in these illustrations reflect the abundance of well-preserved material culture in the Cortez Mining District, and the authors' interpretation of these artifacts illuminates many of the social questions surrounding a mining camp, such as class, gender, and ethnicity.

With nearly half of its pages consisting of images, however, the book is both easily digestible, and, unfortunately, remarkably short. For example, the concluding chapter is just over one page in length. More detail regarding the modern Cortez Hills Expansion Project—the mining operation that spurred the archaeological investigation—and how it might affect the landscape and the remaining cultural resources would have been a nice addition. This could have provided readers unfamiliar with mining archaeology understanding of both the volatile nature of mining landscapes and the importance of archaeological investigations to uncover the stories embedded in these artifacts before they are lost. Nevertheless, *Historical Archaeology of the Cortez Mining District* should resonate with a wide audience and influence those budding archaeologists who hope to uncover another remarkable story from an historic mining site.

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Clark C. Spence. ***A History of Gold Dredging in Idaho.*** Boulder: University Press of Colorado, 2016; 341 pp., 24 b&w photos, notes, bib. essay, ind., cloth, $57. ISBN: 9781607324744

According to the U.S. Geological Survey, Idaho produced over nine million ounces of gold in more than a century of mining. Probably two-thirds of it was from placers, and much of that was from dredging. Auriferous gravels and black sands from surface to bedrock can be found to some degree in many of Idaho's streambeds and alluvial valleys. But finding placer deposits rich enough to work profitably—or even productively—was an elusive quest for most miners after the first flush years of the rush to the Clearwater and Boise Basin goldfields in the 1860s. This book takes up the story twenty years later, as a new technology entered the mining landscape to dredge through and under the remains left by surface miners with their picks, pans, sluices and rockers.

Among active mining historians today, no one is better positioned to trace Idaho's long and complex dredging history than Clark Spence. He knows his native state intimately but avoids personalizing what is essentially an economic and industrial history of Idaho dredging, from its beginnings in the experimental suction dredges on the Snake River to the last muddy scrapings of a dragline dredge on a tributary of the Clearwater nearly a century later. This is a work of careful, painstaking scholarship, the sort of deep dive into primary and secondary sources that characterizes all of his previous works.

Machines get more attention than people in this book, a fact attributable in part to the author's no-nonsense focus on technology and economics. The paucity of company archives and personal correspondence doubtless left him with few opportunities to evaluate the characters who ran the machines. Other than some smart managers and a few scoundrels who made newspaper headlines, personalities get only cursory treatment. The narrative describes individual and company operations, analyzes their financial successes and failures, discusses their technical problems, and summarizes their production results—or lack thereof. Descriptive chapters cover all sections of the state, but the lack of any maps reduces the book's value as a guide to Idaho's remote dredging fields.

In contrasting the efforts of many little operations with a few big ones, the author confirms the truism that money matters when it comes to field testing, land acquisition, applied technology, management expertise, operational stability, and ultimate productivity. In the teens and twenties the Guggenheim-backed Yukon Gold Compa-

ny was one of the "best financed and managed" dredge companies in Idaho and perhaps the most successful. On the other hand, underfunded or inexperienced operators working mostly on hope and hype rarely earned enough to pay expenses.

Idaho's dredging history is replete with rampant speculations and dubious promotions, with few successes and many failures. Dredge operators faced many obstacles, including frequent breakdowns, bad weather, transportation problems, sketchy financing, management shortcomings, process failures, and the scarcity of high-grade deposits—all of which are dutifully chronicled in this narrative. What emerges is a picture of a highly risky, speculative industry seemingly based as much on promotional hyperbole as rational analysis of basic economics. This, of course, is not an unusual condition in mining history, but dredging involved bigger investments, and therefore mining companies had more to lose, than the low-tech surface diggers that characterized nineteenth- and early twentieth-century placer mining.

Mining is widely unpopular today and heavily regulated, but the author is careful to avoid judging the past by present standards. Dredging brought jobs to the back country but left behind a de-vegetated, topsy-turvy landscape, with piles of cobble, ruined fishing streams, silted up downstream waterways, and polluted drinking water. Opposition increased as dredging resumed after its mandatory shutdown during World War II, but the powerful state mining industry kept serious regulatory laws off the books until late 1960s. By that time dredging was nearly dead, with little pay dirt left and costs exceeding revenue. Not until the 1980s, as the author notes, did Idaho begin serious reclamation efforts, funded in large part by federal legislation requiring the Bonneville Power Administration to spend part of its profits cleaning up the Columbia River watershed.

This is not a book for general audiences, but mining historians will enjoy this monumental foray into the details of a large and diversified industry.

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Michael C. Mix. ***Leaded: The Poisoning of Idaho's Silver Valley.*** Corvallis: Oregon State University Press, 2016; 276 pp., 6 b&w photos, 3 maps, 2 tables, 2 figs., notes, bib., ind., paper, $29.95. ISBN: 9780870718755

Leaded is a welcome addition to the mining scholarship of the American West inspired by the author's family history. Michael Mix, a retired Oregon State University professor of biology, grew up in Spokane, Washington, and fondly recalls picnics at a great aunt's mansion on Lake Coeur d'Alene. From Lucy Mix Day, the young author learned about her husband, Jerome Day, who with his brothers famously struck it rich at the Hercules Mine, one of the bonanzas in the Idaho panhandle's Coeur d'Alene Mining District.

"Silver Valley" refers to that district along the South Fork of the Coeur d'Alene River and its major tributaries from the town of Mullan downstream past Wallace and Kellogg. Local boosters, who by the 1970s popularized the term Silver Valley, celebrated the precious metal mined from lead-zinc ores that made the district the world's largest silver producer as well as home to significant lead and zinc producers. The largest and best-known of these, Kellogg's Bunker Hill Company, also owned a metal-refining and smelter complex. That complex closed in 1981 and two years later was designated a Superfund site. Today the Environmental Protection Agency continues its cleanup, while miners toil thousands of feet below in the two mines still active.

Although *Leaded* sets the ambitious goal to be an environmental history of the Silver Valley, it focuses on the operations of the Bunker Hill Company and the environmental destruction it caused, principally through the lead it released that denuded the Silver Valley's hillsides, con-