

The Natural Chemical Resources of Southern Illinois

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Illinois is widely noted for its agricultural products, but few people realize that its second most important contribution to commerce comes from its mineral resources. "Egypt"—the southernmost quarter of the state—has a greater variety of these resources than the other three quarters combined. From the discovery of salt deposits in Saline County by the earliest pioneers to the recent studies of the future possibilities of Anna kaolin, there has been a steady advance in the development of various minerals.

The most extensive deposits are those of soft coal which, until recently, were not of special chemical significance. However, in December, 1933, a coking plant using the Knowles type oven was put into operation at West Frankfort, the site of the largest soft coal mine in the world. At the present time twenty-six ovens are in operation, using over 330 tons of coal each day to produce 250 tons of a coke, called "Carbonite", several tons of a light tar, and about 750,000 cubic feet of gas which is bought and distributed by the Western United Gas and Electric Company. The coke is used chiefly for fuel purposes but developments may yield a product for metallurgical use.

The fluorspar deposits of Hardin County are noted as among the most productive mines the world over. Discovered in 1839, mining started in 1842 with galena, which was also present, receiving the most attention. After the Civil War the lead ore was gradually superseded in importance by the fluorspar and since 1900 it has been of major importance. During the last decade about 630,000 tons of fluorspar, valued at over thirteen million dollars, were marketed from these mines. Most of the ore is used in the basic open hearth steel process to give greater fluidity to the slag. Considerable quantities are also used by the aluminum industry in the manufacture of artificial cryolite, Na_3AlF_6 ; and for the preparation of other fluoride chemicals.

Another mineral of importance to several chemical industries is the fuller's earth deposit along the Ohio River in Pulaski County. Mining was started in 1920 by the Sinclair Oil Company and shortly after that date the Standard Oil Company of Indiana opened a second mine near by. About 150,000 tons of the earth, selling for over two million dollars, have been obtained since that time. The two plants have a

capacity of over 300 tons a day. Again Illinois ranks in the first three states in the Union in this product. It is used almost entirely for bleaching and clarifying mineral oils. Its action in this capacity is dependent upon the porous nature of the earth, due to the fact that it is built up of grains approaching colloidal size which offer a large active surface. (The name "fuller's earth" is derived from its original use in removing grease and fat from woolen cloth during the process of fulling.)

"Egypt" is also noted for its deposits of silica of a very high degree of purity, especially in Union and Alexander Counties. The mineral is ground to the fineness of flour and is used extensively as a filler in paint, wood and soap products, and in the manufacture of metal polishes and foundry molds. Production during the last decade amounted to 135,000 tons valued at over one and a quarter million dollars.

There are also numerous deposits of clays for use in the manufacture of pottery and lower grade ceramics products, and of limestone which, however, is used mostly as crushed stone for aggregate and ballast.

All of these natural chemical resources, with the exception of the by-product lead from fluorspar mining, are of non-metallic nature. They do not receive the publicity of the metal ores in other parts of the country but, nevertheless, they are all of national reputation in their particular fields. They are all contributors to success in important industries.

Two other possible developments are of great interest according to recent investigations of the State Geological Survey. First, the rapidly expanding rock-wool industry has at its demand five deposits of workable wool-rock material of siliceous limestone for the production of high-grade insulating products. Second, Illinois produces one-fourth of the edible animal and vegetable oils used in the United States. If the fuller's earth, previously described, is used for purifying these edible oils they become rancid, so it has been necessary to use English or Californian earths costing from twenty-six dollars to fifty-four dollars a ton with as much as 50 tons a day being used. It has recently been discovered that a kaolin deposit near Anna (Union County) has characteristics which may allow it to compete with these imported products. This Anna kaolin seems to have regenerative powers which excel both the others now in use.

The quality and uses of all these natural chemical resources of Southern Illinois are of a nature that point to an excellent continued demand in supplying the needs of a variety of essential industries. Discovery of new deposits and further developments should also lead to expansion in the productions of these minerals.