

systems in great detail. In general, the systems contrast with American plans, specific to each state and usually based upon either wage loss or the use of a published impairment rating not related to ability to work, i.e., “impairment” and “disability” are clearly distinguished.

The subject of native Africans working in South African gold mines merits an entire volume, but *Silicosis* does a thorough job. It details the exploitation and inferior treatment of blacks in every phase of the mining enterprise, from recruitment to repatriation. In contrast to whites (mostly Dutch-descended Afrikaners and Cornishmen), black laborers had inferior wages, assignments to the most physically demanding and dusty jobs, poor living arrangements, and marginal medical care and compensation for injury or disease.

The effectiveness of medical surveillance and care can only be imagined when one “kafir” doctor examined three hundred to twelve hundred black miners each day with no records and rarely chest x-rays. The white miner with lung disease was treated in a sanitarium; the disabled African miner was repatriated to his village of origin, usually to die and often in other countries such as Mozambique or Nyasaland (Malawi). And sick with tuberculosis, the repatriate often served as a vector of endemic disease, over the long term destroying village social and economic structures. It is probable that this social disruption has contributed to the prevalence of AIDS now seen in southern Africa.

Silicosis recognizes and discusses in detail the pivotal role of the Johannesburg International Silicosis Conference of 1930, financed primarily by the Transvaal Chamber of Mines, well aware that gold mining was the primary source of national revenue. A carefully selected body of experts from around the world gathered to formulate a legal and medical definition of the disease, to examine its causes and prevention, and to consider the sourcing and awarding of financial compensation. The chamber recognized that publicizing the safe-

ty of mining was essential to worker recruitment, and that efficient mining depended upon maintaining for as long as possible the fitness and productivity of miners. Also discussed was the extent to which the burden of compensation encouraged the implementation of preventive measures. The conference explicitly rejected the notion that silicosis developed from tuberculosis, and its deliberations have had long-lasting influence.

Although *Silicosis* reviews the *history* of medical diagnosis and of dust-related disease, this is not a technical or medical book and does not discuss the diagnosis of silicosis or its clinical, pathological, or physiological manifestations. Environmental conditions which lead to disease are not referenced in any technical or quantitative sense. The value of this book lies in its examination of the societal costs of industrial progress. What are the tradeoffs between national wealth and personal convenience and comfort versus workers’ and public health?

The inclusion of authors from ten countries offers important multi-national perspectives and bibliographic resources, many of them primary. The text is clearly written and supported by extensive documentation. *Silicosis* is highly recommended for its analysis of the evolution of the economic, political, social, legal, and regulatory aspects of this occupational disease.

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R. D. Saunders. *Underground and Radioactive: Adventures of a Uranium Miner in 1970s New Mexico*. Jefferson, NC: McFarland and Co., 2017; 218 pp., 31 b&w photos, 1 map, glos., ind., paper, \$29.95. ISBN: 9781476669960

In *Underground and Radioactive*, R. D. Saunders chronicles his experiences as a miner in the Grants Uranium District in the mid-1970s. In the first couple of chapters he describes how he went from being a college graduate in Illinois to

working for Kerr-McGee at the Section 35 Mine in Grants, New Mexico, known as the "Uranium Capital of the World."

He started out as a greenhorn in the industry. He had to learn quickly about how machinery and processes work in the mine, and his description also serves to introduce the reader to the world of underground mining. He relates stories of incidents that occurred to him as he progressed from starting out as a laborer, moving up to being a miner's helper, and eventually achieving the status of working as a miner.

Saunders states in his introduction that, "while mining is deadly serious, much of what happened underground was just plain funny." A good sense of humor runs through many of the stories and descriptions. For example, Saunders felt sorry for the workers above ground who "never got the opportunity to expand their vocabulary through working relationships with miners from all over the world willing and able to teach obscenities in a dozen different languages."

A major strength of the book is character studies of his fellow miners and co-workers. He devotes a chapter to describing Cal Cargill, who trained him from being a miner's helper to working as a miner, a big jump in pay and prestige. Saunders starts his description by saying that "there are people who pass through our lives, however briefly, who change us forever. . . . Their impact is profound and enduring, emotionally, spiritually, physically, and sometimes more. . . . For me, Cal Cargill is one of those people."

He describes an incident where Cal saved them both from a cave-in and probable death. Cal heard sounds that indicated that the large area they were working in was about to collapse, so he said they would leave early for lunch. Sure enough, when they returned after lunch, the stope "was a mass of rubble, boulders, and timbers. Hundreds of square-sets were down. It was an incredible sight." Cave-ins were a major cause of death in the district due to the soft sandstone which shifted and collapsed in ways hard to predict.

This book will appeal to both mining aficionados and the layperson. Saunders describes in detail the nature of the work he performed. He defines mining terms in everyday language, in addition to having a glossary in the back of the book. Unfortunately, there are no underground photos of the actual mines.

Saunders provides photos from the New Mexico Mining Museum in Grants to illustrate mining methods. The Museum created an excellent replica of many features of the underground mine workings in the district, and the photos correspond well to the stories Saunders tells. For example, a photo of an ore chute accompanies his story of blasting open a jammed ore chute. The chute turned out to be full of water, which gushed out and nearly drowned him and his co-worker.

Saunders admits that he didn't know what he was doing when it came to using the powder to blast open the chute, and that he might have been fired for what he did, except that "the mine was desperate for bodies." Saunders describes drilling and blasting boulders in a large ballroom as "the most dangerous work I ever intentionally undertook." Working in an open stope was not standard practice and it could have resulted in being fired, or worse, injury or death. No slabs fell on him, and as he says, "sometimes you just get lucky."

A severe accident that resulted in broken vertebrae ended Saunders' mining adventures after two years of underground work. He went on to a career in economic research and he is now retired. He writes in the epilogue that "not many days go by that I don't miss being underground, though." He told me via email that "I really can't emphasize enough how impressed I was at the time and still am today by the people I worked with. These were extremely hard-working and honest individuals the likes of which I never had the pleasure of working with again at any other job."

This book is well-regarded by several people I know who worked in the district. Jack Burgess, who also worked at Kerr-McGee as a mine superintendent, said that the book is the "best descrip-

tion of day-to-day mining that I've seen." Rusty Rappaport, owner of Four Corners Exploration Company, said the book was well written, and he liked the description of the difficulty of finding a place to live in the booming town, an experience that Rusty shared as well. Very few other books have been published about the Grants Uranium District. George Dannenbaum's *Boom to Bust: Remembrances of the Grants, New Mexico, Uranium Boom* is a collection of colorful stories and interviews with people who worked in the mining industry, as well as other people who lived in the Grants area. *Yellowcake Towns*, by Michael A. Amundson, looks at the impact of uranium mining on towns in the West, including Grants.

Several books have examined the health impacts of uranium mining among the Navajo in New Mexico and Arizona, such as *Yellow Dirt: An American Story of a Poisoned Land and a People Betrayed*, by Judy Pasternak, or *The Navajo People and Uranium Mining*, edited by Doug Brugge, Timothy Benally, and Esther Yazzie-Lewis.

Saunders does not address the more controversial aspects of uranium mining, such as health effects, remediation of mine sites, or nuclear power or weapons. Saunders' book is not an overall history of the district, but through his personal stories the reader gains a good understanding of the way mining was conducted.

Saunders states that he wants to share his experiences because "frustratingly little has been written about the life of an underground uranium miner. Even less is known about those working underground at Ambrosia Lake, an ancient, long waterless seabed in northwest New Mexico that is part of the Grants mineral belt." With all of the mines currently closed, and the mining techniques of this era unlikely to be resumed, Saunders' recollections make a valuable contribution to preserving the mining history of the Grants Uranium District.

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