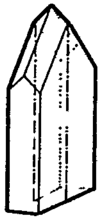
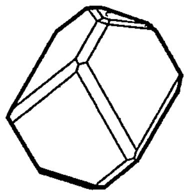
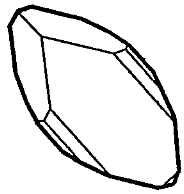
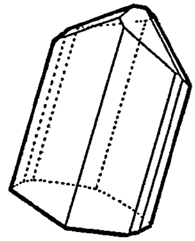
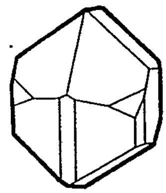
$2.00

MMNE

MICROMOUNTERS
OF NEW ENGLAND

NORTHEAST MEETING

May 14, 1983

Science Museum, Springfield, MA

PROGRAM

9:30 Registration
10:00 Informal Session
12:00 Lunch
1:00 Presentation:

MICROMINERALS OF THE FRANCON QUARRY

by

VIOLET ANDERSON

2:00 Informal Session
3:00 Drawing for Door Prizes
4:00 Departure

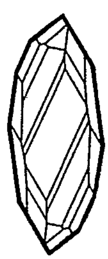
President - Mrs. Gerry Lindeyer | Vice President - Norman Biggart
Secretary - Ralph Carr, Jr. | Treasurer - Mrs. Janet Cares
Newsletter Editor — Mrs. Shelley Monaghan

Additional Information ——

Mrs. Janet Cares, 18 Singletary Lane, Sudbury, MA 01776 • (617) 443-9180

GUEST SPEAKER: Violet Anderson
137 Buckingham Ave.
Toronto M4N 1R5,
Ontario, Canada

Vi first began photographing minerals in 1970, and has since become one of the best-known photographers of micromounts in the mineral world. Since 1977 she has written the "Microminerals" column appearing in the Mineralogical Record, which has included locality articles on Loudville, Francon, and Mt. St. Hilaire. Recently she has transferred her talents to the periodical "Monde et Mineraux", published in Paris, France. She is a Research Associate in the Department of Geology and Mineralogy at the Royal Ontario Museum in Toronto, Canada. She and her husband, Ross, an equally enthusiastic micromounter, are frequent attendees of the Tucson Show where Vi's slide programs are always popular.



AIDS TO THE IDENTIFICATION OF FRANCON UNKNOWNS

Janet Cares

With collecting coming to a close at the Francon Quarry, it is all the more important to know what species you have, as they may well be irreplaceable. The tests presented here may be easily carried out by the average amateur using readily obtainable equipment. It is important to note that no single test can absolutely identify a mineral, but examination through the microscope combined with one or more other tests will enable you to put a quite reliable label on many of your unknowns.

The simplest test, and one which leaves the specimen intact is examination under ultraviolet light. Although fluorescence may not be characteristic of a species worldwide, it is often consistent at a given locality. This is true at Francon for a number of species as summarized below. This observation should be made with as little background light as possible, and preferably total darkness, especially for phosphorescence, the continued flourescence after the ultraviolet light has been turned off.

Unaltered end members of a species also have characteristic solubilities. Given below are solubilities in water, hydrochloric acid (HCl) diluted with an equal volume of water, and in a few cases nitric acid (HNO_3) or sulfuric acid (H_2SO4). The dilution of HCl used is safer to handle than concentrated acid, and will not harm the skin if washed off promptly after a spill. Any acid is corrosive to metals, so reactions should be observed away from the microscope if possible, and containers should be kept stoppered when not in use. We recommend that the diluted HCl be stored in clean plastic bottles with dropper tip, such as may have contained eye drops or nasal spray. These will deliver one drop at a time, and will not spill out if tipped over. In some cases, especially where reaction takes place in the cold, a small chip or crystal may be used, but with less soluble minerals results are more readily obtained if the specimen is powdered. This can easily be done by grinding it between two hard streak plates. A clean plastic milk bottle cap serves well as a container for testing solubility in the cold. Minerals requiring heat for solution may be placed (as chips or powder) in a small test tube with acid, and heated carefully by means of a pocket lighter. CAUTION: Never point the open end of the tube being heated either at yourself, another person, or any object which could be harmed by acid which could spurt from the tube on boiling.

A test for the presence of fluoride is of value in a few cases, and is easily carried out. A microscope slide (or small piece of window glass) is cleaned with detergent, rinsed, and dried, after which it should be examined under magnification for any pits or scratches which might interfere with the test. The test mineral in chip or powder form is placed on the slide and a drop of concentrated sulfuric acid (H_2SO_4) is added. The slide should be placed on an acid-resistant surface (such as the cover of a plastic margarine container) in case the acid drips off the side. After a period of time sufficient to decompose the mineral, the slide is rinsed with water, dried, and examined under the microscope for etched areas or pits produced by hydrofluoric acid liberated from the specimen during solution. It may be necessary in some cases to rewash the slide, scrubbing the test area lightly with the fingers and wiping dry with a soft cloth or paper towel, as occasionally an insoluble residue adheres to the glass and will be falsely interpreted as an etched area. Under the conditions outlined, the test is virtually specific for the fluoride ion. Obviously a mineral which is totally insoluble in H_2SO_4 will not give the test.

In the tables, minerals have been arranged according to specific gravity for the convenience of those who are able to obtain this information.

MINERALS WHICH DISSOLVE IN 1:1 HC1 WITH EFFERVESCENCE

S.G.	
2.2	Nahcolite (sol. H_2O)
2.44	Dawsonite (delayed)
2.7	Strontiodresserite (rapid)
2.71	Calcite (fast)
2.8	Hydrodresserite (rapid)
2.89	Dolomite (warm)
2.97	Ankerite (warm)
3.0	Dresserite (rapid)
3.2	Weloganite (rapid)
3.36	Unknown No. 5 (warm)
3.7-3.8	Strontianite (fast)
3.9-4.2	Synchysite
3.96	Siderite (warm)
4.9-5.2	Thorbastnaesite
6.8-6.9	Hydrocerussite

MINERALS WHICH ARE <u>NOT</u> SOLUBLE IN 1:1 HC1

S.G.	
2.07	Sulphur
2.1-2.2	Graphite
2.3	Cristobalite
2.6	Albite
2.6	Chalcedony
2.65	Quartz
3.0	Cryolite (dec. H_2SO_4)
3.18	Fluorite (dec. H_2SO_4)
4.0	Celestite
4.25	Barite

Also anatase, baddeleyite, brookite, ilmenorutile, marcasite, zircon, unknowns 3, 10, 11, 13

MINERALS WHICH ARE SLOWLY SOLUBLE IN 1:1 HC1 WITHOUT EFFERVESCENCE

S.G.	
2.1-2.2	Mordenite (gel)
2.2	Dachiardite (gel)
2.2-2.3	Analcime (gel)
2.3	Gypsum
2.4-2.5	Harmotome (no gel)
2.9-3.2	Natrojarosite
3.1-3.2	Fluorapatite
3.3-4.3	Goethite
3.9-4.1	Sphalerite
4.5-4.8	Pyrrhotite
5.2	Magnetite
5.26	Hematite
6.0-6.1	Crocoite
7.6	Galena

MINERALS WHICH ARE SOLUBLE IN WATER

S.G.	
2.17	Halite
2.2	Nahcolite (effervesces in HC1)
2.2-2.3	Rozenite
2.68	Thenardite
	Montmorillonite (S.G. 2-3) does not dissolve, but swells in water to a paste.

MINERALS WHICH GIVE FLUORIDE ETCH TEST

Bastnaesite
Cryolite
Fluorite
Synchysite
Unknown No. 3

FLUORESCENT AND PHOSPHORESCENT MINERALS

Dresserite family: white LW, SW, phosphorescent
Strontianite: (acicular pale yellow habit only): cream to white LW, SW, phosphorescent
Unknown No. 3: white LW, SW, phosphorescent
Weloganite: variable and unreliable
Some calcite fluoresces pink to red (unreliable)
Some feldspar fluoresces pink (unreliable)

FRANCON UNKNOWNS = ST. HILAIRE UNKNOWNS

Several of the unknown minerals from Francon are also found at Mt. St. Hilaire, and have either been submitted or approved by the IMA (International Mineralogical Association). Until the names have been published by those who first described them we cannot print them, but offer the information below.

Francon unknown number 10 is a niobate of sodium with a specific gravity of about 2.7, and the same as St. Hilaire UK43.

Francon unknown number 11 is a hydroxide of aluminum with a specific gravity of 2.5, and the same as St. Hilaire UK45.

Francon unknown number 13 is the calcium analog of number 10, and the same as St. Hilaire UK50.

Bill Henderson

The extrusive igneous (volcanic) rocks of the western states afford a remarkable and extremely beautiful suite of microminerals. Unlike the basalts which we have in the eastern states, the volcanic rocks out west are light in color and correspond to the extrusive equivalents of granites. These rocks, mostly rhyolites and andesites, are formed from lava which is much poorer in iron than that from which basalt is formed. In addition, the acidic (granitic) lavas crystallize at much higher temperatures, are much more viscous, and contain less water. The minerals formed are entirely different for these reasons.

In our basalts, the minerals of interest to collectors are found in cavities, either ones left unfilled when pillow lavas form underwater, or in gas cavities formed by decompression when the basaltic lava reaches the surface. In the West, microminerals are found in two types of cavities formed by decompression. The first, called lithophyses, are roughly spherical in shape, much more so than those in basalts because the lava is so viscous that it resists deformation of the bubbles. In many cases, the lithophyses show concentric shells of micro crystals and have the appearance of a somewhat expanded onion. In other cases, the gas cavities assume a lenticular shape with horizontal dimensions many times the vertical dimension or thickness. Here, the almost crystallized magma appears to be lifted apart by the gas pressure, which rises as the gases are forced out of the crystallizing rock. The choice microminerals, of course, are found in these cavities.

In the following paragraphs, I will describe the commoner and more interesting micro species found. First, though, a couple of caveats. The descriptions are based only on specimens in my own collection, and many fine species or localities may be omitted. Second, since all the specimens were acquired by exchange, I cannot guarantee that all the localities given are distinct - some may be synonyms for the same collecting area. A table correlating species and localities is given after the mineral descriptions.

Hypersthene is one of several orthorhombic silicates and is fairly widespread in the western extrusive rocks. It is extremely variable, forming columnar to short columnar crystals, transparent and light to medium brown in color. When altered (oxidized), it becomes opaque and brick red in color and may be altered to or encrusted by hematite. Occasionally, crystals are cavernous or formed in parallel growth. All these forms, habits and colors are to be found in hypersthene from Summit Rock, near Diamond Lake, Oregon. Summit Rock is an andesite plug dome.

Pseudobrookite, an iron titanium oxide, is another orthorhombic mineral. It forms extremely handsome crystals, usually easily distinguishable from hypersthene. It seems to occur in two paired habits and colors. At many localities, of which the Paramount Claims, Sierra County, New Mexico seems to be the best, it is found in radiating groups of brilliant, jet black crystals, columnar in proportions. At other localities, of which Lemolo Lake, Douglas County, Oregon is typical, the crystals tend to be shorter, more tabular, and striated lengthwise. They are also much squarer in habit, thus more obviously orthorhombic than hypersthene or black pseudobrookite. The color, too, is quite different, being a slightly reddish brown, often with an irridescent or varnished appearance. The lesser transparency, redder shades of color and flatter and squarer habit distinguish it from hypersthene. When the two occur together, as they often do, the difference is unmistakable.

Fayalite is still another orthorhombic mineral, an iron silicate. It forms very thin, unmistakably orthorhombic crystals, striated lengthwise and rectangular in shape. Its color is a light brown and the crystals are perfectly transparent. It can be confused with hypersthene as to color, but the much flatter crystal form should distinguish the two.

Closely related to fayalite is the orthorhombic magnesium, manganese end member hortonolite. Although not always so, the only hortonolite I have from western localities is an opaque brick red in color and dusted with what appear to be tiny hematite crystals. This material is from the osumilite locality in the Three Sisters Peaks, Lane County, Oregon. Other hortonolite would probably require chemical analysis to distinguish it from favalite.

Hornblende is also found at the Summit Rock locality. A calcium iron silicate in the amphibole family, it has the same light brown or almost slightly greenish brown color as much of the hypersthene with which it is found. However, the crystals are much longer, the length to width ratio being perhaps 10-15 rather than 2-5 as it is in hypersthene. This distinction holds true for amphiboles in general, i.e., they tend to be long columnar while the pyroxenes such as hypersthene tend to be short columnar. Also, this same difference in length can be used to distinguish the two families in acidic extrusive rocks from the Eifel District in Germany.

Augite, a calcium iron pyroxene, is also found at Summit Rock and obeys the rule above in that it forms short columnar crystals. These are easily distinguished as they are a deep bottle green in color.

Bixbyite, a cubic iron manganese oxide occurs at a number of western localities in handsome crystals. The crystals are always a brilliant black and most commonly show only the cube. Less often cubo-octahedrons are formed, but the finest bixbyites show the trisoctahedron as a major face. Very few other minerals do so. Fine crystals, some showing the trisoctahedron, are found at a locality in Sierra County, New Mexico. Frequently, bixbyite and topaz are found in association in the same cavities. Then, on rare occasions, the bixbyite may be found in oriented or epitaxial growth on the topaz. It tends to form in narrow bands or circlets on the topaz, the crystals following a potential cleavage surface (c-plane) of the topaz. The fact that the crystals are oriented with respect to the topaz is not immediately apparent since the cube face of each bixbyite crystal makes a rather odd angle (33°) with the c-plane of the topaz. The relationship is observed repeatedly, however, so it is a true example of epitaxial growth. The finest locality for this material is Topaz Mountain, Utah.

Osumilite is a fairly rare sodium iron silicate found in excellent crystals in the Three Sisters Peaks, Lane County, Oregon. The most remarkable feature of the mineral is its pronounced pleochroism. Viewed in different directions, it varies from deep blue or blue-black to a transparent brown in color. The crystals are equant hexagonal in shape.

Three polymorphs of silica are found in gas cavities in western extrusive rocks. These are cristobalite, tridymite and high and low quartz. Cristobalite and tridymite are high temperature, low pressure polymorphs of $Si0_2$, as would be expected since they occur in these high melting point lavas under near surface conditions. Cristobalite forms at the highest temperatures, then tridymite followed by high and low quartz. The higher temperature forms are unstable as the temperature of the crystallizing magma falls, so often pseudomorphs are found of the low temperature species after the high temperature ones. The crystals of cristobalite and tridymite are usually small, and distinguishing the two is not always an easy matter. When the crystals can be made out, however, it is seen that cristobalite forms octahedral or, less commonly, cubic crystals. These may be in intergrown groups, and often the crystals are an opaque white. Tridymite is hexagonal, often forming tabular crystals, which may be twinned into wedge shape groups or even interpenetrating twins like cerussite in appearance. Thus, a platy habit suggests the latter while an octahedral or equant shape is more characteristic of the former. Quartz needs no description as to its crystal form.

Topaz is frequently found in these gas cavities in extremely well developed crystals. The finest locality, of course, is Topaz Mountain, Utah. The transparent, wine color crystals form there are known worldwide. Of special interest to the micromounter are the occasional crystals showing etch pits, internal healed fractures, incipient cleavage planes and quartz inclusions.

Spessartine in transparent, deep red crystals is found with topaz at a locality near Grants, New Mexico. It is without a doubt some of the finest spessartine to be found anywhere. When the two species are to be seen in a single micro specimen, they make a striking pair.

Red beryl is another brightly colored species found at several western localities in extrusive rocks. The crystals, a deep red to pale pink in color, form simple hexagonal prisms terminated with a c-face. The crystals frequently show inclusions of other minerals or even rhyolite itself. The best of these, perhaps, are from the Wawa Mountains in Utah.

Several other species are found in these gas cavities, species which will not be described here even though they form in attractive crystals. Among these are hematite, ilmenite, magnetite, plagioclase and other feldspars, acmite, apatite, hyalite and rutile.

Many western micromounters have this type of material to trade, and no good micro collection should be without these species. Why not write a few letters and send a few packages and fill in the species missing in your collection?

Species / Locality Table	Hypersthene	Pseudobrookite	Fayalite	Hortonolite	Hornblende	Augite	Bixbyite	Osumilite	Cristobalite	Tridymite	Topaz	Spessartine	Red Beryl	Hematite	Ilmenite	Magnetite
Arizona																
Galiuro Mtns., Pinal Co.									x							
California																
Coso Hot Springs, Inyo Co.			x						x	x						
Little Lake			x							x						
Nevada																
Lane City, White Pine Co.										x						
New Mexico																
Beaverhead, Sierra Co.							x									
Cuchillo, Sierra Co.		x														
near Grants											x	x				
Paramount Claims, Sierra Co.		x					x						x			x
Valencia Co.											x					
Oregon																
Diamond Lake	x								x	x						
Red Cone, Crater Lake	x	x														
Lemolo Lake, Douglas Co.		x														
Summit Rock	x				x	x									x	x
Three Sisters Peaks, Lane Co.				x				x								
Utah																
The Dells, Thomas Range		x														
Thomas Range, Juab Co.		x					x			x	x		x	x		
Twin Peaks														x		
Wawa Mtns., Thomas Range													x			
Topaz Mtn.							x				x		x	x		x

THE QUEEN OF THE QUARRIES

Gerry Lindeyer

After a decade or more of "feasting" at the DeMix Quarry in St. Hilaire and the Francon Quarry in Montreal, the lean years are upon us micromounters of the Northeast. Most of us are, however, fortunate enough to have collected large quantities of the precious rock in years past from these quarries and have stored it away in cellars and garages, where we have to go digging, for there "ain't no more to be had" at these locations, although indubitably many hopefuls will still try to get in these places.

The time of rock famine seems to have arrived, but is it really that bad? Surely it will take a lot of digging to come up with something special, and the take-home load will often be light and unproductive. But I hear from people who go collecting regularly in New England and come home with very nice things, although I must admit I have not seen them. There are still lots of places where microminerals can be found; for instance, the Quabbin Reservoir in Massachusetts, the Government Pits in New Hampshire, and the famous Maine locations. In Connecticut there are the Bethel Bertrandites, the Thomaston Dam Wurtzites, and, at the Queen of the Quarries, the Stickland Quarry, the Bertrandites, Tourmalines, Apatites, zoned Fluorites, Pyrites, Columbites and Quartzes. I have been there a few times recently and so have some of my friends, and we have come home, not jubilant, but somewhat satisfied.

This famous Lithia Pegmatite is located on the west side of Collins Hill in Portland and in the early 1900's accommodated two mining operations, the Strickland and the Cramer or Schoonmaker Quarries. They were located close together and the two in their outward probings at times met and eventually connected via a tunnel that runs under the present road.

The Strickland Quarry was originally opened in 1840. In 1904 Mr. F. E. Strickland of Portland, Connecticut, bought the mine and after only a few years sold it, but he stayed on as foreman until about 1920. The mine was in continuous operation until the 1930's and was briefly reactivated in the 1950's.

The quarry was mainly operated for feldspar (some 4000 tons of feldspar were taken out yearly), and up to 1933 all minerals other than quartz, feldspar, and mica were the property of the owner, Mr. Strickland, but as they had little economical value, they usually ended up on the dumps. After 1933 the operator of the mine could sell specimen material to collectors and dealers, but still a lot of good material was dumped.

The quarry actually was a large open pit, with extensive side-chambers, consisting of a coarse pegmatite composed mostly of microcline and smoky quarts. The feldspar crystals were quite large and so were the plates of mica. In 1926 the Quarry was one of the nation's five largest mica producers. Black tourmaline, much fractured, was abundant, so was beryl in dull terminated crystals. There also were large spodumene crystals and beautiful uraninites in sharp octohedral crystals, some of which are in the

Weslyan University collection. There were also lovely apatite crystals, comparable to the fine purple ones found in Maine.

Real good things happened when the miners dug to about 30 feet below the surface. Pockets were found with beautiful large tourmalines. At about 45 feet deep large crude quartz crystals were found, which were anything but beautiful. I admit to owning one, ugly as sin, about 6 to 7 inches long and about 4 inches in diameter, which I dug up under the old car which used to be near the first dump some years ago. At a depth of about 50 feet tourmalines were found again, often naturally fractured and naturally cemented, average size 1/2 inch diameter and 1½ inches long, mostly green or blue, but there were also some pinks and watermelons. I remember the story that Mr. Tiffany came out to the Quarry himself to take a look at the beautiful gemmy tourmalines and threw away the ones that, according to him, did not make the grade. That was on the path beyond the old car under which I found my ugly. Large masses covered with brown secondary deposits were also found at the 50 foot level, weighing as much as 7 pounds each. When one of these messy masses was carefully pried open it was found to contain one single tourmaline, purple at the base, pink in the middle and green at the top. Mr. Strickland claimed that one for himself and eventually sold it to Professor Ford for the Brush collection.

Lovely clear beryl crystals were also found varying in color from golden yellow, to aquamarine, to pink. A friend of mine, groping under a tree, found one in the mid 1970's at the dump which had been excavated for fill. Another friend found something else on a dump, when she turned a rock on one January day on the first field trip of the year to Strickland. She found copperheads, a nest of them, and without any hesitation made short shrift of them in no time flat, and took none home.

The second quarry was the Schoonmaker or the Cramer, opened in 1933 by the A.A. Schoonmaker Co. of New York under the name of Connecticut Mica & Mining Co., which specialized in insulating materials and was mainly interested in the large mica deposits. Their one and only dump was the Schoonmaker dump. The Schoonmaker quarry followed the natural incline of the pegmatite which brought it closer and closer to the Strickland quarry, until the two connected via the tunnel under the road, as mentioned earlier.

Both mines were abandoned at about the same time and the quarries slowly filled with water until the present level was reached. The large pit is a favorite swimming hole for teenagers, but the police chase them away, with good reason. It is a dangerous place. In 1960 two scuba divers got lost in the many underground tunnels and chambers of the two connecting quarries and died not being able to find their way out before their air supply had run out. It took five days of pumping to expose the tunnel where the accident had occurred.

The Strickland Quarry is a classic New England pegmatite location with an exceptionally rich mineralization. Over 90 species have been identified, and it is an excellent hunting ground for microminerals. It has been written up a number of times, amongst others by Richard Schooner, after whom a "Palermo" mineral has been named (Schoonerite). One of his papers was entitled, "90 Minerals from a Connecticut Hill." Another article appeared in Rocks and Minerals, but the date of the issue is not available at this time. Ron Bentley wrote about the mine for the Hartford Club Bulletin, now defunct. I must admit that I borrowed quite a bit from his two articles about the history of the two mines, and I give him credit for researching the history of this famous area so thoroughly.

Mr. Schooner in 1954 warned mineral collectors that the location had been visited by thousands of collectors and that it would be necessary to do a lot of digging and pounding to get the rarer minerals. But a lot of collectors in the 1960's, 1970's, and 1980's have dug hard, and not so hard, and sometimes have not dug at all, but have come up with beautiful material - rare micros, lovely gemmy beryls, tourmalines, garnets, columbites, and purple apatites. One of the purple apatites was found by a collector walking behind a friend on one of the paths leading to the last dumps. First she thought it was something dropped by a bird, but then she thought it might be worth a closer look, and lo and behold, it was a thumbnail specimen with some 20 purple apatites. That same day another collector found a large single purple apatite at the bottom of a deep, deep hole after hours and hours of digging. Strangely enough, I have not heard of any others being found after that, but that may be lack of communication! I do know what the friend thought after she found out what she had so casually stepped over.

Another good mineral to look for is Bertrandite, which is often coated with an iron deposit and hard to find. Bill Henderson has written an article on Connecticut Bertrandites in the Mineralogical Record (May-June Issue, 1975), which would be very helpful in identifying Strickland Bertrandites. The Bertrandites are still on the dumps, mostly in dirty pockety material. Micromounters should pick up any old dirty rock with little pockets. Most of it will be thrown away again, but it might contain bertrandites, pyrites, apatites or quartzes.

Many micro minerals can still be found on Collins Hills. Favorite places include the Schoonmaker dump; look for bluish clevelandite with pockets. It is not lying around in quantities, and you may have to dig. On the first two dumps before the Schoonmaker, bertrandites, apatites and manganapatites can be found. On the dump around the quarry and beyond the Schoonmaker there are beryls and spodumenes, rarely in crystals, but micros associated with these minerals can be found there too, and there are all kinds of goodies on the dumps further to the right.

I could list all 90 plus minerals that have been identified, but most of you probably have seen such a list. Probably you have heard all this before anyhow, but it is always nice to think about Mr. Tiffany sorting his beautiful tourmalines, and about all the small and the big, all the beautiful and the ugly minerals that have been found there, because it means that it can be found again and that is what keeps us going. And if we are too tired, we can always go and sit on the top of the Schoonmaker dump on a cool sunny day and enjoy the pleasant breeze and the beautiful view from the top.

MASSACHUSETTS MINERALS — A CHECKLIST

Dr. Carl A. Francis, Curator of Harvard University's Mineralogical Museum, 24 Oxford Street, Cambridge, Mass. 02138 has been compiling a list of mineral species found in Massachusetts. This is an updated list of those either reliably reported in the literature or verified on actual specimens. Collectors with possible additions are urged to contact Carl, preferably with a specimen for him to work on.

Actinolite
Aegirine
Albite
Allanite
Almandine
*Amesite
Analcime
Anatase
Andalusite
Anglesite
Anhydrite
Anthophyllite
Apophyllite
Aragonite
Arsenopyrite
Augite
Aurichalcite
Babingtonite
Barite
Beryl
Biotite
Birnessite
Brochantite
Brookite
Brucite
Calcite
Caledonite
Cancrinite
Carbonate Cyanotrichite
Cassiterite
Cerussite
Chabazite
Chalcanthite
Chalcocite
Chalcopyrite
Chrysotile
Clinochlore
Clinohumite
Clinozoisite
Cobaltite
Copper
Cordierite
Corundum
Covellite
*Danalite
Datolite
Diaspore
Diopside
Djurleite
Dolomite
Elbaite
Enstatite
Epidote
Fayalite
Ferrisicklerite
Fluorapatite
Fluorite
Forsterite
Gahnite
Galena
Geikelite
*Gibbsite
Goethite
Gold
Graphite
Grossular
Grunerite
Gypsum
Hematite
Hemimorphite
Heterosite
Heulandite
Ice
Ilmenite
Kutnahorite
Kyanite
Labradorite
Langite
Magnetite
Malachite
Margarite
Meionite
Microcline
*Microlite
Molybdenite
Monazite
Muscovite
Neotocite
Nepheline
Parisite
Phenacite
Phlogopite
Piemontite
Plumbogummite
Pollucite
Prehnite
Pumpellyite
Pyrite
Pyromorphite
Pyrrhotite
Quartz
Rhodochrosite
Rhodonite
Riebeckite
Rutile
Schorl
Siderite
Sillimanite
Silver
Smithsonite
Sodalite
Sonolite
Spessartine
Sphalerite
Spinel
Spodumene
Staurolite
Stilbite
Stilpnomelane
Sulfur
Talc
Tephroite
Tremolite
Triphyllite
Titanite
Wollastonite
*Wroewolfeite
Wulfenite
Zircon
Zoisite

*Minerals first described from Massachusetts

Collectors who specialize in so-called "type locality" minerals may never obtain a true type specimen, as they are the ones on which the original work was done to characterize the mineral, and are usually carefully guarded in a museum or university collection. Most such collectors are limited to specimens obtained from the locality where the first-described species was found. These are not necessarily rare, but are regarded as having an enhanced value over the same species found elsewhere. Listed below are four localities popular with micro collectors with the species which were originally described and named from them. An asterisk (*) denotes a species which has so far not been found at any other locality.

MT. ST. HILAIRE, QUEBEC[1]

*Carletonite
*Donnayite
*Gaidonnayite
*Hilairite
*Lemoynite
*Monteregianite
Paranatrolite
*Petarasite
*Steacyite
Tetranatrolite
*Yofortierite

FRANCON QUARRY, MONTREAL, QUEBEC[2]

*Dresserite
*Hydrodresserite
*Sabinaite
*Strontiodresserite
*Weloganite

PALERMO NO. 1 PEGMATITE, GROTON, NEW HAMPSHIRE[3]

Bjarebyite
Foggite
*Goedkenite
*Palermoite
*Samuelsonite
Schoonerite
Strunzite
Whitlockite
Whitmoreite
Wolfeite
Xanthoxenite

FRANKLIN-STERLING HILL AREA, NEW JERSEY[4]

Bannisterite
*Baumite
Bementite
Cahnite
Chalcophanite
*Chlorophoenicite
Clinohedrite
*Esperite
Feitknechtite
Franklinite
Gageite
*Gerstmanite
Glaucochroite
*Hancockite
*Hardystonite
*Hauckite
*Hendricksite
Hetaerolite
*Hodgkinsonite
*Holdenite
Hydrohetaerolite
*Johnbaumite
*Kolicite
*Kraisslite
Larsenite
*Lawsonbauerite
*Leucophoenicite
*Loseyite
*Magnesium-chlorophoenicite
Manganpyrosmalite
Margarosanite
*Marsturite
*Mcgovernite
*Mooreite
Nasonite
*Ogdensburgite
*Retzian-(Nd)
Roeblingite
Roweite
*Schallerite
*Sterlinghillite
Sussexite
Tephroite
*Torreyite
Willemite
Woodruffite
*Yeatmanite
Zinalsite
Zincite

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FRANCON MINERALS ARRANGED ACCORDING TO CHEMICAL COMPOSITION

ELEMENTS

Graphite	C
Sulfur	S

SULFIDES

Galena	PbS
Marcasite	FeS_2
Molybdenite (2H)	MoS_2
Pyrite	FeS_2
Pyrrhotite	$Fe_{1-x}S$
Smythite	$(Fe,Ni)_9S_{11}$
Sphalerite	$(Zn,Fe)S$

OXIDES AND HYDROXIDES

Anatase	TiO_2
Baddeleyite	ZrO_2
Brookite	TiO_2
Chalcedony	SiO_2
Cristobalite	SiO_2
Unknown No. 11	$Al(OH)_3$
Goethite	$FeO(OH)$
Hematite	Fe_2O_3
Ilmenorutile	$(Ti,Nb,Fe)_3O_6$
Magnetite	Fe_3O_4
Pseudorutile	TiO_2
Pyrochlore	$(Na,Ca)_2Nb_2O_6(OH,F)$
Quartz	SiO_2
Unknown No. 3	
Unknown No. 13, 10	

HALIDES

Cryolite	Na_3AlF_6
Fluorite	CaF_2
Halite	$NaCl$

SULFATES

Barite	$BaSO_4$
Celestite	$SrSO_4$
Gypsum	$CaSO_4 \cdot 2H_2O$
Natrojarosite	$NaFe_3(SO_4)_2(OH)_6$
Rozenite	$FeSO_4 \cdot 4H_2O$
Thenardite	Na_2SO_4

CARBONATES

Ankerite	$Ca(Fe,Mg,Mn)(CO_3)_2$
Calcite	$CaCO_3$
Dawsonite	$NaAl(CO_3)(OH)_2$
Dolomite	$CaMg(CO_3)_2$
Dresserite	$BaAl_2(CO_3)_2(OH)_4 \cdot H_2O$
Hydrocerussite	$Pb_3(CO_3)_2(OH)_2$
Hydrodresserite	$BaAl_2(CO_3)_2(OH)_4 \cdot 3H_2O$
Nahcolite	$NaHCO_3$
Sabinaite (No. 5)	$Na_9Zr_{4+x}Ti_2O_9(CO_3)_8$
Siderite	$FeCO_3$
Strontianite	$SrCO_3$
Strontiodresserite	$(Sr,Ca)Al_2(CO_3)_2(OH)_4 \cdot H_2O$
Synchysite	$(Ce,La)Ca(CO_3)_2F$
Thorbastnaesite	$Th(Ca,Ce)(CO_3)F \cdot 3H_2O$
Weloganite	$Sr_3Na_2Zr(CO_3)_6 \cdot 3H_2O$

CHROMATES

Crocoite	$PbCrO_4$

PHOSPHATES

Fluorapatite	$Ca_5(PO_4)_3F$

SILICATES

Acmite	$NaFeSi_2O_6$
Albite	$NaAlSi_3O_8$
Almandine	$Fe_3Al_2(SiO_4)_3$
Analcime	$NaAlSi_2O_6 \cdot H_2O$
Dachiardite, Na-rich	$(Na_2,Ca,K_2)_5Al_{10}Si_{38}$
Elpidite	$Na_2ZrSi_6O_{15} \cdot 3H_2O$
Harmotome	$(Ba,K)(Al,Si)_8O_{16} \cdot H_2O$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Montmorillonite	$(Na,Ca)_{0.33}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot nH_2O$
Mordenite	$(Ca,Na_2,K_2)(Al_2Si_{10})O_{24} \cdot 7H_2O$
Zircon	$ZrSiO_4$

ORGANIC COMPOUNDS

Unknown hydrocarbon coating

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