



**Friends of Mineralogy - Colorado Chapter
Newsletter No. 6, November, 1992**

November Meeting: 7:30 p.m., Thursday, Nov. 12, 1992
Denver Museum of Natural History
VIP Conference Room (at rear of T-Rex Cafe)

*(enter the museum through the staff door,
to the left of the main entrance on the
north side, facing the parking lot)*

PROGRAM

Secondary Mineral Deposition at Sterling Hill, New Jersey

by Earl R. Verbeek and Marilyn A. Grout

Earl Verbeek and Marilyn Grout are structural geologists with the U.S. Geological Survey; Earl is a longtime member of the Colorado FM Chapter. For the past several years they have been studying the minerals and geology of this unique and world-famous deposit. Franklin (formerly Franklin Furnace) and Sterling Hill form two adjacent and unusual zinc-manganese ore deposits. In past years, the Franklin mine (shut down in the 1950's) was the best known as a source of franklinite, willemite, zincite, and other minerals. During the past decade, the Sterling Hill mine permanently ceased operation as an active underground mine and was sold to Richard and Robert Hauck, to be reopened as a museum, historical site, and location for scientific research and recovery of mineral specimens. Many rare and unique minerals have been and continue to be discovered at Sterling Hill, and the mine is now the center of an active community of collectors and researchers. Earl and Marilyn have spent many weeks underground at the Sterling Hill mine, mapping and examining the deposit. In this month's program, they will share some of their knowledge and insights into the nature of this remarkable mineral locality, hopefully to include some of the stories, now in the process of becoming legend, of the many new mineral finds that have been made in the face of a continual battle against a rising tide of groundwater that is slowly taking back what man has explored here in the depths of the earth. An abstract of Earl and Marilyn's talk follows on the next page.

* * * * *

*FMCC 1992 officers: Pete Modreski, president
Roger Bennett, vice-president
Eugene Foord, director
Ed Raines, director*

*Carol Smith, secretary
Eunice York, treasurer
Glen Johnson, director*

Mailing address: FMCC, P.O. Box 150401, Lakewood, CO 80215-0401

Secondary Mineral Deposition at Sterling Hill, New Jersey

Earl R. Verbeek and Marilyn A. Grout

U.S. Geological Survey, Denver

The Franklin and Sterling Hill Zn-Fe-Mn orebodies in northern New Jersey were metamorphosed to upper amphibolite facies nearly one billion years ago. The chemically complex ores and enclosing marble country rock have been a source of endless fascination to mineralogists, geochemists, and mineral collectors for more than 180 years. By the turn of the century the number of papers published on these deposits stood at nearly two hundred, and the total is now more than eight hundred. More than 340 mineral species, most of them secondary species present in small amount, have been described from these deposits. In recent decades Sterling Hill has become most well known for its bewildering array of arsenate minerals, which now number more than four dozen.

Most studies of Franklin-Sterling Hill minerals have been carried out on hand samples removed from their geologic context. In consequence, published information on the depositional environment of many secondary species often is limited to such general statements as "occurs on slip surfaces in ore". Opportunity for extended study of mineral assemblages *in situ* first became possible in June 1989, shortly after Richard and Robert Hauck purchased the Sterling Hill mine at a tax sale and reopened the adit. Since then, nearly 1,000 faults have been studied in the mine in an attempt to decipher the complex post-metamorphic deformation history, with emphasis on the structural environment of some of the more exotic and scientifically important secondary mineral species.

The results have confirmed something long suspected, that many mineral species occur in highly restricted assemblages occupying small volumes of rock. Entire mineral assemblages within single fractures commonly change *in toto* within distances of 1-2 cm as the fracture passes from one rock type into another; the change from secondary willemite-zincite-sphalerite in ore to copper sulfides in marble is but one example. Chemical components of species precipitated within lenticular vugs along faults commonly were derived from the immediate wall rock rather than having been introduced with the hydrothermal fluid from an external source. Sterling Hill today preserves a fine record of hydrothermal mineral deposition within an evolving, rock-dominated system.

Recap of past meetings - At the September FM meeting, we had a most interesting session on appraising the value of mineral specimens. Everyone, including the panel of three "experts", participated in judging the value of a suite of sample specimens; a complete report tabulating the results will be included in a future newsletter.

In October, Bryan Lees gave a memorable slide show and talk about his work reopening and mining rhodochrosite at the Sweet Home mine, Alma, Colorado. The program included a video filmed at the mine by David Basinger of the Denver Museum of Natural History, and a special stereo slide presentation of photos taken in the mine by Chauncey Walden. *Thanks to Ray and Eloise Berry for volunteering to bring refreshments to the October meeting.*

Welcome to new members - Mark Coffey, of Boulder, Colorado, and William Ross Moore of Lake Jackson, Texas.

Membership list - A new membership roster for 1992 is enclosed with this newsletter.

Election - A ballot for election of 1993 FMCC officers, as prepared by the nominating committee (Dan Kile, Jack Murphy, and Marge Bachman) is enclosed with this newsletter. Please mail the ballot, or return it in person at the November meeting. Ballots will be counted and results announced at that meeting, Nov. 12.

Dues - are payable at any time for 1993. Send your check for \$13.00 to our P.O. Box address, or give it in person to treasurer Eunice York at the November meeting.

Denver Show - This year's 25th anniversary show had many unusually fine exhibits, plus dealers, lectures, and everything else; most of us think it was the best show yet. Trophies and awards for competitive exhibits at the show went to:

Glen & Joan Johnson, Best of Open Division ("Minerals and Stamps")
Al & Sue Liebetrau, Best Restricted Minerals, Unlimited Size (Silver)
Les Presmyk, Best Restricted Cabinet Minerals (Arizona)
Gene Tribbey, Best of Thumbnails
Bill & Cheryl Harrison, Best Restricted Thumbnails (Colorado)
Jim Hurlbut, Best Restricted Micromounts (Colorado)
Dave Weller, Best of Cabochons
Keith Sheel, Best of Faceted Stones
Ed Raines, Best Educational (Aspen silver)
Steve Jorgensen, Best of Field Collected Fossils, Specialized (Didymoceras)
Mineralogical Society of Cleveland, Best Miniature Minerals, Society
Littleton Gem & Mineral Club Cabbers, Best of Cabochons, Society
Larry and Flo Kammerzell, Best Novice Exhibit
Will Harrison, Best Junior Exhibit
Les Presmyk, Prospector's Trophy (hematite, Quartzite, Arizona)
Steve Jorgensen, Best Fossil Trophy
Ralph Clark, Richard Pearl Trophy (best single specimen; kammererite)
Glen & Joan Johnson, Shorty Withers Trophy (best overall exhibit)
Al & Sue Liebetrau (Best of Species, Thumbnail and Miniature Silver)
Keith Proctor (Best Small Cabinet Silver)
James & Dawn Minette (Best Colorado Silver)
Eldon Hunewell (Best Lapidary Silver)

At the special auction at the Saturday evening program, the Houston Museum of Natural Science purchased the Tsumeb malachite after azurite specimen donated by John Sinkankas for benefit of Rocks and Minerals, with a winning bid of \$1400. A great many people from all the area mineral clubs helped make it what it was; we look forward to an even bigger and better show next year, if everyone pitches in to help. FM's own special thanks go to those who helped at our Mineral Identification booth: Howard Bachman, Isabelle Brownfield, Bill Chirnside, Eugene Foord, Leonard Himes, Pete Modreski, Barbara Muntyan, Ed Raines, and Sam Rosenblum; plus "guest experts" Jean DeMouthe, Susan Ericksson, and Paul Pohwat.

Mount Antero book - FM and the Colorado School of Mines are in the process of signing a final version of the contract for publication of Mark Jacobson's book on Mount Antero.

Future events:

Nov. 14-15, 1992 - New Mexico Mineral Symposium, Socorro, NM
Jan. 14, 1993 - January FM meeting
Mar. 11, 1993 - March FM meeting
April 8, 1993 - April FM meeting
May 13, 1993 - May FM meeting (annual auction)
Sep. 9, 1993 - September FM meeting
Sep. 16-19, 1993 - Denver Gem and Mineral Show/American Federation Show
Oct. 14, 1993 - October FM meeting
Nov. 11, 1993 - November FM meeting