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Kentucky's Fluorspar

FLUORSPAR is not a rare mineral, but it rarely occurs in commercial quantity. There are some considerable deposits in Colorado and New Mexico, but their remoteness from markets is too great a handicap to successfully commercialize them. The chief commercial deposits in America are in Crittenden and Livingston Counties, Kentucky, and just across the Ohio River in Hardin County, Illinois. The deposits known as the Ozark Uplift courses northeasterly from Arkansas, through Southern Illinois and into Crittenden and Livingston Counties, Kentucky. The Arkansas mineralization incident to the Ozark is lead and zinc, and these not infrequently occur along its eastern course, but the Illinois-Kentucky end of the Ozark not only carries considerable lead and zinc, but much more fluorspar. Volcanic intrusions of Mica Peridotite through limestone country rocks usually cause the deposition of commercial fluorspars, and, sometimes diamonds. These intrusions are much in evidence in the Illinois-Kentucky limestones at the east end of the Ozarks. Hence the large fluorspar deposits in the Illinois-Kentucky field, but no diamonds, and just as they occur almost identically in England and Germany, and in South Africa in the limestones to the east of Kimberly diamond fields. These intrusions of peridotite are also in evidence on the south shoulder of the Arkansas Ozarks. But the country rock there is different, and hence the Arkansas diamonds.

The discovery of fluorspar in Kentucky is due to the iron ore and mining and charcoal furnace operations of President Andrew Jackson in the eighteen thirties and forties. There were then clear surface evidences of the best fluorspar deposits, and the "lead shines" caught his eye. He thought it meant silver, and it frequently does. Before he

discovered that Kentucky leads have a low silver content, Jackson had taken title to many thousands of acres. He disposed of the acreage and there have since been opened on the same land some of the best fluorspar deposits in the country. The present owners trace their titles back to the President with much pride.

The next man to grasp the meaning and possibilities of these fluorspar deposits was James Waller. He came in the late sixties and early seventies and did extensive and expensive prospecting, and for the first time the extent of the

deposit was disclosed. The industrial uses for it then were too limited and transportation facilities so meagre that it was not possible for him to make the project a commercial success. At that time the only demand was from the glass-makers, the potters, and chemists, and they took only the high grade.

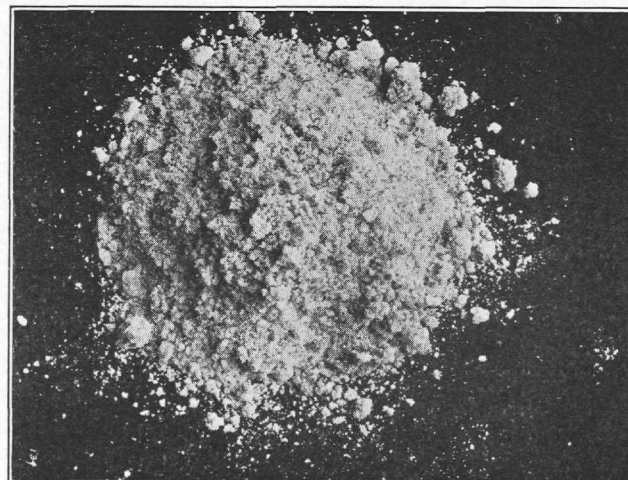
Fluorspar mining on a large scale began in 1890 with the transition in steel making from the Bessemer to the Open Hearth process. The depletion of high grade iron ores drove the steelmaker to the Open Hearth process so that the plentiful supplies of low grade ores and scrap could be worked. Without fluorspar, dependable steel from the open hearth furnace would not be possible. Seventy-five per cent of the fluorspar production is used in steel making. Five per cent is used in aluminum making where it is equally essential; ten per cent goes for glass and enamelware; and ten per cent is used for chemistry and miscellaneous purposes. Ultimately, it is expected that heavy drafts will be made upon fluorspar in cement and wood preserving. Fluorspar was the base of the deadly war gas which Uncle Sam had ready to turn loose upon the Germans at the close of the World War.

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BY special permission of the publishers, this feature was rewritten from an article by Clement S. Nunn, which appeared in the July, 1932, issue of the "Kentucky Progress Magazine."—The Editor.



Fluorspar for 10,000 Bath Tubs



Fine "Sugar" Gravel Fluorspar

Kentucky's Fluorspar

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Notable among the mines is the Rosiclaire in Illinois, and the Franklin and Lafayette in Kentucky. There are numerous other valuable mines throughout the territory. At the present time, however, the stock bins of all users are running over, and until business improves, mine production will be negligible.

Lead content is about one per cent of the fluorspar production, and it is all separated and saved by milling at the mines.

Several valuable deposits of zinc ore, free from fluorspar have been developed, and until the depression, this branch of the industry was growing rapidly. Zinc occurs also in connection with nearly all the fluorspar deposits, but the connection has not been good for either. The zincs are sulphides, and the steel maker does not relish the idea of adding even that small quantity of sulphur to his batch, where he is seeking to make low sulphur steel by the use of fluorspar. Until the development of the flotation method of separation, they were inseparable because so nearly of the same specific gravity. The zinc smelter was also afraid of zinc ore carrying any quantity of fluorspar.

It seems peculiar that smelters of all other metals buy fluorspar for help in the process, but the zinc smelter does not actually smelt; he distills, and the powerful hydrofluoric acid destroys his retorts.

But these metallurgical troubles are all in the past. While there are good zinc deposits in the districts which are free of fluorspar, the newly developed flotation method has solved the separation problem so that the fluorspar mines, when business revives, will add that equipment to their mines and turn to profit the big tonnage of mixed ore which has heretofore gone into the discard.

To see Joe Moss, pride of the Ceramics, sleep in English 419, one would think that concentration was synonymous with sleep. Joe not only concentrates in his sleep but very sleepily concentrates.