

## MINERALS AND MINE FIRES

Somewhat akin to slag minerals are those species that owe their origin to the occurrence of disastrous mine fires. They were produced no more intentionally by man than were those in the slags from his smelters.

I have several from different mines in my collection and their history is an interesting adjunct to the specimens. In 1981 I collected beautiful sulphur crystals from the fumaroles of the still burning Star Coal Mine at Rosedale near Drumheller, Alberta. The fire started in 1957 and when efforts to extinguish it failed the mine was sealed. Enough air is drawn into the mine, however, to keep it smouldering, and the rock around the vents was hot enough in 1981 to burn your shoes.

More dramatic are the fires such as occurred at the United Verde Mine in Jerome, Arizona in 1894. I have samples of copiapite, and arsenolite from this occurrence. The fire burned for several decades despite attempts to extinguish it. It was thought to have been caused by spontaneous combustion of unstable sulphide minerals on exposure to air. Surface stripping operations later exposed rocks above the fire area to reveal a suite of newly formed hydrated sulphate minerals.

The burning stopes were sealed with bulkheads and unsuccessful methods attempted to extinguish the fire included the use of water, carbon dioxide and steam under pressure. The introduced water as vapour probably reacted with the iron and copper sulphides at high temperature and their upward migration into fractures produced the unusual suite of species.

The new species found were, butlerite, guildite, ransomite lausenite, yavapaiite, selenium (first natural occurrence) and the now questionable species jeromeite. Also found were, alunogen, copiapite, coquimbite, voltaite, claudetite, and arsenolite. Of the new species only butlerite, ransomite and selenium have since been found elsewhere.

Reference: Mineralogy of Arizona, Anthony, Williams & Bideaux, page 29, University of Arizona Press, 1977.

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The above appeared in CMMA's "Micronews", September, 1944. An additional item of interest is to be found in Rocks & Minerals, March/April, 1982, page 73 on Wayne Downey, who collected in burning coal mines of Pennsylvania, and for whom downeyite is named.