or unstable hanging walls. Nystrom argues that these models, and museum mining exhibits more generally, were used in an ideological partnership between large corporations and major museums as "educational propaganda," in Gilbert's words, for mining companies. "Gilbert [and others] . . . saw common cause with the heads of companies and industries . . . and sought to mobilize the visual culture of mining to help shape public understanding," writes Nystrom, a charge that other authors have also brought against museums of technology.

At the beginning of *Seeing Underground*, Nystrom mentions the importance of maps and models as material culture artifacts, a fascinating observation that perhaps remains underdeveloped. Material culture is the study of the meanings of an artifact, which are both utilitarian—what it does—and symbolic—what it represents. "Underground surveying and mapping not only helped mining engineers better understand and control their mines," Nystrom writes, "but also contributed to their professional identity. The power to make and wield technological representations set mining engineers, as a professional group, apart from others who could purport to do similar work, such as so-called practical men."

Early on, those "practical men" regarded the "college boys" suspiciously, but the scale and cost of modern industrial mining eliminated the possibility of an informal approach, however experienced, to mineral exploration and development. Thus the tools—maps and models—not only served the utility of information storage and retrieval, they also functioned as symbols of authority, evidence of the technological and social victory of college-trained engineers and geologists over "practical" miners by the late nineteenth century.

This reviewer's criticisms of *Seeing Underground* are limited mostly to mentioning what this significant study had to omit. The subject of maps and models as promotional tools is scarcely considered. Left unmentioned, understandably, is that other way of seeing underground, photography, about which the author has written in this journal (q.v. 2010). The work also suffers slightly from its final editing, chiefly from word omissions and noun-pronoun disagreements. None of these points diminish the contribution Nystrom's book makes to the field of mining history, and, more broadly, to the study of science and technology and to the literature about the triumph of the engineer in the age of industrialization.

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Karen Dustman. ***Silver Mountain City: Ghost of the Sierra.*** Markleeville, CA: Clairitage Press, 2011; 208 pp., numerous b&w illus., 4 maps, notes, ind., paper, $25. ISBN: 9780983333104

The Alpine County mining story has a familiar ring to historians. Despite its frigid perch along the isolated crest of the Sierra Nevada, mining began there in the wake of the Comstock excitement, after prospectors found a number of large quartz outcrops that dipped almost vertically through andesitic wall rock. Although the mineralized zone was extensive and some samples assayed high in silver, most lodes below the water table contained a mixture of complex, low-grade ores that could not be reduced without smelting.

The lack of local smelters and the absence of good roads or railways to carry concentrates to processing facilities in Nevada or California did not deter British investors from pouring money into these speculative mining ventures. Most of it was wasted driving tunnels and building expensive and generally useless surface plants—an outcome this book attributes mostly to management scams, but the story is more complicated than that.

When silver was demonetized and capital dried up the mines were abandoned. Since the 1880s a few small operators have periodically tried their luck, but they lasted only a few years and produced little. Today Alpine County rests in splendid rural isolation, a haven for ranchers,

hunters, and summer tourists.

Karen Dustman has produced an informative and entertaining book, but mining is only the thematic backdrop to her main interest, the social life and economic history of Silver Mountain in its heyday. A ghost town since the 1890s, for two decades after its founding in 1862 it served as a service and supply center for mining operations in the southwestern quadrant of the wedge-shaped county. The author is an enthusiastic county employee, local historian, and collector. Largely from contemporary local newspapers, county archives, the state library, and ephemera, she has gathered a wealth of information and crafted a compelling narrative.

Organized topically and well illustrated using a mix of archival photocopies and scanned images, the text weaves together colorful anecdotes and feature stories that cover, among other things, community schools, living conditions, travel hardships, mining-related industry and commerce, the financial and technological efforts to drive tunnels under the most promising outcrops, and the Alpine adventures of Lewis Chalmers, a Scottish-born lawyer and promoter who represented the principal mining investors and managed the main companies. His letterpress copies of correspondence were key sources for this book, but faulty attribution in the fifty-seven pages of endnotes and the lack of a bibliography will leave readers wondering where these sources are located.

A good copy editor would have improved the mechanics of documentation. One paragraph on page fifty-four, for instance, has six endnotes describing ventilation problems in a long haulage and drainage tunnel, but all are to the same set of letters, and none cites the location of the originals, which apparently reside either in the California State Library or at the Bancroft Library. Dustman refers selectively to important books and articles relevant to her subject, but the mining sections would have profited from a broader reading of mining literature, particularly the U.S. Geological Survey and California State mining and geology publications, monthly reports on Alpine County in the *Mining and Scientific Press* (now fully available online), and Clark Spence's seminal study, *British Investments and the American Mining Frontier, 1860-1901.*

From birth to death in twenty years is not unusual for mining towns, nor was the hope and hype that brought investors and camp followers to remote places like Silver Mountain. By skillfully interweaving her own descriptive prose with fragments of contemporary newspaper rhetoric, the author has written a lively popular account that will compare favorably with other books in this genre.

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