The Philip Foster
Micro-mineral Collection

Tom Mortimer

Presentation made possible by the dedicated efforts of Dana Morong, Madbury, NH
HISTORY

Philip C. Foster (1892 - 1974)

Lived much of his life in Dover, NH

His family was the publisher of *The Foster Daily Democrat* newspaper, Dover, New Hampshire, (est. 1873).

Mineral collecting inspired in childhood by great-uncle who lived about two miles from the Parker Mtn. Mine, Strafford, NH.

Field collected and traded New England minerals for many decades.
HISTORY - continued

Joined the Maine Mineralogical and Geological Society (1928)

Member of the Boston Mineral Club – 1940’s


A trustee of the Woodman Institute in Dover, N.H

A member of Micromounters of New England, founded in 1967, but attended few meetings.

Contemporary associate of Gunnar Bjareby, Philip Morrill, Clayton Ford, Peter Zodiac, and Clifford Frondel
Contributed numerous articles to mineral club newsletters.
The Philip Foster Micro-mineral Collection

His collection of over 3600 micro-mounts was said to be one of the most detailed in New England.*  [Dana Morong census: 3740 specimens]
[tm estimate – present in Morong salvaged boxes: about 2500 to 2700]

530 NH  ME and NH are in
890 ME  tray boxes 1 - 94
32  CT
107MA
  6 RI
  0 VT

Organized by Dana System number followed by specimen number.
   Example Brazilianite:  41.5.10 - 1

For the silicates, numbers are from the 6th edition.
   Examples:  quartz is 210, and petalite is 310

•There is also a 35 box, 1235 pseudomorph collection.
Pyrite
Road Cut, Rte. 93  --  --  New Hampton, N.H.

Cubic xls. on Dolomite xls.  in vug
mod. by oct., on corners
one xls. elongated to 1.4 mm

white matrix 25 mm
Foster card file
Salvage and Restoration

The Foster micromount collection donated to UNH geology department on his death.

In spring 2008, UNH decides to “de-acquisition” the Foster micromount collection. Former UNH geology graduate Dana Morong, aware of the importance of the collection, agreed to save it from ignominity. Pat Barker was helpful in facilitating the collection transfer to Dana.

Over several years Dana:
• Cleaned the tray boxes
• Re-attached specimens dislodged from corks
• Returned specimens to their photo-hinge locations
• Created multiple computer, searchable, data-base records of the collection
• Authored several articles on the collection
A Philip Foster micromount (0.8 inches square)

Blackened corks on black photo album paper. White ink on backside.
A Philip Foster micromount (0.8 inches square)

Without the card catalog, this collection would have very little value.

Blackened corks on black photo album paper. White ink on backside.
A tray of Foster collection specimens (8” x 10”)

Small white cards on left side indicate species and Dana number.
Total of 141 tray boxes. Three boxes are missing
Foster collection storage

Collection presently stored in five cardboard boxes – three shown here.

Each box 24” x 18” x 10”
(2.5 cubic feet each)

Total 12.5 cubic feet

Card catalog files, Dana Morong notebooks, and CD ROM are included in these boxes.
Some issues with Foster’s mounting methodology

Specimens can become dislodged from their photo-hinge docking location.

Corks can break free from their photo-paper base. A problem when multiple specimens become dislodged within a tray box. The consequences of dropping a tray box are substantial.

You must remove the specimen from the photo-hinge docking station to verify its catalog number. The photo paper is old weak, and friable.
SPECIMEN PHOTOS

Mostly New Hampshire – with apologies ...
ANATASE  Road Cut, Littleton, NH
7 mm quartz crystal with orange anatase crystals, mounted on blackened cork
ANATASE  Road Cut, Littleton, NH
0.8 mm anatase crystal, two views

Catalog # 452-106

$\text{TiO}_2$
APATITE-CaOH  Palermo Mine, N. Groton, NH  Catalog #41.5.10-1
6 mm apatite cluster
ARROJADITE  Palermo Mine, N. Groton, NH  Catalog #40.2.1-6
1.7 mm arrojadite crystal  Phillip Foster had cataloged as “dickinsonite”
ARROJADITE  Palermo Mine, N. Groton, NH  Catalog #40.2.1-6
1.7 mm arrojadite crystal  (There are multiple crystals on this specimen.)
ARROJADITE  Palermo Mine, N. Groton, NH  Catalog #40.2.1-6
6.5 mm field of view  (There are multiple crystals on this specimen.)
BERYL  Ossipee, NH  Catalog #4.30-1
Left: 5 mm FOV  (Foster had this specimen labeled as sapphirine.)
Sapphirine chemistry is:
\[ \text{Mg}_4(\text{Mg}_3\text{Al}_8)\text{O}_4(\text{Si}_3\text{Al}_9\text{O}_{20}) \]
BRAZILIANITE  Palermo Mine, N. Groton, NH  Catalog # 41.5.10-1
7 mm brazilianite crystal
CORDIERITE  Soapstone Quarry, Richmond, NH  Catalog # 353-3
4.5 mm terminated crystal
CRANDALLITE  Palermo Mine, N. Groton, NH
2.5 mm field of view. Zoom view: 0.8 mm

Catalog # 41.5.8.4-6
Testing recommended for this one!
GRAFTONITE  Parker Mtn. Mine, Strafford, NH  12 mm field of view
"HALLOYSITE" (A miss-identification) Palermo Mine, N. Groton, NH
1 cm field of view. Full view: 1.8 cm specimen
Halloysite is a clay mineral, an aluminum silicate: $\text{Al}_2(\text{Si}_2\text{O}_5)(\text{OH})_4$. Perhaps a mixture of two minerals?

“HALLOYSITE” (A miss-identification) Palermo Mine, N. Groton, NH
1 cm field of view. Full view: 1.8 cm specimen
HUREAULITE Parker Mtn. Mine, Center Strafford, NH
Catalog # 39.1.3/3-9
5 mm field of view
KASOLITE  Ruggles Mine, Grafton, NH  1.9 cm specimen
• Very fine, hair-like, crystals are discernible at high magnification.
• Matrix is quartz.
• Kasolite chemistry is: \( \text{Pb}(\text{UO}_2)[\text{SiO}_4] \cdot \text{H}_2\text{O} \).
• The kasolite identification is per Foster's catalog.
• There are several crusty uranium minerals with similar appearance, (e.g. uranophane).
• It is unknown how Foster made the kasolite identification.
• An EDS analysis should be definitive, as kasolite is the only Pb, U, Si mineral.
• Kasolite is reported from the Ruggles Mine.
MORAESITE  Chandlers Mill Mine, Newport, NH  Catalog # Moraesite-New-2

3 mm field of view. Brilliant white moraesite fibrous sprays
OPAL var. Hyalite    Gloucester, MA
15.5 mm field of view.
ORPIMENT  Parker Mtn. Mine, Center Strafford, NH
1 mm field of view. Crusty mass of orpiment-realgar  

Catalog  # 26.10=1
• An article in the December, 1982 issue of "Granite Chips" newsletter of the Southeastern New Hampshire Mineral Club by Phillip Foster reports a find of two "pin-head" sized occurrences of orpiment-realgar from Parker Mtn. This may be one of those specimens.
• Harvard examined the specimen, but was non-committal and indicated the sample was too small for analysis. Gunnar Bjareby opined a possible realgar-orpiment ID.
• The elements in realgar/orpiment are arsenic and sulfur, both of these are present at Parker.
• I had discounted a realgar-orpiment occurrence at Parker as "folklore." The matrix for this small crusty bleb is triphylite-ferrisicklerite and appears quite legitimate for a Parker Mtn. piece. An EDS analysis is needed.
PARSONSITE  Ruggles Mine, Grafton, NH  Catalog # 41.8.4-1
About 1 mm field of view
• The majority of the micro crystals on this specimen are these thin, prismatic, transparent, yellow, crystals with square-ish terminations.

• An *American Mineralogist* article by Frondel Vol. 35, pgs. 245 - 250: "Studies of Uranium Minerals (I)" stated: "Parsonsite from New Hampshire... occurrs at the Ruggles pegmatite near Grafton Center, Grafton County, New Hampshire, as crusts of microscopic spicular or lath-like crystals. The mineral occurs sparingly along fracture surfaces in massive feldspar and quartz" ... "The color of the mineral is pale citron-yellow, and the luster is adamantine. ... Most crystals have transparent and relatively perfect terminations."

• There are no photos of Ruggles Mine parsonsite (or from any other New England locality) on mindat.org (2015).
PHOSPHOSIDERITE  Palermo Mine, N. Groton, NH  Catalog # 40.3.2.2-5
3 mm field of view - pale blue balls of phosphosiderite
PREHNITE    Walpole, NH
4 mm field of view

Catalog # 411-5
ROCKBRIDGEITE - manganoan  Fletcher Mine, N. Groton, NH  Catalog # 41.6.6.1-1

8 mm field of view. Foster has this specimen labeled as "Frondelite."
American Mineralogist article, "Frondelite and the Frondelite-Rockbridgeite Series" vol. 34,(1949) pgs. 541 - 549 , by M. Lindberg, includes analyses of two Fletcher Mine rockbridgeite specimens. The article notes the occurrence of "manganoan rockbridgeite (Fe",Mn")Fe_4"'(PO_4)_3(OH)_5, from the Fletcher quarry, North Groton, New Hampshire .... Ferrous iron may oxidize to ferric iron. At Fletcher quarry green rockbridgeite (Fe", Mn")Fe_4"'(PO_4)_3(OH)_5 oxidizes readily to brown rockbridgeite, (Fe"", Mn")Fe_4"'(PO_4)_3(OH)_5 “

A basic conclusion of the article is that this mineral at the Fletcher Mine is manganoan rockbridgeite, not frondelite.
1.7 mm blocky uraninite crystal with uranophane coating. Octahedral faces are also present.
UNKNOWN  Palermo Mine, N. Groton, NH             Catalog # 40.3.2.2-1
Top photo: 1 mm crystal, Lower photo: 7 mm field of view.
These crystals are on phosphosiderite, which is underlain by rockbridgeite.
UNKNOWN - with yel. Parsonsite    Ruggles Mine, Grafton, NH    Catalog # 41.8.4-1 1
Top: 0.5 mm spray. Bottom: 0.8 mm cluster of crystals.
The Future of the Foster Micromount Collection

Historically, a very important collection

However, the majority of the specimens are quite pedestrian. About 5% are most remarkable for species or locality occurrence.

What repository is willing to take on a collection that requires a microscope to appreciate?

Philip Foster a candidate of Micromounters Hall of Fame (Old Timers)?