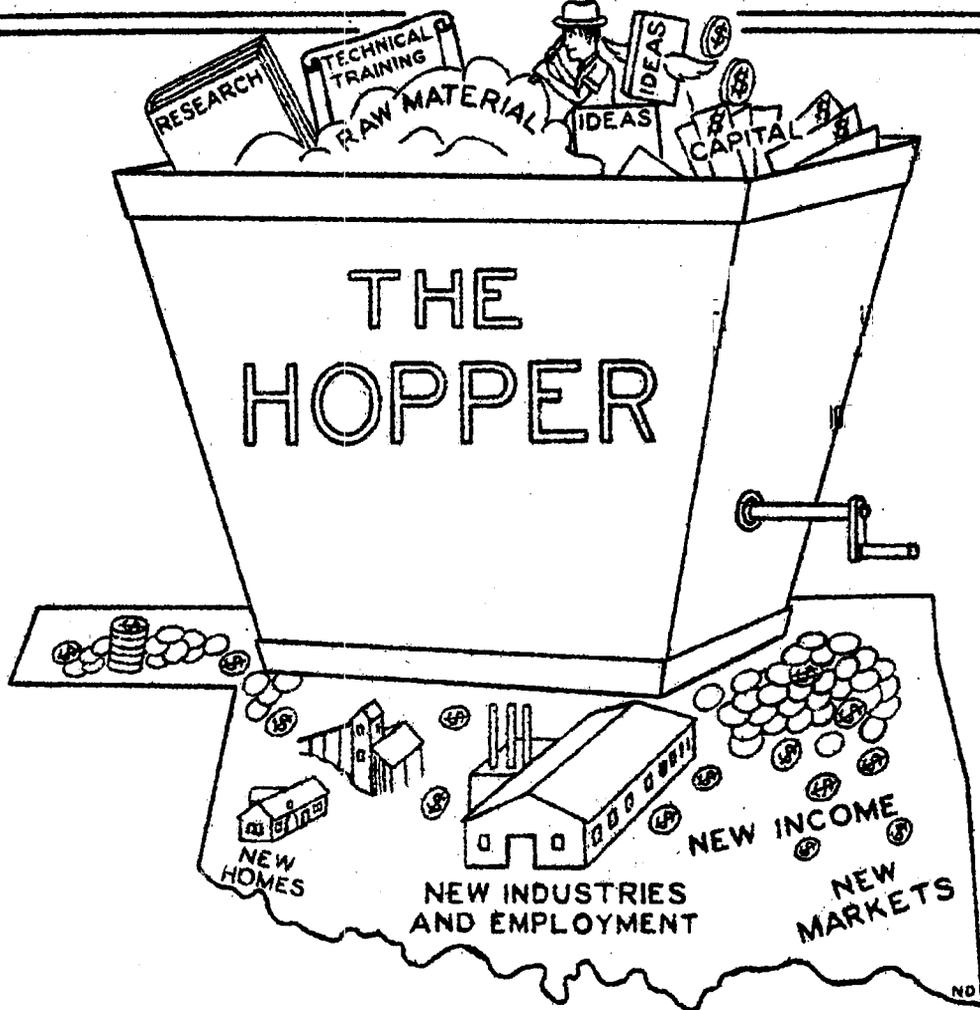


OKLAHOMA MINERAL INDUSTRIES CONFERENCE



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HOPPERATOR'S PAGE

Manufacturing contributes about three times as much to the United States income and gives employment to more people each year than does agriculture. Mineral production contributes about half as much income as does agriculture in the national economy, but mineral fuels, metallic ores, and industrial minerals furnish the raw materials for much of our processing industries.

In Oklahoma, order of importance for many years has been mineral production, agriculture, and manufacturing, with manufacturing far behind the other two. Yet, those who are urging expansion of industries and greater utilization of industrial minerals to improve our economy are charged with speaking half truths, because "The land is the only place on earth where people can get a living if worst comes to worst." That's what the Chinaman has been doing for thousands of years--following a simple agricultural economy; with attendant low standards of living, and famines that can't be relieved because subsistence economy does not build modern transportation systems. And just how can there be a prosperous farmer if we put all his customers on small subsistence farms?

Statistics show that in 1900 in the United States, 35.5 percent of our employed population was engaged in agriculture. By 1940, this had dropped to 18.8 percent. This shift of population from the farms to industrial areas is not something born of the war, but has been going on for decades. You can't keep them all on the farm, and so Oklahoma is losing population. Where do they go? To states encouraging industry, which in turn provides employment opportunities. Most of our people want some of the better things of life which America produces, and will fall back on a Chinaman's existence only as a last resort.

MINERALS IN OKLAHOMA'S INDUSTRIAL FUTURE

By

Erle P. Halliburton, President
Halliburton Oil Well Cementing Co.

(Address delivered at the Seventh Annual
Oklahoma Mineral Industries Conference,
November 7, 1946, at Ada, Oklahoma.)

When Gus Delaney and Bob Dott wrote me several weeks ago, requesting that I address this conference on Oklahoma's mineral resources, I immediately wondered why. Certainly, in this gathering of professional men, there are many who are better qualified than I to speak on this subject. There is little I can tell you about our state's mineral resources that you don't already know. But the invitation of your officers was so worded that I couldn't turn it down. When they said they wanted somebody "who has faith in Oklahoma's resources and their possibilities for development," they got a speaker. I have that faith, gentlemen. But my confidence in the future, I'm sorry to say, must be qualified. The possibilities of Oklahoma's mineral development are unlimited, if--and this is the "if" we must remove--if the American way of life is perpetuated. Your job, and mine, is to see that it is. The importance of sustaining this way of life, the way of economic liberty, of individualism, of voluntary action, the way that has made this state and this nation great, is the keynote I want to sound in this talk to you today.

As many of you know, I believe in speaking my mind on this subject. I also believe that more of us who cherish the American way of doing things should do the same. It's time to speak up. I'll say more about that later. First, let's consider Oklahoma's past, present and future in the industrial world.

In 1892, when prospective settlers were gathering along the borders of the Cherokee Strip in anticipation of one of Oklahoma's famous "runs," a railroad company published a booklet telling in eloquent words of the natural advantages of "Indian Territory, Oklahoma, and the Cherokee Strip." It was "respectfully dedicated to the members of all trades and professions and the possessors of capital who desire a field where honest and intelligent effort will receive its reward." The natural advantages of climate and soil were pointed out. Predictions were made concerning the establishment of mineral industries. Coal mining was considered to be foremost among the possibilities, and lead was known to be present in the territory. Strangely enough, although small quantities of oil and natural gas had been found in the Indian Territory and in eastern Kansas, there was no mention of petroleum.

You are familiar with the rest of the story.

Fifteen years later, when admitted to the Union as the 46th state, Oklahoma brought six times as many inhabitants and fifty times as much wealth as had any other state. Men of imagination and initiative, unrestrained in their desire to produce the wealth essential to the welfare and progress of a nation, had already unlocked much of Oklahoma's earth-enclosed treasure as early as statehood. Today, the treasure of mineral raw materials includes oil, natural gas, liquified petroleum gases, coal, lead, zinc, iron and manganese ores, rock asphalt, chats, glass sand, gypsum, dolomite, limestone, salt rock, clay, woolrock, volcanic ash, brines, and others.

A plant just south of town takes a little lime rock, a little alumina, a little silica, a little gypsum and a little fuel, all produced from nature here in Oklahoma, and converts these natural elements into cement, which has done more to develop the oil industry than any other single thing. From

cement, concrete is made. From concrete, roads are made. Without roads, and the means of transportation devised by man, ours would be a primitive society having little, in any, use for petroleum. I mention this merely to illustrate the diverse but interdependent characteristics of all industry, and to show how enterprise, or the lack of it, can make much, or nothing, of nature's resources.

Our system of free enterprise has often been attacked during recent times by calamity squealers who claim that, without government control, our natural resources will be exhausted in just a few years. I am not one of those individuals who believes that our petroleum reserves cannot be exhausted, but I have the utmost confidence in the ingenuity of man working under a system of free enterprise to find a way out of any such difficulty. For that reason, I feel quite certain that long before our petroleum reserves are depleted, the ingenuity of man will have developed not a substitute for petroleum but something unknown to us here in this room at this time--something that will be far superior to petroleum as we are now using it.

It was less than two years ago that the atom was developed as an explosive. Its force is so tremendous that it astounds the imagination of man when he attempts to estimate the energy it releases. Here in Oklahoma, as far as I know, there is no pitchblende, the source mineral from which the atomic bombs were made. But if we can take oil from the bowels of the earth in this state and produce synthetic rubber, is there any reason to believe that Oklahoma's mineral resources contain no elements, now unknown to us, that will give us every benefit that we now receive from petroleum?

Oklahoma's mineral reserves are enormous. Coal reserves, for example, are estimated at 55 billion tons; natural gas, over nine-and-a-half trillion cubic feet; gypsum, 125 billion tons. Over five-

and-a-half billion barrels of oil have been produced from Oklahoma's wells, and geologists predict that still greater deposits are yet to be tapped within the state's borders. Since 1911, Oklahoma's production of vitally important mineral resources has totaled almost ten billion dollars, placing the state fifth among all states as a continuing producer of mineral wealth. Of the 20 most important mineral raw materials used in the chemical industries, 16 occur in commercial quantities in Oklahoma.

Industrial opportunities in numerous fields are ready-made in Oklahoma. The greatest of these opportunities, I think, lies in the development of the state's mineral wealth. Increased knowledge of the use of petroleum and natural gas as raw materials, plus the volume and variety of other minerals which exist in this region, foreshadow the establishment in the Southwest of what may become the center of the world's chemical industry. The science of hydrocarbon chemistry alone contains the seed of many new industries. We are now living in the chemical age--the age of electronic alchemy--and its possibilities cannot be even vaguely defined.

Today, radium, radar, ultra-violet or black light, infra-red light and spectro analysis are revealing secrets not even suspected a short time ago. We have one man engaged in research with the vibratory spectrum to give us a workable answer to the cause and effect of chemical and physical phenomena that will lead our thinking beyond nuclear fission. Remember, this is in Oklahoma. Remember, too, that insofar as geological time is concerned, we began using the natural resources of Oklahoma just a few minutes ago.

No one will deny that Oklahoma is abundant in natural resources. No one will dispute the fact that Oklahoma's mineral and industrial development

has been phenomenal. And no one will deny that Oklahoma will play an increasingly important role in the industrial world ... If we perpetuate our American way of life.

Without this way of life which produces men with initiative and imagination and which permits them to develop their talents and skills for the benefit of all, the mineral resources of Oklahoma would have been unknown and of no more value than if they had never existed. Men in my company who have helped to develop the mineral resources of Oklahoma are now contributing to the development of the resources of Arabia and Iran. Yet the Persian Gulf and Eastern Mediterranean areas, inhabited by civilized peoples hundreds of years before this continent was discovered, claim the distinction of being the cradle of civilization.

Natural resources alone do not explain the wealth of Oklahoma any more than they explain the wealth of America, the richest country in the world. There must be a political climate favorable to the growth of industry. I know of two almost barren islands with practically no natural resources, not even soil of a quality capable of subsisting the inhabitants. Both islands combined are no larger than a single Oklahoma county. Yet millions are invested in industry. I am speaking of Aruba and Curacao in the Caribbean, just off the coast of Venezuela. The Dutch created a more salutary climate for industry on these islands than did the Venezuelans in their country, hence the natural resources of Venezuela go to the refineries of Aruba and Curacao.

While Americans have been developing the resources of half a continent during little more than a century, Europeans have been utilizing for a much longer time the resources of Asia, Africa, South America, the East Indies, the West Indies, Australia and the South Sea region. The American

advantage lies in our system of individual freedom and individual opportunity. Our advantage took root and grew to fruition in the very foundation of this country.

American individualism has not only created great wealth and the multiplication of forms of wealth in goods and services. It has also distributed these forms of wealth to a degree unequalled anywhere else in the world. The telephone, the electric light, the seamless sheet, the silk stocking, fresh vegetables and fruits in winter, sanitary meat markets, the ice box, the milk bottle, the gas range and the kerosene cook stove, ready-made clothes, wall paper, the toothbrush, the leather shoe, moving pictures, ice cream and a thousand other things to which Americans are so accustomed that they hardly notice them, all these testify to the soundness of a system recognizing economic liberty, individualism and voluntary action. No other people have even dreamed of enjoying the distribution of wealth that is taken for granted by the citizens of this country. I will admit that some of these items cannot be taken for granted today! And you know why. Still blaming the war, the controllers who persist in tinkering with the natural law of supply and demand are creating shortages which cannot be laid to the war!

Stated briefly, the success of Oklahoma industry, the American industry, can be attributed to three things: first, the willingness of Americans to venture and the absence of legislation forbidding them to do so; second, the development of skills; last, and least important, the abundance of natural resources. Without the first two factors, our natural resources would be undeveloped and therefore worthless.

In regard to venture, in the oil game, I would like to make this observation. With all of today's knowledge of geology and engineering, there is no

positive guarantee that a given well will be commercially successful. You geologists have been telling me where to drill for a long time, but sometimes when I get through with you and the geophysicists, I find that I have the same dry hole I would have had without your help!

Nature has been extremely kind to the human race. She has seen to it that her resources were so placed that they could not be had simply for the asking. For instance, if the petroleum deposits of the world had been placed in convenient reservoirs in such a way as to require no human effort in their discovery and use, primitive man would have destroyed them long before the human being equipped himself mentally to develop the machinery and processes that now make our petroleum deposits valuable. God not only gave us our natural resources but He hid them away in such a manner as to bring about the development of man's mental faculties, causing man to be more appreciative of nature's great store of wealth. Without the development of the science of the geologists, we would now have a shortage of petroleum products.

Certainly things that require no mental or physical effort have little or no value. Nature, in placing on earth an abundance of resources, left it to man to discover and increase their many uses, and thus enabled man to develop his mental faculties. Man did not begin to use much of nature's storehouse of wealth until he introduced the competitive system of sharing in our natural wealth. It was competition, granting the greatest reward to the men who were best equipped mentally and who were willing to put forth the greatest effort, that brought about the development of our natural resources and our high standard of living.

Under no other system of government has the individual citizen fared so well as he has under the American system of individual freedom and

individual opportunity. Some Americans, however, would apply in this country the foreign ideologies under which the individual surrenders his freedom and his right to opportunity in exchange for a fancied security. Therein lies the "if" to the continued development of this state and the nation.

The limiting factor in our industrial expansion will not be labor; there will be plenty of that. Nor natural resources; we still have them in abundance. Nor capital; that is fairly abundant and it can be increased. Labor alone, land alone, capital alone, or all three combined, cannot produce wealth any more than nitrogen, phosphorous and potash, without water, can produce crops. The limiting factor will be enterprise, and it is up to us to maintain a political climate which will foster enterprise, not frustrate it.

This means that the leaders in industry must have the courage to speak their convictions, to state honestly and accurately what they believe to be right. In no other way will our national policy be determined by our best minds.

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Footnotes for table on next page:

- 1/ Value included under "Miscellaneous."
- 2/ Figures obtained through cooperation with Bureau of the Census.
- 3/ Sold or used; value of clay used in cement and heavy clay products not included in total value.
- 4/ No canvass.
- 5/ Not valued as ore; value of recoverable metal content included under the metals.
- 6/ From zinc smelting.
- 7/ Value not included in total value for State.
- 8/ Includes minerals indicated by "1" above.

MINERAL PRODUCTION OF OKLAHOMA, 1945

(Collected by U. S. Bureau of Mines and Oklahoma Geological Survey)

PRODUCT	QUANTITY	VALUE
Asphalt (native). short tons	(1)	(1)
Cement.....barrels	(1)	(1)
Clay:		
Products (other than pottery and refractories)		2/ \$707,272
Raw.....short tons	3/ 243,358	3/ 178,658
Coal..... " "	2,897,000	9,965,000
Gypsum (erude)... " "	(1)	(1)
Lead..... " "	12,664	2,178,208
Lime..... " "	(1)	(1)
Mineral waters.gallons sold	(4)	(4)
Natural gas....M cubic feet	345,000,000	52,580,000
Natural gasoline and allied products:		
Natural gasoline..gallons	280,625,000	15,200,000
Liquefied petroleum gases.....gallons	136,224,000	4,100,000
Ores (erude), etc.:		
Lead.....short tons	8	(5)
Zinc..... " "	9,545,153	(5)
Zinc-lead,..... " "	2,640,147	(5)
Petroleum.....barrels	138,036,000	176,500,000
Salt.....short tons	(1)	(1)
Sand and gravel.. " "	1,274,136	761,448
Stone..... " "	3,894,720	1,572,772
Sulfuric acid 6/ " "	(1,7)	(1,7)
Zinc..... " "	69,300	15,939,000
Miscellaneous 8/.....		3,716,517
Total value, eliminating duplications.....		282,859,000

Footnotes at bottom of preceding page.

NEW OKLAHOMA GLASS PLANT
EMBODIES MODERN FEATURES

Brockway Glass Co., Inc., Plant No. 3, at Muskogee, was constructed with emphasis on flexibility of operation and ease of immediate and future expansions, employs most modern equipment and methods, and includes some new innovations. The Muskogee plant is the subject of the feature article of The Glass Industry for December.

F. B. Hess, vice president, is in charge of production at the new plant, which is reported to represent an investment of \$1,250,000, is producing 225,000 glass bottles a day, and employes 170 persons working four 6-hour shifts.

Water supply is obtained from the Muskogee water system, and, "Natural gas and electricity are also obtained from the outside as it was found prevailing southwestern low rates were such that the company could purchase these two commodities for a third of the cost of production within the plant."

* * * * *

OKLAHOMA SILICA SAND CO. FEATURED
IN ROCK PRODUCTS

December issue of Rock Products contains a well-illustrated discussion of the plant and operations of the Oklahoma Silica Sand Company plant at Hickory, written by H. E. Swanson. Capacity of the plant is rated at 50 tons an hour. Sand is obtained from the sandstone member of the Oil Creek formation. Hydraulic mining methods are employed in open pit.

(Note: It has been learned that H. E. "Herb" Swanson, was a victim of the Winecoff Hotel fire in Atlanta, December 7.)