House during the annual Franklin-Kiwanis Exhibit. At the appointed time the Chair called the meeting to order and then introduced Dick Hauck, Sonny Cook and John Hendricks. It seemed that prior to the meeting, a group had formed the Franklin-Ogdensburg Mineralogical Society to broaden the scope of interests including meetings, with speakers, field trips and most importantly work toward the establishment of a Museum to perpetuate the best in Franklin Minerals as a continuing public organization.

The Chairman admitted, candidly, that from his headquarters in up state New York, he was unable to provide these facilities, so painlessly and by common consent, the activities of the Franklin Mineral Association were merged into the initial operations of the Franklin-Ogdensburg Mineralogical Society. Dick Hauck was our first President, Ken Fisher was Vice President, John Hendricks, Secretary-Treasurer and Sonny Cook, our first Trustee, with these initial members constituting the Board of Directors. At this meeting, a number applied for charter membership, including our second President to be, Frank Edwards. According to the best memories, the following were also Charter Members: Jack Baum, Louise Borgstrom, Paul Chorny, John Sebastian and Bill Spencer. From there on, active membership grew until we had Henry Althoen, Jack Butler, Ewald Gerstmann and many of the rest of us who were proud to attempt to add to the record of our predecessors.

Some high points need emphasis. The Society will never be able to pay its debt to John Hendricks. According to good authority, he was a veritable dynamo. He set the organization pattern for the F.O.M.S., prepared the constitution and elucidated the aims and purposes of the Society. Also as an experienced Chemist, he participated in the identification of many Franklin minerals and set the pattern of the Picking Table of which he was Editor for the first year, to be so ably succeeded by Frank Edwards, who has built up this publication to the position of basic reference for minerals found at Franklin and Sterling Hill in addition to being a most comprehensive bulletin concerning the affairs of the Society.

Another high light is the support given to the Franklin Mineral Museum, Inc., brought into being by the Kiwanis Club of Franklin, New Jersey. As one of the objectives of our Society was to assist with the provision of a museum, it was logical and representative of the cooperative spirit that has always existed between us for the Kiwanis Club to invite some of our members to become part of a group that formed the Museum Organization. This was written up in an article published by Gems and Minerals in 1972 so it is not necessary to be repetitive, but members of F.O.M.S., Inc. have continuously been elected to the Board of Directors of the Franklin Mineral Museum, Inc., and the writer was happy to have been elected Vice President of the initial organization and to have served as President after the most untimely and tragic loss of Ed Selems, the first President.

The happy collaboration of the Technical Group from the Franklin-Ogdensburg Mineralogical Society, Inc. , with the Administrative Effectiveness of the Kiwanis Club has proven a most far reaching and comprehensive operating team in promoting interest in Franklin minerals and it seems clear that as long as this relationship is continued that a permanent public interest will be maintained with the Franklin Mineral Museum Inc., as the information center concerning Franklin Minerals.

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