

T H E W O R K S P R O G R A M

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--Works Progress Administration--

For Release to Newspapers,
Sunday, September 25, 1938

TECHNICAL ADVANCES IN MINING MAKE AVAILABLE LOW-GRADE ORES, OFFSET DEPLETION, AND INCREASE OUTPUT PER WORKER

The mining industry in this country has long since skimmed the "cream" of most of the rich mineral deposits and is now faced with the problem of working grades of ore which a generation ago would have been considered almost worthless. The ingenuity and inventiveness demanded by this decline in ore grades has brought about great improvements in mining techniques. In spite of decreasing metal content per ton of ore, technical progress has produced a rising output per worker for all major metals.

These facts are brought out in a monograph prepared by the WPA National Research Project in cooperation with the U. S. Bureau of Mines, and released for publication today by Harry L. Hopkins, Works Progress Administrator. Under the title, "Mineral Technology and Output per Man Studies: Grade of Ore", it analyzes the effects of lowered ore yields in such minerals as gold, silver, copper, lead and zinc.

In transmitting the report to Mr. Hopkins, Corrington Gill, Assistant Administrator in charge of all research of the WPA, states that the declining grade of ore "has been a persistent stimulus to the mining technician. His inventions, required to offset increasing physical difficulties in mining,

have changed the course of output of metal per man.

"Despite improvements in technique, however, there comes a time in the life of every mine when the yields of valuable content per ton of ore continuously fails to return a profit; the mine then ceases to be an employer of labor and leaves in its wake the half-abandoned camps that are found in many of the older mining districts. Some of the effects of this depletion are found in the heavy relief rolls of many western mining areas where early vigor has waned, in the changing geographical distribution of employment opportunities for mine workers as mining shifts to new localities, and in the modified skills required by 'mass mining' of low grade deposits with new varieties of equipment.

"Also, when adverse economic conditions force reduced production, employment is sharply affected as efforts are made to raise the yield by the selective mining of small tonnages of high-grade ore. For example, the report points out that Michigan copper mines reduced their output of ore by 68 percent between 1931 and 1932, and raised the yield by 45 percent by means of selective mining. This did not greatly change the output of copper per man, but it resulted in sharp changes in employment since the man-hours worked underground were cut 72 percent."

The study goes into the subject of the general decline of ore grades, prefaced by a brief description of early "bonanza" mining when a pick and shovel were the principal items of equipment, and discusses the technical advances which have made possible the profitable working of low-grade ores. Separate chapters are devoted to gold and silver ores, copper, and lead and zinc.

In a final chapter on output per man it is pointed out that approximately one-half the Nation's present copper supply comes from mines which were known

but considered worthless in 1900; that silver and gold deposits with one-tenth the yield required for profitable production 50 years ago are being successfully worked today, and that in spite of a 27 percent decline in ore yields in lead mines in the last quarter of a century, such deposits are still being worked at a profit. "Metal mining," the report states, "has had to adjust itself to a lower grade of ore, and the success of this process has been one of the important victories of mineral technology."

The report consists of 114 pages, including an appendix of numerous charts and supplemental material. It was prepared by Andrew V. Corry and O. E. Kiessling. Dr. Kiessling, of the U. S. Bureau of Mines, is in charge of the mineral technology studies of the National Research Project on Reemployment Opportunities and Recent Changes in Industrial Techniques directed by David Weintraub and Irving Kaplan.

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