

Porfirio Diaz Tunnel. The company introduced motorized equipment and modernized processing, with cyanidation eventually supplementing mercury amalgamation. Batopilas Consolidated also mechanized transportation, replacing the long mule trains with railroads.

Shepherd's family, his wife and seven children, lived in grand and feudal style. The "Castle" that was their home still stands as a tourist attraction. All of these changes, Hart concludes, led to development of an "alienated working class" and the concurrent events of the Mexican Revolution. He laments "the oppressive nature of the American mining company's interactions with a cross-section of Mexican society."

Hart cites references from archives in both the United States and Mexico, and library collections from Washington, D.C., to California and Texas. He had access to personal and corporate records from the Batopilas Mining Company and the Batopilas Consolidated Mining Company, spanning development from 1860, through the Mexican Revolution of 1910 and World War I, to the mine's closing in 1921.

The book has some problems of omission and with historical "facts," however. Oddly, no mention is made of the Sherman Silver Purchase Act of 1890, or of the subsequent Depression of 1893, which must have affected the Batopilas enterprise. A person named "Junior" Almaden is introduced as "heir to a nascent California wine-making operation." Undoubtedly Hart refers to the Almaden winery, but it was founded by a French family, and was not named for the family, but for its mercury mining locale, named, in turn, for a historic mercury mine in Spain. Another questionable lapse concerns the cyanide process, discovered in 1887 and not widely used until the twentieth century. That process should not be blamed for earlier deaths, and its health risks are debatable in any case. It is probably also erroneous to claim that Copper Canyon ores contained significant quantities of chromium and aluminum.

Hart also engages in some peculiar uses of

technical terms. The patio process for ore treatment is well known, and there is no need to translate it as "esplanade." There are probably no *arêtes* [glaciated peaks] in that part of the Sierra Madre. A tunnel is not a shaft; neither is a shaft a pit. A stope is not the same as a mine face; a refinery is not the same as a smelter; ore processing does not produce "chaff." No miner speaks of "grinders" that "smash" rocks, or of "vertical tunnels." The valuable liquid in the processing plant is never called "slop."

The book also falls short in editing and proofreading. Punctuation is careless: e.g. on page 39, "before intersecting the vein and; he recognized," and on page 94, "at the same, time." Words are omitted: e.g. page 19, "the estate consisted a big house." The Camuchin Mine is misspelled "Camunchin." The writing contains too many cases of contorted syntax, such as on page 24, "[he] . . . provided musical entertainment through his ten-year-old daughter;" page 71, "the pueblo hosts wanted to win these races badly;" and page 19, "the people of Julimes enjoyed more of life's comforts than did those of Chupadero, including at least a few commercial goods."

The thesis of this book, however valid it may be, is weakened by its presentation.

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Robert P. Wolensky and Joseph M. Keating. *Tragedy at Avondale: The Causes, Consequences, and Legacy of the Pennsylvania Anthracite Coal Industry's Most Deadly Mining Disaster, September 6, 1869*. Easton, PA: Canal History and Technology Press, 2008; 191 pp., b&w photos, maps, append., notes, ref., ind., paper, \$19.95. ISBN: 0930973407

It is fitting for me to review *Tragedy at Avondale* since the late Joseph Keating served as our tour guide to the disaster site on the post-conference tour for the 2005 Mining History Asso-

ciation conference in Scranton, Pennsylvania. I recall that it was hot and humid as we reviewed illustration panels he had gleaned from contemporary *Harper's Weekly* accounts and contemplated the 110 lives of men and boys tragically lost to fire beneath the historic landscape where we stood. Bob Wolensky dedicated this book in part to his deceased co-author. Wolensky also attended the Scranton conference and previously wrote a book on the Knox Coal Mine flooding disaster of 1959.

In light of notable U.S. coal mining accidents of recent years, it is appropriate to reexamine the accounts of what is widely recognized as anthracite coal mining's worst disaster. Nearly 140 years later things can still be learned and questions remain unanswered. One can find striking similarities when comparing recent media coverage, public opinion, and calls for tighter mine safety regulation following the mine explosion in Sago, West Virginia, and multiple fatalities at Crandall Canyon, Utah, to newspaper and periodical coverage of the Avondale mine fire, public opinion at that time, and the development of early mine safety laws. Avondale provided the push that caused growing safety concerns in the coal industry to become the basis for Pennsylvania's Mining Safety Act of 1870.

For those unfamiliar with the Avondale disaster, it began when a fire started in the upper reaches of a wood-lined ventilation shaft of this anthracite mine. Because fire moves upward, the wooden breaker built on top of the shaft quickly became engulfed in flames. This shaft provided the only means of egress from the mine. Smoke and noxious fumes drawn back down into the mine poisoned and asphyxiated all of the men and boys working below, as they had no way to receive fresh air or to escape. The ill-equipped rescuers could not reach the trapped miners in time, and two would-be rescuers also perished. A coroner's jury report from 14 September 1869 concluded that "the fire originated from the furnace in the mine, taking effect on the wood brattice to the

up-cast air course leading from the bottom of the shaft to the Head House."

Wolensky and Keating not only recount the ins and outs of the anthracite mining technology and practices of the time, as well as the evidence that supported the jury's report, but also reintroduce long-forgotten facts, issues, and testimony that support an alternate scenario. Many believed at the time that the fire was of incendiary origin. If it was indeed arson, ample motive and opportunity existed to carry out such a horrific deed in a time of Welsh versus Irish strife combined with labor unrest against anthracite mine management.

This work first introduces the reader to the standard facts and accounts concerning the tragedy at the Avondale Colliery in 1869. Each successive chapter explores the not insignificant viewpoint—common in 1869, but nearly forgotten today—that the fire was intentionally set, not accidental. The authors reconstruct from testimony and written accounts of the time how this might have occurred and why.

Labor and regional conflicts in the anthracite coal fields are examined in this light. The tension between the Welsh and Irish, the strife between the actual and legendary Molly Maguires, even the differences in various coal fields are explored to try to give the reader a full sense of the possibilities, though the authors acknowledge that the full truth is unknowable.

Further discussion considers the narrative that developed, the consensus reached in the final report, and why people believed what they believed. Mine safety and related legacies of Avondale are also covered. Finally, the more recent history of how the disaster has been memorialized and remembered and marked as a historic site brings the reader to the current day.

Tragedy at Avondale does not read like an academic study, so it will interest the general reader of mining history. Nevertheless, it is well researched, with many documented sources for those with a penchant for that level of detail. It contains many appropriate figures, including maps, portraits,

photos, and even artists' renditions and interpretations of the disaster. Appendices include a helpful glossary of anthracite mining terminology, a timeline of events between 1868 and 1875 encompassing the period of the tragedy, and a collection of ballads and poems about the incident.

The strength and appeal of *Tragedy at Avondale* is its reinterpretation of events, giving a plausible alternative to what has been the almost universally accepted explanation for the disaster. It is somewhat unsettling to read the emotional

accounts of the despairing families of the accidentally dead; to contemplate the disaster as the possible murder of 110 innocents is most disturbing. This is not a reinterpretation based upon new theories of social development or labor history, but upon documented accounts. The authors are to be commended for bringing these long lost ideas back to the forefront for consideration.

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