"Mineral Conservation in Missouri"

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The term "conservation" when used in reference to mineral resources has a connotation somewhat different from its usage in connection with plants, animals, water, and soil. While in many cases, conservation of natural resources implies the preservation or planned replacement of these resources, the conservation of mineral deposits is generally understood to entail the most efficient and maximum possible use of these resources which cannot be replaced.

To use mineral resources most efficiently, the market demands, prices, and methods of mining, milling, and smelting must be of a nature which permits mining of ores of the lowest possible grade.

If mineral prices are abnormally low in proportion to mining, milling, and smelting costs, there is danger of a tendency to "high-grade" or produce only the richest ore, leaving behind the low-grade material. Such cream-skimming operations exemplify poor conservation practices because the lean ore which is left behind may never be produced whereas it might have been profitably produced if blended with higher grade ore. For the sake of convenience, the term "ore" is used rather loosely in this discussion, because as defined in mining circles, an ore no longer merits the name when it cannot be produced at a profit.

Depressed prices may also lead to closing of mines. Once a mine is closed (as in the lead-zinc area of southwestern Missouri), a tremendous price rise may be necessary to reopen it. Such is especially the case when water is permitted to flood the workings and installations such as trackage, electrical wiring and timbering deteriorate. Thus, unstable mineral prices or markets may result in loss of what might be future ore reserves, because of the great expense of reopening mines.

As cited in the two examples above, conservation of mineral resources demands an assured profitable market for mineral products so that the maximum amount of ore may be profitably produced and so that the minimum amount of "ore" be left behind.

Advances in mining, milling, and smelting methods have resulted in more efficient production of mineral resources in many areas in Missouri.

Improved mining and milling methods have permitted reworking the tailing piles for lead in the Lead Belt of southeastern Missouri. Advances in exploration geology and mining engineering methods have assured the continued operation of mines which were at one time considered exhausted.
Barite or "tiff" was formerly mined by hand. Mechanized surface mining methods and large milling plants have permitted reworking of hundreds of acres considered exhausted using hand mining methods. Mechanization has likewise permitted the strip-mine production of thin coal beds with relatively thick overburdens. The future may see the use of coal in place by gasification of the coal and utilizing the energy of the burning gas. Such usage would be conservation, because it would permit the exploitation of beds which are too thin or too deeply buried to permit profitable mining.

The conservation of oil is realized by using production techniques which do not dissipate the reservoir energy contained in natural gas pressure or the hydraulic drive of water. Those forms of energy which help to drive the maximum amount of oil from the ground are most efficiently used if producing holes are properly spaced and if the rate of production is carefully controlled for maximum recovery. Conservation of oil also includes the development and utilization of methods of secondary recovery which will permit flushing out oil that cannot be produced by normal production methods. The two most common methods of secondary recovery are gas injection or water flooding.

Many thousands of dollars are spent annually in Missouri on mineral conservation. These expenditures include research on more efficient mining and milling methods, the search for new uses for minerals and by-products, and geologic research devoted to finding new mineral deposits.

In addition, the mining industries expend large sums for prevention of stream pollution by mine and mill wastes and for research in rehabilitation of strip-mined lands.