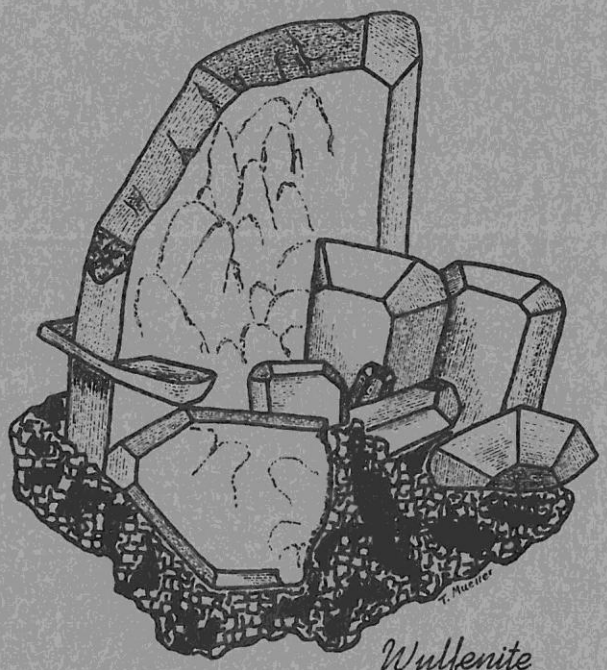
4th annual

NEW MEXICO MINERAL SYMPOSIUM

November 12 & 13, 1983



Wulfenite
DENVER SHAFT
GRANT COUNTY, NEW MEXICO

NMIMT Campus, Socorro, New Mexico

Welcome to the

THE FOURTH ANNUAL

NEW MEXICO MINERAL SYMPOSIUM

November 12 and 13, 1983

Weir Hall, Room 120
New Mexico Institute of Mining and Technology
Socorro, New Mexico

sponsored by
New Mexico Bureau of Mines and Mineral Resources
New Mexico Tech Mineralogical Society
Albuquerque Gem and Mineral Club
New Mexico Museum of Natural History
University of New Mexico, Department of Geology

The purpose of the New Mexico Mineral Symposium is to bring together for an exchange of ideas both professionals and amateurs interested in mineralogy. The sponsors hope that the Fourth New Mexico Mineral Symposium will give both groups a forum to present their cumulative knowledge of mineral occurrences in the state. **In addition to the formal papers, informal discussions among mineralogists, geologists, and hobbyists should benefit all.**

SCHEDULE

Saturday, November 12

8:00	Registration and coffee and donuts
9:15	Welcoming remarks
9:30	Some mineral localities in the Black Range and vicinity, south-central New Mexico - Alan Heyl
10:00	Geology of the Pedernal Hills, Torrance County, New Mexico - Jeremy Setter
10:30	Coffee break
11:00	An overview of the mineralogy of Bisbee, Arizona - Richard Graeme
11:30	Azurites from the Hanover #2 mine, Grant County, New Mexico - Richard W. Graeme IV and Douglas L. Graeme
12:00	Lunch
1:30	Notes on unusual minerals from the Harding pegmatite - Paul Hlava
2:00	Collecting history of the Hansonburg mining district (Blanchard claims) - Gerry Ostrom
2:30	Break
3:00	Minerals of Point of Rocks: new findings - Ramon S. DeMark
3:30	Small specimen collecting in the Southwest - Les Cubit'
4:00	Microminerals and microscopes: micromineral study and swap
5:00	Sarsaparilla and suds: cash bar at El Matador Lounge, El Camino Motel (#3 on map)
6:30	Dinner at El Camino Restaurant. Dinner Talk "Of Bridal Chambers, Jewelry Shops, and Crystal Caverns - A Glimpse at New Mexico's Mining Camps, Characters, and their Mineral Treasures" Robert W. Eveleth

Sunday, November 13

9:00	Mineralogy of the carbonatites and barite-fluorite-sulfide veins in the eastern Lemitar Mountains, Socorro County, New Mexico - Virginia T. McLemore and Robert M. North
9:30	Data on vug minerals from Point of Rocks, New Mexico - lorenzenite, searlesite, and cancrinite - Pete Modreski
10:00	Coffee break
10:30	Epithermal Silver Mineralization in the Carbonate Creek Area, Kingston, New Mexico - V. M. Canby and R. L. Evatt
11:00	Tailings: open discussion of what's new in minerals in the Southwest
12:00	Lunch
1:00-3:00	Silent auction sponsered by the New Mexico Tech Mineralogical Society

SOME MINERAL LOCALITIES IN THE BLACK RANGE AND VICINITY, SOUTH CENTRAL NEW MEXICO

Allen V. Heyl

U.S. Geological Survey
Federal Center, MS 905, Denver, Colorado. 80225

Many well known mines and mineral localities are in the general region of the Black Range west of Truth or Consequences, New Mexico, and the nearby bedrock areas. The best known locality is Iron Mountain on the west side of the Black Range where Richard Jahns has reported nearly 200 minerals including helvite, danalite, fluorescent fluorite, hypogene willemite, and molybdenian scheelite. About 20 miles to the northwest on top of the range is Nugget Gulch, one of the best localities for 0.5 cm to 5 cm in diameter, banded brown nuggets of cassiterite , in the form of red, yellow, and brown wood tin. Some make beautiful gems when tumbled and polished. North of New Mexico route 52, 1 mile into the Black Range, a-wood gathering road leads northeast into Sheep Canyon where a large wall-forming gold-quartz vein contains some beautiful coarse amethyst suitable for slabbing. Up Turkey Creek and then left up Buster Creek a jeep road leads to the Black Range front. The south fork at the front if followed one-fourth mile will lead to an area along the creek in andesite with many amygdaloidal vugs as much as 5 cm across which contain stilbite and heulandite crystals, some very beautiful.

West of Chloride up Chloride Creek about 2 miles a well maintained cliff road rises to the south. Over the crest the dumps of the U.S. Treasury mine can be seen and driven to with a four-wheel-drive vehicle. At the northwest end of the dump -. across from the old powder house, small flecks of gold can be collected in dark bands of copper and silver minerals in quartz. Twelve miles to the west up Cloride Creek near its source, is the Silver Monument mine, .where the dumps contain beautiful massive bornite, freibergite, and (under the microscope) native silver.

South of the highway to Hillsboro and 2.5 miles east of the town is a passable road down Ready Pay Gulch to the east end of the Percha Creek Box. Here old vanadium mines have good yellow buff crystals of type-locality endlichite, orange vanadinite, wulfenite and descloizite. The Macho district, lies 8 miles southwest of Lake Valley, 13 miles northwest of Nutt and about one-half mile west of the Wallace ranch on the north side of Macho Creek. The main dumps have silver-lead sulfides and sphalerite, but the older dumps across the draw to the northeast have good small crystal crusts of endlichite, vanadinite, wulfenite, descloizite, smithsonite, anglesite, hemimorphite, supergene willemite, and possibly coronadite.

PRECAMBRIAN ROCKS OF THE RATTLESNAKE AND PEDERNAL HILLS, TORRANCE COUNTY, NEW MEXICO

Jeremy R. D. Setter

KRITI Exploration, Inc.
One Memorial City Plaza, 800 Gessner, Suite 790,
Houston, TX 77024

Fabric mapping, petrographic and geochemical studies in the Rattlesnake hills (RH) and Pedernal Hills (PH) have shown that two different tectono-stratigraphic assemblages may be present. The RH comprise an area of scattered exposure of approximately 50 km^2 of medium grade quartzo-feldspathic augen gneisses and subordinate mylonite gneisses, that are consistently foliated SSE with moderate to steep dips. Small sub-vertical aplite veins trend SSE along with the axial planes of en echelon, ptygmatic quartz veins. Originally mapped by Kelley (1972) as schists and granite gneisses, the RH appear to be lithologically distinct from the quartz-muiscovite-staurolite and quartz-muscovitekyanite schists, alkali granites, amphibolites and quartzites, that are foliated parallel to layering ENE, of approximately 300 km^2 extent that for the PH. Also, the minor hematite-malachite-chalcopyrite mineralization, characteristic of portions of the PH, was not found in the RH. However, the RH are assumed contemporaneous to the 1.4 b.y. age of Mukhopadhyay et al.(1975) from the metamorphic rocks of the PH.

Additional tectonic analysis of Precambrian structures shows the presence of shallow ($15\text{-}20^0$) easterly thrust in the northern portion of the PH. The kinematics of this event are currently highly speculative, although field evidence suggests that these shallow thrusts post-date the high angle, north trending thrusts of Laramide age. K-Ar dating in progress on a previously unmapped, fresh, unsheared intrusive body of basalt in the RH gave an age of 848 ± 42 m.y. which helps to further constrain the structural deformational history of the RH-PH Precambrian terrain.

AN OVERVIEW OF THE MINERALOGY OF BISBEE, ARIZONA

by

Richard Graeme

Sharon Steel Corporation
Hanover, New Mexico 88041

Bisbee, Arizona is truly the classic North American mineral locality. During the near century of its operation, literally hundreds of thousands of fine specimens were produced and preserved.

From a relatively simple geologic environment, an impressive array of over 200 distinct species, including 6 new ones were produced. This is intended to be a broad overview of the history, geology and the more notable species that have combined to make the name "Bisbee" synonymous with fine minerals.

AZURITES FROM THE HANOVER #2 MINE, GRANT COUNTY, NEW MEXICO

by

Richard W. Graeme IV
and
Douglas L. Graeme

Hanover, New Mexico

The Hanover number 2 mine in Fierro, Grant County, New Mexico has, as of late, been the source of a great many small, but fine azurite rosettes.

This occurance is very similar in geologic environment to other localities that have produced similar specimens. Unfortunately, little has been done to document the features that allow the development of this form. The purpose of this discussion is to fill this longstanding void.

NOTES ON UNUSUAL MINERALS FROM THE HARDING PEGMATITE

Paul Hlava
Sandia Laboratories Albuquerque, New Mexico

Most people who collect at the Harding pegmatite are familiar with the common minerals and the major ore minerals of the mine. Mixed in with these are small, rare grains of more unusual minerals, such as the bismuth minerals, that most collectors miss or do not recognize.

In this talk, I will comment on how to recognize some of these unusual minerals and I will comment on some features of their chemistry. Minerals included in this talk are native bismuth, bismuthinite, bismutite, bayerite, pucherite*, mottramite*, spessartine, zircon, thorite, and bertrandite.

* New records for the Harding pegmatite.

COLLECTING HISTORY OF THE HANSONBURG MINING DISTRICT (BLANCHARD CLAIMS)

Jerry Ostrom

Enchanted Mesa Minerals
Helen, New Mexico

Since 1881, there has been interest in the mineral possibilities of the Oscura Mountains which are located about 10 miles south of Socorro and about 35 miles east of San Antonio. The Blanchard Mine is located about 9 miles south of Bingham, New Mexico and it is this particular location that is going to be given attention during this presentation. The presentation will be divided into three parts: a brief history of what has been written about the territory, a few anecdotes about collecting at the site, and some slides about how the site looked in the past up to the present time plus some pictures of minerals from the • location. There will be a display of minerals collected by the author from the Blanchard Mine in the Mineral Museum.

MINERALS OF POINT OF ROCKS - NEW FINDINGS

Ramon S. DeMark

3705 General Chenault, NE
Albuquerque, New Mexico

The minerals from Point of Rocks Mesa in eastern Colfax County, New Mexico were first discussed at the 3rd annual New Mexico Minerals Symposium at Socorro in November of 1982. New discoveries at Point of Rocks Mesa in the intervening months since the 3rd symposium have further enhanced the significance of this unique New Mexico mineral location.

The uncommon species villiaumite, serandite, acmite, searlesite, neptunite, and polylithionite which are found at Point of Rocks were discussed during the 3rd symposium. Since that time, the exceedingly rare sulfide niineral rasvumite has been found plus the more prosaic sulfide minerals, galena, spalerite and pyrrhotite. Eudilyte, cancrinite and natrolite have also been identified as occurring in relative abundance.

Additionally, the first New Mexico occurence of the mineral lorenzenite has been established. These minerals plus additional unknown species portend that Point of Rocks Mesa will soon rank as one of the most prolific New Mexico locations for mineral species.

Point of Rocks Mesa is located in Colfax County in T26N R26E and appears on the Point of Rocks 7 1/2' topographic quadrangle. The location is about 24 miles east of Springer, New Mexico and can be easily reached by passenger car. The mesa is on privately owned land and permission to collect must be obtained by stopping at the ranch home of Pete and Faye Gaines which is directly south of the mesa.

COLLECTION OF SMALL MINERAL SPECIMENS

Les Cubit

Socorro, New Mexico 87801

General discussion concerning collection of different size specimens. Advantages and disadvantages of each with emphasis on small specimens. Collector's idiosyncrasies and effects on their colleceions.

Slide projection and discussion involving some of the World's most exotic small minerals which occur in the Southwest United States. Conclusive statements.

"OF BRIDAL CHAMBERS, JEWELRY SHOPS, AND CRYSTAL CAVERNS- A GLIMPSE AT NEW MEXICO'S MINING CAMPS, CHARACTERS, AND THEIR MINERAL TREASURES"

by

Robert W. Eveleth

New Mexico Bureau of Mines and Mineral Resources

Mineral collectors today, whether we be miner, prospector, engineer, geologist, or just plain enthusiast, are actively involved in preserving a small part of our natural history whether we realize it or not. Although collecting has obviously taken the back seat behind the quest for ore, few who have been involved with minerals in one endeavor or another have not been moved to gather a cabinet of natures treasures. Just how long has this phenomena been going on? Perhaps since the first human bent to pick up a sky-blue or dense red stone and wondered from whence it came. Here in the area we currently call New Mexico, diligent research would doubtless reveal the Spanish collected copper minerals from the Santa Rita del Cobre some 200 years ago while documentary evidence currently on hand can take the reader/listener on an armchair journey spanning nearly 150 years to places with exotic names like Santo Domingo de las Calzadas, Mount Chalchiutl, and Pinos Altos as well as the others mentioned above. The journey exposes us to both heroes and villains of the past and reveals a brief glimpse into their daily lives. And whether miner, prospector, promoter, or nomad of the plains, a common thread runs among them; they were mineral collectors all.

MINERALOGY OF THE CARBONATITES AND BARITE-FLUORITE-SULFIDE VEINS IN THE EASTERN LEMITAR MOUNTAINS, SOCORRO COUNTY, NEW MEXICO

Virginia T. McLemore
Robert M. North
New Mexico Bureau of Mines and Mineral Resources
Socorro, N.M, 87801

Paleozoic carbonates (minimum age 449 rn.y. ± 16 mey.) intrude the Precambrian rocks exposed in the eastern Lemitar Mountains, Socorro County. Carbonatites are unique carbonate-rich rocks of apparent magmatic origin and are characterized by a distinct but variable mineralogya chemistry, and associated alteration. The Lemitar carbonatites occur as dikes, stockworks, and veins and display textures, mineralogy, chemistry and wail-rock alteration typical of carbonatite complexes. They contain greater than 50% carbonate minerals and varying amounts of apatite, magnetite, pyroxenee, and other accessory minerals. Despite variations in texture of the Lemitar carbonatites, they can be grouped on the basis of mineralogy and mode of emplacement as: 1) silicocarbonatite dikes; 2) sovite (greater than 90% calcite), ravhaugite (greater than 90% dolomite), and carbonatite veins; 3) ankerite-dolomite carbonatite dikes; and 4) stockwork carbonatites,

Barite-fluorite-sulfide veins occur in the vicinity of the carbonatite dikes and locally occur with some carbonatites. The primary mineralization of the veins is barite, fluorite, galena, sphalerite, quartz, and small amounts of chalcopyrite, pyrite, and calcite. Many of the veins contain silver. Subsequent alteration has produced wulfenite, hemimorphite, cerussite,- hematite, and a small amount of malachite, chrysocolla, and anglesite. Barite-fluorite-galena mineralization is common in central New Mexico and is considered to be Tertiary in age. This mineralization is probably formed by the expulsion of basinal brines along fractures related to the Rio Grande Rift. However, it is possible, that some of the barite mineralization in the Lemitar Mountains is related to the carbonatites and is of Paleozoic age.

The presence of carbonatites in the Lemitar Mountains may also have tectonic significance. Carbonatites are commonly associated with continental rifts or lineaments and the carbonatites in Socorro County support current theories of rifting occurring as early as Precambrian or Paleozoic. Other carbonatites and alkalic rocks in New Mexico and Colorado are similar in composition and age to the Lemitar carbonatites, further supporting Precambrian or early Paleozoic rifting.

DATA ON VUG MINERALS FROM POINT OF ROCKS, NEW MEXICO LORENZENITE, SEARLESITE, AND CANCRINITE

Peter J. Modreski

U.S. Geological Survey
Box 25046, Federal Center, MS 922
Denver, Colorado 80225

Lorenzenite, seariesite, and cancrinite are three of the uncommon minerals that occur as euhedral crystals in the phonolite sill which forms Point of Rocks mesa, Colfax County, N. Mes. These minerals are contained in late-stage gas cavities up to several centimeters in size, which are lined with projecting crystals mainly of alkali feldspar, acmite, and nepheline. The iorenzenite is a niobium-bearing variety, $Na_2(Ti,Nb)_2Si_20_9$ it forms brown, transparent prisms less than 1 mm long. Lorenzenite was previously known from several alkalic massifs in the U.S.S.R., from Norway, and from Narsarsuk, Greenland.

Searlesite, a borosilicate, $NaBSi_20_5(OH)_2$, forms colorless, prismatic to bladed crystals as much as 2 cm long. It is previously known only from boron-containing evaporite beds in California, Nevada, Wyoming, and the U.S.S.R.

Cancrinite occurs in alkalic, silica-poor igneous rocks, often with nepheline and sodalite. At Point of Rocks, it forms cylindrical or tapering hexagonal prisms as much as 2 cm long and 0.5-1 mm thick. Some of these crystals consist of a core of transparent or violet-tinged cancrinite (about 0.15 mm in - diameter) surrounded by a layer of gray, inclusion-filled natrolite about 0.10 mm thick, and covered by an outer layer of colorless, subhedral analcime about 0.02 mm thick. The cancrinite family is a group of hexagonal alkali aluminosilicate minerals, with the general formula $(Na,Ca,K)_{6-9}(Si, A1)_{12}O_{24}[(S0_4),(C0_3), (Cl,0H)_2]_{2-4}*nH_20$, which differ according to the dominant cations present (Na or Ca), anions present (CO_3, SO_4, Cl, or OH), and details of the crystal lattice (space group and number of atoms per unit cell). Point of Rocks cancrinite belongs to the species cancrinite sensu strictu. The formula inferred from microprobe analysis is near $Na_8Al_6Si_6O_{24}(CO_3)_{0.8}(SO4)$; it corresponds to 29-33 mole percent of the sulfatian end-member, vishnevite. The cancrinite is uniaxial (-) with $\varepsilon = 1.494$ and $w = 1.500$.

EPITHERMAL SILVER MINERALIZATION IN THE CARBONATE CREEK AREA, KINGSTON, NEW MEXICO

V. M. Canby and R. L. Evatt

N.M. Institute of Mining and Techology
Socorro, New Mexico 87801

The Kingston district has historically been a producer of base and precious metals, and its enriched lead-zinc-silver deposits have produced phenomenal near-surface oxidized silver ores in the past. The area was extremely active in Tertiary time, typified by an early period of major north-south faulting, followed by intrusion and extrusion of shallow intermediate to acidic porphyritic rocks. Finally, there was regional silicification and minor fracturing followed by ore emplacement.

Mineralization on Carbonate Creek is of a type apparently unique in the area. Argentite (acanthite) float, reportedly in masses up to 200 pounds, was found in Silver Gulch in the early 1880's. Although 80,000 ounces were produced from float alone, extensive developement failed to reveal the source of the large masses.

The source area of the argentite is in highly altered limestones adjacent to an andesite body, which is also altered in places. Work by the authors using geochemical and other methods has revealed the presence of argentite unevenly distributed within a "replacement" deposit in several members of the Lake Valley limestone. This bed consists almost entirely of finegrined silica and varying amounts of argentite, almost to the exclusion other minerals. Minor native gold with high silver content fills cavities and seems to be the last mineral deposited. The deposit is interesting in, that it appears to be the top of an epithermal system.