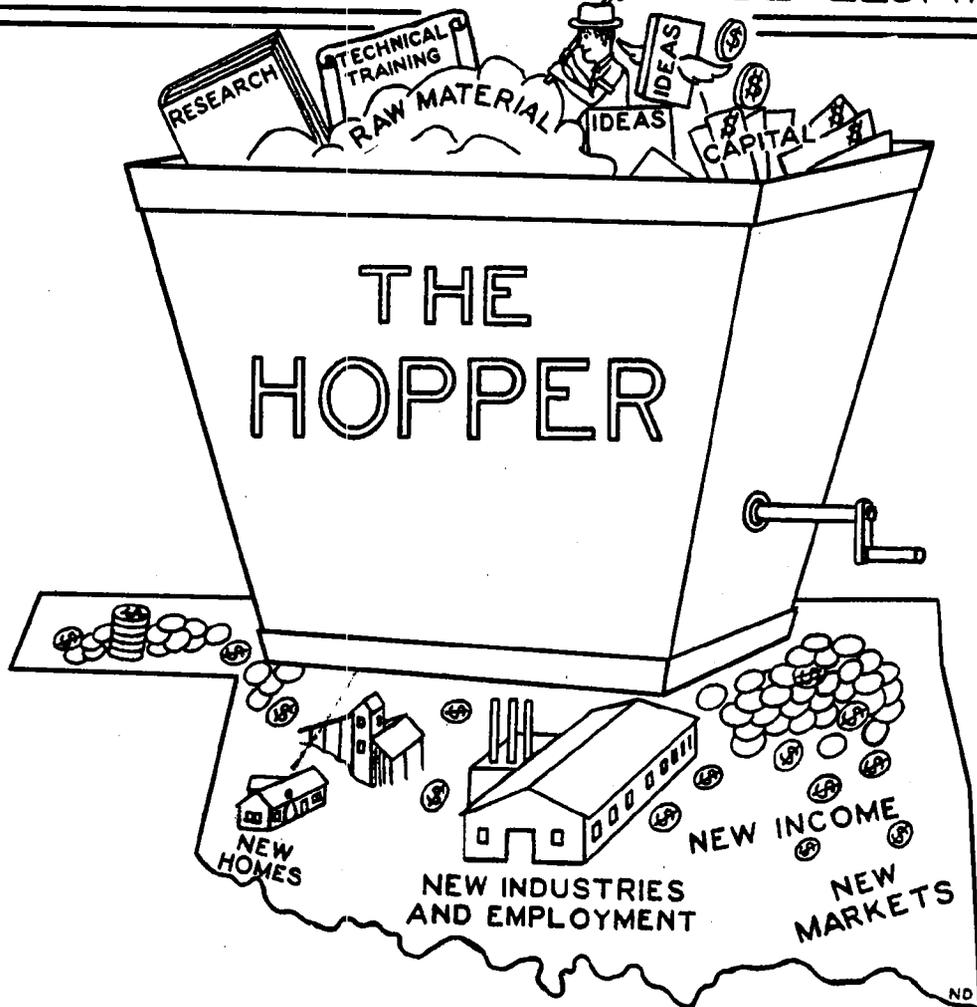


DEDICATED TO OKLAHOMA'S DEVELOPMENT



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"Let us not forget that labor and labor organizations, together with the ordinary merchants and people of the different communities are often more interested in mineral seeking than the larger industries themselves. I have often found that the only fellow that would go out and seek gold was the fellow who was broke.

"and from what I have seen here in Oklahoma of the prospecting effort it would seem to me that I could show you ten square miles in the Victor-Cripple Creek area where there has been more labor expended than has been put out over the whole state of Oklahoma -- (that is prospecting for minerals other than oil)."

-- Jay Randolph

"A while back a friend gave me a glass of dandelion wine -- pretty good too. You know boys, all my life I've been out in the blue grass killing dandelions when I should have been in the dandelions pulling out the grass."

Hess also told about the fellows, in the wee small hours after the party had been going on for some time, deciding to go out and do something big, and taking up the suggestion that they scrub an elephant, spent the rest of the night vainly hunting for an elephant.

MORAL: There may be a lot of little "dandelions" in Oklahoma that are small enough for us to handle, if we'll just look for them instead of looking for "elephants".

-- Moore C. Hess

TRENDS IN THE INDUSTRIAL MINERAL INDUSTRIES  
OF THE SOUTHWEST

by

Harold B. Foxhall, Director  
Arkansas Geological Survey  
Little Rock, Arkansas

delivered at

Southwestern Regional Meeting, A.I.M.E.  
Norman, Oklahoma, October 17, 1950

The area of the Southwest including the states of Oklahoma, New Mexico, Texas, Arkansas, and Louisiana, together with the states of Missouri and Kansas contributes 30 percent of the mineral wealth of the United States. This area, perhaps more than any other similar area in this country, constitutes an almost complete economic unit in relation to mineral resources essential to industry. All of these states are producers of fuels, and some of metallics. This report deals only with the non-metallic or industrial minerals--and on this score what any one of the 7 states lacks in industrial minerals, one or more of the others have in abundance.

We are particularly proud to have you men from all parts of the United States to see first-hand what tremendous growth has been going on here in the Southwest; in the last ten years industrial value up almost 300 percent. This wave of industrialization which began in the late 30's was of course given enormous impetus by the war, partly due to decentralization of defense industries---now again in the present crisis----to locate inland. The most fortunate and significant trend has been that the expansion in the industrial mineral field has been in the nature of processing industries----manufacturing to the finished product within the state where the natural resource is mined----not the extractive policy so prevalent in the past. And most fortunate of all is that these industries

were not temporary war plants, but permanent, well-engineered, well-financed operations. And not only has there been no post-war retrenchment as was often mentioned in depths of the war but instead an accelerated continued industrial expansion of the industrial mineral processing plants -- modern streamlined.

This expansion has not been confined to minerals alone--significantly the growth of the chemical industry in the southwest particularly in the coastal states of Texas and Louisiana has developed a "local" demand and market for these mineral resources.

With this growth developed an urgent need for detailed specific data on the mineral resources of the area and the splendid State Geological Surveys answered this need. We state geologists know that as a rule capital is disposed to hesitate about investing in a state where there is no information available about its resources and no way to find out about them except by the risk expenditure of its own funds -- if an individual state wants to borrow money it knows that it must open up its books, and if it wants to interest capital in mines or developments of mineral resources, it must open up its geology. The state geological surveys have technical reports published or otherwise available and realize full well that modern mineral industries demand precise measurements and exact data rather than the chamber of commerce type of questionable generalizations. The State Geological Surveys have obtained the confidence of industry. We have learned that continued geologic mapping and research is vital if the present trend of growth within each state is to continue. All of the state geologists have experienced a tendency by local capital to want to build a new industry -- and I must say that one of our prime functions has been to keep people from throwing their money away. Certain well conceived of such projects have received our utmost

cooperation and new small processing industries such as brick or rock wool plants are the result. There has also been mutual cooperation among the states of southwest in this industrial development program.

Following is a general summary of important trends in mineral production in the seven states:

Barite: Percent increase of 1949 over 1939 is 621 percent. The Arkansas barite mines were opened in 1939.

Bauxite: 1943 was the big year with 7,000,000 tons of production.

Lime: Missouri and Texas, the two leading states, are the only states in the region for which U. S. Bureau of Mines figures were available. Arkansas, Louisiana, Kansas, Oklahoma, and New Mexico also produced during this period but figures were unavailable. Gradual steady rise from 1939 to 1947 with no drop in 1944 (as in other construction materials) is probably due to increase of chemical use and paper manufacture. 1948 production was 318 percent over 1939.

Salt: About 6 million tons in 1939, reached 12 million tons in 1944, and rose but very little in 1948. Apparently production rate has leveled off beginning about 1944, but 1948 production was 218 percent over 1939.

Clay products: Refractory industry in Missouri alone in 1948 was 33 million. The industry experienced a drop in 1944 similar to cement. However, in 1948 production was 230 percent of 1939.

Gypsum: Available production figures include only Arkansas and Texas. The gypsum industry also shows sharp uptrend following 1944. Other states producing gypsum in 1948 were Kansas and Oklahoma. Available figures show an increase by 1948 of 800 percent over 1939.

Sand and Gravel: The peak was in 1942 with 27 million, however it dropped in 1944 to 15 million. From 1944 to 1948 there has been a steady rise with an increase of over 272 percent.

Sulphur: Produced 35 million in 1939. There was a steady rise to 1944 at 56 million and another steady rise through 1948 to 90 million. The increase from 1939 to 1948 was 251 percent.

Stone: There was an increase to 20 million in 1942. It dropped off 13 million in 1944. There has been a steady rise since 1944 to 29 million in 1948, or 191 percent over 1939.

Value of all industrial minerals in the seven state area was up to 250 million in 1942, but it leveled off to 246 million in 1944, then there was a steady increase to 388 million in 1948. On a percentage basis, the value of industrial mineral production increased.

Let us now analyze briefly the highlights of industrial mineral development and trends within these states of this southwest area during the past 10 years. I am indebted to each of the respective State Geologists for their cooperation in furnishing information in this regard. In the papers to follow many details of these new plants and information on mineral resources will be given.

First, let us examine what has been happening here in our host state of Oklahoma:

Mineral Resources not previously produced:

1. One of the most important new industrial mineral developments occurred only two years ago with the production of dolomite for the first time in Oklahoma. The principal use is for blast furnace flux at Lone Star Steel plant at Daingerfield, Texas. Also, dolomite is used for glass manufacturing and fertilizer. Deposits are located in the Arbuckle Mountains in south-central Oklahoma and will be visited on the field trip Thursday.

2. First production of ground silica -- Although Oklahoma has had an active glass manufacturing industry for many years, and glass sand has been produced since 1913, production of ground silica started only in 1948 with installation of grinding facilities by Pennsylvanian Glass Sand Company. Also this same year marked the first use of Oklahoma limestone in manufacture of special grades of glass.

3. Production of filter stone began in 1947.

Two excellent publications of the Oklahoma Geological Survey are: Bulletin No. 65, "Geology and Glass Sand Resources, Central Arbuckle Mountains, Oklahoma." (Published 1945) and Circular No. 26, "Geology and Dolomite Resources, Mill-Creek Ravia Area, Johnston County, Oklahoma." (Published 1949), both by William E. Ham.

Mr. Dott and Mr. Ham will give you the interesting details of these resources and developments in papers to follow this morning. It is probably more than mere coincidence that these recent developments came shortly after investigations and publications by the Oklahoma Geological Survey.

Oklahoma also reports a big expansion in the processing industries, particularly in the manufacture of glass, lime, cement, and pottery.

Greatly increased production (which is in general related to the building boom) of crushed stone, sand and gravel, veneer stone - limestone and sandstone, glass sand, gypsum, and brick and tile.

### Kansas

In sympathy with the continued upward trend in the building and construction industry, cement manufacture is up of course---production is now over 200 percent greater than in the pre-war period.

The same applies in general to clay products, brick and tile, and gypsum. Production of manufactured clay products is up 352% over the pre-war (1939) level and up 40 percent in 1949 over 1948.

Salt production in Kansas has remained comparatively stable.

Sand and gravel, and crushed and dimension stone are up sharply.

Kansas leads the United States in the production of volcanic ash--production, however, is off, because for soap powders and the like it is being supplanted by feldspar and the new detergents.

The State Survey reports that they seem to detect a tendency on the part of builders to use more nonmetallics, such as composition siding and dimension stone trim, in housing construction.

### New Mexico

New Mexico reported a slight depression in some of her large variety of industrial minerals for 1949 over 1948, but reports indicate the mining

industry of New Mexico is benefiting from the tremendous impetus that the mining industry is now experiencing owing to war preparation. As elsewhere, construction materials are up sharply. New Mexico ranks first in the United States in the production of potash. The deposits in Carlsbad area began to be developed extensively in the 30's, most of the production going into manufacture of fertilizers.

There was a marked increase in the last two years in the production of perlite, and a slight decrease in pumice in 1949.

### Missouri

Large producer of barite, cement clay products ---particularly the refractories, lime, and stone.

Barite production dropped from production of 278,000 tons in 1948 to 187,000 in 1949.

Cement production is up.

Lime slightly less in 1949 over 1948 high.

The most important production of raw clay is fire clay (75 percent of total clay production) with lesser amounts of diaspore and burley clays. Clay production reached one peak in 1942, however 1949 was above the 1942 peak reaching a total production of 2,400,000 tons. Peak value of manufactured clay products was in 1943 when it reached \$35,000,000.

### Louisiana

Large producer of salt (4th in U. S.) and sulphur (ranks second to Texas). There are 4 mines in Louisiana producing rock salt from domes, mines reaching as deep as 1,000 feet. Fully 50 percent of the annual consumption goes to the chemical industry.

8.

## THE HOPPER

The Grand Ecaille Mine of Freeport Sulphur had a 5 million dollar expansion in 1947, increasing production by 25 percent.

### Texas

Ranks first in U. S. in production of sulphur---large producer of cement and gypsum---and has a variety of newly developed industrial minerals. Dr. Lonsdale of the Bureau of Economic Geology will give the details of Texas industrial minerals in his paper tomorrow.

### Arkansas

New developments in this state are:

1. Minnesota Mining and Manufacturing Company, Little Rock, Arkansas---\$3,000,000 roofing granule plant. (1947)
2. Reynolds Limestone Quarry, (Chemical limestone for Hurricane Creek alumina plant) (1948)
3. Tex-Ark Rock Wool Company, Texarkana, Arkansas---\$300,000 plant. (1948)
4. Eureka Brick & Tile Company, \$200,000 plant, Clarksville, Arkansas.

THE HOPPER--TEN YEARS

Depending upon the point of view, the Hopper is either ten years old or nine and one-half years old. At any rate, this issue is Volume 11, No. 1. Volume 1, No. 1 was dated July, 1941. Only six numbers were published during 1941, but it was decided to start Volume 2 with January, 1942 so that the volumes would run with the calendar year. Therefore, counting 1941 as the first year for the Hopper, it has passed its tenth year of publication.

The first issue was devoted to abstracts of papers presented at the Mid-Year Meeting of the Oklahoma Mineral Industries Conference held at Tulsa, Oklahoma, May 16-17, 1941. Succeeding issues were devoted to publishing full texts of the papers presented at that meeting. Checking back into Vol. 1, No. 1, of the Hopper, we are reminded that Moore C. Hess was president that year and presided at the Friday afternoon sessions of the Mid-Year Meeting, N. R. Graham acted as toast master for the evening meeting, George J. Stein presided at the Saturday morning session, and President Hess was in the chair for the Saturday afternoon business meeting. Titles, papers, and speakers for the Mid-Year Meeting were as follows:

1. Raw Materials in Glass Making, Jay Randolph, Liberty Glass Company, Sapulpa.
2. Petroleum and Natural Gas as Raw Materials for the Manufacture of Chemicals, Sidney Born and R. J. Kaufman, University of Tulsa, Tulsa, Oklahoma.
3. Mineral Industries in the Tulsa area, and Market Possibilities, W. A. Leech, Jr., Koppers Company, Tulsa, Oklahoma.
4. Mineral Resource of the Tulsa Territory, Malcolm C. Oakes, Oklahoma Geological Survey, Norman, Oklahoma.
5. Activities of Local Mineral Resources Com-

- mittees: Tulsa, W. F. McMurry, Superintendent Tulsa Water Department, Tulsa.
6. Oklahoma City, W. H. Stueve, Oklahoma Gas and Electric Company, Oklahoma City.
  7. State-Wide Development Activities, Ford C. Harper, State Chamber of Commerce, Oklahoma City, Oklahoma.
  8. Industrial Development for Oklahoma, M. O. Mathews, Oklahoma Portland Cement Company, Ada, Oklahoma.
  9. Activities of Oklahoma Geological Survey, Robert H. Dott, Director, Oklahoma Geological Survey, Norman, Oklahoma.
  10. Coal and Coke By-Products, Laurance S. Reid, University of Oklahoma, Norman, Oklahoma.
  11. Pottery, John Frank, Frankhoma Potteries, Sapulpa, Oklahoma.
  12. Low-Cost Art Objects from Oklahoma Alabaster, Elmer L. Lucas, University of Oklahoma, Norman, Oklahoma.
  13. Granite, Jerry J. Soukup, Mountain Park Granite Company, Mountain Park, Oklahoma.

The general idea for starting the Hopper came from the Ore.-Bin, a publication with a similar purpose started by the Oregon State Department of Geology and Mineral Industries. Make-up of the Hopper and the design for the front cover represent the contributions of ideas from several people on the staff of the Oklahoma Geological Survey adapted to facilities in the Survey office.

Putting out the Hopper has been an interesting experience, a lot of fun, and naturally at times a source of headaches and worry, especially when no one comes forth with an article. It is most gratifying, however, to be assured from many sources of evidence that the Hopper has had an influence far greater than its modest circulation would imply. We like to believe that this influence has been beneficial to the State of Oklahoma.