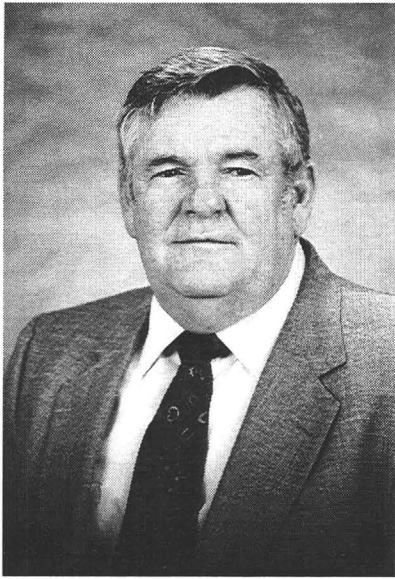




ARIZONA DEPARTMENT OF MINES & MINERAL RESOURCES

Annual Report 1994 - 95

LEADERSHIP



H. Mason Coggin was appointed director of ADMMR in August of 1993. Coggin is an Arizona native who worked his way through college as a mucker and miner in Bisbee. He received a B.S. in Mining Engineering from the University of Arizona in 1961.

He was senior vice president of mining for Coe and Van Loo Consulting Engineers from 1970 until 1981 when he started his own consulting firm.

Coggin is committed to the wise development of Arizona natural resources for the benefit and enrichment of mankind.

DEPARTMENT OF MINES AND MINERAL RESOURCES



56th ANNUAL
REPORT
FY1994/1995



STATE OF
ARIZONA

Arizona Department of Mines and Mineral Resources
1502 West Washington
Phoenix, Arizona 85007



STATE OF ARIZONA
DEPARTMENT OF MINES AND MINERAL RESOURCES
ARIZONA MINING AND MINERAL MUSEUM

Phone (602) 255-3795 Toll-free-in-Arizona 1-800-446-4259

Fax (602) 255-3777

August 13, 1995

Fife Symington, Governor
STATE OF ARIZONA
1700 West Washington
Phoenix, Arizona 85007

Dear Governor Symington:

The Annual Report of the Arizona Department of Mines and Mineral Resources for the Fiscal Year of 1994/95 is herein submitted in compliance with A.R.S. Section 27-106.

The Department of Mines and Mineral Resources has the statutory directive to promote the development of the state's mineral resources through technical and educational processes, to all interested parties for the purpose of improving the economy of Arizona. The Department accomplishes this directive through field contacts, public seminars, producing publications, holding conferences, displaying minerals and providing mining, metallurgical, marketing and other technical information and assistance to prospectors, operators of small mines, the mineral industry, other governmental agencies and others interested in Arizona's mineral resources. The Department's desire is to improve Arizona's economy through the promotion and wise development of its mineral resources.

The Department maintains a mineral museum that acts as the state's official repository for collecting, cataloging and displaying various ores, gemstone, lapidary material and other valuable mineral specimens. It is also used to provide school children with a general understanding of society's need for minerals and mineral products.

The present staff of eight FTE's, five part-time employees (funded by profits from Museum Gift Shop), and a dedicated group of volunteers provides quality service to its customers by focusing on their needs and the needs of the mining industry. In this effort the Department has designed and implemented a Strategic Plan and is committed to a Program of Excellence in Government.

Arizona leads the nation in the production of nonfuel minerals. The value of this production in Arizona in calendar year 1994 was in excess of 3.32 billion dollars an increase of 19.7% over 1993. Copper was the number one product, representing 64% of the U.S. production and 84.8% of Arizona's nonfuel mineral production. Revenues to the state and its legal subdivisions were over

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150 million dollars in direct taxes. The industry employed over 15,000 people directly and as many as 35,000 indirectly. Arizona copper mine reserves increased in 1994 despite a large amount of mining. Several mining companies announced plans to start new Arizona mines or expand the production capabilities of others.

The rapid rise of environmental awareness, inchoate environmental legislation, regulation and administration, has created a jungle that must be adjusted to allow mining, logging and agriculture to provide the commodities that sustain civilization. Mining is erroneously perceived as environmentally damaging. These misconceptions can be remedied through public instruction. The Department strives to inform the general public of mining's important contribution to society. In part the programs provided by the Department through its Mineral Resources Information Center and The Arizona Mining and Mineral Museum strive to inform the general public of mining's important contribution to society. Through this program Arizona school teachers and the general public are provided with text and materials to illustrate that rocks and minerals have functional values as well as aesthetic beauty. They also learn that mining provides the building stones for civilization.

This program is greatly facilitated by the position of curator of education that was approved by the legislature for FY 1994/95. The new position will continue to develop minerals education programs in cooperation with the Arizona Mining Association, the Museum Educators of Central Arizona (MECA), and the Department of Education.

Student visitations to the museum's education classes have increased from approximately 5,400 in 1988 to over 15,000 in Fiscal Year 94/95 as the result of expanded publicity and improved programs.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'H. Mason Coggin', written in a cursive style.

H. Mason Coggin, Director
For the Board of Governors

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1994/95 FISCAL YEAR FINANCIAL STATEMENT

Appropriated Fund #1000

Appropriation	\$660,300.00
Expenditures-	<u>660,275.42</u>
Reverted	\$24.58

Mines and Mineral Resources Fund #3156

Balance Forward 7/1/94	\$60,859.16
Store Sales and Donations	57,869.21
Expenditures	<u>-61,850.47</u>
Balance	\$56,677.90

Printing Revolving Fund #4004

Balance Forward 7/1/94	\$8,187.05
Publication Sales	10,794.57
Expenses	<u>-11,081.45</u>
	\$7,900.17

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PERSONEL
Board of Directors

Ken C. Bennett Chairman - Phoenix
Eric A. Nordhausen Vice Chairman - Phoenix
Richard Oldham Secretary - Quartzsite
Roy Miller Member - Phoenix
William Miller Member - Phoenix

Staff

H. Mason Coggin - Director
B.S., University of Arizona

- Administrator
- Registered mining engineer
- Registered land surveyor
- Legislative liaison

Kenneth A. Phillips - Chief Engineer
B.S., Calif. State Polytechnic
University

- Industrial minerals & minor metals
- Commodity market research
- Technical writing

Nyal J. Niemuth - Mining Engineer
B.S., University of Wisconsin

- Precious and base metals
- Registered geologist
- Network administrator
- Technical writing

Glenn Miller - Curator
B.A., University of Arizona

- Museum management
- Exhibits

Susan Celestian - Education Curator
B.A., Wittenburg University, Ohio
M.S. Northern Arizona University

- Education
- Museum field trips

Ann Turney - Administrative Assistant

- Administration and accounting
- Budget officer
- Operations manager

Diane R. Bain - Clerk/Typist
B.A., University of Arizona
M.A., University of California, Irvine

- Editor
- Technical information officer
- Layout design
- Technical research

Marianne Charnauskas - Clerk/Typist

- Publication sales
- Clerical support
- Accounting assistant

Part-time Employees*

Ann Baker - Tour Guide
Doug Duffy - Tour Guide
Joe McIntosh - Tour Guide
Jerry Myers - Tour Guide
Alice Rosenfeld - Tour Guide
Jeff Scovil - Tour Guide

* Non-appropriated funds

**ANNUAL REPORT
ARIZONA DEPARTMENT
OF
MINES AND MINERAL RESOURCES
FISCAL YEAR JULY 1, 1994 TO JUNE 30, 1995**

**H. MASON COGGIN
DIRECTOR**

**1502 W. WASHINGTON
PHOENIX, ARIZONA 85007
Phone (602) 255-3791 FAX (602) 277-3777**

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DEPARTMENT OF MINES AND MINERAL RESOURCES

For purposes of reporting the Arizona Department of Mines and Mineral Resources is divided into two sections - the Mineral Resource Information Center and the Arizona Mining and Mineral Museum.

MINERAL RESOURCES INFORMATION CENTER

The Department of Mines and Mineral Resources fulfills its mission statement by providing advocacy statements, events, field trips, projects, speeches and planning events, acquiring, cataloging, analyzing, and disseminating technical information and preparing computerized information retrieval systems and publications. The following is a partial itemization of those activities.

INDUSTRY TRENDS

Copper producers, the largest part of Arizona's mining industry, are producing at record levels, over 2.5 billion pounds annually. Earnings are also at record levels as producers have slashed production costs and demand has driven copper prices to \$1.30 per pound.

A key stage was reached at the joint research project of the U.S. Bureau of Mines, Asarco and Freeport. Test in situ leaching of copper from the undisturbed, unmined Santa Cruz deposit in Pinal County began. If successful, this method could revolutionize copper production at some deposits and start exploration for amenable deposits.

An exploration boom is underway in Mexico and South America. This is taking away dollars from programs in the United States including Arizona.

The mining industry continues to be concerned about proposed legislation that would revise the federal mining law. Of special concerns are proposed royalties and tenure of title.

ADVOCACY

The Department maintains a proactive role in encouraging the development of Arizona's mineral resources. The staff has been able to participate in many functions where we have been able to take such a role in encouraging an economic, social, and regulatory climate conducive to the development of the State's mineral resources. Short impromptu speeches, written statements, an identified presence, or attendance at many meetings, conferences, and events took place in the last year. In each case we believe our involvement helped provide a favorable framework for development of Arizona's mineral resources.

- Abandoned Mine Lands Mapping Committee
- State Parks Heritage Funds Distribution meeting (*The Department has received Heritage Fund monies for restoration of the Boras Headframe*)
- Meeting with State Securities Officers on platinum scams (*scams hinder investment desire in Arizona mining*)
- APS Electric Car demonstrations (*Wide-spread use of electric automobiles will require drastic*

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changes in the mix of natural resources needed by the automobile industry)

- Santa Cruz Insitu Copper Mining Research Project information meeting in Casa Grande
- Joint display on Arizona's mining industry at the Arizona State Fair with the Arizona Mining Association
- Best Available Demonstrated Control; Technology (BADCT) Rewrite Group with the Arizona Department of Environmental Quality
- Prescott National Forest Mineral Land Assessment meeting
- Carlota Copper Project Public hearing
- Meeting with the Manager of the Minerals Section of the Arizona State Land Department (*the division of the agency charged with leasing State Trust Lands for mineral resource development*)
- American Institute of Mining Engineers Arizona Conference Board meeting
- Westerners meeting on Arizona Hopi Sacred Clowns (*An important number of these items are on display in the Rose Mofford Gallery in the Mining and Mineral Museum*)
- Meeting with Bill Jameson and Bob Hillock of Attorney General's office regarding a mining operations within the Arizona Department of Transportation right-of-way
- Point Knapping instruction at Pueblo Grande Museum (*the prospecting for and uses of rock materials by the earliest residents of*

Arizona is an important part of the State mineral heritage)

- Reviewed Historical Society interpretation of mining in Arizona
- Weaver Mining District meeting
- Arizona Association of County Recorders (*County Recorders are often the first governmental contact by prospectors and owners of mining claims*)
- Cyprus Tohono Mine Expansion hearing
- NYCO Mineral Processing Plant Location meeting
- Specialty Minerals Industrial Mineral Market Expansion meeting
- Meeting with Arizona Colorado Railroad and the Santa Fe Railroad to discuss freight rates in Arizona

EVENTS

The Department participated in the following events during FY 94-95. An Event is a formalized and planned meeting of any group where the Departments presence will support Arizona's position as the most important mining state in the United States. The Department through both its Information Center and Museum plays an important function in the continuation and success of these organizations.

- Bootprints Along the Cordillera Symposium in Tucson
- Arizona Mine Emergency Association monthly board meetings
- Flagg Mineral Show at Mesa Community College
- Phoenix Gem and Mineral Show Museum exhibit
- Arizona Historical Convention in Tucson

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- American Mining Congress Annual Meeting The Department and the Museum had an exhibit on display
- Fabulous 4th Celebration at the Department
- C.E.O. Breakfast, Excellence in Government
- Arizona Geological Society in Tucson
- Executive Meeting of Maricopa American Institute of Mining Engineers
- Budget And Strategic Planning Class
- American With Disabilities Act compliance meeting with Clent Wolverton of Valley of the Sun Schools
- Exhibits for State Fair and American Mining Congress
- Mineralogical Society of Arizona
- Rio Salado Community College Museum Tour
- National Mining Hall of Fame
- American Mining Congress/National Mining Association State and Regional Mining Associations
- American Institute of Mining Engineers Maricopa Section Monthly Meeting
- Arizona Humanities Council
- Mine Inspectors Meeting in Casa Grande
- Scottsdale Gem and Mineral
- American Institute of Mining Engineers, Tucson Section
- Arizona Mining Hall of Fame in Tucson
- American Institute of Mining Engineers Arizona Conference Annual Meeting in Tucson
- Arizona Mining Association
- Arizona Mine Inspector Inauguration
- Watching History Being Made (*a program at Arizona State University*)
- Ground breaking ceremony of the Santa Cruz Insitu Copper Mining Project
- Arts Council Legislative Reception at the Museum
- Flagg Photo Show at Finch Gallery (an exhibit of some of the photographs in the Department's collection)
- Rockazona Gem and Mineral Show
- Arizona Community Colleges Legislative Reception at the Museum
- Arizona Sonora Desert Museum's Annual preshow mineral sale.
- Phoenix Corral of Westerners
- Annual Meeting of the Arizona Mine Emergency Association
- American Gold Prospector's Association meeting to discuss releasing the public lands to Arizona
- Governor's Strategic Plan for Economic Development Mining Cluster
- Arizona Mining Association's Reception at the Phoenix Country Club
- Tour of Heard Museum with Dr. James McBride and Arizona history students from ASU
- Tucson Gem and Mineral Show
- People For the West Rally at the Capitol Building

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES
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- Statehood Day, '95 (*Polly Rosenbaum brought 92 visiting singers from Colorado City to the Mining and Mineral Museum*)
 - Prospector's Day at the Museum
 - The U.S. Bureau of Mines Copper Industry Briefing
 - Arizona Book Publisher's Association
 - Arizona Mineral and Mining Museum Foundation meeting at the Museum.
 - "Car Made from Rocks" (*Meeting with Polly Rosenbaum and a reporter from the Arizona Republic to discuss the project as a touring exhibit of the importance of minerals in society*)
 - Scottsdale Gem and Mineral Show historic mining photograph display.
 - Arizona Mineral Collectors in Tempe
 - Arizona Mining Association's Spring Teachers Field Trip
 - Boomtown Spree at Miami For Mining Competition
 - Meeting with State Mine Inspector to plan support for Mining Competitions
 - 1996 Annual Society of Mining Engineers Meeting in Phoenix (*planning meeting for the convention to be held in Phoenix*)
 - Mining Competition Committee for State Fair
 - AMIGOS Luncheon at the Phoenix Country Club (*AMIGOS is a support group of Arizona mine equipment suppliers*)
 - Mining Competition Committee, Bisbee meeting for planning competitive events
 - Arizona Minions, mineral collectors, meeting to review specimens
 - Mining and Mineral Museum Advisory Committee meetings
 - Society of Mining Engineers Committee Meeting
 - ADMMR Museum, Arizona Mining Association and Arizona Rock Products Association Exhibit at Maricopa County Fair
 - Arizona Geological Society monthly meetings
 - Arizona Mining Association Spring 1995 Teacher Field Trip
 - San Manuel underground, open pit, mill and smelter field trip
 - Navajo Land Reclamation Program (*provided maps and data on past uranium mining operations*)
 - U.S. Geological Survey Mineral Information Office (*provided maps and data on mining operations and mineral resource potential*)
 - Arizona Board of Technical Registration (*transmitted complaints regarding phony assayers to the Board for investigation*)
- FIELD TRIPS**
- The following field trips were made by Department personnel to view firsthand the operations of new and existing mining operations or to review inactive operations to obtain information for the agencies mine files and AZMILS Database (Arizona Mineral Industry Location System).
- Arimetco's Johnson Camp to review copper leaching operation
 - Texas Canyon Rock and Sand, Inc. to introduce Department and discuss operations

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- Cochise Resources at Dragoon to discuss and review activities
- Properties near Wilcox and Dragoon to gather information for Department database
- Arizona Electric Power Cooperative at Cochise to observe and review tests of new source of Arizona limestone for pollution control
- AZCO Mining Company in Safford to review operations at the Sanchez Mine
- 85 Mine
- IMCA Marble/Granite facility to become acquainted with types of polished stone, its uses and markets
- Crown King area mines to gather information for Department database
- Reymert Mine to review past mining operations and reclamation work
- Gold Green Placer property at Quijota to review operations and obtain data for Department's Directory of Active Mines in Arizona
- Pioneer Sands Casa Grande Quarry to review operations and obtain data for Department's Directory of Active Mines in Arizona
- Jerome Little Daisy Headframe at Jerome State Park
- Globe to investigate uranium concentrations in subdivision
- Kingman to visit Economic Development for Mohave County
- Orphan Mine to review status and photograph historic headframe
- Quartzsite to review reclamation plan submitted to Bureau of Land Management for mining operation
- Tucson to meet with John Lacy, mining attorney, who is rewriting Department publications: *Laws and Regulations Governing Mineral Rights in Arizona* and *Manual for Determination of Status and Ownership, Arizona Mineral and Water Rights*
- Point of Pines on the San Carlos Apache Reservation to present a program on mineral resources as part of Arizona's natural resources to the San Carlos Apache Natural Resources Summer Camp
- Queen Creek to review operations and obtain samples at Minerals Development Inc. marble processing plant
- Superior to review quarry operations and at Minerals Development Inc. marble quarry
- Clay deposits in the Cochise County of Benson were visited and sampled together with the Arizona Department of Commerce. An effort was made to find clays usable by DeRoma of Italy.
- White Cross Clay mines in Pantano Wash to obtain samples and review operations at the clay mines that supply Phoenix Brick Company and Arizona Portland Cement Company

PROJECTS

The following projects were started or completed in FY 94-95.

- The Boras Headframe, a gift of the Phelps Dodge Corporation from Bisbee, has been dismantled and moved to Phoenix with the help of the Arizona Public Service Company. APS provided the crane,

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the trucks and considerable labor in getting the structure dismantled and moved. Matching funds have been contributed by the State Historic Preservation Office and the structure is planned for re-erection in the first quarter of FY 95-96.

- Ken Phillips visited Drake Stone Products at Drake and discussed methods to increase production and sale of Arizona flagstone from the quarries in Yavapai and Coconino counties. Production of sandstone-flagstone is an important part of Arizona's mining industry, yet it is little recognized by industry and the public. The industry includes at least 12 operators at over 60 quarries, supporting as many as 500 employees. Discussions included methods by which this important segment of Arizona's mining industry can be promoted.
- Acquired bookshelves and office furniture donated by the Arizona Department of Water Resources. This furniture, no longer needed by Water Resources, will provide the Department with additions and replacements for furniture acquired by the Department in the 1930's.
- Acquired additional flat map storage cabinets through donation and began a project of cataloging and archiving mine maps. Volunteers are being trained to catalog the Department's extensive collection of mine maps. Information on each map is to be included in a database that will be related to the Department's AZMILS database. The

Department's mine map collection is an important part of the agency's resources used to develop new mining ventures in Arizona.

- Received donations from several personal collections of mine report files, technical literature, and mining library books from Mulchay, Grover Heinrichs, Kennison and Richard Mieritz. Began sorting, listing and cataloging of information contained in files. Much of this work is being done by volunteers under the supervision of Department engineers. Current plans are to maintain the files as individual author's collections and reference them to pertinent, specific Arizona mining properties in the Department's AZMILS database.
- The Department was given an extensive quantity of exploration data on the Gladstone McCabe Mine in Yavapai County. The information is being integrated into the Department's Gladstone McCabe mine file. This donation is believed to be the largest quantity of information received on a single mine by the Department.
- The Department acquired and installed a new network file server and operating system. The old 286-10, 200 MB server was replaced with a 486-66, 1,030 MB server running Novell 4.10. The network PC's are being upgraded to run Windows and use Windows versions of application software.

SPEECHES and PROGRAMS

Department personnel gave speeches during the year to a great variety of

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groups with some interest in mining or minerals. A speech or program varies from an advocacy statement in that several days of preparation and perhaps a paper for publication has been written by Department personnel on the subject.

- Mining History Association Nevada City, California *The A.L. Flagg Photo Collection* by H. Mason Coggin.
- Rio Salado Community College Geology students field trip by H. Mason Coggin
- Sun City West Tour *Mining in Society* by H. Mason Coggin
- Weaver Mining District Association *Mining Claim Regulations* by Ken Phillips
- Mesa Prospectors *History of Gold Mining in Arizona* by H. Mason Coggin
- Apache Junction Gem and Mineral Club *Gold Mining in Africa* by H. Mason Coggin
- Arizona Mineralogical Society *Collecting Minerals in Bisbee* by H. Mason Coggin
- Royal Palm School *History of Mining in Arizona* by H. Mason Coggin
- Scottsdale Gem and Mineral Club *A Map Tour of Mining in Arizona* by Ken Phillips
- Weaver Mining District in Congress, AZ. *Mineral Identification and Prospecting* by Nyal Niemuth
- Apache Junction Gem and Mineral Club *Tales of a Bisbee Mineral Collector* by H. Mason Coggin
- Prospecting Symposium at Apache Junction *Prospecting for Profit in the 90's* by ADMMR Staff
- The Phoenix Phoenixians at the museum *Mining in Society* by H. Mason Coggin
- Carl Hayden High School on a tour of the Museum.
- *Mining in Society* by H. Mason Coggin
- Cochise County Historical And Archeological Society *Roots of the C&A* by H. Mason Coggin
- Leisure World Lapidary Club. *Roots of the C&A* by H. Mason Coggin
- Elder Hostel with Dr. James McBride of ASU *Mining in Society* by H. Mason Coggin
- Braggin Rock Club of Black Canyon *Gold Mining in Africa* by H. Mason Coggin
- Arizona Roadrunners Prospectors Club
- *Gold Mining in Africa* by H. Mason Coggin
- Arizona Mineral Symposium *The A.L. Flagg Photo Collection* by H. Mason Coggin
- Scottsdale Gem and Mineral Club
- *A Map Tour of Mining in Arizona, Continued* by Ken Phillips
- Arizona Geological Society in Tucson. *We have Copper in Arizona* by H. Mason Coggin.
- Weaver Mining District Association *Rocks Every Prospector Should Know* by Nyal Niemuth, given by Ken Phillips
- Maricopa Gem and Mineral Society *Gold Mining History of Arizona* by H. Mason Coggin

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- Phoenix Westerners *Roots of the C&A* by H. Mason Coggin
- Tavar School in Scottsdale to 120 Fourth Graders *Mining in Society* by H. Mason Coggin

PLANNED EVENTS

- The following events are being planned by the department, department personnel, or Museum; either by themselves or in partnership with others.
- July 4, 1995 Phoenix Fabulous 4th The Museum will host a VIP program for participants in the program
- August 17, 1995 Gathering of Cowboy Poets at Sharlott Hall in Prescott The Director has been included in the program for several sessions and will present a collection of poems from Arizona mining and state history
- September 23, 1995 Arizona Mining and Mineral Museum Foundation Program at Museum
- October 1995 (Date to be set) The Department has been asked to put on a mineral seminar in Prescott
- October or November 1995 (Date to be set) The Department will provide a program Mining in Arizona in Tucson
- October 21, 1995 Flagg Fall Mineral Show in Mesa
- October 27, 1995 First National Team Mining Competitions at the Arizona State Fair in conjunction with The Arizona Lottery and other organizations.
- December 4, 1995 American Institute of Mining Engineers Arizona Conference meeting in Tucson
- March 10, 1996 History of Mining in Arizona Symposium in Phoenix *"Roots of the C&A"* to be presented
- March 11-14, 1996 Society of Mining Engineers Annual Meeting in Phoenix The Director and Department Staff will assist Society of Mining Engineers in the success of this meeting. Possible plans include Museum visits, co-hosting technical sessions, and leading field trips.
- March 15, 1996 Minerals in Arizona Symposium *"Arizona Gold"* to be presented by H. Mason Coggin
- April 13-16, 1996 Arizona Historical Convention in Sierra Vista Paper to be presented by H. M. Coggin, subject to be determined, but limited to a subject that will promote and develop an interest in Arizona mining, mining history and the importance of mining to Arizona
- June 1, 1996 Possible Annual Convention of the Mining History Association in Bisbee. This meeting will bring about 100 people to Bisbee for four days.

ACQUISITIONS by the MINERAL RESOURCES INFORMATION CENTER

Kennison Collection Approximately 7 file drawers of information on mining properties

Mulchay Collection Approximately 10 file drawers of manuscript information on mining properties in Arizona and the Southwest. Also includes 5 bankers

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boxes of mining and geological publications.

Heinrichs Collection Approximately 12 file drawers of manuscript information on mining properties from Arizona and the Southwest.

The library continues to improve and increase. Presently we have most of the current publications from the USGS and US Bureau of Mines covering subjects in Arizona as well as most current periodicals. We have a growing collection of EIS statements and Mining Plans of Operations that have been prepared for new or expanded operations. We are continuing to upgrade our data bases with new information and expand our collections in several areas.

The department has acquired several large colored prints of mineral specimens. They are being exhibited in strategic places in the museum and are used as traveling exhibits around the state.

PUBLICATIONS

The Department produced the following publications during the year.

- *55th Annual Report of the Department of Mines and Minerals Resources.*
- *Directory 43, Directory of Active Mines in Arizona with Map - 1995* Alphabetical listing of company, address key personnel, mine name and location for metallic and nonmetallic producers
- *Circular 2, Arizona Land Ownership Status revised* Brief instruction on determination of land status.
- *Circular 52, Jig Recovery Systems* A manual on jig operation and selection guide for operators of a gravity separation plant
- *Circular 60, Earth Science Clubs in Arizona* Includes rock hound, lapidary and prospecting organizations.
- *Circular 61, Arizona Gem Shows 1994-95* Includes date, location, sponsoring group, contact person for the gem shows in Arizona.
- *Circular 57, Arizona Mining Update - 1995* A review of current mining activity in Arizona. Includes gold, copper uranium, gemstone, industrial mineral and coal activity.
- *Circular 58, Assayers and Assay Offices in Arizona* List of commercial assay laboratories in Arizona.
- *Circular 59, Mining Scams*, revised Discusses common features of mining scams and ways to avoid becoming a victim
- *Open File Report 95-13, Listing of Grover Heinrichs File Collection*
- *Circular 62, State Agencies Concerned With Mining and Mineral Resources in Arizona* Contains names, addresses, and pertinent people at state agencies concerned with mines and mineral resources
- *Arizona Mineral Resource* Nos. 5, 6, 7, and 8 Quarterly newsletter containing information about the Department and events affecting mining in Arizona.

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Outside Publications

- Co-author Field Trip 17 - Bagdad, Bruce/Old Dick, Copper Basin field trip paper for *Bootprints Along the Cordillera* Symposium Volume
- "Arizona Exploration Activity" for *Mining Engineering* annual review issue
- Co-author U.S. Bureau of Mines 1994 state summary chapter for Arizona.

PROBLEMS

- Over the last few years of budget cuts and the loss of personnel have caused the department to fall behind in several areas. With the help of one new FTE, a continued program of recruiting and training volunteers, a fund raising program and by improving a system of strategic planning these shortfalls can be reduced or even eliminated in perhaps five or six years.
- Adding information to AZMILS database
- Abstracting information from publications
- Getting current information on environmental permitting
- Adding new information from the archive
- Combining files from former Tucson office
- Cataloging/abstracting the new collections
- Metallogenic Map project
- Entering files from the new acquisitions
- Writing new publications

Gold and Silver Deposits of Arizona
Arizona Copper Mine Production History
Arizona Gypsum Deposits

Arizona Mineral Deposits

Arizona Dimension Stone Deposits

Consumption and Marketing Arizona

Mineral Products

Exploration Companies Active in Arizona

Directory of Environmental Consulting firms

Mineral Development Projects

Precious and Non Copper Base Metal

Reserves in Arizona

- Cataloging library
- Speaking engagements
- Reporting activities
- Seminars
- Public meetings

VOLUNTEERS

- 780 volunteer hours were recorded in the Mineral Resources Information Center

ARIZONA MINING AND MINERAL MUSEUM

INTRODUCTION

The Arizona Mining and Mineral Museum serves as the state's depository for collecting, cataloging, and displaying mineral specimens of various ores, gemstones, lapidary material and other valuable mineral specimens. The Museum's collections are used as the tools to accomplish its mission. The mission is:

"To educate Arizona's citizens about our mining and mineral heritage and to demonstrate that minerals are the cornerstone of Mankind's existence; that minerals have aesthetic value; and, that minerals have functional value."

Since moving into the Polly Rosenbaum Building in 1991, the Arizona Mining and Mineral Museum has provided activities and services to over 146,000 visitors from around the world and all 50 states, over 51,000 Phoenix area school children, and several hundred physically and mentally disabled individuals, including many people in wheelchairs. Over that same time period, the Museum has provided services to a limited number of visually impaired individuals. A small number of hearing disabled individuals have visited the Museum. One goal of the Museum is to increase program service to Americans with disabilities.

The Museum is staffed by a full-time Curator, a Curator of Education, 5 part-time Tourguides, and over 100 active volunteers. The Curator of Education position was funded this fiscal year.

The part-time Tourguide positions are funded with non-appropriated funds. The following is a brief description of the activities and services provided by the Museum with a brief report on each activity or service during the 1994/1995 fiscal year.

Museum Exhibits and Self Guided Museum Tours

The Arizona Mining and Mineral Museum maintains mining and mineral exhibits that are displayed in over one hundred closed and locked display cases or on open display stands. There is written interpretation in the form of labels, descriptive text or some combination of both on all specimens and displays. Currently, there are over 3,100 mineral specimens on display and a much smaller number of mining related displays. If the artifact, mineral specimen, or other exhibit elements are not enclosed, museum visitors are free to touch.

Each year since 1991, more visitors have toured the Museum and taken advantage of the exhibits. During this fiscal year almost 36,00 visitors toured the Museum exhibits. These visitors were from all 50 states and around the world.

Special Programs

The Museum is working to develop and present programs to Americans with disabilities. During this fiscal year with the help of Jay Frankel, a volunteer tourguide, an hearing impaired individual, the Museum presented a program to multi-handicapped (wheelchair, emotional problems and physically disabled) students from the Phoenix Day School for the Deaf, and

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programs to two groups of middle school students from the Phoenix Day School for the Deaf.

In addition to these programs, over 600 Americans with disabilities took advantage of our exhibits and self-guided tours.

Public Symposiums

Public symposiums offered at the Museum fall into different categories -- those offered through the Museum or the Museum Foundation (The Arizona Mineral and Mining Foundation) and those offered by other institutions or governmental agencies.

During this fiscal year the Arizona Mineral and Mining Museum Foundation conducted its "Third Annual Minerals of Arizona Symposium" drawing over 70 guests from the western states and speakers from all over Arizona.

During this fiscal year the U.S. Bureau of Mines offered its third annual symposium on "Leaching Copper Oxide Ores" drawing over 30 representatives from the mining industry from the western states and speakers for both industry and government.

Special Events

Special events at the Museum fall into two different categories special events sponsored by the Museum or the Museum Foundation that provide a direct benefit to the Museum and those events sponsored by other organizations or agency that use staff time but provide no direct benefit to the Museum. These events do, however, provide exposure to the Museum for

groups of individuals who otherwise might not visit the facilities.

Museum Sponsored Special Events:

Fourth Annual Prospectors Day Over 200 hundred visitors from around the valley attended this years Prospectors Day. Events include gold panning (for real gold), nugget shooting (everyone gets something), equipment demonstrations, demonstrations on how to make your own equipment, how to determine land status, and other of information related to the hobby of gold prospecting.

Earth Science Clubs Meeting The Museum provides meeting rooms for nine clubs. The clubs usually meet once a month. This fiscal year over 3,252 members attended meetings at the Museum. In return for the meeting space, the clubs provide Museum volunteers, financial support, equipment, minerals for the education collection and gift shop, and many other services. An example of an important donation this fiscal year was a 30" Toshiba TV for the classroom.

Representatives of each club serve as members of the Museum Advisory Committee along with a representative of the mining industry, a representative of the general public, a representative from elementary education and a representative for higher education. The Museum Advisory Committee meets on the last Monday of each month. The Committee serves as the Museum connection with the community it services.

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Second Annual Arizona Mineral and Mining Museum Foundation Mineral Sale Thirteen mineral dealers and over 100 people attended this event.

Special Events Sponsored by other organizations

City of Phoenix Fabulous Phoenix 4th - each year for the past four years the City of Phoenix has used the Museum as its "VIP Reception" area. For the past two years the City has provide a "Meet-and-Greet" opportunity with the Stars and each Star is interviewed by TV and Radio in the Mofford Gallery. This year over 300 VIP's and their families used the Museum and viewed the fireworks from the south side of the building.

Arizona Commission on the Arts The Arizona Arts Council's Legislative Luncheon was held this year at the Museum for the fourth time. There were over 200 participants including over 60 Legislators attending.

Arizona Community College Association For the second, year the Arizona Community College Association held its annual Legislative reception at the Museum. This year over 150 people attended the meeting including over 30 Legislators.

Arizona Department of Education For the first time this year the Department of Education held its Poetry Judging Contest at the Museum. Thirty teachers from around the state attended.

TRAVELING MINING AND MINERAL EXHIBITS

The traveling exhibit program is designed to extend the Museum's

concept, programs, services, and activities beyond the Museum boundaries. Some of the traveling exhibits represent a collaborative effort with one or more organizations. For example, state and county fair exhibits are generally done in conjunction with the Arizona Mining Association. The following is a list of locations the Museum mounted traveling exhibits this fiscal year:

Mojave Middle School Library, Scottsdale, Arizona - this is the third year the Museum has provided the Mojave Middle School library with a traveling mineral exhibit.

The Arizona Mineralogical Society's "Gem and Mineral Show", Phoenix, Arizona - this year follows a long history of providing exhibits at their show. The Mineralogical Society is one of the Clubs that meet at the Museum.

Tucson Gem and Mineral Show, Tucson, Arizona - this is the fifth year that the Museum had exhibited at the Tucson Show. The Tucson Show is one of the largest gem and mineral shows in the world.

Gold Rush Days "Gem and Mineral Show", Wickenburg, Arizona - this continues a long history of the Museum providing a traveling mineral exhibit at this show.

The Maricopa Lapidary Society's "Phoenix Gem and Mineral Show" - this continues a long history of exhibiting at their show. The Maricopa Lapidary Society is one of the earth science clubs that meet at the Museum.

The Arizona State Fair in partnership with the Arizona Mining Association

- this is the third year the Museum has partnered with the Mining Association to exhibit at the State Fair. However, the Museum has a long history of providing exhibits to the State Fair.

The Maricopa County Fair in partnership with the Arizona Mining Association - this is the second year the Museum exhibited at the County Fair.

The American Federation of Mineralogical Societies, Oklahoma City, Oklahoma - this is the first time the Museum has ever exhibited at this show.

TEACHER-IN-SERVICES

Through its "Teacher-In-Service" program, the Museum provides training to elementary school, middle school, and high school teachers on a wide range of subjects relating to mining and mineral resources. These subjects include: how and where minerals are used in our everyday lives; how to identify minerals, environmental issues as they relate to mining and mineral resources, instruction on how to integrate mining and mineral resources information into their curriculum, and how Arizona's minerals are mined and processed.

In addition to the programs offered in-house, the Museum, through its Curator and the Department through its Chief Engineer, are partnering with the Arizona Mining Association's Director of Education and their program "Minerals in Society" (MIS). The MIS programs are presented as week long

institutes. The "Minerals in Society" Institutes are presented as Level I classes and Level II classes. The institutes are held in different locations throughout the state. In addition to the institutes, during the fall and spring of 1994/1995 six one-day field trips to different Arizona mining properties were conducted.

Museum Teacher-In-Services

Chapman University Phoenix, Arizona thirty teachers attended the 4 hour in-service. Activities included:

- Instruction on "Mineral ID in the Classroom Setting."
- A "Bag'em-and-Tag'em" activity which provides samples of many different products. Teachers are asked to guess which products are made from minerals and which are not. Then each sample is discussed and tagged with a list of its constituent minerals.
- Demonstrations of grade appropriate mineral experiments with directions that can be conducted in the classroom
- Lapidary demonstrations and gemstone faceting
- Gold panning experience with each participant keeping the gold he/she found.

Pendergast School District - Staff Development Glendale, Arizona

- Instruction on "Mineral Id in the Classroom Setting"
- A "Bag'em-and-Tag'em" activity which takes many different products and have teacher guess what products are made from minerals

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and which are not. Then each sample is discussed and tagged with a list of its constituent minerals.

- Lapidary demonstrations and gemstone faceting
- Gold panning experience with each participant keeping the gold he/she found.
- Demonstrations of grade appropriate mineral experiments with directions that can be conducted in the classroom

Minerals in Society Partnership

Through this partnership Department and Museum staff have interacted with over 500 teacher from elementary schools, high schools and colleges, and universities throughout Arizona.

- During July and August of 1994 the Chief Engineer and Curator participated in Level I MIS Institutes, as presenters and technical consultants, at Miami, Arizona, Arizona State University, Tempe, and Morenci, Arizona.
- During June 1995 the Curator participated in Level I MIS Institutes in Tucson, Arizona, and conducted two at Arizona State University, Tempe and one Level II Institute held in Tucson, Arizona.
- During the fall and spring of 1994/1995 the Curator traveled to 6 mining operation with teachers from many locations in the state.
- Magma's Pinto Valley mine, mill and tailings reclamation project

- Cyprus Bagdad's mine, mill and solvent extraction facility
- Asarco's Mission Complex mine, mill and tailings reclamation
- Asarco's Ray Complex mine, mill, smelter and solvent extraction facility
- Magma's San Manuel underground mine, open pit mill, smelter, and solvent extraction facility

TEACHER KITS/PACS

On request, teachers are given a "Teachers' Kit". This is a box containing about 50 numbered samples of rocks and minerals. Included is a booklet describing each specimen and its uses, plus a mineral identification key and clues on rock identification. In addition, the kit provides other mineral information sheets. About 800 kits were distributed during 1994/1995.

The kits are volunteer-dependent. The minerals in the kits are provided largely by mines and volunteers and most necessary tasks are performed by volunteers: specimens are crushed to size, the numbers are glued on each specimen, kit materials are reproduced and assembled, and volunteers meet periodically to put the kits together.

Also available are "Teacher Pacs", grade-specific activities for use in the classroom.

STUDENT EDUCATION

The student education program introduces students from pre-school through college to the mineral world of beauty and function. Students discover how minerals and mineral resources are a part of virtually every aspect of

everyday life. And each student leaves the Museum with three free specimens of Arizona rocks/minerals which they select from a wheelbarrow.

- The program is made up of the following major components:
- An introductory film
- A grade-specific show-and-tell-style talk on minerals and how they are used in everyday life
- A self-guided tour of the Museum
- A "Treasure Hunt" -- ten questions for which students hunt the answers
- Hands-on activities at various stations in the Museum
- Demonstrations conducted by volunteers (lapidary, conductivity, crystal growing, wire wrapping, inlay, faceting)
- On a limited basis, Museum staff have gone out to individual schools and libraries to present this program. During 1994/1995, 5 programs were given at schools, 1 at a public library and 7 to rockhound clubs and civic groups.

LAPIDARY WORKSHOP

The lapidary shop is an important part of the Museum's adult and student education programs. The shop serves as a training ground to interested people in the hobby of rockhounding and lapidary art. The lapidary shop is operated by an all-volunteer staff, consisting of the shop supervisor and seven shop monitors. The shop monitors supervise the day-to-day operations of the shop. No one is allowed to

work in the shop unless a monitor is present and the user fee of a nominal \$2.00/hour pays for machine maintenance. Monitors volunteered 2080 hours and certified shop users paid for 390 hours during 1994/1995.

- Contributions of the lapidary include:
- The shop supervisor offers several 12 hour classes in cabochon-making each year.
- The shop crew, part-time staff and volunteers assist Museum visitors to locate areas for rockhounding.
- Shop volunteers will cut rocks (on a limited basis) for interested rockhounters, allowing them to discover the hidden beauty inside.
- The shop monitor will provide interested Museum visitors with a tour of the shop.
- Shop volunteers often conduct lapidary demonstrations on the Museum floor as part of the student education program.
- The shop is an important part of the gift shop program. Craftspeople cut and polish geodes, cut and polish slabs, make cabochons and create other items that are sold in the gift shop.

GIFT SHOP

The Museum gift shop is an important extension of the Museum's education and exhibit programs. The Museum Curator, Curator of Education, and the Volunteer Gift Shop Manager work closely together to purchase items that complement the Museum's education

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and exhibit programs and further the Museum mission.

The Museum Gift Shop provides Museum visitors the opportunity to purchase mineral specimens from Arizona and around the world, items hand-crafted by Museum volunteers, books, and a wide variety of gift items. Funds generated by gift sales are used to pay the part-time Museum staff and also to support other Museum programs.

During 1994/1995, the Gift Shop was upgraded with the addition of larger display area, larger counter and two new cash registers with increased accounting capabilities.

VOLUNTEER PROGRAM

The heart of all programs and services provided by the Museum is the continuing involvement of volunteers. Since 1991, over 150 active volunteers have given over 30,000 hours of their time to the Museum through the volunteer program. During 1994/1995, 9294 hours were donated.

Museum volunteers are integral participants in all Museum activities and services. Some programs (i.e. lapidary shop) are staffed and managed entirely with volunteers. Some of the activities made possible through volunteerism are:

- Lapidary Shop
- Gift Shop Manager and staff
- Jewelry sold in the Gift Shop is made by volunteers
- Teachers' Kits numbering, assembly, mineral acquisition and crushing

- Case cleaning, minor maintenance and lighting chores
- Mineral cataloging (many hours of computer time)
- Staffing of activities outside the Museum
- Reception

ACQUISITIONS/DONATIONS

From July 1, 1994 through June 30, 1995 there were 206 separate acquisition recorded in the acquisition book. The types of items and the number of items acquired ranged from a single item, for example a 30" Toshiba TV for the classroom, to several hundred items and in some cases several tons of material. (see the acquisition book for a detailed listing of all items). Items that were not cataloged were distributed to the gift shop, the educational collection, or the lapidary shop.

There were 201 new specimens added to the Museum's permanent collection this year.

MAJOR MEDIA COVERAGE

This fiscal year was a good year for media coverage. Following is a list of major coverage:

- Arizona Highways March 1995
- West Valley View April 1995
- Channel 11 - taped material from Museum for Children's program
- Channel 3 "Sign On" a half hour program for the hearing impaired. The Curator and Jay Frankel, Volunteer Tourguide gave a program on the Museum and programs they are developing for the hearing impaired

Mineral Resource

MINING

404 and 401 Small Placer Mine Information

In response to a flood of questions concerning the effect of the Army Corps of Engineers' 404 permit and the Department of Environmental Quality's (DEQ) 401 permits on small placer projects, the following information was obtained:

Any activity that involves excavation or discharge, such as panning or dredging, now falls under these regulations. As a practical matter, however, the Corps of Engineers has taken the position that any operation involving:

- a) less than one acre of impact to washes, or
- b) flat washes with 1 foot bottom width, or
- c) steep washes with 2 to 3 foot banks and 2 to 3 foot bottom width,

need only obtain a 401 certification from DEQ. DEQ is the state cooperating agency and certifies the work and permitting done by the Corps of Engineers. In those cases where the Corps does not issue a permit, the DEQ has no permitting to certify. Therefore, DEQ alone certifies operations that fall within the 404 exclusions cited above or they issue a waiver. DEQ is more interested in how the property will be left than about what occurs there. The 401 section requires photographs of the site be taken before operations begin and a letter stating what will be done to reclaim the property when production ends. Bonding may be required.

Mining Law Reform

The 1872 Mining Law gave the American public the right to prospect for minerals on the public lands. With several conditions and provisions this law provided tenure for prospectors while they explored favorable properties and tenure to miners when the discovery was perfected. Over the years, laws for specific types of minerals and several volumes of case law have allowed the United States to develop its mineral resources and to grow from a seedling democracy into a world leader.

The U.S. Congress is in the process of revising this law and several others which regulate the public's use of the public domain in those states west of the Mississippi River. Both the Senate and the House of Representatives passed bills to reform the 1872 Mining Law earlier this year. The primary provisions of these two bills are compared below.

HR-322 "Rahall Bill" (D-WV)

- 8% "net smelter return" royalty
- Arbitrary rental fees
- No defensible tenure
- Proliferation of green tape
- Expropriation w/o compensation
- Arbitrary rule changes
- Prolonged permitting requirements

S-775 "Craig Bill" (R-ID) - Reid (D-NV)

- 2% "net profits" royalty
- Annual rental of \$100/claim
- Continuance of patenting
- Reasonable reclamation

Neither bill was considered entirely favorable to the mining industry but the Craig bill was considered more favorable. On August 2, Senator Johnson (D-LA) chaired a joint congressional committee to develop a compromise bill. He surprised his colleagues and the industry when he made an offer (the Chairman's mark) that was only a step below the House's Rahall bill. This position preempted any reasonable compromise since the house come-back would be expected to fall somewhere between the Chairman's mark and the Rahall bill.

Secretary of the Interior Bruce Babbitt, meanwhile, staged weekly media events in which he misled the American people about the costs and procedures of mining claim staking and patenting. In his remarks he completely ignored the fact that this law would eventually stifle economic development in the mining industry and would deplete the nation's mineral resources by making them inaccessible to the American public.

Rebuttals to Mr. Babbitt's media barrage have been limited to late night reviews and a few comments on

CNN talk shows. No discussion of the issues has occurred on any forum that would have a serious political impact.

With the stage set with these props, the house counter offer was made on August 16. It not only restated the Rahall bill but added several new and restrictive provisions that were not contained in earlier versions of either bill while compromises were narrow and few.

- A base royalty of 5 percent of the gross which may go as high as 33 percent for gold and copper. The 5 percent is equivalent to a 25 or 30 percent carried interest.
- State laws must meet or exceed federal requirements before the state will be allowed to administer the law within its borders. This provision extends federal provisions to nonfederal lands.
- Best Available Demonstrated Control Technology (BADCT). Any reference to "economic feasibility" was deleted. Industry and regulators alike find difficulty with this term.
- Backfilling of open pits at Interior Secretary's discretion. This provision is not only foolhardy in many cases it is impossible without first digging a hole.
- Onerous and unrealistic water provisions which would prevent miners from using water in their processes.
- Mining may be prohibited by an arbitrary determination that the subject property is unsuitable for mining.
- A nationwide "black list," the Applicant Violator System (AVS), would keep an application from being accepted from a party who was accused of being in violation of any environmental, fish or wildlife law or regulation whether it involved mining or not.
- The house language allows "any person who is or may be adversely affected" to bring suit.

In late-breaking news the committee has broken off for 1994 and a new Congress will address the issue next year.

Mining Activity

A high copper price (\$1.10) beginning in the spring and continuing through the summer coupled with the expectation of a growth in demand by third world countries has had a stimulating effect on the industry.

- Magma is planning a \$500 million expansion of its K project at San Manuel and additional research at Florence.
- Oracle Ridge is planning to expand to 1 million pounds per month.

PUBLICATIONS

The Department produced the following publications during the last quarter:

55th Annual Report of the Department of Mines and Mineral Resources

Circular 53 Earth Science Clubs in Arizona, includes rockhound, lapidary and prospecting organizations.

Circular 54 Arizona Gem Shows 1994-95. Includes date, location, sponsoring group, and contact person for the gem shows in Arizona.

Circular 55 Arizona Mining Update. A review of current mining activity in Arizona. Includes gold, copper, uranium, gemstone, industrial mineral and coal activity.

Circular 56 Annual Assessment Work Requirements Under Arizona Statute, 1994. An explanation of assessment work requirements written by John C. Lacy.

A complete list of publications is available upon request.

- Cyprus is discussing expansions at Bagdad, Miami, Twin Buttes and Tohono. They are studying Mineral Park for possible SX-EW and are doing work on several other Arizona properties.
- Asarco has received an aquifer protection permit for Silver Bell SX-EW plant and their Santa Cruz in situ leach research project near Casa Grande.
- Phelps Dodge has announced their intent to review the Safford Project for a possible open pit and leaching project. They are planning a \$200 million expansion at Morenci and are studying the Cochise Project. Copper Basin and other projects are still on hold.
- AZCO has received an Aquifer Protection Permit and is now obtaining funding for the Sanchez Project. AZCO's mining claim patent has not been issued.
- Cambior is awaiting a 404 permit from the Corps of Engineers for the Carlotta Mine. The hold up is reported to be the Fish and Wildlife Service.
- Arimetco has renewed development at the Van Dyke and permitting is underway at the Zonia.
- Yarnell Gold is pressing permitting.
- Add-West is sinking a decline at Oatman on the Gold Road.

ADMMR Staff Busy With Inquiries

The requirement to pay rent for mining claims on federally administered mineral rights was extended through 1998 by Congress as part of the Federal budget enacted last October. Questions about Arizona requirements for assessment work and county recorder filings took a significant amount of staff time during the last three months. Many claim owners were confused about the changes and what they were required to do. The ADMMR circular that addresses the subject was updated and example and sample forms for use in 1994 were created.

Bureau of Land Management data show:

- 23,623 claims had rent paid for the 1994-95 year.
- 4,140 new claims were filed between 9/1/93 and 8/31/94.
- 347 certificates for small miners' exemptions (10 or fewer claims) were filed. These cover about 2,000 claims.

Construction Activity Generates Increase in Materials Availability Inquiries

The boon in construction activity in Arizona has increased the number of industrial mineral availability inquiries received by the Department. Companies and individuals interested in starting new sand and gravel operations have dominated the inquiries. Because the cost of construction aggregate for a building project is dominated by the cost of transportation, suburban growth continues to feed the need for new sources of construction aggregate that are closer to construction areas.

Conflicts between land uses, protection of riparian areas, the need for affordable construction materials, and the NIMBY attitude (Not in my Back Yard) continue to be difficult of solve. We also receive calls from people wanting to know how to prevent these operations. In such cases we try to provide the caller with a "mini education" about the use of mineral resources.

Photo Collection Received

The Department has recently received an extensive collection of photographs from Edward Flagg, the son of the photographer, A.L. Flagg (1883 - 1961).

During his long professional career in Arizona, which began in 1906, Authur Flagg worked for a variety of Arizona mining companies including Kelvin Sultana Copper Company, Ace Mineral and Development Com-

pany, Gallagher Vanadium and Rare Mineral Corporation and the Mines Holding Company. In 1946 he was appointed Superintendent of the Mineral Department of the Arizona State Fair. In 1949 he joined the staff of the Arizona Department of Mines and Mineral Resources.

Upon retirement in 1953 at age 70, various mining companies paid his salary to become the first curator of the Arizona Mineral Museum. During his career he wrote several books and many papers and took a great number of photographs. The Department has received approximately 3,000 4" x 6" negatives that he took between 1906 and 1961.

This collection of images contains many examples of mines, transportation, culture, domestic life and public places. Most of the photos are of excellent quality and about 50 percent have been previously identified.

Keith Halsey, a Department volunteer, has spent approximately 450 hours identifying and classifying these photos from publications in the Department's library. The identified prints are preserved in archival photo albums. Completing the identification will require an additional 450 hours and approximately \$1,000 in materials.

MUSEUM NOTES

Mineral Photographs

The Department has acquired several large, colored prints of mineral specimens. These prints were enlarged from photographs by laser copy technology. Several of them are be exhibited in the museum while others are being marketed. Copies of these photographs are for sale in the museum gift shop. Beginning with the Bootprints Along the Cordillera Symposium in Tucson next month and the fall gem and mineral shows, the Department will initiate an effort to sell prints of these photographs, with proceeds going to the museum.

Gift Shop Furniture

Two new display cases have been constructed and placed in the Museum gift shop. Funds were donated to the Museum by the Phelps Dodge Corporation for this purpose. The lighting and appearance of these cases is having a positive effect on sales of minerals and items in the gift shop. Additional display cases are being considered and bids have been received.

Headframe Funding

On August 25 the Historic Preservation Advisory Committee (HPAC) met to review grants for the State Historic Preservation Office (SHPO). A request for \$31,287 to relocate the Boras Headframe from Bisbee to Phoenix was one of the grants considered. At the meeting the evaluation scores for all of the grant requests were revealed. The Department's application scored 77.3 percent out of 100 and ranked 31st out of 92 applicants. The total funds available of \$1.4 million were spent before the Boras Application was reached, but the committee continued to select applicants until a 10 percent over budget level was reached. Apparently some of the grants may be withdrawn and SHPO expects to receive additional grant funding. Thus, possible funding for the Boras, for \$22,320, may be available in February. Adding the amount previously raised, we have approximately \$35,000 available. Additional funding will be required and we are accepting donations and selling paving bricks for \$50 and \$100 in our fund-raising program.

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Mineral Resource

ADMMR

NEW FILE COLLECTIONS

Two significant collections have recently been added to ADMMR's mining archives. In October the Department received from his heirs the files of Ronald Mulchay, chief geologist at Cananea for Anaconda Mining Company. Three four-drawer file cabinets and a similar volume of bankers boxes contains data on economic geology and historical information covering Mulchay's professional career during the mid 1920s to the 1980s. It includes an extensive amount of published and unpublished data on intrusive breccias associated with porphyry copper deposits. This research includes many of Mulchay's personal observations and conclusions. Many handwritten, fieldnotes, cross sections, drill hole maps, geological sketches, and interpretations are included. This donation is currently being catalogued and should be available for public inspection during the first quarter of 1995.

MINING

ADEQ BADCT GUIDANCE REWRITE GROUP

A one-day session was held to finish rewriting the BADCT (Best Available Demonstrated Control Technology) guidance documents. In the preceding months the Department of Environmental Quality (DEQ) took the original rewrite that was developed by the full committee and added a large section that had been developed by their staff. This new work included many items that had not been discussed in the original meetings. If accepted by DEQ, the new document will contain many requirements that will be more stringent than the previous versions.

GSPED

The Governors Strategic Planning Committee for Economic Development, GSPED, met in Scottsdale to discuss what government can do to support economic development in Arizona. The consensus of those present indicated that government should try to develop in the following areas:

- Expansion and integration of the information and communication network into all communities, businesses, libraries, schools and medical facilities statewide.
- Escalation of Arizona's opportunities to participate in international trade through: 1. Improving North-South Highway routes between Canada and Mexico. 2. Encouraging development of Guaymas deep water port and facilities. 3. Encouraging unified port management by federal agencies at borders.
- Develop state-wide transportation and distribution.
- Improve and Reform state education financing system.

New ADMMR Publication

ACTIVE MINES IN ARIZONA - 1995

Directory 43, Phillips, K.A., Niemuth, N.J., and Bain, D., 1995, 25 p.

This directory, available after February 1, lists company name, address, key personnel, mine name, and location of the mining companies active ADMMR in Arizona. Sand and gravel operations are also included. A 1:1,000,000 scale map shows locations of metal mines, non-metal mines, and company offices and plants. Available by mail for \$5.50 or at ADMMR for \$4.00.

Reform regulatory measures by:

- Streamline or eliminate regulatory impediments of economic development.
- Allow transition of information and communication infrastructure network .
- Encourage wheeling of wholesale electric power into Mexico.
- Adaption of tax reform package through simplification and equalization.

General Rural Initiatives

- Improve rural health through hospital regulation.
- Provide low interest, accessible financing for rural businesses.
- Improve educational opportunities and programs in usual areas.
- Develop a system for financing rural infrastructure.

General Economic Development issues to improve rural business

- Extension and increased funding of job training program.
- Funding of programs to provide financing in the \$25,000 to \$100,000 range.
- Reduce and eliminate personal property tax on businesses.
- Provide state funding for the Arizona Technology Development Authority
- Endorse recommendations from Film Industry Task Force.
- Create an HRM plan and funding for a Disparity study.

BACK FILL OR COMPENSATE

The California Bureau of Land Management issued a Memorandum on November 30, 1994 (CA-95-32) declaring its intentions to establish a formal statewide policy regarding backfilling. The BLM intends to extract compensation for not reclaiming open pits and other areas created by mining operations. The memorandum, if not rescinded, requires backfilling of all open pits, prospect pits, shafts and other man made holes. If backfilling is impossible or not feasible the miner will be required to provide other compensation such as creating waterfowl habitat or developing guzzlers for wildlife. With this memorandum, the California BLM clearly intends to economically penalize miners. The problem is that the memorandum states that the compensation will be determined on a case-by-case basis, commensurate with the

PUBLICATIONS

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Circular 54 Arizona Gem Shows 1994-95. Includes date, location, sponsoring group, and contact person for the gem shows in Arizona.

Circular 56 Annual Assessment Work Requirements Under Arizona Statute, 1994. An explanation of assessment work requirements written by John C. Lacy.

Circular 57 Arizona Mining Update - 1995. A review of current mining activity in Arizona. Includes gold, copper, uranium, gemstone, industrial mineral and coal activity.

Directory 43 Active Mines in Arizona - 1995. Available after February 1.

A complete list of publications is available upon request.

area left unreclaimed. There is no way of telling what these arbitrary reclamation costs will be.

BLM's Director acknowledged that additional disseminated gold deposit discoveries can be anticipated and declared that these discoveries would impact the public lands. To support his 'not-a-tax' decision, he suggested that the selection of non-backfill could be included, but should not be analyzed in the context of the anticipated profits of the project. How these costs would effect the profit or loss from mining was not discussed.

These policies come at a time when the BLM is recommending disposal of lands in some areas, while asking that the patent provisions be stricken from the 1872 Mining Law.

ADMMR solicites suggestions for this newsletter. Please let us know your areas of interest and what you would find useful.



One of the last surviving wooden headframes, built in 1917, lies waiting for assemble after being transported from Phelps Dodge's Boras mine in Bisbee.

MUSEUM NOTES

THE BORAS ARRIVES

by Charlie Connel

At long last, the big day arrived! On November 1 of this year, and with the help of Phelps-Dodge, Arizona Public Service (APS) equipment and personnel, volunteers, ladders, cranes, bucket trucks, MCO personnel, grinders, welders, chains, bracing, cribbing timbers, and tractor-trailers, the Boras headframe and equipment started it's 200 mile journey to the Arizona Mining and Mineral Museum in Phoenix.

Packing up the Boras for its move was no small feat. The hoist weighs 19,600 lbs., two sheave wheels weigh 1,000 lbs. each, and a piece of the foreframe weighs 13,400 lbs. A 35-ton APS crane was required to lift and load the heavy parts. Each piece had to be braced or supported before it could be lifted and moved. The huge, timbered frames were laid down as gently as eggs. Two 40-ft. APS flat-bed trailer trucks were loaded and on

November 5 the trucks pulled out of Bisbee, headed for Phoenix. The convoy did not actually reach the museum until November 8 at about 3 :00 p.m. On November 9 the trucks were unloaded and the headframe had reached its new home. There was still parts remaining in Bisbee, so on December 12th the Museum sent a rack truck to gather up the last of the items. On December 16, the last of the Boras arrived at the museum.

Now the headframe must be assembled and erected. The first stage will be to excavate the site and pour the concrete foundations for the "collar." Once a firm foundation has been constructed, the headframe will be restored a piece at a time, in the reverse order that it was dismantled. Each piece has been numbered and charted. Like a giant jigsaw puzzle, the pieces must all fit together just as they originally stood. The hoist must be mounted and the hoist house reconstructed. Finally, when everything has been put together, the cables will be pulled through the sheave wheels and the Boras headframe will stand - just as it once did over the Boras shaft in Bisbee.

The Arizona Department of Mines and Mineral Resources wishes to express sincere thanks to the people and organizations who have so selflessly given of time and materials that the Boras headframe might become a permanent feature at the museum.

Phelps Dodge Corporation:

John Zamar, Sam Sorich, Bob Bullard, David Pearce, John Carbajal, Ernie Jimenez, John McClain, Harry Metz, Joe Durrenberger, and Gene Bendixon

APS :

Keith W. Carpenter, Ronald L. Baade, Alex F. Boros, John C. Field, Arthur M. Hamrick Jr., Jerry R. Marlowe, Vidal B. Serna, Richard L. Camacho, and Perry G. Schafer

Pay Dirt:

Gary Dillard and Bill Eppler

The MCO Corp.:

William McKenzie and George McKenzie

Arizona Mining and Mineral Museum Supporters:

Morris Jackson, Ev Dixon, Charlie Connell, Glenn Miller, Doug Duffy, Mason Coggin, Jerry Ohlund, Frank Hendricks, and Gaston Fiorelli



Do you need this information in an alternative format? Please call the Department office at 255-3791.

ARIZONA MINING HALL OF FAME

On December 3, 1994, in Tucson, the following people were inducted into the Arizona Mining Hall of Fame:

- J. Burgess Winter, for his career in the copper industry
- Dr. Joseph A. Holmes, for his work in mine safety.
- Nellie Cashman, for her contributions to miners' welfare

Medals of Merit were awarded to:

- J. David Lowell, for geological resolution of porphyry copper deposits
- Ronald R. Swanson and Donnell W. Agers, for contributions to solvent extraction of copper

Special recognition was given to:

- Senator Dennis DeConcini, for political contribution to Arizona mining

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Mineral Resource

MINING

Mining Law Changes Planned

A group of key senators have introduced hard-rock mining reform legislation similar to the Craig Bill proposed last year. Cosponsors of the bill, introduced on March 7, 1995, include Senate Mining Subcommittee Chairman Larry Craig (R-Idaho), Senators Frank Murdowski (R-Arkansas), Harry Reid (D-Nevada), and Richard Byran (D-Nevada), and nine others. This bill, S. 506, Mining Law Reform Act of 1995, is supported by the mining industry. It is hoped that it will resolve the recent debate on the 1872 Mining Law. The Bill includes the following provisions:

- Retains existing claim location system,
- Retains the current \$25 location fee and \$100/yr rental,
- Creates a right of exclusive possession,
- Supports a 3% net royalty,
- Repeals current patent moratorium,
- Requires the Secretary of the Interior to diligently process pending applications,
- Includes a patent transition period of 18 months,
- Provides for payment of fair market value for the surface estate,
- Allows reclamation to be controlled by the state,
- Excludes redundant suitability provisions,
- Includes use of a limited reverter for non-mining use.

Senator J. Bennett Johnston (D-Louisiana), the ranking Democrat on Murkowski's committee will undoubtedly object to the pivotal royalty provision. Last year Johnston had negotiated down to a 3% gross royalty on gold and 2 percent on other minerals.

Senator Bumpers (D-Arkansas) and Rep. George Miller (D-California) are expected to be the main opposition to the Craig bill. Miller has already introduced a bill (HR-721) as an omnibus public lands revenue bill with calls for an 8% royalty.

Clifford Altfeld, a member of the Department's Board of Governors, will be leaving the Board after ten years of service. Altfeld, first appointed by Governor Bruce Babbitt in 1984, is an attorney with the firm of Schorr, Leonard & Felker, P.C. in Tucson. He was appointed to a second term by Governor Rose Mofford in 1991. Altfeld has been a loyal, dedicated advocate of the Department through years that were among the most difficult but also the most rewarding. Thank you, Cliff. The Department is richer for your having come our way.

GOP Considers Public Land Transfer to States

Several Republican legislators have expressed a desire for the Bureau of Land Management to transfer public lands to the states. Among the proponents of the idea are Don Young (R-Alaska), Jim Hansen (R-Utah) and several western governors including Arizona's Fife Symington. A draft bill has not been prepared as the action is still in the planning stages.

Mine Inspector's Bill Cleared

With a unanimous vote, the seven members of the Arizona Senate Committee on Natural Resources recommended passing House Bill 2078. This bill will allow the Mine Inspector to donate mine rescue equipment to the Arizona Mine Emergency Association (AMEA). These donations will help AMEA in providing federally-mandated rescue team support for small and remote underground mining operations in Arizona. The nonprofit association is supported by dues from its members.

The equipment has formerly been on loan from the Mine Inspector's office, placing the State in jeopardy of a lawsuit in case of equipment failure.

Heinrichs Files Received

Grover Heinrichs, retired Arizona mining engineer, has donated a collection of over 1,100 files to the Department. The collection has 3 principal components: 1) mine reports and data from Professor Edward Wisser, University of California, Berkeley, 2) property files of Essex International, and 3) Heinrich's files on mining companies, properties, and commodities. The amount of data contained in these files is substantial and makes a significant addition to our library. A listing of the files is available.

William Miller Named to Board

William J. Miller has been appointed to the Board of Governors of the Arizona Department of Mines and Mineral Resources by Governor Fife Symington. The appointment began February 1, 1995 and continues through January 31, 2000.

Miller was born in Chicago and moved to Arizona with his family in 1952. He graduated from Camelback High School in 1961. After attending ASU, Miller went to work for KOOL-TV. His first job was pulling cables for the studio cameras. By 1968 he was producing prime

time documentaries and was named manager of the Special Projects unit at Channel 10. He later served as Manager for the News and News Director for the same station.

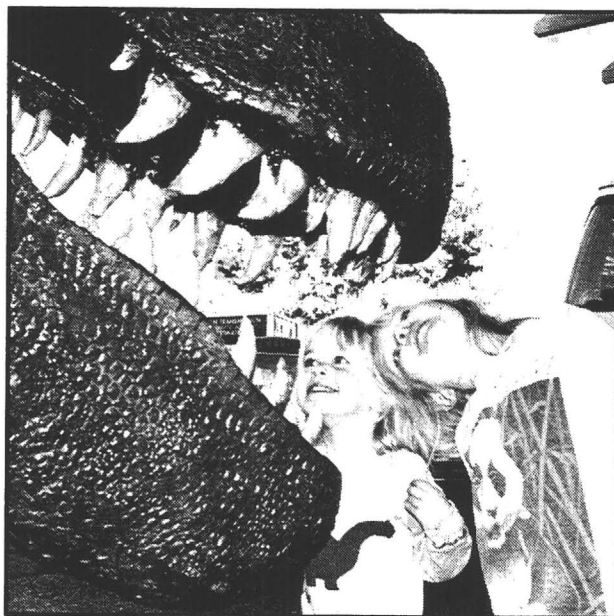
In 1986 Miller became Station Manager at KTVK-TV3. He is also a member of the Board of Directors of Media America Corporation. Since 1989 Media America has acquired Phoenix Magazine, one of America's premier city magazines, KESZ, a popular adult contemporary FM station, and Desert Production Center, one of the largest video production companies in the Southwest.

Miller and his wife Sandy have two children, a son, David, and a daughter, Cherie. His activity in the community over the past 10 years has included serving as president of the Arizona Broadcasters Association, president of the First Amendment Coalition Board, vice-president of the endowment of the Walter Cronkite School of Journalism and Telecommunications-ASU, president/chairman of Barrow Neurological Foundation, member of the St. Joseph's Hospital Center (Phoenix) Foundation Board, member of the Valley of the Sun United Way Board, and vice-president of Kids Voting Arizona.

TUCSON GEM & MINERAL SHOW



The Tucson show, held each February, is one of the finest and most prestigious in the world. The main show is held in the Tucson Convention Center, but dealers spill out into all available motels in the downtown area.



Megan and Amanda Barlow enjoy a T. rex in front of the Pueblo Motel.

Mission Back in Molybdenum

Asarco has announced that it is restarting its molybdenum circuit at the Mission Unit. This is the result of the high prices being paid for molybdenum and molybdenum concentrates. Producer stocks in concentrates, oxide and other product forms were 16,911 metric tons at the beginning of 1994 but have been reduced to 9,631 metric tons by the end of October 1994. For the week ending January 20, 1995 the average price for molybdenum concentrate was \$3.95 per pound and dealer molybdenum oxide was \$16.50 per pound.

Backfill Directive Reversed

Ed Hastey, State Director of the California Bureau of Land Management (BLM), has canceled his recent memorandum to BLM field offices advising compensaion would be required for the loss of a "functioning ecological unit" if backfilling could not be accomplished or is infeasible. According to *California Mining*, Hastey withdrew the memorandum 2 days after receiving a letter from the California Mining Association that charged that the memorandum was a violation of federal law.

Wanted: 5,000 Tons of Pyrite

Material traditionally considered waste has now become valuable. Pyrite has become an important commodity. A company that has been consuming large quantities of this material has lost their supplier and desperately needs a source of pyrite. If you are able to supply this commodity or have such deposits please call the Department.

MUSEUM NOTES

Arizona Museum Days

In recognition of International Museum Day (May 18), Central Arizona Museum Association (CAMA) Members are holding a four-day, Valley-wide observance from May 18 - 21. Participating museums and institutions are offering discounts on admission and gift shop purchases.

Visitors to the Arizona Mining and Mineral Museum who mention International Museum Day during that time will receive a 10 percent discount on purchases from the Museum gift shop.

For more information, including a free CAMA brochure with a map, call (602) 644-2468.



New Education Curator

Susan Celestian has accepted the position of Education Curator at the Arizona Mining and Mineral Museum.

Susan received a B.A. degree in geology from Wittenburg University in Ohio and a M.S. degree in geology from Northern Arizona University.

She came to the Museum from Glendale Community College where she taught geology. She was also director of the M.E.S.A. Pre-college Program, a cooperative effort between high schools, colleges, and industry designed to encourage minority high school students to enter math- and science-related careers. Additionally, she co-directed the GCC Science Expo for high school and elementary students.

For the past five summers she has taught classes for ASU West's Center for Lifelong Learning.

Glenn Miller, Museum Curator, says Susan has "exactly the background, the skills, and the enthusiasm we had hoped to find for our new position." The Education Curator will be responsible for restructuring the Museum field trip program, enhancing the teachers' sample kits and information packets, and developing additional interpretive Museum displays.

"I am excited about this new position," Susan says, "It is a wonderful opportunity to share my love of minerals and geology."



Do you need this information in an alternative format? Please call the Department office at 255-3791.

Arizona Still #1 Mining State

Arizona copper production and value reached a record high last year! With an estimated value for non-fuel mineral production of \$3.3 billion, Arizona again leads the nation. The preliminary figures for 1994, reported by the U.S. Bureau of Mines, are listed below.

MINERAL PRODUCTION IN ARIZONA - 1994

Mineral	Quantity	Value
Clays (tons)	101,400	\$421,000
Copper (tons)	1,304,980	2,818,752,000
Gemstones	NA	3,776,000
Gold (troy ounces)	79,991	28,870,000
Pigments (tons)	75	38,000
Sand & gravel (tons)	49,604,000	184,500,000
Silver (troy ounces)	5,465,619	23,502,000
Stone-crushed (tons)	7,275,000	38,300,000
Other		224,609,000
Total		\$3,322,768,000

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MINING

AZCO SELLS SANCHEZ

AZCO announced that it has agreed to sell 100% of its Sanchez Project and 70% of its Piedras Verdes Copper Project to Phelps Dodge for \$40 million. This agreement will give AZCO working capital and provide two valuable properties to Phelps Dodge. The Sanchez Project located east of Safford is fully permitted. If Phelps Dodge brings this property into production it will be the first open pit copper mine to be started in a new district in Arizona since Asarco's Sacaton pit in 1976. Acquiring Sanchez places Phelps Dodge in control of this new copper district.

Historical Perspective

Bear Creek Exploration, a subsidiary of Kennecott Copper, was active in the district in the 1950's and announced plans to consider the Atomic Energy Commission's Plowshare program to use underground nuclear blasting to break a large tonnage of low grade copper ore into fragments that could be leached in place. This announcement triggered a major acquisition and exploration program in the district that included most of the major copper mining companies in the US. Inspiration Consolidated Copper Company acquired the Sanchez property during this rush.

Discoveries by Phelps Dodge, Inspiration, and Producers Chemicals were soon reported. Kennecott was sinking a shaft on their property in 1965 for the purpose of exploration and development. Phelps Dodge followed with an exploration and test shaft in 1968, and Inspiration announced a major testing program for a heap leaching operation at Sanchez. Producers Chemicals Company was producing copper by leaching and precipitation early in the 1970's at the San Juan. Phelps Dodge continued to develop their Safford property by sinking shafts and doing underground development.

Most activity in the district stopped in the early 1980's as copper prices slumped. Inspiration dropped their lease on the Sanchez and returned it to its owners,

"C. N. Schuette was examining a quicksilver mine near Durango City. Heading home, he boarded the train for Canitas, on the Mexico City - El Paso line. His train was late, he missed the connection, and had to stay in Canitas all night. The only hotel was an adobe structure, a veritable posada or fonda out of Don Quixote - equal accommodations for man and beast. It was called the Gran Hotel Ritz, according to an enormous sign to this effect. Schuette asked the proprietor why it was called the Gran Hotel Ritz. "Por el prestigio, señor, por el prestigio."

So Edward Wisser recalled an experience of a friend in his journal, *Reminiscences of Mexico*, a delightful collection of stories from his 15 years of travel as a geologist in Mexico in the 1930's and '40's. His day-to-day experiences are recounted in vivid language and good humor.

This journal is only one of many unpublished reports, mine files, photographs, and maps recently donated to the Department. Cataloging and storage of the various collections is proving to be almost overwhelming. Open-file reports of the collections are in various stages of progress. Open-file Report 95-13, *Listing of the Grover Heinrichs Collection*, is available

William Sorsen, et al. Phelps Dodge was letting their underground workings flood and Kennecott ceased activity in the district. Phelps Dodge eventually acquired Kennecott's holdings in the San Juan.

Sorsen provided copies of technical data to ADMMR and requested help in finding a qualified company to pursue the deposit. Department engineers encouraged numerous companies and individuals to consider the property. Based on the data and encouragement provided, Richard C. Moores II and John Dreier optioned the property in 1989 and formed a new company

called Arizona Copper Company that went on to become AZCO. AZCO developed plans and acquired permits to operate an open pit mine and SX-EW facility. When AZCO was unable to raise the \$100 million in the market or through private offerings, Phelps Dodge bought AZCO's interest.

Phelps Dodge's 1994 Annual Report announced resources totaling 2,050 million tons in this district. Sanchez adds another 170 million tons to that total.

VICTOR VERITY

The Arizona mining industry has lost Victor Verity, age 91. He was a 1927 graduate of the University of Arizona with a degree in Mining Engineering. He returned to the U of A to receive his doctor of law degree in 1936. Verity practiced international mining law in Tucson until his semi-retirement in 1982. He served as president of the Rocky Mountain Mineral Law Foundation and a member of the Western Governors Conference on Mining Law. He was a long time friend of the Department and one of the original authors of *Laws and Regulations Governing Mineral Rights in Arizona*.

The long and tedious task of rewriting and updating Laws and Regulations has fallen to John Lacy for the past several editions. John paid Verity the following tribute at the memorial services in Tucson: "One of the greatest tributes to Vic, in my opinion, was the plaque given to him by his friends in the Arizona mining industry after his term as president of the Rocky Mountain Mineral Law Foundations. The plaque, containing a mounted mining lamp, was inscribed to Vic as the provider of light in dark places. Vic was able to see the essence of problems and of people and made every day of living a joy."



Do you need this information in an alternative format? Please call the Department office at 255-3791.

MINING TERMS

How many of these mining terms do you know? We found them in the 1907 edition of the *Copper Handbook* (and did not know very many of them).

- ARROBA - A Spanish weight of 25.36 pounds avoirdupois. In Portuguese, 32.38 pounds
- BAL - Cornish for mine
- KINDLY - The appearance of rock carrying or promising to carry good mineral values
- MINERS INCH - The amount of water that will flow through an opening one inch square under a six-inch head which is 2,274 cubic feet in 24 hours, or 94.3/4 cubic feet per hour, equal to 655 wine gallons or 593 imperial gallons per hour
- MOMME - A Japanese weight equal to 3.75 grams or 2.4113 penny weights
- PICUL - A Chinese weight of 133 1/3 pounds
- POOD - A Russian weight of 36.112 pounds avoirdupois
- PRILL - Cornish for selected ore secured by cobbing
- RAGGING - Cornish for rough cobbing; broken lumps of ore of medium size
- VARA - A Spanish-American measure of length of 33 inches
- WHEAL - Cornish for mine. Synonymous with bal

SEEKING MEMBERS

The Mining Foundation of the Southwest has two goals: 1) Increase public knowledge and awareness of the mining industry and its importance to the economic health of this country, and 2) Assist schools and universities of the southwest at all levels in teaching the future engineers upon whose shoulders will fall the burden of maintaining the industry's viability.

Over the years the Foundation has helped raise money for modernizing the mining exhibit at the Arizona Historical Society Museum in Tucson, underwritten the publication costs of books such as *History of Mining in Arizona Volumes I and II*, provided computers to the Mining Department of the University of Arizona, and made speakers available to elementary schools. Currently the Foundation aids in recruiting students, provides books to high school and college libraries, and may soon provide college scholarships to students in mining related fields.

For more information call Jack E. Thompson at 520-318-3532.

KENNISON DATA ACQUIRED

Another significant collection of mine and prospect data has been added to ADMMR's library. In May, the files of John E. Kinnison were donated by geologist Clark Arnold of Tucson.

The majority of the collection concerns the geology and exploration of porphyry copper deposits in central and southern Arizona, especially the Mission district. The commodities discussed at other Arizona properties include gold, silver, zinc, and tungsten. The data was gathered from the mid-1950's through the 1980's. The collection also describes copper and other deposits in the western United States and Sonora, Mexico.

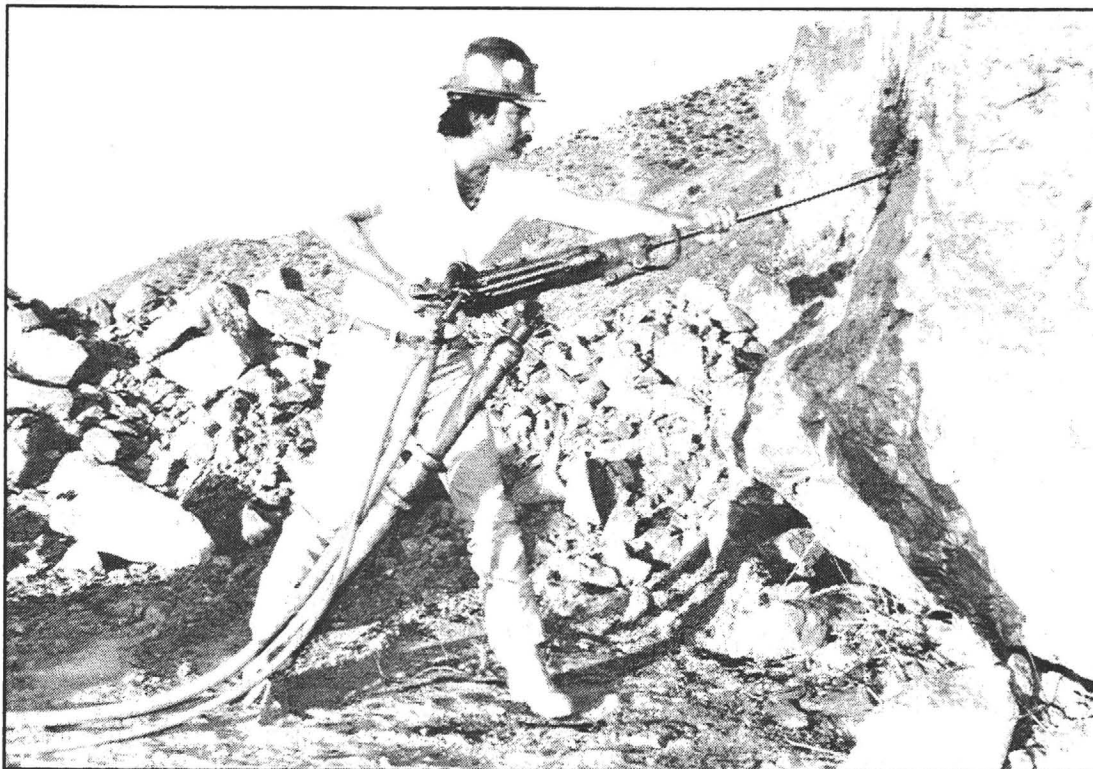
MUSEUM NOTES

BORAS HEADFRAME UPDATE

The grant funds from the Arizona State Historic Preservation Office for the Boras Headframe became available this May and the contract was signed at the end of the month. The funds were held up because of a depletion of state lottery funds due to large winners in the Lotto game and gaming on Indian reservations drawing players from the lottery.

Negotiations are underway for an additional \$15,000 that should complete the headframe erection, hoist house, interpretative signing, and walkways.

The next planned major expenditure for exhibits will be funding for the "Car Made From Rocks." The Department has already acquired \$5,100 for this project with a promise of an additional \$5,000 next year. Your contributions are appreciated and tax deductible.



ADMMR will be assisting in the National Hardrock Mining Championship to be held during the Arizona State Fair on October 27 in the main arena beginning at 10:00 am. The event, sponsored by the Arizona Lottery, has a full day of contests scheduled that include mucking, spike driving, jack leg drilling, and hand drilling. The teams will be selected from mining competitions held throughout the western states and will represent the best athletes in the sport.

ATTENTION CLAIMMANTS

DO NOT FORGET!!

Mining claim rental fees are due in the Bureau of Land Management state office by

August 31, 1995

Claim holders owning part or all of 10 claims or less may qualify for a waiver from rental fees. Applications for the waiver are also due by the same date.

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