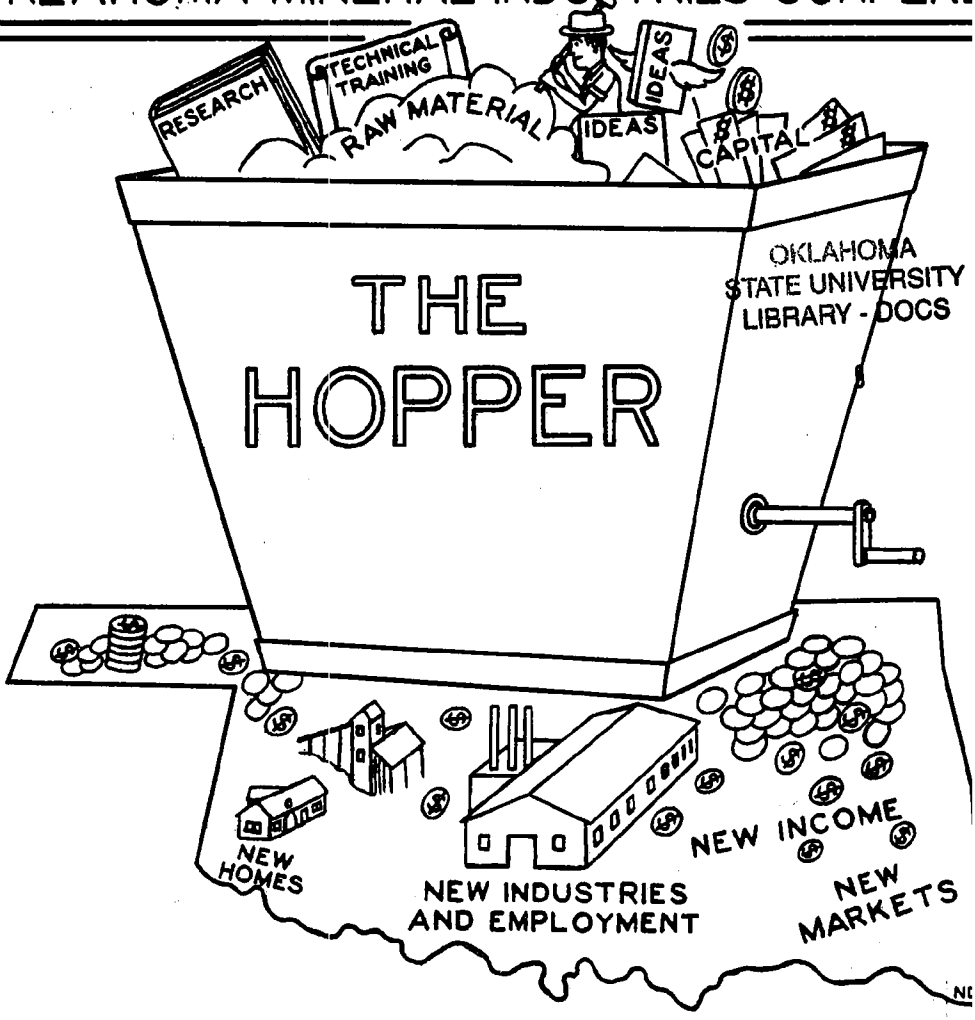
OKLAHOMA MINERAL INDUSTRIES CONFERE



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GLASS

by
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Liberty Glass Company, Sapulpa
(Address delivered at the Oklahoma Industrial and Mineral Industries Conference, October 13, 1948)

Glass is man's most versatile creation, being a truly basic material possessing the distinctive properties of a stubborn and perverse substance that bows to only one master, heat. It is a product of civilization as contrasted with pottery, which was made by primitive man. The oldest glass known is nature's obsidian, a volcanic glass. Man first made glass between 10,000 and 2,000 B.C. It has been established that glass was made in 2100 B.C., so we are dealing with a substance that has been made by man for over 4,000 years.

Our forefathers witnessed the erection of the first manufacturing enterprise in America in 1609. A glass factory was erected near Jamestown, Virginia, and glass was exported to England the same year. A second glass factory was erected there in 1621, but these plants survived only a short time. The oldest glass plant now operating in the United States is the American Optical Company of Massachusetts, which was founded in 1833. Only six other glass companies which were established in the last century are now in business. The Pittsburgh Plate Glass Company is one of these and was incorporated in 1833 in Pennsylvania. At the present time there are about 270 glass plants in the United States located in 23 states.

The first of the century saw the industry moving west. From 1902 to 1905 twenty new glass plants sprang up in Kansas and one at Bartlesville, then in Indian Territory. The latter plant was, from all records, the first glass factory in Okla-

homa. The Kansas glass boom was short lived, for by 1919 only five remained and by 1929 only one was left, at Caney, Kansas. This plant has been idle for years but this year has again resumed making glass.

A glimpse at the history of the Oklahoma glass industry during its 44 years of struggle may furnish a clue to the reason for the ups and downs of this industry in our state. The history of glass plants in Oklahoma presents a graph of hills and valleys. In 1911 we find two more plants added to the Bartlesville factory. By 1912 the number had reached six. The period between 1914 and 1920 saw this number increase to twenty. After World War I some plants went out of business, but this peak of 20 plants was again reached in 1928. At this time there were six factories in Okmulgee, four in Sapulpa, two each at Sand Springs and Poteau, and factories at Kiefer, Bristow, Blackwell, Muskogee, Ada, and Henryetta. Nine years later this list had shrunk to eight. During the past eleven years the average has been nine active plants in the state.

Today there are fourteen glass plants with one shut down: Corning Glass Works and Brockway Glass Company at Muskogee; Ball Brothers, Ruppert Glass Company, American Window Glass Company, and South Western Glass Company at Okmulgee; Hazel Atlas Glass Company, with plants at Blackwell and Ada; Hyatt Glass Company, Poteau; Pittsburgh Plate Glass Company, Henryetta; Kerr and Company, and Kerr, Hubbard, Kelly, Inc., both at Sand Springs; Bartlett Collins Glass Company, and the Liberty Glass Company in Sapulpa. Four of these companies have been in the same location for more than 25 years: Kerr and Company, and Kerr, Hubbard, Kelly, Inc., of Sand Springs; Bartlett Collins Glass Company, and the Liberty Glass Company in Sapulpa.

This brief history is familiar to many of you and is given here only for whatever value it may

furnish in analyzing any mistakes of the past. The short life of the Kansas plants was the direct result of the depletion of gas in the southeast part of that state. Several of the Kansas plants were moved to Oklahoma between 1914 and 1919. Kansas lost 15 plants during this time, and Oklahoma gained 12 during the same years. This migration from Kansas to Oklahoma clearly demonstrates the fact that the magnetic attraction is natural gas. Another factor, next in importance, is the proximity of silica sand with the correct chemical analysis and in sufficient quantity. To my knowledge there is no silica sand deposit in the whole state of Kansas. The limestone for the Kansas plants could have come from Carthage, Missouri. I am informed that at one time there was a soda ash plant operating in the salt area of Kansas near Hutchinson during the glass boom there. This plant has long been closed.

To turn again to our home state, we saw 20 plants in 1928 and then saw them disappear, losing more than one plant per year until only 8 remained in 1937. These were the depression years that witnessed the shutting down of factories and the moving of several from the state. Every plant that remained was fighting for its existence. Those that came through, and are still here, are in better condition physically and financially than at any other time in their history. This may be ascribed to the war demands for glass and to the increased efficiency attained during the war.

The past two years has witnessed the advent of two new glass plants; at Muskogee, the Brockway Glass Company, with its eastern plants at Brockway, Pennsylvania, and the Corning Glass Works with plants at Corning, New York. It is interesting to note what Mr. William C. Decker, President of the Corning Glass Works, states as their reason for erecting a plant at Muskogee. He cites five reasons for their selection:

1. The availability of the desired number of high grade workers needed for the manufacture of glass.

2. An ample and constant supply of low cost natural gas, the fuel vitally important to our manufacturing operations.

3. A nearby supply of superior glass sand, one of our basic raw materials, and easy access to sources of other necessary supplies.

4. The dependable electrical power service available in Oklahoma.

5. The location of Oklahoma in relation to our markets and its excellent rail transportation facilities.

Let us review these five reasons given by Mr. Decker.

1. Availability of glass plant labor. The glass plants of Oklahoma have never suffered from insufficient labor -- both skilled and common. Surrounded as we have been by the oil industry here, mechanics, electricians, mold makers and machine operators have always been available. Common labor was difficult to obtain during the war and good labor is still scarce. However, there has been very little labor trouble in the state.

2. The gas supply here is still ample to care for industrial needs for many years to come. The cost of this raw material, gas, in Oklahoma is now less than one-fourth the average cost in eastern and mid-western states where the largest number of glass plants are located. When you consider that the cost of fuel in melting glass is from 7 to 10 percent of the total cost of making glass, you realize its vital attractiveness. Another factor that should help Oklahoma attract this industry is the scarcity of oil and gas in the above states, at times compelling the closing of plants or a change from gas to oil or coal for fuel. This is a very costly procedure and often involves the total re-

building of the furnace with a higher cost of operation when completed.

3. Raw materials. The major raw materials in glass are silica sand, soda ash, limestone, and feldspar. There are many other materials used but the above, together with cullet or broken glass, constitute over 90% by weight of the total batch. Salt cake, borax, arsenic, cobalt, selenium, fluorspar, lead oxide, and other minor ingredients are also used. In Oklahoma we find a very large supply of commercial silica sand--with a low enough iron content for tableware, bottle containers, sheet and window glass, and green and amber glassware. The silica content of several sands is high enough for the more exacting optical glass.

Soda ash is not made in Oklahoma and must be shipped into the state from plants in Texas or from the east.

Feldspar is not mined in Oklahoma as yet, but there are deposits in the Arbuckles in southern Oklahoma, according to the Oklahoma Geological Survey, but no real commercial deposits have been located. At the present time Colorado furnishes most of the feldspar, but it may be purchased in South Dakota.

Limestone is still being shipped from Carthage, Missouri, but a new plant is now operating in Oklahoma at Marble City with a good product, and a dolomite plant is being constructed in the southern part of the state.

So here in Oklahoma we find our major raw materials except soda ash. This product could and would be made here if the state enjoyed sufficient industries using soda ash and the by-products from this plant to justify the expenditure.

4. The fourth reason was electrical power. Dependable power has always been available to Oklahoma's different industries. There is extensive potential electrical power here in the vast deposits of coal, some 50 billion tons located in the east part of the state, together with the future hydroelectric source of supply. This added to the

energy stored in our present known oil reserves of about one billion barrels, assures ample power for all present and future requirements.

5. The fifth reason was Oklahoma's location with reference to markets and shipping facilities. Oklahoma has adequate shipping facilities with its 6,000 miles of railroads, supported by the services of many truck lines. Also airplane service is available from every principal city. The question of markets is beyond the scope of this paper, for some plants here have shipped to many foreign countries and to most of the states.

With all of her advantages, why has the Oklahoma glass industry grown so slowly? We can see only one answer to her ups and downs and her slow advancement--the distance to big markets. The products from our glass factories are comparable in quality to those of any other plants in the world. We have the most up-to-date equipment, we have very low fuel costs, a bountiful supply of good silica sand, limestone and feldspar, good labor and good labor relations, and very adequate and dependable electrical power with extensive potential power stored in the ground. Our shipping facilities are adequate, but freight rates are now a decided handicap and in the future promise to be even worse. Our great distance from manufacturing centers such as the automobile manufacturing centers has barred Oklahoma plants from furnishing their glass needs.

These are some of the reasons for the slow growth, but the failure to correctly analyze markets has probably been one of the largest contributors to the glass failures in Oklahoma. But we still feel that Oklahoma will solve the problems mentioned and soon be the glass center of the West. Again I say that glass is man's most versatile creation, possessing the distinctive properties of a stubborn and perverse substance.

INDUSTRIAL AND MINERAL INDUSTRIES CONFERENCE
OKLAHOMA CITY, OKLAHOMA

R E S O L U T I O N

October 13, 1948

WHEREAS, Oklahoma's industrial development over the past two or three years has been marked, and,

WHEREAS, much of this success is traceable directly to the programs of the Oklahoma Geological Survey and the Oklahoma Planning & Resources Board,

THEREFORE, BE IT RESOLVED, that this conference extends its appreciation to the Oklahoma Legislature for its support of the Oklahoma Planning & Resources Board, and to the Legislature and the Board of Regents for Higher Education for their support of the Oklahoma Geological Survey, and expresses the hope that in the vital years to come, the Legislature and the Regents will continue their constructive interest in these two fine agencies.

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GROUND-WATER IRRIGATION IN DUKE AREA SUBJECT OF REPORT

Several wells that yield enough water for use in irrigation have been drilled in the general area of Duke, Jackson County. Discussion of these wells, and what is known of the geology of the water-bearing formation, is contained in a report entitled, "Ground-Water Irrigation in the Duke Area, Jackson and Greer Counties, Oklahoma", by Stuart L. Schoff, and issued as Mineral Report No. 18 of the Oklahoma Geological Survey. The report is accompanied by a small map showing general location of the eight wells that have been drilled for irrigation purposes.

INDUSTRIAL AND MINERAL INDUSTRIES CONFERENCE
OKLAHOMA CITY, OKLAHOMA

R E S O L U T I O N

October 13, 1948

WHEREAS, it is desirable to preserve all of the good features that have come out of recent annual meetings of the original Mineral Industries Conference, of the Oklahoma Industrial Conference, and of the Oklahoma Industrial Tour Reunion, and

WHEREAS, this year these have been rather loosely knit under the title of "Oklahoma Industrial and Mineral Industries Conference."

THEREFORE, BE IT RESOLVED, that the following members be named to a committee to form a permanent organization of the diverse groups represented at this conference and to write a new title for the conference, said committee to be made up of:

Robert H. Dott, Norman
Sheldon L. Stirling, Oklahoma City
Harold Wright, Tulsa
Jerry Soukup, Mountain Park
Keith Marshall, Ada
Harold Godschalk, Enid
W. J. Martin, Miami

This committee is to report at the 1949 meeting.

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WATER WELL DRILLING CONTRACTORS MEET IN ENID

First meeting of Oklahoma water well drilling contractors was held at the Geo. E. Failing Supply Co. plant, Enid, Jan. 21. About 70 men attended, the majority being water well drilling contractors, others representing supply houses, State Department of Health, State and Federal Geological Surveys, and the Planning and Resources Board.

The meeting was called by the Health Department, with the Geological Survey cooperating. Carl Warkentin, of the Sanitary Engineering Division, acted as chairman, representing Henry J. Darcey, Chief Sanitary Engineer. Mr. George E. Failing was host at luncheon in the Company cafeteria, and at a social hour following adjournment.

Speakers included Dr. G. E. Condra, State Geologist of Nebraska; R. D. Alexander, Oklahoma City Consulting Engineer; Stuart L. Schoff, Norman, U.S. Geological Survey Geologist-in-charge of Oklahoma cooperative ground water investigations; Lester L. Settle, Oklahoma City, Sanitary Engineer of the Health Department; and Robert Storm, Urbana, Illinois, Secretary, National Water Well Association.

Dr. Condra gave an inspiring talk, "The Importance and Functions of a State Well Drillers' Association," and recalled that Nebraska has had such an organization for 20 years, which has accomplished much in increasing knowledge of ground water resources and its proper development. Nebraska well drillers have learned the need of keeping records. In Nebraska, the Health Department is part of their Association's support, which makes a very logical tie-up. All three groups must work together--Geological Survey, Health, and Well Drillers.

R. D. Alexander spoke on "The Need for Preliminary Investigations of Ground Water Supplies," pointing out from his own experience how money had

been wasted in the belief that you can get as much water as you want, anywhere you drill. Another common and costly mistake is drilling wells too close together and pumping them too hard.

Dr. Schoff spoke on: "Services of Oklahoma Geological Survey," describing the cooperative ground water program of the Oklahoma and U. S. Geological Surveys, which has been operating on a 50-50 matched funds basis since 1937. On a map he showed the principal areas of the state where ground water can be obtained in sufficient quantities for municipal and other relatively large uses.

Mr. Settle discussed the Public Health and sanitation angle of well location and construction, his title being "Sanitary Rules to Follow in Developing Ground Water Supply for Domestic Uses." He placed on the well drillers the responsibility of making sanitary wells. "No organization can take the place of the conscientious well driller. The people of your community look to you as an expert in the field of water wells, and rightly so." By a sketch, Settle pointed out sources of pollution in wells, and why one well may be good and another bad.

Robert Storm, Secretary of the National Well Drillers' Association, outlined general plans of organizations in different states, and offered to aid the Oklahoma group in any way possible.

The following Board of Directors was elected:

Claude Frazier, O. C.
J. S. Jenks, Guthrie
R. D. Sawyer, Chickasha
I. V. Owens, Duke
E. L. Kelly, O. C.
M. E. Kelle, Crescent
Al Braithwaite, Enid
J. A. Poindexter, O. C.

J. A. Poindexter was temporary chairman. The Board elected Al Braithwaite President. The offer of the Health Department to serve as Secretary was accepted. Next meeting will be in Oklahoma City in the spring.