

# When Rosiclare, Illinois, was “Fluorspar Capital of the World”

## State mineral helped end World War II

By Herbert K. Russell

In 1965 the Illinois legislature was asked to name a *state mineral* and chose fluorspar. Some people wondered if coal had a better claim on this honor, but (as all schoolboys and girls know) coal is not a mineral but is simply compressed vegetation.



Fluorspar has a wide range of applications—as a component in steelmaking, ceramics, dental health (fluoride) and more: when used in combination with other minerals, fluorspar helps to remove steel’s impurities and makes it stronger; when used to create hydrofluoric acid, fluorspar’s uses are nearly endless, e.g., rocket fuel and aluminum. It is marketed in three grades depending on its purity.

The origin of fluorspar—aka “spar,” fluorite, and  $\text{CaF}_2$ —dates to millions of years ago when volcanic forces deep within the earth propelled hot, mineralized gases and fluids upward in southeastern Illinois and western Kentucky. Much of the liquid fluorspar lodged in vertical cracks and faults created by the area’s earthquakes. As time and weathering eroded the soil covering some deposits, fluorspar outcrops became visible.

When the explorer-ethnologist Henry Rowe Schoolcraft traveled down the Ohio River in 1818, he saw on the cliffs near Cave in Rock “some fine purple spars and crystallized galena.” Galena was then the more important mineral (it is the source of lead and bullets), but by the 1890s or perhaps a little earlier, fluorspar had found its place in American steel making.

Big-time mining began after World War I, during which fluorspar’s military applications had become clear. The United States had access to fluorspar in small amounts in several states, but the largest and easiest-to-mine deposits were in fluorspar-rich Hardin County and nearby counties such as Pope.



At Spar Hill, personnel from the Benzon Fluorspar Company use a shovel to remove fluorspar’s “overburden,” the dirt and rocks covering it. The photo was taken in eastern Hardin County about 1935.

Courtesy Hardin County Independent, Elizabethtown, Illinois



Shown in black, major deposits of Illinois fluorspar are located in the counties of Hardin and Pope between the early settlements of Shawneetown and Golconda.

Map adapted from Illinois State Geological Survey.

U.S. Steel and other corporations opened Illinois mines, and for much of the twentieth century, eighty or so mines in Illinois and those in Kentucky provided 90 percent of domestic fluorspar needs. Much American fluorspar was exported abroad. Regardless of its destination, however, Illinois fluorspar often began its trip to market on Ohio River barges in Hardin County.

The Cave in Rock area had some of the richest and most accessible minerals, portions of which had formed in deposits so shallow that they could be surface mined, such as those at the eponymously named *Spar Hill* and *Lead Hill*.

When fluorspar deposits are deeper than about fifty feet, a shaft mine is necessary. Illinois mines descended to various depths, with one as deep as 1,300 feet. A partial list of underground hazards included the loss of a miner’s finger or arm to machinery; crushing by roof falls (cave ins); flooding, especially when mining near the Ohio; and bad air, the most lethal being hydrogen sulfide; the latter is seldom encountered, but its ability to quickly incapacitate its victims earned it the nickname of “knockdown.” Silica dust was also a concern. A frequent companion material of mining, silica can result in silicosis, a breath-stealing disease.

Loosening the ore was usually accomplished by blasting with dynamite, resulting in a “muck” pile of various minerals and waste rock. The clay, shale, limestone and other rocks that accompany blasting have to be removed, after which it is necessary to separate fluorspar from other minerals, such



**The Crystal Fluorspar Company relied on this Ohio River loading facility to market its product. Barges were capable of carrying up to 550 tons each. This load may be headed to steel mills in Pittsburgh; Granite City, Illinois; Gary, Indiana, or elsewhere. Photo from *Mines and Minerals in Illinois, An Industrial Romance*, State Department of Mines and Minerals [1945].**

as lead, zinc, calcite, barite, quartz, and so on. Family mines too small to own the appropriate cleaning technology generally sold their ore to larger mines in the immediate area.

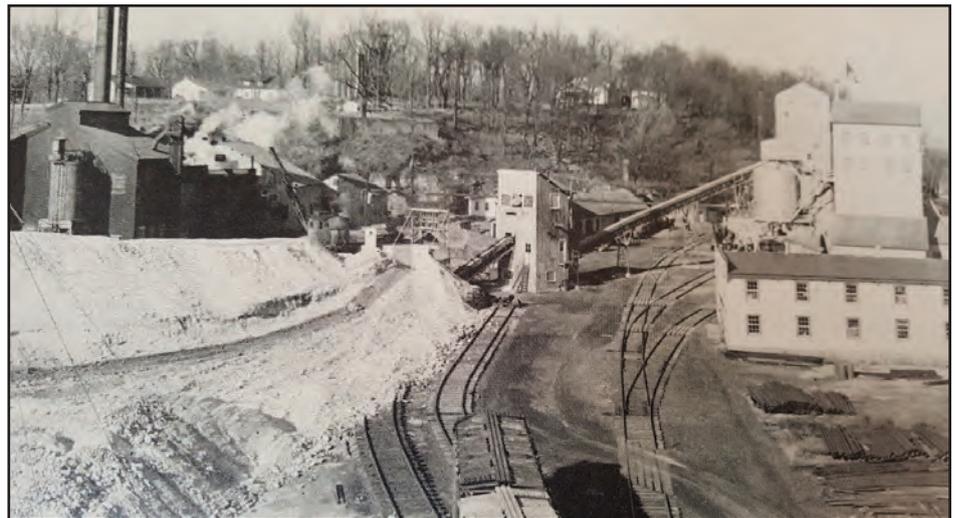
Jobs were numerous during flush times in both mom and pop mines and those owned by major mining interests. As the pick-and-shovel era gave way to mechanized mining, the Illinois industry flourished, except when strikes were underway. The area also experienced mine wars between union and nonunion workers.

The Great Depression of the 1930s saw a severe decline in mining as companies competed to sell to the few markets available. This condition continued until 1939 when war broke out in Europe, and the federal government mandated the stockpiling of fluorspar.

During World War II, Illinois fluorspar was vital for producing steel for tanks and ships and aluminum for airplanes. Fluorspar miners were exempt from the military draft because they were employed in an “essential war industry.” Soldiers and other uniformed personnel guarded Rosiclare’s mines and environs, and War Department signage warned aliens, spies, and saboteurs that traitorous behavior would result in fines, imprisonment, or death.

Illinois fluorspar production surpassed that of Kentucky during the war

years because most Kentucky fluorspar was in vertical veins. In contrast, some Illinois fluorspar in the Cave in Rock area had formed in easier-to-access horizontal or “bedded” deposits. These had occurred long ago when the hot fluoride-bearing solutions had encountered obstacles that caused them to move laterally and mix with limestone. Many of these horizontal deposits could be easily mined with the use of large, motorized vehicles to drill, load, and haul.



**The Aluminum Ore Company of Rosiclare is shown in the early 1940s. White heaps of fluorspar are on the ground at left in front of the power house. Milling and crushing took place in the light colored building in the center, with additional cleaning and drying facilities in the buildings on the right. Photo from *Mines and Minerals in Illinois, An Industrial Romance*, State Department of Mines and Minerals [1945]**

In early 1945, the Illinois State Department of Mines and Minerals showed how it was contributing to the war effort with a compact book titled *Mines and Minerals in Illinois, An Industrial Romance*. It highlights the state’s coal and mineral assets and capabilities. Its editors did not (of course) know of the scientific research going on under the football stadium at the University of Chicago: processed fluorspar would turn out to be vital to nuclear fission, allowing scientists to alter uranium 238 to U-235 and create the atomic bomb that ended World War II.

The post-war period brought with it a sense of well-being, and many mines stayed busy. Major corporations included Inland Steel, Alcoa (aluminum), Allied Chemical, and others. Refinements were made in processing finely ground fluorspar, which might be mixed with a binder, shaped into uniformly sized pellets or briquettes, and then dried and shipped in 100-pound bags. Or the processed fluorspar might be transported in bulk, depending on the needs of the end-user.

In 1965 Illinois named fluorspar its state mineral, and Rosiclare soon after promoted itself as “Fluorspar Capital of the World.” There were no domestic challengers to Rosiclare’s title—in part because the Rosiclare Lead and Fluorspar Mining Company



**Some Hardin County fluorspar had been deposited in horizontal beds so spacious that they could accommodate large mining vehicles. These four plant officials discuss mining procedures in a comfortable environment. The tube at left delivers fresh air to a work site.**

*Courtesy Gelman Collection, Special Collections Research Center, Morris Library, Southern Illinois University, Carbondale.*

had once been the largest fluorspar mine in the nation. Now, however, a concern that had been growing for years matured into a major problem.

Less expensive foreign fluorspar had threatened Illinois miners and producers for a good many years. After the early 1950s, price differences between foreign and domestic sources became more attractive to American consumers, especially the powerful steel industry, which had the political clout to influence tariff policies. Mexico also had deposits of easily mined fluorspar, and it enjoyed much cheaper labor costs. As the 1960s changed into the seventies and eighties, cheaper fluorspar from Mexico and other countries threatened and then shut down many American mines.

Kentucky's fluorspar mines ended work in 1985, those in Illinois in 1995. As this article was being prepared, Kentucky and Illinois each had one mine working. Fluorspar's heyday in Illinois had lasted about a century, from the 1890s to the 1990s.

It is fortunate, then, that both states have independent fluorspar museums devoted to indoor and outdoor displays of equipment, minerals, signage, records, mine models, and many photos. The American Fluorite

Museum is located in Rosiclare in the former office building of the Rosiclare Lead and Fluorspar Mining Company. An Illinois State Historical Society sign describes the site's significance. The Ben E. Clement Mineral Museum is across the Ohio River in Marion, Kentucky; it possesses one of the world's finest collections of fluorspar. Both museums have web sites showing hours and contact information.

Rosiclare affirmed its historical place in 2017 with the unveiling of a life-size double statue showing a fluorspar miner and his wife. He is in



**A large piece of blue fluorite from Hardin County rests on a weathered cart in the American Fluorite Museum in Rosiclare.**  
*Photo courtesy Gary DeNeal.*

work clothes and carrying a drill; she has a baby bottle protruding from a pocket in her sweater, a reminder that more is riding on his shoulders than just a drill. 

*ISHS member Herbert K. Russell, Carbondale, has written or edited several books on Illinois subjects, including Fluorspar Mining: Photos from Illinois and Kentucky, 1905-1995 (Southern Illinois University Press, available Dec. 2018).*



**David Seagraves' 2017 double statue is sited on Rosiclare's Main Street in a public area near the Ohio River. A wife and mother hands her husband an auxiliary lamp and dinner pail as he heads to the mines. The inscription reads, "In Memory of the Miners Who Have Given Their Lives in the Fluorspar Mines."**  
*Photo courtesy Bethany Belford*