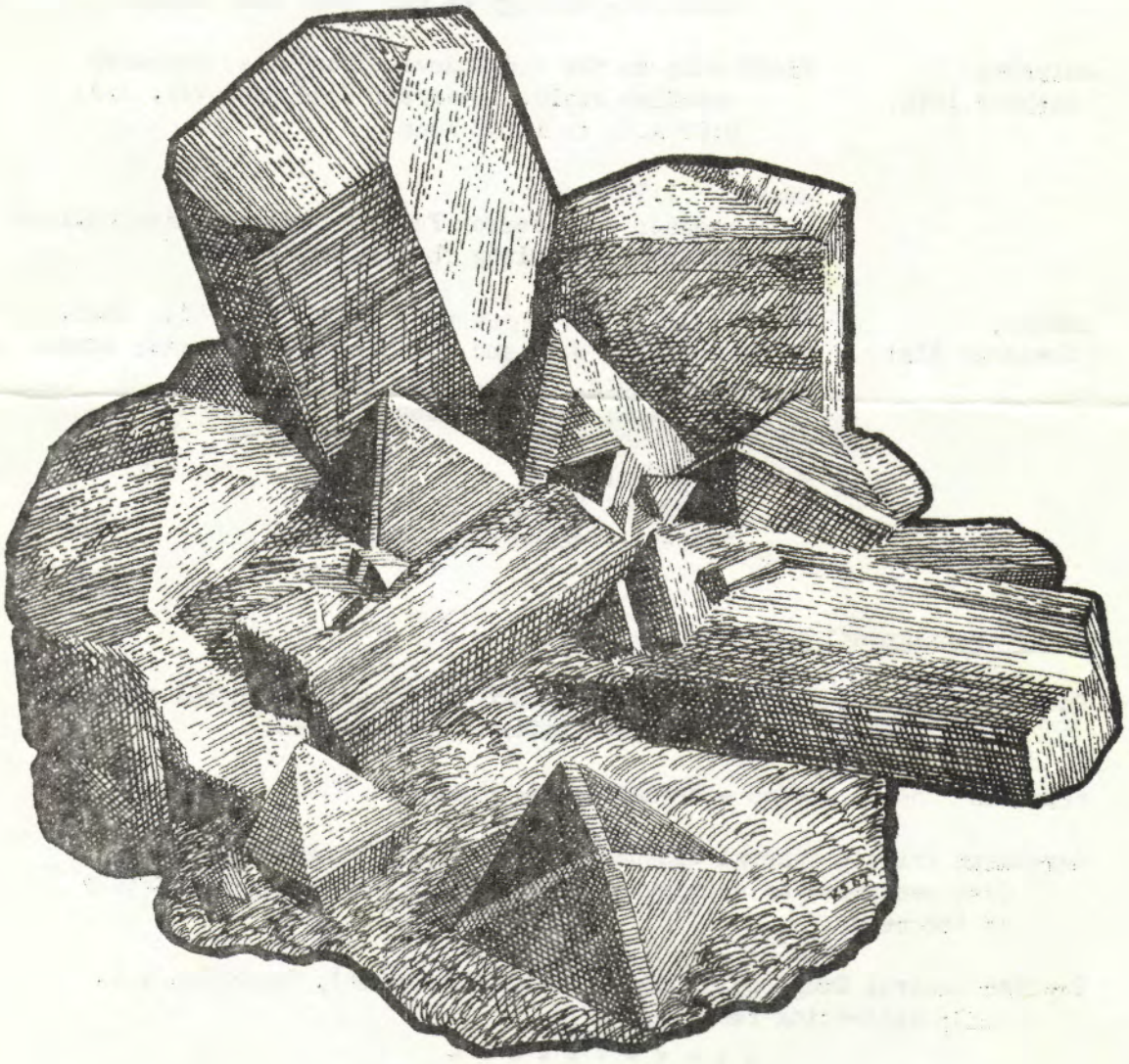
THE PICKING TABLE

JOURNAL OF THE FRANKLIN·OGDENSBURG MINERALOGICAL SOCIETY



VOLUME 12 AUGUST 1971 NUMBER 2

CLUB PROGRAM - FALL 1971

All meetings will be held at the Hardyston School, intersection of Routes #23 and #517, Franklin, New Jersey. Pre-meeting activities start at 1:00 P.M. Speaker will be introduced at 2:30 P.M.

Saturday, September 18th.
Field trip to the Cellate Quarry, Cork Hill Road, Franklin, N. J. 9:00 A.M. to 12:00 Noon.

Meeting 2:30 P.M.
Speaker - Professor Walter Spink, Rider College.
Subject - Geology of Northwest New Jersey.

Saturday, October 16th.
Field trip to the old Andover Iron Mine, opposite Aeroflex Field, Limecrest Road, Andover, N.J. 9:00 A.M. to 12:00 Noon.

Meeting 2:30 P.M.
Speaker - Professor Forrest Dexter, Union College.
Subject - Rambling Through New Jersey

Sunday, November 21st.
Field trip to the Gooseberry Dumps, Cork Hill Road, Franklin, N.J. and the Sand Pits, Passaic Avenue Ogdensburg, N.J. 9:00 A.M. to 12:00 Noon.

Meeting 2:30 P.M.
Speaker - Dr. Alexander Knoll.
Subject - to be announced.

Daily Franklin Attractions

Buckwheat Mineral Dump - entrance through the Franklin Mineral Museum, Evans Street, Franklin, N.J. Daily collecting fee.

Franklin Mineral Museum - Evans Street, Franklin, N.J. Entrance fee.

Gerstmann Private Mineral Museum, Walsh Street, Franklin, N.J. Open weekends; on weekdays by arrangement. No charge, courtesy of the owner.

Trotter Mineral Dump, Main Street (behind the bank), Franklin, N.J. Daily collecting fee.

* * * * * * * * * * *

THE PICKING TABLE is issued twice a year; a February issue to reach members about March 1st with news and the Club Spring program; and an August issue to reach members about September 1st with news and the Fall program. THE PICKING TABLE is written and prepared by Frank Z. Edwards and the mimeo and typing by Louise Borgstrom; the cover by Kenneth Sproson.

F.O.M.S. OFFICERS FOR THE YEAR 1971

President	Alice L. Kraissl	Box 31, No. Hackensack, N. J.
Vice President	Henry M. Althoen	319 Third Street, Dunellen, N.J.
Secretary	Louis Benedict, Jr.	442 S. 21st St. Irvington, N.J.
Treasurer	Bernard Kozykowski	Box 634, Port Jervis, N. Y.
Asst. Treasurer	Robert Thomas	802 Lindsley Drive, Morristown, N.J.

TRUSTEES

Lee Areson '72	Frank Z. Edwards '72
Bruce Barr '72	Alexander F. Knoll '71
John L. Baum '71	Frederick A. Kraissl '71
William Clinton '72	William Spencer '71

John E. Sebastian '71

COMMITTEE CHAIRMEN

Auditing	William Clinton
Field Trip	John E. Sebastian
Field Trip Registration	Trudy Benedict
Historical	Henry M. Althoen
Identification	John L. Baum
Membership	Bernard Kozykowski
Mineral Sales	Henry M. Althoen
Museum Coordinating	John L. Baum
Nominating	John E. Sebastian
Publicity	Betsey Althoen
Program	Frederick A. Kraissl, Jr.
Publications	Frank Z. Edwards
Safety	John E. Sebastian
Social	Mr. and Mrs. Robert Thomas
Welcoming	Jennie Areson

F.O.M.S. Notes

I am sure that many of us are looking forward to the Fall program of the F.O.M.S. Our Program Chairman, Fred Kraissl, and our Field Trip Chairman, John Sebastian, have again prepared an interesting schedule of speakers and field trips. Please note the dates and arrange to join your fellow members for mutual pleasure and profit. Complete details of all events will be given in our monthly bulletins.

At our October meeting, the Nominating Committee, headed by John Sebastian must present a slate of officers to head the F.O.M.S. during the year 1972. If you have a preference for any member to head an office, please communicate your wishes to Mr. Sebastian, or verbally nominate that person at the October meeting.

Some of our Committee Chairmen report that they still require additional personnel for their committees. If interested, please communicate with the appropriate committee chairman.

The original edition of Ervan F. Kushner's "An Abbreviated Manual of Franklin Minerals" has been sold out but a new printing is being arranged. Bernard Kozykowski, our Treasurer, advises that he still has a few copies of the first edition. This volume is available from him by mail (use form on laste page) or at the sales table at our meetings.

* * * * * * * * * * * *

Franklin Mineral Museum

The Franklin Mineral Museum has acquired a large portion of the John Hendricks collection. Fine specimens from this collection are now on sale at the Museum. This is an opportunity to acquire some scarce and rare Franklin minerals for your collection.

* * * * * * * * * * * *

Annual Franklin Mineral Show

The Kiwanis Club of Franklin announces the 15th Annual Franklin-Sterling Mineral Exhibit, to be held Saturday, October 9th, and Sunday, October 10th. Hours on Saturday will be 9 A.M. to 9 P.M.; on Sunday, 10 A.M. to 6 P.M. Daily admission charge - $1.50 for adults; 75¢ for children. Location - the Franklin Armory, Routes #23 and #517, Franklin, N. J.

The admission charge will provide entrance to the exhibit and dealer areas in the Armory; entrance to the Franklin Mineral Museum which features mineral displays, a 35 ft. fluorescent display room, and a tour of the two level Mine Replica; also admission and collecting privileges at the Buckwheat Dump; and new this year, an area for rock swapping. Free parking and free bus service between all areas will also be provided.

Plan to meet your friends and fellow collectors at this always interesting Show.

* * * * * * * * * * * *

N.J. Zinc Retirees.

On May 1st, Mr. John L. Baum retired from the New Jersey Zinc Company. Until its closing in 1954, Jack was the Resident Geologist of the Franklin Mine. His knowledge of that ore body and the geology of Sussex County is unsurpassed. In recent years he worked with William Callahan in the Exploratory Geology Department for the New Jersey Zinc Company. In that capacity, he has also become familiar with the geology and mineralogy of many areas in New England and Canada.

Fortunately for the F.O.M.S. and its members, Jack is remaining in our area and is even more interested in the minerals of Franklin and Sterling Hill. Since May 1st he has devoted full time to his duties as Curator of the Franklin Mineral Museum. A major objective of his is the expansion of the Museum along educational lines. Delivery is awaited of a spectrograph and a polarizing microscope. These facilities, installed in an adequate work area, will enable Jack to do a certain amount of research and identification, all of which is good news for us collectors.

On June 1st, Mr. Sidney S. Goodwin retired from his position as Vice President of the New Jersey Zinc Company. During his 40 years with the Company, Mr. Goodwin served as a geologist (at Austinville, Va.) mine foreman, service chief, mine manager, Company Manager of Mines and Vice President since 1953. He will continue as a consultant for the New Jersey Zinc Company for a period.

Mr. Baum and Mr. Goodwin have been very good friends of the F.O.M.S. and most responsible for our pleasant relations with the New Jersey Zinc Company. We wish them both many years of happy and interesting retirement.

* * * * * * * * * * * *

Harvard University.

More good news for the Franklin enthusiast. Dave Cook has completed his term of military service and is now back at Harvard University. He has been appointed Curator of the Mineralogy Museum and began his duties on July 1st. In September he will resume work at the University on studies for his Doctorate.

Asked about the Baumite series and the other new manganese silicates, he advised that his papers have not been prepared since considerable data detail must still be determined. Approval of the new mineral names will soon be sought from the International Mineralogical Association.

In recent months, a goodly number of interesting Franklin and Sterling Hill specimens have been submitted to Harvard for identification. We hope that with the return of Mr. Cook and his staff, Dr. Frondel may be able to proceed with the work on that material.

In between his assignments with NASA and the Apollo missions, Dr. Frondel has prepared the manuscript of a new book on Franklin minerals. At present he is collecting photographs for this volume and looking for a publisher. Hopefully his work should be available to collectors early next year.

* * * * * * * * * * * *

Geological Notes

A major and continuing concern of Mr. Robert W. Metsger, Resident Geologist of the New Jersey Zinc Company at the Sterling Mine, Ogdensburg, N.J. is the geologic structure and geochemistry of that ore body. For several years he has provided specimen material and worked with members of the U.S. Geological Survey, seeking data along these lines. A preliminary paper on this subject was presented to the Geological Society of America, in September 1969. Abstract of this paper is presented here:

"STRUCTURAL INTERPRETATION OF THE STERLING HILL ORE BODY, OGDENSBURG, NEW JERSEY" by Robert W. Metsger, N.J. Zinc Company, Brian J. Skinner, Yale University; and Paul B. Barton, Jr., U.S. Geological Survey.

We have been led to the conclusion that this ore body could be a metamorphosed sedimentary bed through consideration of the gross structure and by detailed study of a representative portion (selected because of its remoteness from the secondary effects of later faulting).

The ore is probably a single bed, now composed principally of franklinite, willemite and calcite, in a local metasedimentary series of interbedded marble, calc-silicate marble, and gneiss; the whole series lies within the Franklin limestone.

Mineral textures and assemblages suggest that the ore and its adjacent wallrock have been subjected to the regional, sillimanite-grade metamorphism.

The structural configuration of the ore body is a complex series of attenuated isoclinal folds which modify the west limb of a larger, but similarly attenuated, isoclinal syncline. Structures in both the ore and the infolded wallrock demonstrate extreme plastic deformation during folding. The structural complexity of the ore body is much greater than that of the surrounding region, so that a mechanism to account for the localization of the deforming force must be an integral part of any model. We suggest that following initial folding of an original Zn-Fe-Mn rich sediment, the ore body with entrained wallrock (48 x 106 metric tons; density of 3.02 g/cc) moved downward through the marble (density of 2.71 g/cc) as an inverted diaper, at the peak of metamorphism, producing the observed folds."

* * * * * * * * * * * *

An explanation of the probable formation of the sedimentary beds has been advanced by Wm. H. Callahan in his paper "GENESIS OF THE FRANKLIN-STERLING, NEW JERSEY ORE BODIES" published in Economic Geology, volume 61, 1966, pages 1140-41. Abstract as follows:

"It is suggested that the environment and processes of deposition giving rise to a dominantly Fe-Zn-Mn oxide type mineralization in sediments from the Red Sea (Manheim, et al, Program 1965 Annual Meeting, Geological Society of America, page 100) apply to the formation of the strata bound Fe-ZN-Mn oxide-silicate mineralization of the Franklin-Sterling ore bodies."

* * * * * * * * * * * *

Fluorescent Hodgkinsonite

Three of our members, through interest and extra effort, have made some new discoveries and added to our knowledge of Franklin and Sterling Hill minerals.

Bernard Kozykowski received a new ultra violet light for Christmas. This is a Raytech dual short wave and long wave light with a standard short wave filter. Using this light, Bernie found some hodgkinsonite that fluoresced a dull red on the long wave. He checked his findings on about sixty specimens and found this response on about two out of three pieces, so that this species can definitely be listed as a new Franklin fluorescent. However, many questions remain to be answered. Does hodgkinsonite fluoresce under long wave with a normal long wave filter? What is the cause of the dull red fluorescence of hodgkinsonite? Is it the presence of an activator element or is there a possible admixture with another mineral?

F.O.M.S. members with a light similar to Bernie's may provide some of these answers in addition to other information. Do other non fluorescent Franklin minerals react to this combination of wave length and filter? If any of our members find something of interest along these lines, please let me or Bernie know so that we may check your findings.

In addition to the hodgkinsonite, Bernie has found fluorescent margarite and anorthite. We should have more details on this subject in the next issue of the Picking Table.

* * * * * * * * * * * *

Scapolite.

Bob Coffee of Rochester, N.Y. makes news again with his story of fluorescent Franklin scapolite. His interesting account follows:

"Scapolite or wernerite is a complex silicate which is commonly fluorescent in some areas, particularly in Canada. The brilliant yellow Wernerite (L.W.) from Grenville, Quebec, is much prized. However, more often the fluorescence is a dull or weak red and not much to be desired.

Jones, in "Nature's Hidden Rainbows", mentions that blue fluorescing scapolite had been reported and that there were rumors of the red material having been found at Franklin. Since the response to ultra violet is weak, the material makes a poor cabinet specimen and is not commonly sought. Nevertheless, a collector of Franklin fluorescents should have a specimen of each to round out his collection. But where to look? Local residents suggest the Buckwheat but so far this author has been unable to locate the fluorescing variety there. Specimens of each, however, have been found recently on the Trotter.

The red response (S.W.) was found in a specimen of pegmatite that was laced with allanite. The fluorescence is a rich red reminiscent of the response of corundum to L.W. On checking the allanite samples in Areson's Museum, the "Mineral Showcase", only a few were found to behave similarly. The response is typical for scapolite from other areas.

The blue material (S.W.) was harder to locate and was found unexpectedly. It had been noted on breaking up many specimens of "crazy calcite" or "poor man's wollastonite" - the calcite-dolomite material reported in 1969 - that there were frequently seen small areas having a blue fluorescence (S.W.) with a dull cream fluorescence L.W. Finally in the fall of 1970, a boulder of the calcite-dolomite was found which revealed included pockets or small lenses of the blue responding material. Upon analysis both by spectrophotometer and by x ray, this substance turned out to be none other than the sought after scapolite.

In these pockets the scapolite is found as a highly altered powdery material. The powder is readily removed with a spatula and resembles Kaolin or clay. The response to U.V. (S.W.) varies from a good powdery blue to a deep dark velvety blue. The contrast with the two reds of the calcite-dolomite is striking. It would make a beautiful specimen if the scapolite pockets were larger or more numerous, but only scattered small pockets have been found so far. Perhaps others will come up with better material in the future.

Samples of the blue responding material and the x ray spectrographic record of proof have been filed both with the Mineral Showcase and the Gerstmann Private Mineral Museum."

* * * * * * * * * * * * *

Adamite

George C. Pigeon of New York City is one of the few members of the F.O.M.S. who has studied optical mineralogy and uses a polarizing microscope as an aid in identification. Recently, while examining some of the specimen material from Sterling Hill with the greenockite, mimetite-pyromorphite occurrence, he found a light honey yellow mineral which, through optics, proved to be Adamite. His finding has been verified by x ray analysis and adamite should be added to our Franklin Sterling Hill list.

Continuing his work on this material, he has found what appears to be two more new minerals for the area. Samples of these have been sent to a laboratory for x ray verification. When final analysis has been made we will advise our members.

We heartifly commend Mr. Pigeon for his efforts.

* * * * * * * * * * * *

Magnussonite

"Stenhuggarite, a new mineral from Langban and new data on Magnussonite" by Paul B.Moore, Arkiv. Min. Geol. Volume 5, 1970, pages 55-62 and American Mineralogist - volume 56, March April 1971, page 639. Abstract follows:

Type material of magnussonite, $Mn_5(OH)(AsO_3)_3$, from Langban proved upon single x ray examination to have a cubic cell, a 19.70 Å, space group Ia3d, Z=32, at variance with the original description (Amer. Min. 42, 581, 1957). The same species recently discovered from the Brattfors mine, Nordmarks Odalfalt, Sweden, is tetragonal, a 19.58, c 19.72 Å, space group $I4_1/amd$. This magnussonite contains ca. 12 Mg atoms per cell and a minor amount of Ca in substitution for Mn and there may be ordering of the Mg. Partly indexed powder patterns of both types of magnussonite are tabulated. They differ chiefly in the splitting of certain lines in the pattern of the tetragonal form, e.g., 1.74 20 (800) of the isometric form corresponds to 1.7396 10 (808) and 1.7314 12 (088) of the tetragonal form."

* * * * * * * * * * * *

Hancockite, Epidote, Allanite

Abstract of a paper "Refinement of the Crystal Structure of Epidote, Allanite and Hancockite," by W.A. Dollase, published in the American Mineralogist, volume 56, March/April 1971, pages 447-464.

"Complete, three dimensional crystal structure studies, including site-occupancy refinement, of a high iron epidote, allanite and hancockite, have yielded cation distributions. These results when combined with those obtained in previous epidote group refinements establish group wise distribution trends in both the octahedral sites and the large cation sites. Polyhedral expansion or contraction occurs at those sites involved in composition change but a simple mechanism, involving mainly rigid rotation of polyhedra, allows all other polyhedra to retain their same geometries in all the structures examined."

* * * * * * * * * * * *

New Minerals for Franklin-Sterling Validated List

Your editor, Jack Baum and Ewald Gerstmann were permitted to proof read the first draft of the manuscript of the new book in preparation by Dr. Clifford Frondel on the Franklin-Sterling Hill minerals. We found that he accepts as validated the following minerals. Please add them to your validated list.

Argentite - This species was reported and validated from Franklin by John Hendricks in 1960. Other specimens from Franklin and the wire silver occurrence from Sterling Hill (Gerstmann collection) tend to confirm this occurrence.

Arsenolite - This was identified by Dr. Palache in 1941 as an oxidation product of arsenic on specimens from Sterling Hill. It has been inadvertently omitted from previous lists.

Bianchite - Another occurrence identified by John Hendricks in 1960. Bianchite is a hydrated sulfate of zinc and iron and was reported as an oxidation crust on franklinite. It should occur fairly commonly in some of the old weathered franklinite specimens on the dumps.

Bixbyite - Identified as micro size cubes from the Buckwheat Dump, Franklin, by John Hendricks in 1960. Accepted as a validated species by Dr. Frondel although not yet confirmed by x ray analysis.

Epsomite - This occurrence identified by John Hendricks and Stanley Shaub in 1959 as an effloresence on oxidized ore from Sterling Hill.

Humite - This species has been identified in drill cores from Sterling Hill. It occurs in the Franklin limestone.

Hydro-andradite - Identified by Dr. Frondel in 1970. Occurs at Franklin with the Parker Shaft minerals.

Jacobsite - A study of numerous analyses of franklinite shows that some of this material is very high in manganese and thus falls into the jacobsite composition. Comments on this subject were made by Frondel and Ito as early as 1965.

Manganhedenbergite - Identified in Sterling Hill specimens by Dr. Frondel in 1970. Also independently verified in October 1971 by George C. Pigeon.

Magnesioriebeckite - Verified in 1969 by Klein and Ito. This is the mineral from Sterling Hill originally identified in 1928 by Charles Palache as crocidolite.

Sauconite - This clay mineral was originally identified and listed as occuring at Sterling Hill by Nuttall in 1822. It is mentioned by Palache in the Professional Paper #180 with reservations. It was identified by Ross in 1946 as a constituent of the mixture called vanuxemite. Dr. Frondel accepts sauconite as a validated mineral, although he feels much work must be done on the clays from Sterling Hill.

Stibnite - Originally identified by John Hendricks in 1960. Only a few micro-mounts from Sterling Hill are known.

Wurtzite - Verified by Dr. Frondel through x ray analyses. Occurs at Sterling Hill as botroidal crusts; also reported from Franklin as tiny crystals in veinlets.

* * * * * * * * * * * *

Deletions from Franklin-Sterling Hill list

The following minerals should be removed from the validated list of Franklin/ Sterling Hill minerals, as per Dr. Frondel.

Arseniosiderite - This species was tentatively identified by Dr. Palache in 1935 from Franklin. A recent reexamination of these specimens has established that they are not arseniosiderite.

Epistilbite - This specimen has also been reexamined and found to be stilbite.

Opal variety Cachalong - Specimen so identified is now being reexamined. It appears to be a mixture but is definitely not opal.

Vorhauserite - This variety is rejected as too poorly defined.

Wad - The same applies to these ill defined earthy manganese oxides.

* * * * * * * * * * * *

Questionable Species on Franklin-Sterling Hill List

For the reasons given below, question marks should be placed next to the following minerals appearing on the Franklin-Sterling Hill validated list.

Chabazite - This mineral was listed by Hendricks in 1960 as validated and accepted as such by Dr. Frondel. Specimen material is being sought. In the meantime, this goes on the questionable list.

Chrysocolla - Reported as validated from the copper mineral zone at Sterling Hill, but additional information and specimens for revalidation are required.

Halloysite - This clay mineral reported from Sterling Hill should occur but Dr. Frondel feels has not been properly validated.

Hornblende - Dr. Frondel claims that this species has not been validated and that most material reported as hornblende is probably hastingsite.

Kaolinite - Another mineral that probably occurs at Sterling Hill but which Dr. Frondel feels has never been properly validated.

Kentrolite - The Dr. Palache verification of this mineral was made on the basis of crystallographic data. This specimen needs reexamination and revalidation by x ray analysis.

Pyrophyllite - Another mineral reported as accepted by Dr. Frondel but of which he has no record. Should occur with the micro material in the porous grey dolomite found on the Buckwheat Dump.

Pyrosmalite - Dr. Frondel claims that the pyrosmalite from Franklin and Sterling Hill is actually manganpyrosmalite. Reexamination of some of the light brown material from Sterling Hill is needed to remove the question mark from this species.

Neotocite - Dr. Frondel (and Hey) does not accept this mineral as a species because it is poorly defined.

Sillimanite - While Dr. Frondel accepts the presence of this mineral in the gneiss of the area, he claims that it has not been verified from the limestone or the ore bodies.

Beryllium Vesuvianite - Identified by Dr. Palache in 1935 but later analysis by Dr. Hurlbut failed to substantiate the beryllium content. Distinct crystals still need reexamination before this variety is definitely removed from the list.

All of these questionable species require additional x ray analyses on available specimen material. Decision to remove them from our lists should be deferred until a later date.

* * * * * * * * * * * * *

Pyrosmalite/Friedelite/Schallerite

"The polytype properties of pyrosmalite minerals" by Kashaev and Drits, Soviet Physics - Crystallography, volume 15, 1970, pages 40-43 and Min. Abstracts, volume 21, number 4, December 1970, page 301. Abstract:

Structural data have been used to derive all possible polytype modifications of pyrosmalite minerals with repeat periods 1, 2, and 3 "pyrosmalite" layers. The results obtained have made it possible to determine the structure of schallerite and to distinguish two structural models, in one of which the friedelite structure is realized."

A Franklin Bibliography

The third installment of a Franklin bibliography by Dave R. Cook is listed below:

163. Larsen, E.S., The optical properties of the humite group; Am. Min., Vol. 13, pp. 354-459.

164. Laudise, R.A. & Kolb, E.D., 1963, The solubility of zincite in hydrothermal solvents: Am. Min., Vol. 48, Nos. 5-6, p. 642-648.

165. Layman, F.G., 1957, Unit cell and space group of larsenite, $PbZnSiO_4$: Am. Min., Vol. 42, Nos. 11-12, p. 910-912.

166. Leeds, A.R., 1872, Note upon aventurine orthoclase found at the Ogden Mine, Sparta Township, Sussex County, New Jersey: A.J.S., 3rd Ser., Vol. 4, p. 433-434.

167. Leith, C.K., 1909, Magnetite and zinc ores of Franklin Furnace quadrangle: Econ. Geol., Vol. 4, p. 265-269.

168. Levison, W.G., 1916, Columnar manganocalcite from Franklin Furnace, New Jersey: Am. Min., Vol. 1, p. 5.

169. Levison, W.G., 1918, Notes on gageite from Franklin Furnace, New Jersey: Am. Min., Vo. 3, p. 153.

170. Lewis, J.V. & Bauer, L.H., 1922, Cyprine and associated minerals from the zinc mine at Franklin, New Jersey: A.J.S., 5th Ser., Vol. 4, p. 249-251.

171. Liebau, F.; Hilmer, W. & Lindemann, G.., 1959, Uber die kristallstruktur des rhodonits, $(Mn,Ca)SiO_3$: Acta. Cryst., Vol. 12, p. 182-187,

172. McConnell, D., 1954, Crystal chemistry of schallerite: Am. Min., Vol. 39, Nos. 11-12, p. 929-936.

173. Mason, B.H., 1946, A zinc vredenburgite from Franklin, New Jersey: Geol. Foren. Forhandl. Stockholm, Band 68, Heft 1, p. 51-55.

174. Metsger, R.W.: Tennant, C.B. & Rodda, J.L., 1958, Geochemistry of the Sterling Hill zinc deposit, Sussex County, New Jersey: G.S.A. Bull. Vol. 69, No. 6, p. 775-788.

175. Metsger, R.W., 1962, Notes on the Sterling Hill ore body, Ogdensburg, New Jersey: in Northern field excursion guidebook- Internat. Min.Assoc., 3rd Gen.Cong., Washington, D.C., 1962: (Wash., D.C., Min. Soc. America), p. 12-18.

176. Milton, C., 1947, Diabase dikes of the Franklin Furnace quadrangle, New Jersey: Jour. Geol., Vol. 55, No. 6, p. 522-526.

177. Milton, C.; Davidson, N., 1950, An occurrence of natrolite, andradite and allanite in the Franklin Furnace quadrangle, New Jersey: Am. Min., vol. 35, Nos. 7-8, p. 500-507.

178. Milton, C., Hildebrand, F.A. & Sherwood, A.M., 1953, The identity of tinzenite with manganese axinite: Am. Min., Vol. 38, Nos. 11-12, p.1148-1158.

179. Moore, G.E., On chalcophanite, a new mineral species: Am. Chemist, Vol. 6, p. 1-2.

180. Mixter, W.G., 1868, On willemite and tephroite: A.J.S., Ser. 2, Vol. 46, p. 230-232.

181. Moore, G.E., 1877, Preliminary notice of the discovery of a new mineral species: A.J.S., 3rd Ser., Vol. 14, p. 423.

182. Moore, P.B. & Ribbe, P.H., 1965, A study of "calcium-larsenite" renamed esperite: Am. Min., Vol. 50, No. 9, p. 1170-1178.

183. Moore, P.B., 1967, On leucophoenicite (Part 1): A note of form developments: Am. Min., Vol. 52, Nos. 7-8, p. 1226-1232.

184. Moore, P.B., 1968, Relations of the manganese-calcium silicates gageite and harstigite: Am. Min., Vol. 53, Nos. 1-2, p. 309-315.

185. Moore, P.B., 1968, Crystal chemistry of the basic manganese arsenate minerals: II, The crystal structure of allactite: Am. Min., Vol. 53, p. 733-741.

186. Moore, P.B., 1968, The crystal structure of chlorophoenicite: Am. Min., Vol. 53, p. 1110-1119.

187. Moses, A.J., 1894, Contributions from the mineralogical department of Columbia College-21, The pyramids of zincite: School of Mines Quart., Vol. 6, p. 226-227.

188. Moses, A.J., 1905, The crystallization of luzonite and other crystallographic studies; 4. Hematite parting from Franklin Furnace, New Jersey; A.J.S., 4th Series, Vol. 20, pp. 283-284.

189. Mutschler, F.E. 1954, The luminescent minerals of Franklin, New Jersey: Rocks and Minerals, Vol. 29, Nos. 9-10, p. 482-485.

190. Nason, F.L., 1890, Scapolite rock: A.J.S., 3rd Ser., Vol. 39, p. 407.

191. Nason, F.L., 1891, The post-Archaen age of the white limestone of Sussex County, New Jersey: N.J.G.S. Ann. Rpt. 1890, p. 25-50.

192. Nason, F.L., 1891, The post-Archaen age of the white limestone of Sussex County, New Jersey, Am. Geologist, Vol. 7, p. 241-253; Vol.8, p. 166-171.

193. Nason, F.L., 1894, (Trotter mine minerals): N.Y. Acad. Sci. Trans., Vol.13 (for 1893), p. 97-98.

194. Nason, F.L., 1894, The franklinite deposits of Mine Hill, Sussex County, New Jersey: Am. Inst. Mining Engineers, Vol. 24, p. 121-130.

195. Nason, F.L., 1894, (On the minerals of Franklin Furnace, New Jersey): N.Y. Acad. Sci. Trans., Vol. 13, p. 97-98.

196. Nuttall, T., 1822. Observations and geological remarks on the minerals of Paterson and the valley of Sparta in New Jersey: A.J.S.1st Ser., Vol. 5, p. 239-248.

197. O'Daniel, H., & Tscheischwili, L., 1944, Strukturuntersuchungen an tephroite Mn_2SiO_4, glaucochroite $(Mn, Ca)_2SiO_4$, und willemite Zn_2SiO_4 von Franklin Furnace: Zeits. Krist., Abt. A, Bond 105, Heft 4, p.273-278.

198. Olpp, W.H., 1933, Franklin Furnace and its minerals, Min.Soc.S.Calif.Bull., Vol. 2, No. 9, p. 3-4.

199. O'Mara, J.H., 1951, Unit cell and space group of glaucochroite: Am. Min., Vol. 36, Nos. 11-12, p. 918.

200. Palache, C., 1910, Contributions to the mineralogy of Franklin Furnace, New Jersey: A.J.S., 4th Series, Vol. 29, p. 177-187.

201. Palache, C., 1913, On the crystallization of willemite: A.J.S., 4th Ser. Vol. 36, p. 639-644.

202. Palache, C., 1913, Hodgkinsonite, a new mineral from Franklin Furnace, New Jersey: Wash. Acad. Sci. Jour., Vol. 3, p. 474-478.

203. Palache, C. 1914, Supplementary note on the crystal form of hodgkinsonite: Wash. Acad. Sci. Jour., Vol. 4, p. 153-154.

204. Palache, C., & Shannon, E.V., 197, Holdenite, a new arsenate of manganese and zinc from Franklin, New Jersey: Am. Min., Vol. 12, No. 4, p.144-148.

205. Palache, C. & Bauer, L.H., 1927, McGovernite, a new mineral from Sterling Hill, New Jersey: Am. Min., Vol. 12, No. 10, p. 373-374.

206. Palache, C. & Bauer, L.H., 1927, Cahnite, a new boro-silicate of calcium from Franklin, New Jersey: Am. Min., Vol. 12, No. 4, p. 149-153.

207. Palache, C. & Berman, H., 1927, crystallographic notes: 1. phosphophyllite; 2. hematite; 3. willemite; 4. hedyphane: Amer. Min.,Vol.12, No. 4, p. 180-187.

208. Palache, C., 1928, Mineralogical notes on Franklin and Sterling Hill, New Jersey: Am. Min., Vol. 13, No. 7, p. 297-329.

209. Palache, C.; Davidson, S.C. & Goranson, E.A., The hiddenite deposit in Alexander County, North Carolina: Am. Min., Vol. 15, p. 280-302.

210. Palache, C. 1928, The phosphorescence and fluorescence of Franklin Minerals: Am. Min., Vol. 13, No. 7, p. 330-333.

211. Palache, C. & Bauer, L.H. & Berman, H., 1928, Larsenite and calcium-larsenite, and the associated minerals at Franklin, New Jersey, Am. Min., Vol. 13, No. 7, p. 334-340.

212. Palache, C.; Bauer, L.H. & Berman, H., 1928, Larsenite and calcium-larsenite, new members of the chrysolite group, from Franklin, New Jersey, Am. Min., Vol. 13, No. 4, p.142-144.

213. Palache, C., 1929, paragenetic classification of the minerals of Franklin, New Jersey: Am. Min., Vol. 14, No. 1, p. 1-18.

214. Palache, C., 1929, A comparison of the ore deposits of Langban, Sweden with those of Franklin, New Jersey; Am. Min., Vol. 14, No. 2. p. 43-47.

215. Palache, C. & Bauer, L.H., 1930, On the occurrence of beryllium in the zinc deposit of Franklin, New Jersey: Am. Min., Vol. 15, No.1, p. 30-33.

216. Palache, C., 1935, The minerals of Franklin and Sterling Hill, Sussex County, New Jersey, U.S.G.S. Prof. Paper, 180, 135 pp.

217. Palache, C. & Bauer, L.H. & Berman, H., 1938, Yeatmanite, a new mineral and sarkinite from Franklin Furnace, New Jersey: Am. Min., Vol.23, No. 8, p. 527-530.

218. Palache, C., 1941, Crystallographic notes: cahnite, stolzite, zincite, ultrabasite; Am. Min., Vol. 26, No. 7, p. 429-436.

219. Palache, C., 1941, Contributions to the mineralogy of Sterling Hill, New Jersey, morphology of graphite, pyrite, arsenic and arsenopyrite: Am. Min., Vol. 26, No. 12, p. 709-717.

220. Palache, C., 1960, A comparison of the ore deposits of Langban, Sweden, with those of Franklin, New Jersey: Notes, minerals Franklin and Sterling Hill, N.J. Vol. 1, No. 4, p. 67-70.

221. Parker, F.J., 1968, New Franklin locality: Rocks and Minerals, Vol. 43, p. 438.

222. Parsons, A.L. 1930, A chemical and optical study of amphibole: in contributions to Canadian mineralogy, 1930; Toronto Univ. Studies, Geol. Ser., No. 29, p. 29-33.

223. Peacock, M.A.,1941, On the identification of minerals by means of x-rays: Trans. Roy. Soc. Canada, Ser. 3, Vol. 35, Sect. 4, p. 105-113.

224. Peacor, D.R. & Buerger, M.J., 1962, The determination and refinement of the crystal structure of bustamite, $CaMnSi_2O_6$: Zetis. Krist., Vol. 117, Nos. 5-6, p. 331-343.

225. Peacor, D.R. & Niizeki, N., 1963, The redetermination and refinement of the crystal structure of rhodonite, $(Mn,Ca)SiO_3$: Zeits. Krist., Vol. 119, Nos. 1-2, p. 98-116.

226. Peacor, D.R. & Prewitt, C.T., 1963, Comparison of the crystal structures of bustamite and wollastonite: Am. Min., Vol. 48, Nos. 5-6, p. 588-596.

227. Penfield, S.L., 1880, Analyses of some apatites containing manganese: A.J.S., 3rd Ser., Vol. 19, p. 367-369.

228. Penfield, S.L. & Sperry, E.S., 1888, Mineralogical notes; sussexite from Mine Hill, Franklin, New Jersey: Am.Jour.Sci., 3rd.Ser.,Vol.39, p.323.

229. Pennfield, S.L. & Kreider, D.A., 1894, On the identity of hydrofranklinite and chalcophanite: A.J.S., 3rd Ser., Vol. 48, p. 141-143.

230. Penfield, S.L., 1894, On the crystallization of willemite: A.J.S., 3rd Ser., Vol. 47, p. 305-309.

231. Penfield, S.L. & Foote, H.W., 1897, On roeblingite, a new silicate from Franklin Furnace, New Jersey containing SO_2 and lead: A.J.S., 4th Ser., Vol. 3, p. 413-415.

232. Penfield, S.L. & Foote, H.W., 1898, On clinohedrite, a new mineral from Franklin, New Jersey: A.J.S., 4th Ser., Vol. 5, p. 289-293.

233. Perloff, L., 1951, Some micro-minerals of Franklin, New Jersey: Rocks and Minerals, Vol. 26, Nos. 1-2, p. 24-27.

234. Phillips, A.H., 1910, Gageite, a new mineral from Franklin, New Jersey: A.J.S., 4th Ser., Vol. 30, p. 283-284.

235. Phillips, A.H., 1911, Notes on a recent find of zincite crystals, A.J.S., 4th Ser., Vol. 31, p. 464-465.

236. Phillips, A.H., 1917, A rare habit and new form of Franklinite: Am. Min., Vol. 2, p. 5.

237. Pierce, J., 1822, Geology, Mineralogy, scenery, etc. of the Highlands of of New York and New Jersey: Am. Jour. Sci., 1st Ser., Vol. 5, p. 26-33.

238. Pinger, A.W., 1948, Geology of the Franklin-Sterling Hill area, Sussex Co., New Jersey: in Dunham, K.C., Ed., Symposium on the geology, paragenesis and reserves of the ores of lead and zinc, 18th Internat. Geol. Cong., London, p. 68-87.

239. Pirrson, L.V., 1890, On the fowlerite variety of rhodonite from Franklin and Sterling Hill, New Jersey: A.J.S., 3rd Ser., Vol. 40, p.484-488.

1971 DUES ARE PAYABLE NOW - - - - PLEASE GET YOUR RENEWAL IN

MEMBERSHIP RENEWAL

I would like to renew my membership in the Franklin-Ogdensburg Mineralogical Society for the year _____. Dues of $3.00 are attached.*

Name (Mr. Mrs. Miss) _____

Address _____ Tel. No. _____

_____ Zip Code _____

Please advise of any change in address.

- -

APPLICATION FOR MEMBERSHIP

I would like to apply for membership in the Franklin-Ogdensburg Mineralogical Society. $3.00 for 1971 dues and a registration fee of $1.00 is attached.*

Name (Mr. Mrs. Miss) _____

Address _____ Tel. No. _____

_____ Zip Code _____

Please PRINT your name and address exactly as you wish it to appear on your mail.

- -

LITERATURE ORDER *

NOTE: PLEASE ADD .30 PER ITEM FOR HANDLING AND MAILING, PLUS 5% SALES TAX.

		(Copies)	
Jones	Nature's Hidden Rainbows - Fluorescent Minerals of Franklin, N.J.	_____ @ 2.95	_____
Knoll	Mineral Identification for the Amateur	_____ @ 1.00	_____
Kushner	An Abbreviated Manuel of Franklin Minerals available at meetings and by mail from the author- Ervan F. Kushner, 5 Colt Street, Paterson, N.J. 07505	@ $10.00 plus tax	
Mason	Trap Rock Minerals of New Jersey	_____ @ 2.00	_____
Palache	The Minerals of Franklin and Sterling Hill, Sussex County, New Jersey	_____ @ 2.00	_____
Shuster	Historical Notes on the Iron and Zinc Mining Industry in Sussex County, N.J.	_____ @ 1.00	_____
Sims	Geology of the Andover Mining District, Sussex County, New Jersey	_____ @ 1.00	_____
Widmer	Geology and Geography of New Jersey	_____ @ 6.00	_____
Wilkerson	Minerals of Franklin and Sterling Hill	_____ @ 2.00	_____
Yolton	Fossils of New Jersey	_____ @ 1.50	_____
	Back Issues of The Picking Table (Note Issues)	____ @ .50	_____
	F.O.M.S. Button or Lapel Pin (specify)	_____ @ 2.50	_____
	F.O.M.S. Shoulder Patch	_____ @ 1.00	_____
	Total (check enclosed)		$ _____

*Please send separate checks for literature orders. Make checks payable to Franklin-Ogdensburg Mineralogical Society, Inc. Mail to Bernard Kozykowski, Treasurer, Box 634, Port Jervis, New York, 12771. Allow 30 days for reply.

Address Correction requested by
FRANKLIN OGDENSBURG MINERALOGICAL SOCIETY
BOX 146, FRANKLIN, N.J. 07416

BOONTON, N.J. 07005

THOMAS S.WARREN
UV PRODUCTS,INC.
5114 WALNUT GROVE AVE.
SAN GABRIEL,CALIF. 91778