

Fiends of Mineralogy

Colorado Chapter Newsletter

January, 1991

President: Dan Kile: home phone 341-0135

Vice President: Pete Modreski

Treasurer: Jim Hurlbut

Secretary: Carol Smith

Director:

Gene Foord

Director:

Ed Raines

Director:

Bill Smith

January Program: 7:30 p.m., January 10, 1991 - West Auditorium, Denver Museum of Natural History

Ed Raines, a geologist with Analytica, Inc., will present a program titled "Mines and Minerals of the Clear Creek County Mining Districts". This includes Idaho Springs, Lawson, Dumont, Fall River, Silver Plume, Georgetown, Freeland, Lamartine, and Chicago Creek. Ed's interests in mining history and photography promise to make this an outstanding program.

Notes From the President:

1991 DUES ARE DUE !!! Your promptness will be vastly appreciated by Jim Hurlbut, our treasurer, who upon receiving your dues in a timely manner will be able to cross your name off his @\$*! list and add it to the FMCC membership list for one more year. Besides, you get to receive five more editions of this aggravating newsletter! Please send your dues (\$10.00 per year for both National FM and the Colorado Chapter) to:

Jim Hurlbut/FMCC
c/o Denver Museum of Natural History
Geology Department
City Park
Denver, Colorado 80205

If you pay in person, please use a personal check (as opposed to cash) - it ensures that proper credit is given.

Enclosed in this newsletter is the infamous MEMBERSHIP SURVEY form we have been promising. The primary intent of this survey is to give FMCC members more information about your interests, specialties, and background, and it is hoped this will facilitate and encourage communication among members. It is important that everyone fill this form out and return it to Marty Zinn; this information will then be compiled and included in a future newsletter (it will not be included in newsletters being sent to other rock clubs). There is a space to check off if you prefer not to have this information published - but please fill out the form and return it to Marty anyway, especially if you feel that there are any areas in which you may wish to contribute; it will also give us a chance to assess your opinion of FMCC activities.

I read in a recent Rocks and Minerals article (Vol. 65, No. 6, 1990) that what has to have been one of the most incredible gem morganite crystals ever found in North America was cut into gemstones. Found this past year in the Bennett Quarry in Buckfield, Maine, this specimen was

named the "Rose of Maine", and described as a 9" x 12" morganite centered within a cluster of milky quartz, and which "glowed like a hot coal" when backlit with a flashlight while still in the pocket. I find it a sad commentary that contemporary society places a greater value on jewelry than on an irreplaceable mineral, and that economics dictate that significant finds such as this be cut into gemstones in order to yield maximum profit. It would be nice if the public held natural objects in as high an esteem as they do some of the godawful artwork that is regularly auctioned for literally hundreds of thousands of dollars...

Progress Report - Update to the 100-Year Record:

Estimated completion date based on current (past six months) progress is June, 1993. Actually, this may be somewhat optimistic, since this date is based on species completed up to the point of review - it does not account for the time it takes for review or for author's revisions, which may be substantial. Nevertheless, the date for completion is still predicted to be in this century!

Jack Murphy and Gene Foord both turned in a substantial number of species for review. Appendices for the update have been designated at the last author's meeting as follows: Appendix A = significant Colorado mineral localities; Appendix B = analytical data; Appendix C = obsolete mineral terms; Appendix D = glossary (?).

Current Rumors and Events:

The Denver Gem and Mineral Guild's annual show will be held January 17 - 20 at Lakeside Mall. The Denver Show Poster for 1991, featuring quartz, is expected to be for sale at this show for \$4.00.

The Tucson Gem and Mineral Show will be February 13 - 17 at the Tucson Convention Center. The featured mineral is azurite. The Arizona Mineral and Fossil Show will be February 8 - 16 at the Executive inn. If you have any money left at the end of these shows, see me...

For those incurable rare species collectors: Membership to The International Association of Collectors of Slag Minerals is \$5.00 per year, and includes a quarterly newsletter. Apply to D.G. Minatidis, 70 Queen Sophia Ave., 185-32 Piraeus, Greece.

Recent exploration of Inner Mongolia (China) revealed 196 sites with gem deposits of commercial significance! These comprise 42 gem types, including rock crystal, topaz, malachite, and agate. [from Gems and Gemology, Fall, 1990]

For your information ... the new number for the Israel Precious Stones and Diamond Exchange is (972-3) 5751177-83. Please make a note in your directory.

The following Greater Denver Area Gem and Mineral Council officers were elected for 1991: President - Glen Johnson; Vice President - Sandra Walden; Secretary - Betty Duvall; Treasurer - Gloria Charette.

The target date for completion of the Clear Creek Crystal Cave exhibit at the Geology Museum, Colorado School of Mines, is May 1, 1991.

Sequel to the November Program...

Along the lines of the talk on collecting policies on public lands given by Jim Rhett at our November meeting, a talk on a similar topic was presented at the New Mexico Mineral Symposium (November 10 - 11) by Bill Jonas, formerly of the U.S. Forest Service. A 23-page written version of Bill's talk was included in the abstracts volume of the symposium (pp. 21-43); the written text is a particularly good summary of public laws and policies relating to mining, and commercial or recreational collecting on public lands. Dan Kile and Pete Modreski have copies of the symposium abstracts; if interested, you may order a copy (for about \$3.00) from the New Mexico Bureau of Mines and Mineral Resources, Socorro, New Mexico 87801. The following excerpt from pp. 33 - 36 of Bill Jonas' paper contains material that is most relevant to questions of small-scale commercial or recreational collecting:

Regulations governing the commercial appropriation of minerals on BLM and USFS lands are essentially the same except for regulations concerning surface protection. This similarity exists because the BLM has authority over the final disposition of virtually all minerals on USFS lands except for salable minerals and some aspects of leasable minerals. The BLM is also the official record keeper for actions taken on USFS lands. This relationship came about because most USFS lands are withdrawn public lands and the federal government did not want to create a duplication of effort.

BLM regulations allow "casual use" activities on all lands open to location without prior notification or approval (43 CFR 3809.1-2). "Casual use" is defined as activities which result in only "...negligible disturbances..." and "...do not involve the use of mechanized earth moving equipment or explosives or do not involve the use of motorized vehicles in areas designated as closed to off-road vehicles..." (43 CFR 3809.0-5(b)). BLM also allows locatable-mineral activities that impact less than five acres per year to proceed on BLM lands by simply filing a notice with the BLM 15 days before commencing operations (43 CFR 3809.13 and 3809.1-4(b)). An operator may commence activities in a timely manner under a notice without securing prior approval from the BLM. A notice also constitutes authorization to operate vehicles in areas closed to off-road vehicles under 43 CFR 8340. Higher levels of activities and noncasual activities in designated environmentally sensitive areas require the filing and prior approval of a plan (3809.1-4(b)).

In contrast to the BLM's regulations, the USFS regulations tend to be more strict. USFS regulations state that the requirement to submit a notice of intent or plan of operations for locatable mineral activities shall not apply:

- (i) To operations which will be limited to the use of vehicles on existing public roads or roads used or maintained for National Forest purposes,
 - (ii) to individuals desiring to search for and occasionally remove small mineral samples or specimens,
 - (iii) to prospecting and sampling which will not cause significant surface resource disturbance and will not involve the removal of more than a reasonable amount of mineral deposit for analysis and study,
 - (iv) to marking and monumenting a mining claim...
 - (v) to subsurface operations which will not cause significant surface resource disturbance...[and to]..... operations which will not involve the use of mechanized earthmoving equipment such as bulldozers or backhoes and will not involve the cutting of trees.
- (36 CFR 228.4(a)(1) and (2))

No commercial activity whatsoever may take place in a National Park (36 CFR 9) or Wilderness (43 CFR 8560.1-2(a), 8560.4-6 and 36 CFR 293.14) in the pursuit of mineral resources unless one has a "grandfathered" or vested right prior to the park's establishment. (A few of these areas may still be open to leasing or location due to specific wording in their designating legislation.) Any action to remove minerals with commercial intent from these or other withdrawn areas will be pursued as trespass.

The nonadministrative removal of any resources whatsoever is prohibited from taking place in National Parks. This prohibition is outlined in 36 CFR 2.1(a) which states:

(a) Except as otherwise provided in this chapter, the following is prohibited:

- (1) Possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state...
- (iii) Nonfossilized and fossilized paleontological specimens...
- (iv) A mineral resource or cave formation or the parts thereof.

The authority for this regulation is derived from the wording in 16 USC 1 that states:

The service...shall promote and regulate the use...by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

As evidence of the restrictions on parklands, recent proposals to increase the acreage of more than 200 National Parks and the formation of more than 100 new parks, drew sharp criticism from June Culp Zeitner of the Lapidary Journal staff (see "Is the Rock Collector an Endangered Species?" July 1988 edition of the Lapidary Journal).

Although there are no current regulations for USFS or BLM Wilderness Areas that prohibit the noncommercial removal of mineral specimens or "common" fossils, there are also no regulations for USFS lands that do provide authorization for their removal. Also of concern to me is that the Wilderness legislation incorporates wording that is very similar to the above-referenced National Park legislation. The 1964 Wilderness Act (78 Stat. 890, 16 USC 1131) states:

...these shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness...

The only security the noncommercial-collecting community may gain in respect to access to these lands will be through convincing the land management agencies that mineral collecting is a "use and enjoyment of the American people" that will leave the lands "unimpaired for future use and enjoyment as wilderness."

Although there are no specific authorities identifying mineral collecting as a legal use of USFS Wilderness Areas, or for any USFS lands as a whole, the Federal Magistrate in Alamo-gordo recently ruled that minor excavations into vugs of exposed country rock and surrounding soil in the Sierra Blanca Wilderness Area to noncommercially collect smoky quartz was not a violation of USFS regulations concerning the removal or damage of natural features under 36 CFR 261.9 (Mark Wilson, personal communication, 1990). Thus it is implicit, at least from that Federal Judge's opinion, that the noncommercial collection of mineral specimens is legal in USFS Wilderness Areas. I was told in recent conversations with a Smokey the Bear Ranger District employee that one could only pick up specimens exposed on the surface in the Sierra Blanca Wilderness, but any excavations, whatsoever, were prohibited. My experience indicates that the USFS has failed to develop a national policy of any kind concerning noncommercial collecting. The BLM is guilty of the same lack of consistency in policy for Wilderness Areas.

The BLM, however, has made efforts to clarify this issue of noncommercial mineral and fossil collecting on BLM-managed lands. Currently, regulations in 43 CFR 8365.1-5 state:

(a) On all public lands, unless otherwise authorized, no person shall:

(1)...

(2) Willfully deface, remove or destroy plants or their parts, soil, rocks, or minerals, or cave resources, except as permitted under paragraph (b) or (c) of this paragraph; or

(3) Use on the public lands explosive, motorized or mechanical devices, except metal detectors, to aid in the collection of specimens permitted under paragraph (b) or (c) of this paragraph.

(b) Except on developed recreation sites and areas, or where otherwise prohibited or posted, it is permissible to collect from public lands reasonable amounts of the following for noncommercial purposes:

(1)...

(2) Nonrenewable resources such as rocks, Mineral specimens, common invertebrate fossils and semiprecious gemstones;

(3) Petrified wood as provided under Subpart 3622 of this title;

(4) Mineral materials as provided under Subpart 3621 of this title...

(5)...

(c) The collection of renewable or nonrenewable resources from the public lands for sale or barter to commercial dealers may be done only after obtaining a contract or permit from an authorized officer in accordance with Part 3610 or 5400 of this title.

These shall be administered for the use and enjoyment of the Amer-
can people in such a manner as will leave them unimpaired for future
enjoyment as wilderness.

I believe that these regulations also apply to BLM Wilderness

Areas because 43 CFR 8365.1-5 states that the "...rules in this subsection shall apply to the use and occupancy of all public lands under the jurisdiction of the Bureau of Land Management."

These regulations were finalized on August 10, 1983 and appear in the Recreation Management Group of Title 43 of the CFR. It should be recognized that 43 CFR 8365.1-5(c) does not prohibit the sale or barter of a nominal amount of specimens to other noncommercial collectors or to the public at large.

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 - (2) Willfully detect, remove or destroy plants or their parts, soil, rocks, or minerals, or cave resources, except as permitted under paragraph (b) or (c) of this paragraph; or
 - (3) Use on the public lands explosive, motorized or mechanical devices, except metal detectors, to aid in the collection of specimens permitted under paragraph (b) or (c) of this paragraph.
- (b) Except on developed recreation sites and areas, or where otherwise prohibited or posted, it is permissible to collect from public lands reasonable amounts of the following for noncommercial purposes:
 - (1) ...
 - (2) Nonrenewable resources such as rocks, mineral specimens, common invertebrate fossils and semiprecious gemstones;
 - (3) Partied wood as provided under Subpart 3822 of this title;
 - (4) Mineral materials as provided under Subpart 3821 of this title.
- (c) The collection of renewable or nonrenewable resources from the public lands for sale or barter to commercial dealers may be done only after obtaining a contract or permit from an authorized officer in accordance with Part 3810 or 3400 of this title.

The Great Surveys: Part I The Hayden Survey

Dan Kile

Prior to the inception of the U.S. Geological Survey, the United States government funded four independent surveys to explore the largely unknown American west. Known as the "Great Surveys", these teams of scientists laid the foundation for scientific excellence in the fields of geology and topography, as well as agriculture, paleontology and entomology; their work became a cornerstone for the U.S. Geological Survey that was organized in 1879.

This short essay is intended to give a perspective of the vast body of written documentation that emanated from these surveys - a record that left a legacy that endures today. An historical perspective is not intended, as no effort could equal that of R.A. Bartlett's book titled "Great Surveys of the American West" - which interested readers are strongly encouraged to obtain. Regrettably, usable editions of these early surveys are becoming increasingly scarce in spite of their great historical significance; many are relegated to unkept storage areas that are not conducive to preservation, or worse, to public landfills by unknowledgable estate executors.

The four surveys were organized in the mid 1800s under various government agencies, including the U.S. Army and the General Land Office; they were named after the head of the survey, i.e., the Hayden, Wheeler, Powell, and King Surveys. While Powell's survey was principally restricted to the Colorado River and the King survey was limited to an approximately 100-mile-wide area extending northward from the 100th meridian, the Hayden and Wheeler surveys covered extensive areas of western America. The Hayden Survey, discussed in this first of several parts (which will be written as time permits) included Nebraska, Kansas, Montana, Wyoming, and Colorado. This survey provided some of the earliest, and certainly the most comprehensive, work on the state of Colorado.

Publications were in many formats: bulletins and monographs that cover a specific topic; annual reports that relate the many different subjects surveyed during the preceding field season; maps which document the topography and geology of the region; and other "miscellaneous publications" as needed to convey the vast body of knowledge assimilated by these scientists. Of these publications, the annual reports were the most comprehensive in nature, and the atlases were of equal importance in facilitating exploitation of the vast resources of the undeveloped western U.S.

Annual reports of the Hayden Survey were published during the years 1867 - 1878. The first three were rather austere - being limited in size by scant funds from congress. As work progressed, however, along with Hayden's lobbying skills and increasing reputation, greater funding permitted more extensive annual reports; the scope and quality of these works was enhanced by Hayden's uncanny ability to attract eminent scientists to his team. Such notable writers as E. Cope, L. Lesquereux, C. Thomas, F. Endlich, A. Wilson, F. Rhoda, H. Gannett, W. Jackson, and S. Scudder, comprised a few of the scientists of the Hayden Survey; these topographers, geologists, entomologists, botanists, photographers, and paleontologists documented all facets of the western frontier with a thoroughness seldom equaled today. The ruins of southwestern Colorado, Yellowstone, and the Mount of the Holy Cross were first documented by these intrepid pioneers. A partial listing of the contents of the annual reports is given below, in hopes of imparting a sense of the scope, importance, and historical significance left by these scientists.

The First Annual Reports of 1867 and 1868 gave a comprehensive narrative of the geology, agriculture, and ethnology of Nebraska and Wyoming, respectively. The Third Annual Report gives one of the earliest accounts of Colorado and New Mexico, ranging from the red rocks and Table Mountains near Denver to the southwestern part of Colorado. A chapter in this edition, written by Persifor Frazier, documents the early mines and newly-discovered minerals of

Colorado, with an abbreviated list of the important minerals and their localities, and a short essay on the major mining districts in the state known at that early time. Agriculture and stock raising are also given consideration.

The Fourth Annual Report (1870) ranged in content from the geology of the Missouri Valley, by F.V. Hayden, to agriculture, including "A List and Descriptions of New Species of Orthoptera, with remarks on the *Claoptenus Spretus*, or "Hateful Grasshopper", written by Cyril Thomas. The Fifth Annual Report (1871) was primarily concerned with Montana, and included F.V. Hayden's account of Yellowstone National Park, as well as other chapters on agricultural resources, paleontology, zoology (including a list of butterflies collected by C. Carrington and W. Logan), botany, and meteorology. The Sixth Annual Report (1872) covered portions of Montana, Wyoming, Idaho, and Utah. Substantial coverage is again given the Yellowstone region, including numerous detailed line drawings of the geographical features. As usual, extensive reports on the regional flora and fauna (such as "Description of new parasitic worms...in Birds", by A. Packard), as well as paleontology and geology, are given.

The next four years, 1873 - 1876, encompassing the seventh through the tenth annual reports, were primarily devoted to Colorado. These comprehensive volumes carefully documented the geology, mining industry, mineralogy, paleontology, zoology, geography, and topography of the the Colorado Territory. The "Catalogue of the Minerals of Colorado Territory" by F.M. Endlich, in the Seventh Annual Report (1873), lists such early-day discoveries as "amazon stone - Elk Creek"; "tourmaline - on Guy Hill"; "vesuvianite - in large crystals of simple combination on Mount Italia"; "rhodochrosite - Sweet Home mine...in very beautiful crystals"; "smoky quartz - large crystals on the Upper Platte, and on Pike's Peak". Descriptions of Colorado's early mines are also given in this volume, including Tarryall Creek, Silver Heels Mountain, Fair Play, Oro City, and the Elk Mountain district. While superseded by later works, these early reports nevertheless give a timeless historical perspective of the development of the state of Colorado.

The Eighth Annual Report (1874) was a continuation of the efforts of the prior field season, and included reports on the geography and geology of the Elk Mountains, in addition to paleontology, zoology, and topographic reports pertaining to Colorado. The Ninth Annual Report (1875) gave extensive geological (including Endlich's Catalogue of Minerals") and topographic coverage to the San Juan region (including the first account of the Mesa Verde ruins) and the southeastern area of Colorado. An interesting chapter of this report is the "History of the American Bison", written by J.A. Allen. Description, habits, former geographical distribution, "the chase of the buffalo", extermination (including "destruction and reckless waste of buffalo") from vast regions, and present distribution are discussed in great detail. Also recounted in this edition is a lengthy report of the "Rocky Mountain Locust and other Insects Now Injuring or Likely to Injure Field and Garden Crops in the Western States and Territories", with numerous line drawings of the legions of pests, by A.S. Packard! The Tenth Annual Report (1876) gives the usual geological, topographical, paleontological and zoological accounts of the previous season's field observations, in addition to extensive documentation of archaeological findings in southwestern Colorado, written by W.H. Holmes and W.H. Jackson, as well as an ethnological report on the Indians inhabiting Nevada, California, and Arizona, written by W.J. Hoffman.

Perhaps the zenith of the Hayden Survey was the publication of Geological and Geographical Survey of Colorado and Portions of Adjacent Territory, by F.V. Hayden. Published in 1877 and reprinted in 1881, this atlas, more than any other map of that era, facilitated development of the Colorado Territory, and represented an accuracy of mapmaking and surveying that was unprecedented. Sheets I - IV are triangulation, drainage, land classification, and geologic maps of a portion of Colorado; sheets V - XVI are topographic and geologic maps of parts of Colorado; sheets XVII and XX contain geologic sections across the State; and sheets XIX and XX are beautiful tinted panoramic views (detailed line drawings) of the Pike's Peak group, Sawatch Range, West Elk Mountains, Twin Lakes, Mesa Verde, San Juan Mountains (showing Wilson and Rhoda), and La Plata Mountains (including bighorn sheep!).

The Eleventh Annual Report (1877) and Twelfth Annual Report (1878) represented the

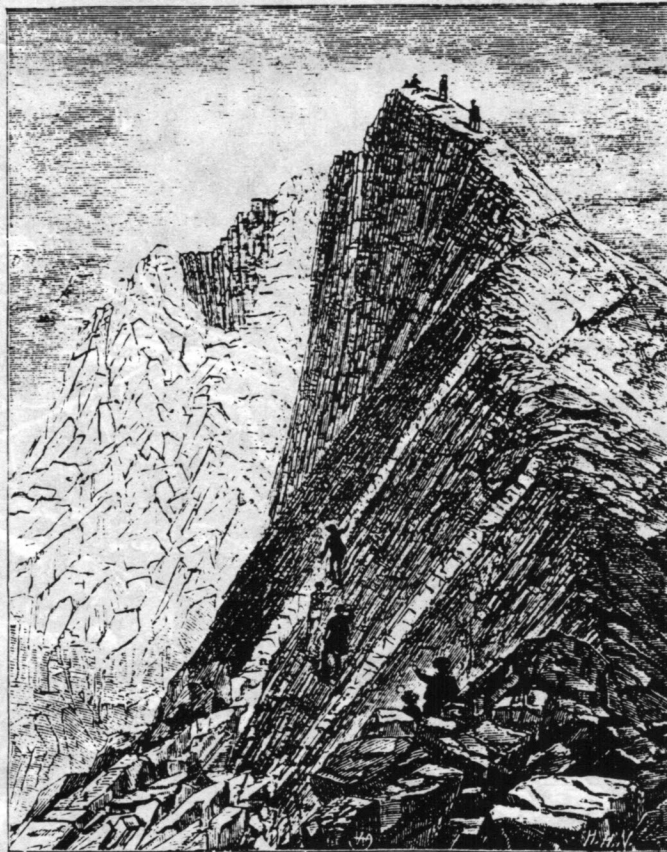
culmination of the Hayden Survey, soon to be superseded by the U.S. Geological Survey in 1879, (directed by Clarence King, who was in charge of one of the four "great surveys" that preceded the U.S.G.S.). These reports focused on Idaho and Wyoming, and expanded on earlier field work by members of the Hayden Survey.

Hopefully these few paragraphs will convey at least some sense of historical importance of the Hayden Survey, as well as the incredible range of scientific disciplines studied by the early explorers under primitive and arduous conditions. This survey, and the other three of the "Great Surveys", did indeed set the standards by which their successors were measured.

Selected References:

1. Bartlett, R.A. (1962). Great Surveys of the American West; University of Oklahoma Press, Norman, 410 pp.
2. Schmeckebier, L.F. (1904). Catalogue and Index of the Publications of the Hayden, King, Powell, and Wheeler Surveys; U.S. Geological Survey Bulletin 222, Government Printing Office, Washington, 208 pp.
3. Chambers, Frank (1988). Hayden and his Men; Lasting Impressions, Dillsburg, PA, 108 pp.

Fig. 13.



Italian Mountain.

HAYDEN - 1874



MOUNTAIN OF THE HOLY CROSS, COLORADO.

HAYDEN - 1876