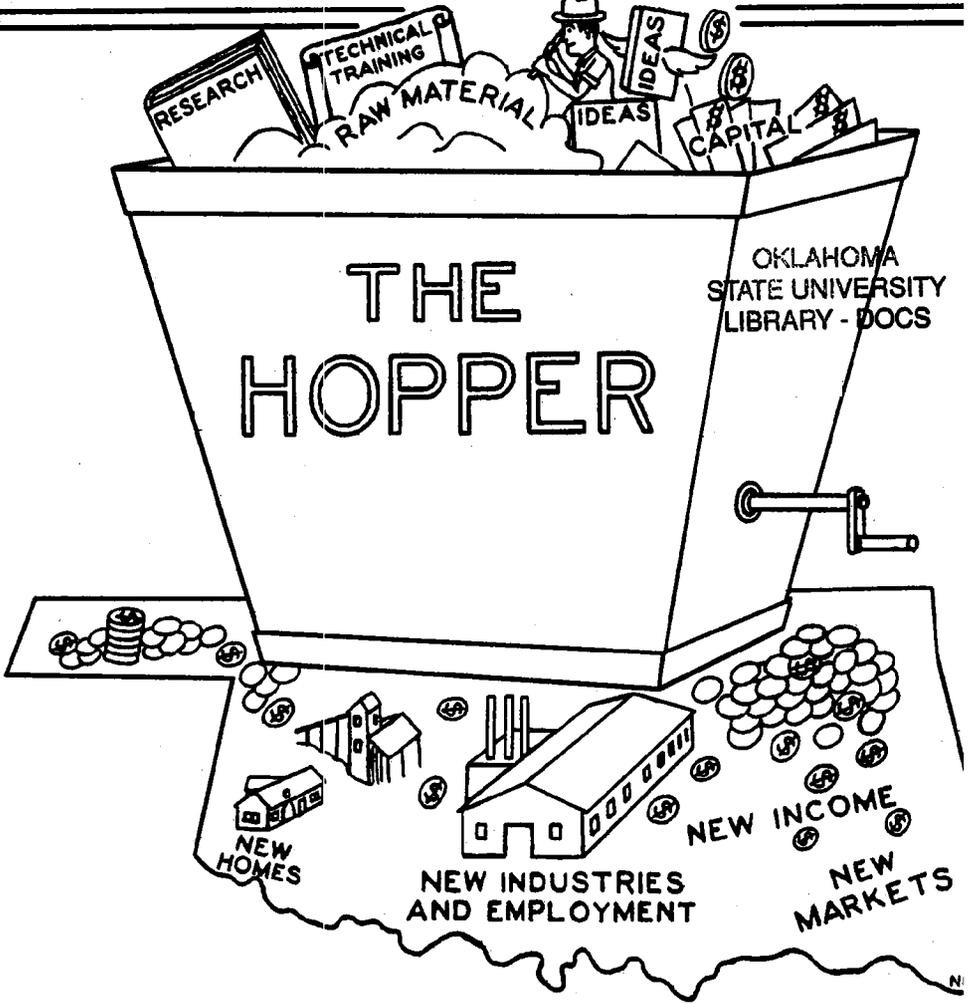


OKLAHOMA MINERAL INDUSTRIES CONFERENCE



PUBLISHED IN THE OFFICE OF THE
OKLAHOMA GEOLOGICAL SURVEY
NORMAN, OKLA.

BRICK AND TILE INDUSTRY OF OKLAHOMA

by

Otto Fluess

Manager-Engineer

Brick & Tile Association of Oklahoma

(Address delivered at the Oklahoma Industrial and Mineral Industries Conference, October 13, 1948)

The 1948 Oklahoma Mineral Conference is of significant importance if viewed in the light of world developments. We are standing at the cross-roads of peace or a most destructive and gruesome war. Because Oklahoma lies within Babson's Circle of the magic empire we all must realize what our daily endeavors must mean to our country in peace or war. A rapid and accelerated development and wise use of our natural resources under the aegis of free enterprise is a weight in the scales of peace which no aspiring and deluded dictator can afford to overlook.

Oklahoma is fortunate indeed in having such a wealth of natural resources, a better understanding and knowledge of which are in the hands of the staff of the Oklahoma Geological Survey.

Truly free enterprise, aware of its duties, can prosper only if its genius and economic position is unhampered by lop-sided regulations and unfair or excessive taxation. It is a tribute to Governor Turner in having veered away from the theory of killing the goose that laid the golden egg. Under his able leadership we have been able to attract capital and thus aid in the development of our natural resources and so translate latent wealth into tangible everyday bread and butter money.

It augurs well for Oklahoma that we can assemble together under the leadership of the Oklahoma

City Chamber of Commerce and its spark plugs, Stanley Draper and Glen Farris, along with the real and highminded workers of the essential committees, and discuss problems of mutual interest and listen to hopes and aspirations of sister industries.

The burned clay brick and tile industry of Oklahoma proudly takes its place alongside other mineral industries in the development of the natural resources and furtherance of the wealth of the State. The mining, processing, burning, sale, and transporting of approximately 230,000 tons of brick and tile with a gross value of approx \$2,800,000.00 may be a small but nevertheless significant factor in the general economics of our State.

Many other products of Oklahoma's natural resources are needed in the manufacture of brick and tile such as natural gas in considerable quantities for burning, electric power, water, lubricating oils and gasoline, rubber, and other products. Oklahoma's transportation system also derives a goodly part of its business in moving a comparatively heavy commodity. It is refreshing to know that most of the wealth found in Oklahoma thus stays in Oklahoma.

Brick has been made from the dawn of civilization and has in all ages been of great importance to mankind. Modern technology has improved the pyrotechnic processes to a point where quality and strength may be maintained with great accuracy. Much of the drudgery of making brick has been eliminated by the use of natural gas. Unceasing efforts in plant improvements with attendant great capital investment, technological advancements, and application of sound engineering and imagineering provided not only excellent brick and tile for Oklahoma consumption, but a great deal is exported to other states. The excellence of materials produced made possible the functional application to engineering principles heretofore unknown. The sound-

ness of the concept and application may be measured when one considers that particular types of brick and tile construction are known thru-out the country as 'Oklahoma Construction'.

Our industry has produced functional units which permit the building of floors and ceilings, girders, beams and lintels; it has engineered wall construction unique in the annals of the construction industry. An exemplification of this is in the administration and assembly building at Tinker Field. Here engineering and imagineering have built the 'breathing' wall, which not only becomes the enclosure but an important adjunct to airconditioning, artificial daylight features, and certain military safety features. The 'breathing' of the wall permits the elimination of solar heat on the exterior, while the interior is being kept at constant temperature and humidity conditions. Operation experience over many years has proved beyond doubt that this type wall may be considered the most efficient and least costly from an operation maintenance standpoint. So it may be seen that Oklahoma minerals play their part in peace as well as war.

Our industry is constantly searching for better methods in producing its ware. It looks to new products such as light weight materials with equal strength of its present products; it has entered a research program of goodly proportion to establish a scientific basis for better production and application. It is believed that we are only standing at the threshold of new discoveries which greatly will enhance the exploitation of the mineral resources of the State and at the same time holds a promise to the consumer of better and more economical things to come which will enhance his living and comforts.

There is no more fitting occasion than this Mineral Conference to make the first public an-

nouncement of completed plans which will affect the lives and economy of many future home owners, because these plans are based upon the use of minerals now gleaned from the good earth and rock of the State of Oklahoma. It is hoped that Oklahoma will win the plaudits of the rest of the country and that the mineral industries of the state take new hope in the future in being first to give to the common man like you and I the fully guaranteed and fireproof home, a structure which is positively guaranteed for 25 years structurally and otherwise against any upkeep whatsoever on the exterior, a home which is not a liability but an investment, a home which has such low insurance rates as to be a negligible factor, a home which cannot burn, a structure which will not lend itself easily to potential future slum conditions usually brought on by neglect, a structure in which investors can place their funds with greatest assurance in knowing that value is maintained under the most trying circumstances, in short, the house of tomorrow.

It is the inherent qualities of the processed minerals which make possible what might seem to be an audacious scheme. The fact that pyrotechnic processed minerals are nearly indestructible and unaffected by ordinary conditions make these plans feasible and practical. Sound engineering and conscientious application of the technological advances made by the mineral industries permit the actual proceeding in the very nearest future with the plans.

The impact on the social, economic and physical living will be great indeed. Funds now used to pay the silent thief of deterioration can then be used for a better and fuller life. The breadwinner of the family can face the world with renewed hope and confidence in knowing that his most essential and cherished possession -- his castle -- is not built on sand but on the rock of sound economy. This house of tomorrow will withstand storm and

quake, it will even afford a great measure of protection against harmful radiation of an atomic blast, an occurrence which we fervently hope to never have to experience.

We have a great faith in a better and fuller living and the great destiny which Oklahoma has to fulfill. We can march together and make the dreams of yesterday become true today. This is why we believe that Oklahoma mineral industries will prosper.

* * * *

GEOLOGY AND MINERAL RESOURCES OF HASKELL COUNTY, OKLAHOMA

Resources and geology of Haskell County are discussed in a new report issued by the Oklahoma Geological Survey as its Bulletin 67 entitled "Geology and Mineral Resources of Haskell County, Oklahoma", according to Robert H. Dott, Director of the Survey. Authors of the report are Malcolm C. Oakes of the Oklahoma Survey and M. M. Knechtel of the U. S. Geological Survey, who did the field work and prepared the manuscript as a cooperative coal investigation project of the two geological surveys.

The report is accompanied by geologic and structure maps of the county, as well as charts and other illustrations. The general geology, and geology as related to coal and natural gas is discussed in considerable detail. An appendix consists of several pages of measured sections with descriptions of exposed rocks in all parts of the county.

Although the investigation was primarily devoted to general and structural geology and fuel resources, other mineral resources of the area were given attention and are discussed in the report. Field work for the report was started as a wartime investigation to further information on coal, and

fuel resources in general, but was not completed before hostilities ceased. Mr. Knechtel worked the eastern and Mr. Oakes the western parts of the county.

The geologic map which accompanies the report is printed in two colors and is on a scale of one inch to the mile. The structure map also is one inch to the mile, with contour intervals of 100 feet based on top of the Hartshorne sandstone.

Bulletin 67 is available from the Oklahoma Geological Survey, Norman. Price, including mailing charges, is \$0.80 a copy.

* * * * *

INDUSTRY AND LAND VALUES

"Fundamentally, real estate has value because one or more economic activities can be profitably performed at or near its location." The preceding quotation is the first sentence of an article entitled "Industrial Trends Affecting Real Estate Markets" which appeared in the March 31 issue of the Monthly Review, Agricultural and Business Conditions, Tenth Federal Reserve District. As applied to farm land, it is stated that the value of a farm is derived from the basic activity of producing agricultural products. Obviously, farm land values are directly affected by distance from consumer markets, because transportation and handling costs in getting agricultural products to market influence the net profits to the producer.

The following excerpts deal primarily with some of the factors influencing the growth of urban centers, but the effect of prosperous centers of industrial and commercial activity on farm income and land values in surrounding areas appears equally important. A review of statistics bearing on this was given in the Director's Biennial Report of

the Oklahoma Geological Survey for 1945-1946. This study revealed a close correlation between industrial activity and agricultural income, by states.

"The economic activities of any given city may be classified into those which service and those which support the center's population.... Supporting activities produce for and sell to a nonresident population. Customarily, most manufacturing, wholesaling, non-local transportation, and non-local government is of this nature.

"Supporting activities require a labor force whose consumer requirements are satisfied by another labor force. Without the supporting activities there would be no labor force with consumer demands, and hence no urban center.... Ordinarily, urban centers in this area were initiated to satisfy the needs of a surrounding population engaged in agriculture or some other raw material extraction process. This first supporting activity is likely to be two-sided. Raw materials of the area are concentrated in the urban centers and passed along to larger consumer markets. A return flow of manufactured articles moves through the centers' retail stores to residents of the surrounding region. As the towns grow they may add wholesaling, manufacturing, and other kinds of services to an ever-widening trade area.

"Urban centers, whose supporting activities are largely confined to concentrating the area's raw materials and retailing the manufactured goods of other cities, have definite limits of population size which can be supported. Dr. Randall T. Klemme of Oklahoma A. and M. College has found there is one retail worker for each farm family doing its major trading in the local center. Thus, to attain any size, the trading center must service an enormous region of reasonably productive farms. Because of the relationship which exists between retail trade and distance to be traveled, this seldom

if ever happens. If an urban center is to expand beyond its retail trade limitations, it must increase its manufacturing activities. There are exceptions, of course.

"A quick look at the employment components of cities of varying size suggests the importance of manufacturing to the larger centers' economies. Thus, for urban centers in the area below 400,000 and all urban centers in the nation above that figure, the following data are indicative:

| <u>Population Size</u> | <u>Per Cent Employed in Manufacturing</u> |
|------------------------|---|
| 10,000-50,000..... | 9.6 |
| 50,000-100,000..... | 13.8 |
| 100,000-400,000..... | 16.3 |
| Above 400,000..... | 31.4 |

(Computed from 1940 U. S. Census data.)

"Studies by the Federal Housing Administration and others have indicated that, for every person employed in a supporting activity in urban centers, there is one person employed in a servicing activity. This means that, where 40 per cent of a city's population is employed, each person employed in a supporting activity is the economic base for another employed person plus three nonworkers, presumably members of the two families. Stated differently, the employment of one person in manufacturing that is supporting in nature increases the city's population size by five. This becomes highly significant when translated into terms of the demand for urban real estate."

Importance of manufacturing on income as well as on population size is discussed, and tables are given showing that the average income of persons employed in manufacturing is higher than those in retail trade. Position of the various states in the Tenth Federal Reserve District, with reference to employment in some types of manufacturing, is

shown by charts. On percentage basis, Oklahoma leads in products of petroleum and coal, and appears to average about second in the district, with Missouri first in most of the specified items. In location of industrial plants, Oklahoma is holding about the same percentage position since 1940 that it held before; that is, 0.7 percent of the national total.

The 1947-48 Biennial Report of the Director of the Oklahoma Geological Survey is devoted in part to a discussion of many of the industrial mineral raw materials found in Oklahoma. These mineral raw materials, together with the diversified agricultural resources of the state, coupled with an abundance of fuel, are the natural resources—the crude raw materials—which could furnish the basis for industrial activity that would bring Oklahoma up to the national average.

* * * * *

Footnotes to 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 is included here but is not included in total value.
- 4/ Not valued as ore; value of recoverable metal content included with the metals.
- 5/ From zinc smelting.
- 6/ Value not included in total value for State.
- 7/ Includes minerals indicated by "1" above.

MINERAL PRODUCTION OF OKLAHOMA, 1947

(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, heavy clay (other than pottery and refractories)..... | | 1,563,000 ^{3/} |
| Raw.....short tons | 522,704 ^{3/} | 349,000 ^{3/} |
| Coal..... " " | 3,098,000 | (1) |
| Gypsum (crude).. " " | (1) | (1) |
| Lead..... " " | 14,289 | 4,115,282 |
| Lime..... " " | (1) | (1) |
| Natural gas..M cubic feet | 393,216,000 | 15,493,000 |
| Natural gasoline and allied products: | | |
| Natural gasoline.gallons | 279,617,000 | 17,499,000 |
| Liquefied petroleum gases.....gallons | 166,306,000 | 5,987,000 |
| Ores (crude), etc.: | | |
| Lead.....short tons | 103 | (4) |
| Zinc..... " " | 4,451,405 | (4) |
| Zinc-lead..... " " | 2,471,819 | (4) |
| Petroleum.....barrels | 141,019,000 | 270,908,000 |
| Pumice and pumicite.....short tons | (1) | (1) |
| Salt..... " " | (1) | (1) |
| Sand and gravel. " " | 1,670,205 | 1,125,322 |
| Stone..... " " | 2,610,770 | 2,679,855 |
| Sulfuric acid ^{5/} . " " | (1,6) | (1,6) |
| Zinc..... " " | 51,062 | 12,357,004 |
| Miscellaneous ^{7/} | | 20,226,303 |
| Total value, eliminating duplications | | 351,578,000 |

Footnotes on preceding page.