

Publications Available

Circular 93, *Arizona Earth Science Clubs, 2001-02* and Circular 94, *Arizona Gem Shows, 2001-02* are now available.

Circular 93 lists the 39 earth science clubs that are currently active in Arizona, including general membership and residents-only clubs and prospecting organizations.

Circular 94 lists 25 gem and mineral shows that are scheduled for the upcoming season that begins in October.

Drop by the Museum or Department office to pick up your copies or view them at our website, www.admmr.state.az.us

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Mineral Resource**Mine-for-leach Project
Completed at Morenci**

For the first time in nearly 60 years there is no concentrator operating in the Morenci district. The Morenci concentrator closed at the end of February after having operated continuously since February of 1942. Earlier this year Phelps Dodge completed its newly constructed mine-for-leach project and will be operating at full capacity by the fourth quarter of the year. The \$220 million project, which includes crushing, stacking, leaching and SX-EW facilities, was completed in March following 10 months of design, engineering, and construction. Converting to 100 percent leach production will cut costs by eliminating the need for concentrating, smelting, and refining. The Morenci operation is the world's largest producer of copper cathode from SX-EW.

The new mine-for-leach facilities are expected to increase Morenci's annual cathode capacity to 820 million pounds. Thirty percent of that will come from the new crushing operation supplying the Stargo leach field.

Morenci is the fifth largest copper mine in the world. Past production combined with known reserves and future resources total 7.5 billion tons at 0.43 percent copper! That is enough copper to construct 250 million US homes. The deposit is unlike other porphyry copper deposits in that it contains almost all supergene chalcocite mineralization. This is what has allowed Phelps Dodge to change to an all-leach operation.

The project included expansion of the mine's current crushing and conveying system; installa-

tion of two 'stackers,' a mobile conveyor system that disperses crushed ore onto leach stockpiles; expansion of existing solution extraction facilities; and construction of a new electrowinning tank house.

At about the same time that Phelps Dodge announced the increase in production at Morenci the company announced cuts in production at five of its other Southwestern mines in order to reduce electricity consumption costs. Production will be cut at Henderson molybdenum mine in Colorado, at Tyrone and Chino in New Mexico, and at Sierrita and Bagdad in Arizona. During August and September the Sierrita operation will suspend one-half of its mining and concentrator operations (representing a total of one month of production), reducing copper production by 14 million pounds and molybdenum production by about 2 million pounds. Beginning in July, production at Bagdad will be suspended for one month, reducing its 2001 copper production by 19 million pounds.



Two 2,000 feet long radial arm stackers construct 22.5 foot lifts and then advance on new material at the high grade Stargo Canyon leach field.



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Address Correction Requested

Abandoned Mines Program

Since the spring of 1992 when the Arizona State Mine Inspector's Office entered into an agreement with the Bureau of Land Management to inventory abandoned and inactive mines, the Abandoned Mines Program has been expanded to include all lands in Arizona, public or private, with the exception of Indian lands. Douglas K. Martin, the State Mine Inspector, estimates that there are over 100,000 abandoned mine workings in Arizona. "Of those, we estimate that about thirteen percent may have what we term a Significant Public Hazard," Martin says. "We assess mines for safety, to see if they endanger the public in any way, and also to see if closing a mine would impact endangered or sensitive species."

Alene Jones, Abandoned Mines Supervisor, along with her staff of two, has the enormous job of inventorying the 100,000 workings. "So far, we have inventoried and mapped over 9,000 mines," Jones reports. "We have the assistance of college interns in the summer who thoroughly assess the target properties. So far we have investigated over 1.5 million acres." The target areas are selected using two criteria; they must face encroachment of the public, and they must be in an area that is identified as containing clusters of mines. The mines encountered are rated in three areas: dangerous conditions, impact on endangered species, and the degree to which the public has easy access to the mine.

Mines that are easily accessible to the public and have a high danger level are fenced, or in some cases, permanently closed. There are many steps necessary before a mine is permanently closed, including contacting the Department of Mines and Mineral Resources for in-

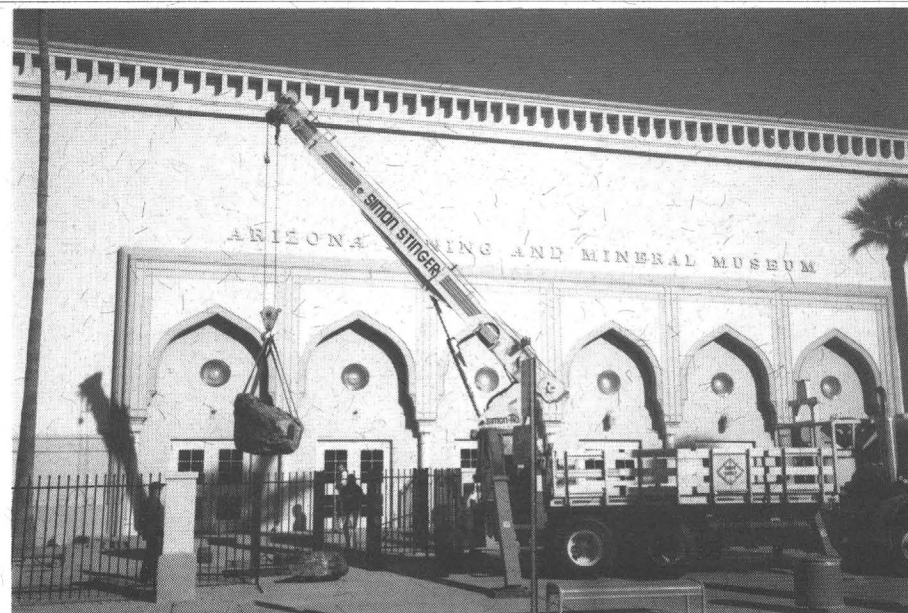
A Warning for Claim Holders!

While giving the Department background information for the article on the Abandoned Mines Program, Doug Martin asked us to remind claim holders that they have the sole financial responsibility for making their claims safe, even if shafts were already in existence when they filed their claim. The claim holder assumes liability for any danger to the public their property may present. If you are a claim holder, or an owner of any property that includes mines, the Mine Inspector's Office can assist you in assessing the danger and make suggestions for remediation if needed. Metal warning signs to post at mine sites are available at no charge.

formation on the mine's history and geology. Mines shown to have sensitive animal species or known to have future mineral potential are made safe with methods other than filling. In March 1999, a mine site near Cave Creek was permanently closed by backfilling. The site consisted of four vertical shafts, an adit, and a quarry highwall.

Jones says that the program currently is focused on abandoned mines on State Land. In 1998, Senate Bill 1250 created the Abandoned Mine Safety Fund to encourage private contributions that can be used directly to abate public safety risks on State Land and leverage legislative appropriations to increase the funding for this work. Money placed in the fund is limited to covering the direct costs of work and cannot be used to cover administrative costs.

A crane on loan from APS eases a brilliantly-colored boulder of copper ore from the Morenci mine into position in front of the Museum. The 9,547 pound boulder is a donation from Allen W. and Ruthie A. Preston of Tucson.



Students survey the merchandise in the gift shop, including polished stones, mineral sets, testing kits, arrow heads, crystal-growing kits, geodes, and posters,

Museum Gift Shop

In 1986 a case of donated minerals in a corner of the Arizona Mineral Museum was designated a 'sales area' and the Museum Gift Shop was established. Since its humble beginnings the Museum Shop has developed into an important additional source of funding for the Museum, supplying 100 percent of all Museum Tour Guides salaries. Additionally, revenues are used for specimen acquisition and other Museum expenses.

The shop currently offers a broad and diverse selection of gem- and mineral-related items. "The Museum Shop carries minerals from all over the world," says Ann Baker, manager of the shop. "The prices range from 25 cents, making purchases affordable for school children, to specimens for the high-end collector." Unlike some museum gift shops that do not allow school groups, the Museum shop carries a large selection of rocks, minerals, testing kits, and books especially for children. The shop also features items such as elegant mineral specimens, jewelry, rock tumblers, fluorescent lamps, carvings, lapidary material, rock hammers, gold pans, books, maps, and postcards.

The book section of the shop, managed by Dane Brown, a volunteer, takes up an entire wall of the shop and includes books on mining, prospecting, minerals, gems, gold panning, Arizona

history, ghost towns, fossils, and the lapidary arts. Department publications are available there also.

The shop is largely manned by volunteers who also make the majority of the jewelry items offered for sale. Staff members, volunteers, generous benefactors, and clubs donate mineral specimens, many of them self-collected, allowing the shop prices to remain low. "Every purchase made at the Museum Gift Shop directly benefits the Museum," Baker points out. So make certain you leave time for gift-shop-browsing the next time you visit the Museum or the Department offices.



Parking Solution

With Museum parking spaces almost non-existent due to construction of the adjacent Department of Administration building, it would seem that folks are getting creative in finding alternative parking. Actually, a better solution is to park in any of the government agencies' parking lots on the east or west sides of 15th Avenue north of Washington.